

INDOOR

NEWS and VIEWS

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

ROBERT W. GEER, 2922 S. Garfield, Denver, Colo. 80210
 GEORGE RIVERS, 3408 Boller Ave., Bronx, N. Y. 10469
 RICHARD SIRONEN, 1349 S. W. 174, Seattle, Wash. 98166
 THOMAS F. STONE, 6305 Inca Rd., Ft. Worth, Tex. 76116
 DAVID R. THOMSEN, 5432 Haft Rd., Cincinnati, O. 45239

Special Action Committee

For those who may have missed opening announcements of S.A.C., this is an energetic action of NIMAS members who seek to aid beginners in indoor flying (of all ages, but with special emphasis on youth) in learning how to build and fly indoor models. The effort in preparing materials for instructors was spearheaded by Phill Lawry and Roger Schroeder, and a total of 20 instructors in various parts of the country have volunteered to help as needed. The most recent volunteer instructors are listed below, with others listed in November and December '69 INAV's.

Carl Nye, RD #1, Cortland, New York
 Dave Linstrum, 12 Holcomb St., Simsbury, Conn. 06070
 Jim Davidson, 1815 Melbourne Ave., N.E., Huntsville, Ala. 35801

Actually, Dave Linstrum was originally listed as an instructor in St. Louis, Mo., but he has moved and is reaffirming his willingness to help.

Telephone Numbers?

The Nov. '69 INAV noted that some NIMAS members would like to know the numbers of other NIMAS members so they can call as they travel around. Numerous people have responded by sending their numbers - how about you?

Change of Address

Dave Linstrum, Manager of the FF Team Selection Program, has moved: 12 Holcomb St., Simsbury, Conn. 07060.

Fudge Factors?

Over the years, NIMAS members have cooperated in their postal meets, to the extent that standard "fudge factors" have been developed to permit competition between teams in sites with different ceiling heights. At present, there are two ways to fudge HLG flights, and one formula for equalizing rubber flights.

HLG's are fudged one of two ways, depending upon the amount of difference between the two ceiling heights. If the high ceiling is over 1.5 times as high as the lower one, there is a graph which is used. For smaller differences, this formula is used:

$$\text{Fudge} = (\text{high ceiling})/(\text{low ceiling})$$

The numerical value of the fudge factor is multiplied by the flight times from the lower site; the resulting times are then compared directly with those from the high ceiling site. For rubber models, the same procedure is used, except that the following formula is applied regardless of difference in ceiling height:

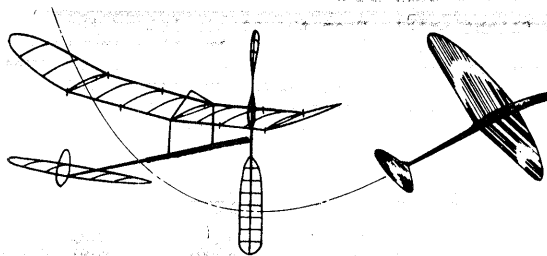
$$\text{Fudge} = \sqrt{(\text{high ceiling})/(\text{low ceiling})}$$

It has almost become standard for teams flying postal meets to use the FAI method of measuring ceiling height, as is now being done in the NIMAS Award program.

Top Ten Ceiling Dodgers

Last month, a casual mention was made of the concept of listing flights that didn't touch the ceiling - in other words, no rafter-banging or ceiling scrubbing. This really ought to say more about who has the most efficient models? Anyway, four fliers immediately and enthusiastically sent in times to begin the listing:

	Time/ceiling	Fudge (to 35')	Est. Altitude	Score
1. Hal Crane	682/20'	1.32	19'	850.2
2. Hewitt Phillips	428/20'	1.32	7'	564.9
3. Roger Schroeder	239.5/15'	1.53	13.5'	365.9



4. Harry Cook 237/15' 1.53 13' 362.6

Ground rules for future listings: Submit times with FAI measure of ceiling height and your estimate of how high the model actually went. The times will be fudged to 35' (using ceiling height; the estimated altitude can be used either for speculation or scaring the competition) and posted for the honor (?) and maybe a prize if there is enough interest. Times must be submitted by the first day of the month to be listed in that month's issue. Send entries to Bob Putman, 507 Darlene, Arlington, Tex. 76012

Peanut Scale

We recently had a request for a copy of the rules for Peanut Scale; Bill Hannan then sent this comment: "The original rules were very 'loose', since PS was always conducted as a sideline 'just for fun' event, and was never taken too seriously at first. What has happened, however, is that a great many modelers have been attracted by the class. During our recent Flightmaster Annual, several fliers entered ONLY Peanut Scale! To top that, a number of the avid R/C boys have even entered into the PS action, which really amazed all of us. Thus, the event has outgrown its original concept, and the Bridgeport, Conn. "Flying Aces", who originated the idea, are hard at work on a new set of rules, which should be ready shortly. Every effort is being made to preserve the 'fun' spirit, and the judging will be kept simple."

As a sideline to Bill's commentary, I would like to note that the PS plans that Bill has for sale are very good. Not only are they well presented, but the structure is well engineered and the models are assembled from an absolute minimum of pieces. This should yield quickly built models - which seems to be part of the fun. Send Bill a card at P. O. Box A, Escondido, Cal. 92025 and ask him for a catalog.

NFFS Design Competition

The National Free Flight Society and AMA are co-sponsoring a design competition for a small field rubber powered model. Entry deadline is April 1, 1970, and an entry blank and set of rules can be obtained from Annie Gieskieng, 1333 S. Franklin St., Denver, Colo. 80210.

Rubber Strippers Available

Bob Dunham has offered to open up his production line on Bilgri-type strippers once again. These are very nice units made from plexiglas, and work very well with either a single blade or multiple blades (see Jan. '67 INAV). The price is \$5 per unit, with deadline for ordering set for Jan. 20, 1970. All units will be produced at the same time, according to orders on hand Jan. 20. Send orders to Bob Dunham, 4730 S. Yorktown Ave., Tulsa, Okla. 74105.

INDOOR RULES

The following comment was recently received on autogyro and ornithopter rules; send your comments and rebuttals to Box 545, Richardson, Tex. 75080 and they will be forwarded to the author of the comment:

"The flapping surfaces on the ornithopters have merely become replacements for propellers; their fixed wings supply all the lift. I saw Carl Goldberg fly his ornithopter at the 1946 Mats, and it did well. I would guess that 85% of the wing area was in the flapping portion, with only a small fixed center section. There was none of this business of a fixed wing separate from the flapping wings.

The autogyro rule should be changed to eliminate all fixed wing surfaces. Models of this type will fly. Most record-setting 'gyros of recent vintage would fly much better without their rotor assemblies, since the fixed wings are doing all the lifting and rotors are along for the ride."

An editorial comment on the above: There have been a few heated arguments on the above topics. From the standpoint of the CD, it is particularly difficult to tell if an autogyro rotor is really contributing to the lift or not. One flight in particular was observed where the rotor stopped, then reversed direction without visibly

affecting the flight path! From the standpoint of the FCCB, only a major increase in activity in these events would really justify time spent on new rules - they are almost dead and this is a shame. They are interesting events that could benefit greatly from modern materials and techniques, and offer a unique challenge.

TOP TEN EASY B

	Time/ceiling	Fudge (to 35')	Score
1. Bob Platt	575/20'	1.32	760
2. Hal Crane	525/692	1.32	692
3. Jim Walters	675/37'	.972	656
4. Clarence Mather	590/30'	1.08	637
5. Joe Portecorvo	516/24'	1.21	623
6. Joe Deady	636/37'	.972	618
7. Pete Patterson	492/24'	1.21	594
8. Jim Clem	416.5/22.3'	1.25	520.6
9. Harry Cook	319/15'	1.52	484.9
10. Howard Haupt	384/25'	1.18	454

Top Juniors

1. David Sandelius	460/37'	.972	447
2. R. J. Dunham, Jr.	467/41'	.92	431
3. Richard Sironen	441/36'	.986	434.6
4. Jimmy Clem	254/22.3'	1.25	317.5
5. Kim Mather	255/25'	1.18	302
6. Neal Rozelle	287/35'	1.00	287
7. Paul Brown	221.8/22.3'	1.25	277.3

CONTEST CALENDAR

ALABAMA - Huntsville. AA Indoor contest at Madison Co. Coliseum in Huntsville, Mar. 15, 1970. HLG - Jr & Open; Easy B - Jr.; Paper Stick, Indoor Stick & Scale - Open. CD - E. J. Minter. For info: J. T. Davidson, 1815 Mel-bourne Ave., NE, Huntsville, Ala. 35801, ph. 539-1509.

ARIZONA - Phoenix. Indoor sessions in Arcadia High School Gym, 7 pm to 10 pm, the second Tuesday each month. Contact Terry Thorkildsen, 3103 W. Willow Ave., Phoenix, Arizona 85029 for further details. Cat. I site.

ILLINOIS - Chicago. Cat. I indoor sessions at Girl's Gym of Forest View High School, 2121 Goebbert Rd., Arlington Hts., Ill. Sessions each Sunday, 9 am to 5 pm, except Feb. 8, 1970. Call Al Sortwell at 312-439-1497 for info and directions to the gym.

MARYLAND - Silver Spring. Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring. Jan. 16, 30; Feb. 20, 1970. 7 pm to 11 pm.

MASSACHUSETTS - M.I.T. Cat. II indoor sessions at MIT Armory, Mass. Ave. & Vassar St., Cambridge, Mass., 3:30 pm to 6:30 pm, Jan. 31, Mar. 7, 1970. Indoor contest April 11, 1970, 1:30 pm to 8:30 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass., ph. 358-4013.

NEW YORK - Long Island. Cat. II indoor contest at Canteague Park, Hicksville, L. I. May 3, 1970. Site is 190' dia. dome, 50' high. HLG, Easy B, Indoor Stick, Paper Stick, Scale. CD - Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L. I., N. Y.

TEXAS - Ft. Worth/Dallas/Denton. Cat. I indoor meet at Ballroom of Texas Woman's Univ., Denton, Texas. Jan. 17, 1970, 10 am to 5 pm. HLG, Paper Stick and Catapult glider for Jr. & Sr-Op.; HLG and AMA Cub for Sub-Jr. Jim Clem, 8240 Green Hollow, Dallas 75240, 214-235-4603.

WISCONSIN - Milwaukee. Indoor sessions each Thursday from 7:30 pm to 9:30 pm at Sherman Social Center, North 51st St. and W. Locust St. Ken Kraemer, 3945 N. 41st St., Milwaukee, Wisc. 53216, ph. 414-442-5864.

POSSIBLE NEW EVENT?

A couple of fliers have suggested, at various times, that indoor needs an event larger than Easy B (for better relative flight performance), and with less design limitations. The most recent suggestion has incorporated these basic features: FAI span (65 cm), a minimum weight, and maximum rubber weight to be half the airframe weight.

The disadvantage of the rules is that the indoor CD would be required to furnish a scale. However, it has been suggested that the airframe weight be made equal to that of a U. S. nickle (approximately .2 oz.). Thus, a simple ratio scale with two hooks and one pan to place the nickle in would suffice.

The proposed class should have the advantage that the beginner suffers only from lack of experience in building and flying, without the psychological handicap of a weight problem. Light indoor models seem to be a necessity in all but low ceilings; this is the major stumbling block for beginners. If they manage to approach the same weight as experienced builders, they break the model from lack of handling experience. When they build models they can handle, they feel the model's weight will beat them.

The FAI span limitation trains people in handling that model size while giving a model large enough to fly well in spite of the high wing loading. The limit on rubber weight lowers the overall weight (giving slower airspeed) and places emphasis on proper application of power without requiring super-strong fuselage of near-zero weight.

Drop a line to Box 545, Richardson, Tex. 75080, and express your feelings about this class. Has it a place in indoor, and do you feel it would encourage more fliers to fly? Even though indoor is still growing, much of the increase is in scale and Easy B, which isn't really going to help expose fliers to the pure duration aspect of our obsession/hobby/sport.

RECORDS? MAYBE!

BRAINBUSTERS RECORD TRIALS, Dec. 27-28, 1969, Cat. I Willis School, Hampton, Va. 20' ceiling. Open Helicopter - 10:36, Hewitt Phillips (Hewitt also made flights of 8:07, 8:48, which also exceeded the existing record.)

OAKLAND CLOUD DUSTERS Cat. II meet, Dec. 13-14, 1969 Cow Palace, San Francisco, Cal. 96' ceiling. Open AMA Cat. II FAI - 34:57, Jim Richmond. Open FAI Cat. III FAI - 34:57, Jim Richmond.

POSTAL CHALLENGE

Jim Haught, 4004 E. Kemper Rd., Cincinnati, O. 45241 offers both a postal challenge and a fun event: Build a "Tenny Easy B" directly on the magazine plans (Oct. '67 AM), to the following rules: (Jim calls this a MINI-BEE)

1. Use the AM plans only, except it is permissible to make the tips square instead of slanted.
2. No bracing; solid motor stick and boom, sheet balsa prop.
3. Tissue or condenser paper covering only.
4. Make flights before witness and have witness sign results sheet.
5. Enter times in one or more of the following ceiling categories:

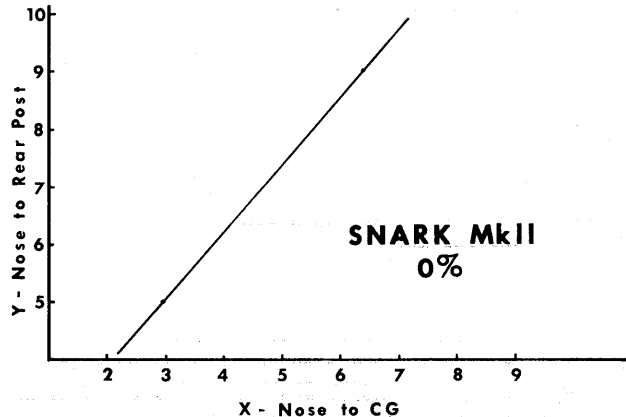
Cat. A - 10'	Cat. D - Over 50'
Cat. B - 30'	Cat. E - Outdoors
Cat. C - 50'	

Since this makes a 6" span model, it won't take much time to build. He suggests that prop blades be made paddle shaped, and that rubber sizes between .020" and .030" will be about right.

Deadline for entry is March 15, 1970; send your entry to Jim at the above address.

STATE OF THE ART

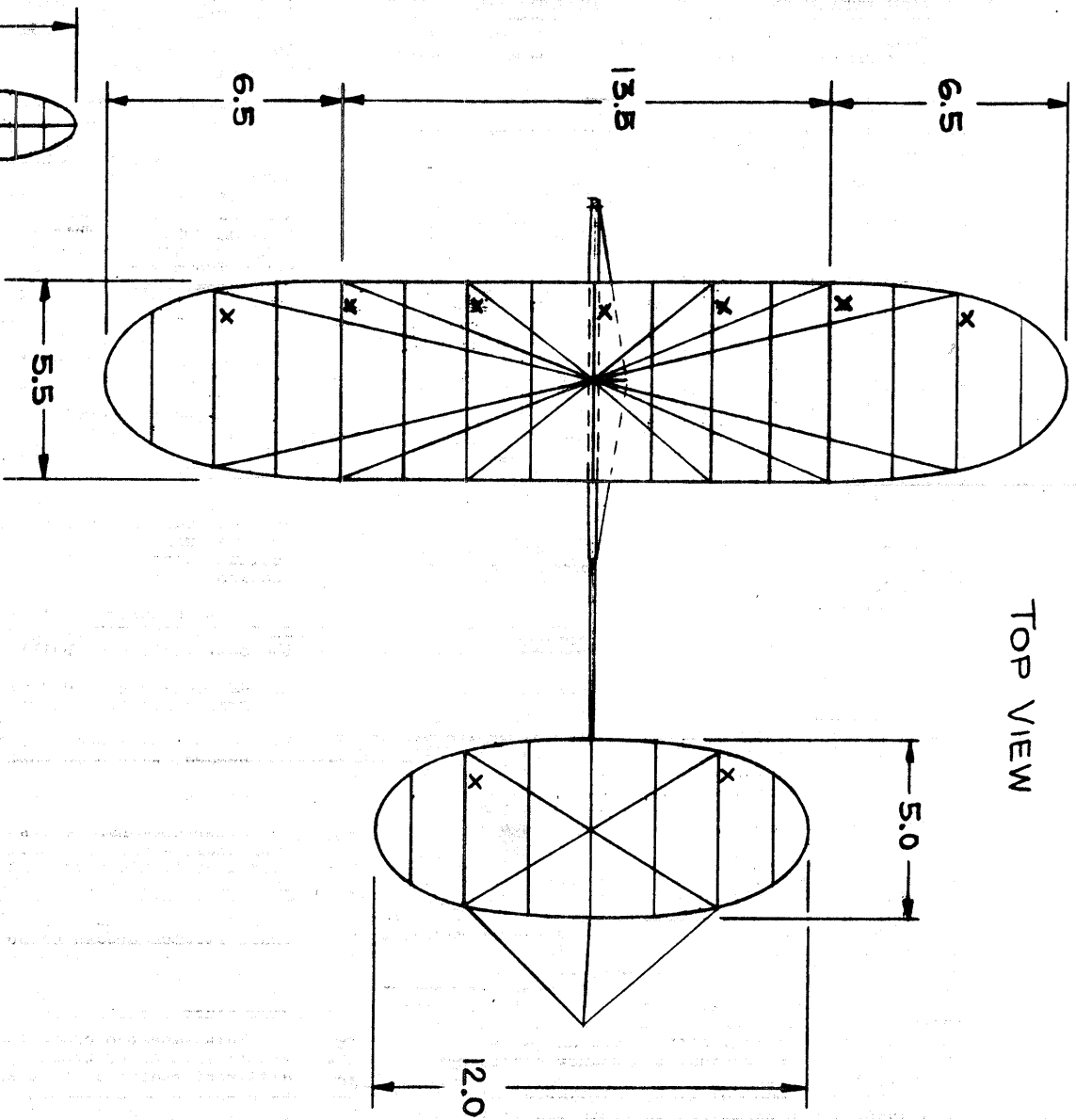
The featured model for the month is one of the top low ceiling designs currently being flown - Tom Vallee's Snark Mk II. The plans list three records the model has set in 1969. In addition, it has placed well in several contests and served as a flying "test bed" for low power experiments along the line proposed in INAV in various 1964 issues. Finally, the model was used to compile data for "Hall Meteorology, Hall Geometry and Low Ceiling Duration", Tom's paper in the NFFS SYMPO 2. If you haven't read this, now is the time. It has many hints for contest flying in poor air (typical winter contest air!) and other strategic flying hints. The usual CMOS balance chart is presented below, calculated for 0%. If Tom drew his plan to scale (regarding wing location), he flew it at about + 1% stability margin, with no trouble from turbulence.



CONTEST RESULTS

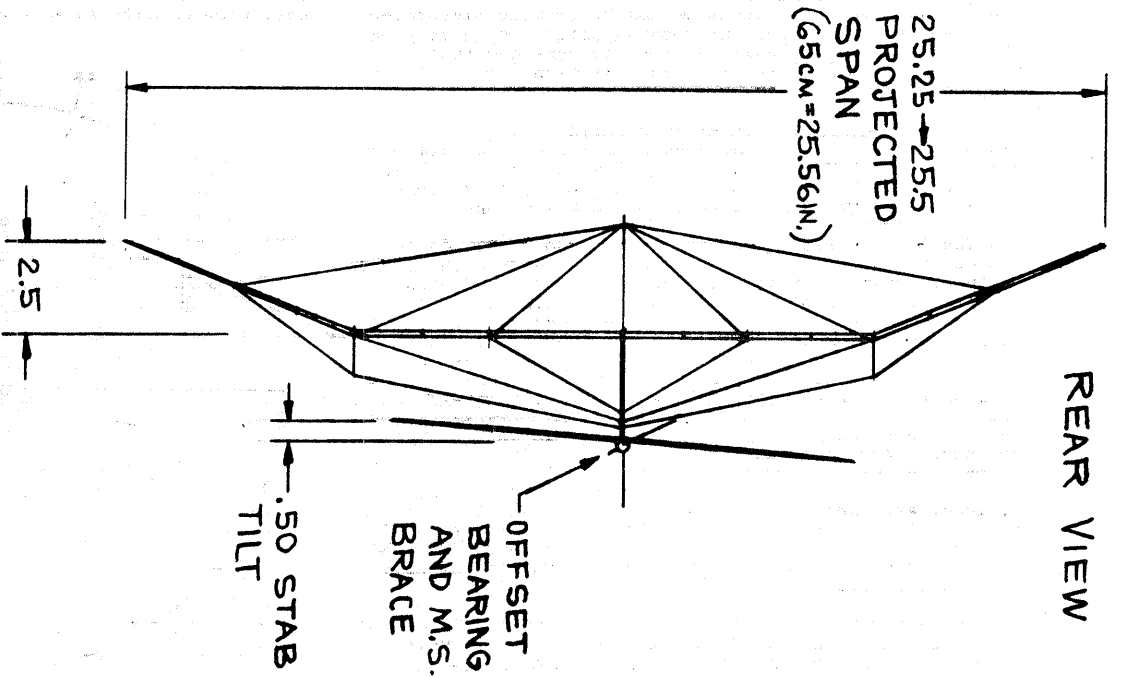
OAKLAND CLOUD DUSTERS Cat. II Contest (Cow Palace) 96' ceiling.

Jr-Sr. HLG	Open HLG		
1. Marty Thomson	1:59.2	1. Steve Geraghty	1:39.6
2. Bill Gibbs	1:35.4	2. Dick Schenz	1:33.0
3. Gerry Geraghty	1:20.2	3. George Foster	1:15.0

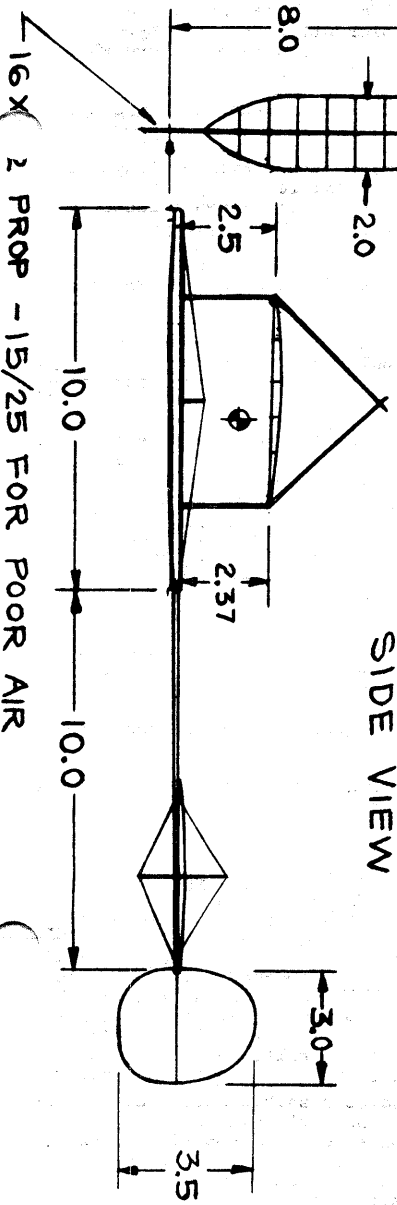


TOP VIEW

SIDE VIEW



REAR VIEW



SNARK MK II
 65 CM FAI
 18:17.8 CAT I AMA FAI
 RECORD - MAY 1969
 18:48 FAI CAT I AND
 19:43.5 AMA CAT I
 FAI RECORDS, OCT 1969

<u>Jr-Sr Paper Stick</u>	
1. Gerry Geraghty	9:22
2. Terry Buddingh	8:40
3. Chris Miller	4:36

<u>Open Paper Stick</u>	
1. Jim Richmond	20:20
2. Bob Randolph	18:01
3. Jerry Powell	16:08

<u>Jr-Sr Indoor Stick</u>	
1. Bill Gibbs	16:55
2. Linda Randolph	12:57
3. Terry Buddingh	9:40

<u>Open Indoor Stick</u>	
1. Carl Rambo	29:49
2. Jim Richmond	25:01
3. Bud Romak	24:48

<u>Jr-Sr Cabin</u>	
1. Bill Gibbs	8:44
2. Gerry Geraghty	1:47

<u>Open Cabin</u>	
1. Bob Randolph	18:06
2. Jim Richmond	13:56
3. Bob Gibbs	11:52

<u>FAI - Jr-Sr-Open</u>	
1. Jim Richmond	34:57
2. Bud Romak	
3. Clarence Mather	

22:00	56:57
	47:53
	42:30

BOEING HAWKS Cat. II Contest (Interlake High School) 37' ceiling.
December 19, 1969

<u>Jr HLG</u>	
1. Phil Hainer, Jr.	1:01.3
2. Jim Hainer	:48.7
3. Spencer Nelson	:31.1

<u>Sr-Open HLG</u>	
1. Jim Walters	1:12.1
2. Al Borer	1:08.4
3. Joe Deady	1:00.4

<u>Easy 3</u>	
1. Joe Deady	10:58
2. Jim Walters	9:54
3. Joe Portecorvo	8:24
4. Rich Sironen (Jr.)	3:81

<u>Indoor Scale</u>	
1. Al Borer	72.5 pts.
2. Woody Kokita	64.5
3. Norm Jacky	61.5

INDOOR CONSTRUCTION TECHNIQUES

Part I - Wood Selection

Most indoor builders, even beginners, know that wood selection is a major technique that must be learned before they can build ultra-light indoor models that will hold up under the rigors of ground handling. (Bill Bigge once did calculations to show that, once launched, an indoor model could be much lighter without collapsing than it must be to hold together during winding and launch.)

If we assume that our wood is of uniform thickness and uniform quality across the entire sheet, we can study the grain structure variations in order to make proper application of each sheet of wood. Before we go on to that, a word about our assumptions: Balsa is highly variable as it grows, depending upon outside factors. Thus, a small block of balsa may weigh (average) such that it would be graded as 4.5#/cubic ft; yet it might be 4.2# wood on one side of the block and 4.8# wood on the other. Both our balsa processors (MicroDyne and Micro-X) are conscientious in their wood grading, both before and after cutting. It is still possible for them to produce sheets not perfectly uniform, in that detection of minor variations would take a prohibitive amount of time. Similarly, minor variations in thickness are difficult to prevent during cutting and also hard to detect without taking 20 or more micrometer measurements. Even so, our wood supplies are quite good in both respects, especially when you consider that soft, thin balsa must be sawed to size. It cannot be sanded by machine without warping.

Basic wood grading by grain structure gives four distinct grades of wood: "A" grain, "B" grain, "C" grain and quarter grain. Quarter grain wood is really extra high grade C grain, as will be seen in a moment; pure forms of A grain and B grain are more distinct gradations.

The illustration below, "The Balsa Compass," is an attempt to show the relative relationships of each type of grain structure. It is supposed to show the end view of a balsa log, with a block outlined just above the center of the log. Certain portions of the block have been cut into sheets, viewed from the end, and the block has been divided into zones according to grain types. Herein lies the difficulty, because the "C" shown on the ends is not true C grain. Pure C grain, also called quarter-grain, is cut so the sheet is parallel to the annular rings of the log. This produces very large speckles in the surface appearance, where the saw has cut across individual rings. A grain is just the opposite; the sheet is cut perpendicular to the annular rings. This produces the appearance of long, straight lines the length of the sheet. B grain sheets, viewed from the end, would have the rings running through the sheet at an angle, as illustrated. "B" wood has a mottled, unattractive appearance, but is actually an excellent choice for several purposes.

The descriptions given above for the various types of wood grain are a bit difficult to keep track of, unless a sample of each type is available for comparison. It is easier to study wood grain types if you have samples of 1/4" sheet with various grain types. Cut smoothly across the end of each piece with a razor blade so the annular

rings are visible. Compare the grain directions to those illustrated in the "compass" as an added study aid. Finally, there are some good color slides of wood types in the Dick Black "wood selection" slide/tape lecture which will aid in learning wood grain types.

The following comments are taken from the Micro-X catalog, with their permission:

A Grain: very easy to bend across the grain or lengthwise. Actually the weakest or most flexible wood per weight. It is best used for spars where sharp bends are necessary like wing tips, spars, rudders and prop outlines. Not for rolling bodies. (This is because much of the strength of a motor stick depends upon keeping the cross-section round and uniformly curved. Stiff wood, like quarter-grain, is sufficiently stiff.)

B Grain: Sometimes unattractive looking but a very stiff wood for its weight. It should be used for straight spars such as wing center sections. Can also be used for ribs and prop outlines.

C Grain (Quarter grain): Looks like mother-of-pearl chips running crosswise in it. It is very stiff, both across grain and lengthwise. It is best used for rolling motor sticks, and is excellent for ribs. Do not use for spars.

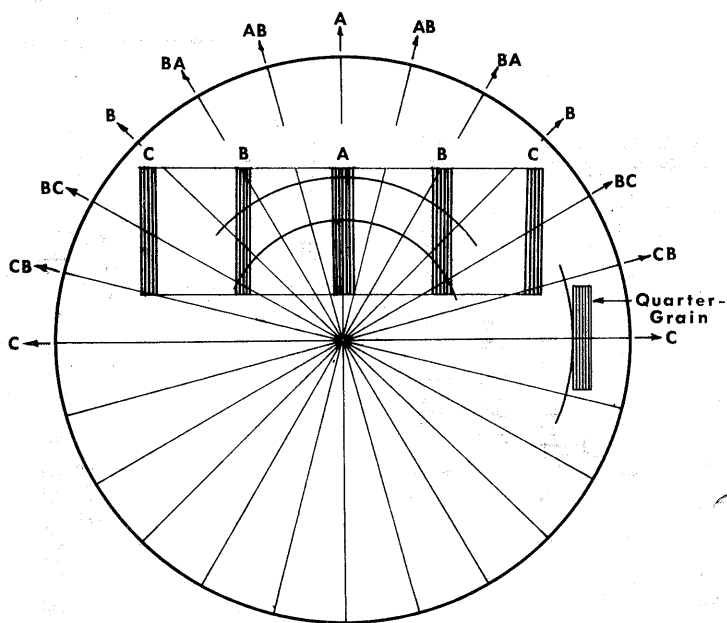
Regular "C" (shown as CB on the compass) is almost as good as quarter grain for the uses mentioned above. If you must make a choice, save quarter grain for motor stick rolling, since this is the most critical application in the whole model.

Lest the extra designations on the compass cause some confusion, the following groupings can be made by all but the most finicky of builders:

1. CB & C - use as C grain; except reserve C (quarter-grain) for motor tubes.
2. BC, B & BA - use as B grain where very stiff spars are needed, with B in most critical places.
3. AB & A - Use as A grain.

After wood has been sorted into grain types and uses, each sheet should be checked for stretch breaks and uniform density along the entire length (no soft places in the sheet). Stretch breaks are caused when a log falls across another log, causing the whole log to bend sharply at one place. The result is tiny cracks in a sheet, and small stretch breaks cannot be seen. They show up in this test: cut a piece with uniform cross-section, as nearly square as possible. Hold the ends of the strip; bend it in a curve approximating a semi-circle. Stretch breaks will cause the strip to fail, usually with a clean break.

This same procedure locates possible soft spots in the sheet; instead of breaking, the strip will bend with a different radius at soft spots (or hard spots). Often, it is possible to salvage most of a sheet if the change in density or strength occurs at one end - just trim off the soft part or mark it with marker pen.



The Balsa Compass

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

THEODORE KATSANIA, 48 Whitehall Dr., Berea, O. 44107
 KEN KRAEMER, 3945 N. 41st St., Milwaukee, Wis. 53216
 EUGENE C. LARR, 2906 Lone Jack Rd., Encinitas, Cal. 92024
 BASIL TURI, 38015 Vine St., Willoughby, O. 44094

NIMAS Members Honored

As is their custom, the Chicago Aeronuts held their annual awards banquet in January. This event is one of the outstanding "social" activities held by the Aeronuts, and seems like a good idea for more clubs to take up.

Jim Richmond received a "recognition award" plaque (donated by Pete Sotich) for 1968-69, for winning first at the 1968 Indoor World Championships, and for setting so many AMA records in the two year period. Jim also was given a special "60 minute" stopwatch by the Aeronuts - is this a way of suggesting that Jim should win at the 1970 World Champs with a 60 minute flight?

Charlie Sotich won the Raoul T. Hoffman High Point Trophy for 1968-69, by amassing the highest number of club points. Points are awarded by the Aeronuts for placing at contests, working at contests and performing other club membership functions.

Peanut Scale Rules

The following rules, drawn up by the Bridgeport Flying Aces Club and furnished by Bill Hannan, are offered in response to a question raised recently. Any questions on these rules should be cleared up by contacting Cpt. Dave Stott, Flying Aces Club General Headquarters, 66 Bankside Street, Bridgeport, Conn. 06606.

1. Open to any scale model of no more than 13" wingspan.
2. Total of three flights, hand launched, to be used in addition to Construction and Workmanship points, to determine winner. Flyoff to break ties.
3. Unlimited attempts to gain three official flights. Any flight of 5 seconds or more is automatically official.
4. Construction points - General
 - A. Use of condenser paper instead of Jap tissue - minus 10
 - B. No microfilm allowed.
 - C. Flight Surfaces
 - A. All or partial sheet - minus 5
 - B. Built up, tissue covered, top or bottom only - minus 5
 - C. If proof can be shown that the real ship was covered one side only and model is so - zero
 - D. Built up with top & bottom covered - plus 3

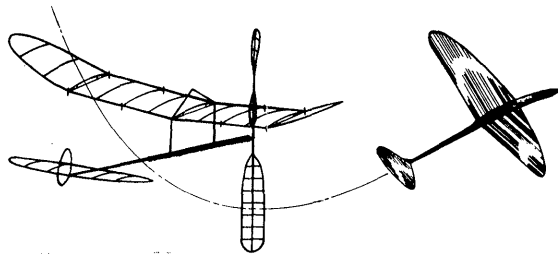
Workmanship points

- A. Color - reasonable effort to use tissue and/or dope to simulate realistic coloring for type modeled - plus 3
- B. Marking - Civil registration & striping or military insignia, serial numbers, squadron markings - plus 3
- C. Details - Struts, cowls, cylinders, pilot, rigging, armament, windshields, steps and control surface outlines plus any unmentioned outstanding details for the type modeled shall be scored thus:
 1. Stark minus 3
 2. Lax zero
 3. Good plus 3
 4. Great! plus 6
- D. Planes that had retractible landing gear may be built with the gear represented in the up position.

CONTEST CALENDAR

ALABAMA - Huntsville. AA Indoor contest at Madison Co. Coliseum in Huntsville, Mar. 15, 1970. HLG - Jr & Open; Easy B - Jr.; Paper Stick, Indoor Stick & Scale - Open. CD - E. J. Minter. For info: J. T. Davidson, 1815 Melbourne Ave., NE, Huntsville, Ala. 35801, ph. 539-1509.

ARIZONA - Phoenix. Indoor sessions in Arcadia High School Gym, 7 pm to 10 pm, the second Tuesday each month. Contact



Terry Thorkildsen, 3103 W. Willow Ave., Phoenix, Arizona, 85029 for further details. Cat. I site.

CALIFORNIA - Edwards AFB. Cat. II Record Trials scheduled for Feb. 15 and Mar. 15, 1970 at Edwards AFB. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda, Cal. 92354 for details and possible need for clearance.

ILLINOIS - Chicago. Cat. I contest by Chicago Aeronuts, Feb. 15, 1970; 9 am to 4 pm, Forest View High School Gym, Arlington Heights, Ill. HLG & Pennyplane event (rules in this issue); Juniors - 15 and under; Open - 16 and over. Pete Sotich, 3851 West 62nd Place, Chicago, Ill. 60629 ph. 312-RE 5-1353 after 6 pm. Also: Flying sessions each Sunday through Mar. 29, 1970. Call Al Sortwell at 312-439-1497 for directions to site.

INDIANA - West Lafayette. Purdue Aeromodelers Indoor Contest, Old Purdue Fieldhouse in W. Lafayette. Easy B, HLG, Indoor Scale; all ages combined. Trophies through 3rd in each event. Chris Matsuido, Box 617, Cary Hall, W. Lafayette, Ind. 47906, ph. 495-2867. Mar. 8, 1970, 9 am-4 pm.

KANSAS - Olathe. Indoor contest, Olathe Jr. High, 1 pm to 5 pm, Feb. 21, 1970. AMA Cub, Sub-Jr. (all ages thru 13). HLG - Sub. Jr.; Ages 14 & over; Indoor Scale - Jr. & Open; Easy B - all ages combined. Harry Cook, 6319 Marty, Overland Park, Kan. 913-HE 2-5523 or Roger Schroeder, 4111 W. 98th St., Overland Park, Kan. 913-648-4265.

MARYLAND - Silver Spring. Indoor session at JFK High School, 1901 Randolph Rd., Silver Spring. Feb. 20, 1970, 7 pm to 11 pm.

MASSACHUSETTS - M.I.T. Cat. II indoor session at MIT Armory, Mass. Ave. & Vassar St., Cambridge, Mass., 3:30 pm to 6:30 pm, Mar. 7, 1970. Indoor contest April 11, 1970, 1:30 pm to 8:30 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass., ph. 358-4013.

MISSOURI - St. Louis Area. Indoor contests at Duchesne High School, St. Charles, Mo., Mar. 15 and Mar. 22, 1970, 11 am to 4 pm. Indoor Scale, Delta Dart, Easy B, Indoor Stick, HLG. Special rules for Open Delta Dart, Scale, Easy B; contact Jim Bennett, 324 Helfenstein, Webster Groves, Mo. 63119 or Lou Merlotti, 9214 Mackinac, Affton, Mo. 63123 for rules and entry blank.

NEW YORK - Long Island. Cat. II indoor contest at Cantigue Park, Hicksville, L. I. May 3, 1970. Site is 190' dia. dome, 50' high. HLG, Easy B, Indoor Stick, Paper Stick, Scale. CD - Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L.I., N. Y.

OHIO - Wright-Patterson AFB. Indoor meet on Mar. 8, 1970, AMA Delta Dart, AMA Scale and Peanut Scale. Marty Richardson, 7130 Claybeck Dr., Dayton, O. 45424.

TEXAS - Ft. Worth/Dallas/Denton. The Jan. 17 meet had to be cancelled at the last minute; will be re-scheduled when possible. If you did not receive a notice in January and want to receive notice when the meet is rescheduled, send your name to Box 545, Richardson, Tex. 75080.

WISCONSIN - Milwaukee. Indoor sessions each Thursday from 7:30 pm to 9:30 pm at Sherman Social Center, North 51st St. and W. Locust St. Ken Kraemer, 3945 N. 41st St., Milwaukee, Wisc. 53216, ph. 414-442-5864.

TOP TEN EASY B

	Time/ceiling	Fudge (to 35')	Score
1. Bob Platt	575/20'	1.32	760
2. Dick Hardcastle	602/23'	1.23	743
3. Hal Crane	525/20'	1.32	692
4. Jim Walters	675/37'	.972	656
5. Clarence Mather	590/30'	1.08	637
6. Joe Portecorvo	516/24'	1.21	623
7. Joe Deady	636/37'	.972	618
8. Pete Patterson	492/24'	1.21	594
9. Jim Clem	417/22.3'	1.25	520.6
10. Harry Cook	319/15'	1.52	485

Top Juniors				
1. Richard Sironen	517/37'	.972	503	
2. David Sandelius	460/37'	.972	447	
3. Robert Dunham II	467/41'	.92	431	
4. Jimmy Clem	254/22'	1.25	318	
5. Kim Mather	255/25'	1.18	302	
6. Neal Rozelle	287/35'	1.00	287	
7. Paul Brown	222/22.3'	1.25	277	

TOP TEN CEILING DODGERS

	Time/ceiling	Fudge (to 35'	Est. Altitude	Score
1. Tom Vallee	810/20'	1.32	19'	1068.2
2. Hal Crane	682/20'	1.32	19'	850.2
3. Dick Hardcastle	602/23'	1.23	22.5'	743
4. Hewitt Phillips	428/20'	1.32	7'	564.9
5. Richard Sironen	408/37'	.972	33'	396.6
6. Roger Schroeder	239.5/15'	1.53	13.5'	365.9

THE 1970 FAI INDOOR TEAM SELECTION PROGRAM

by Clarence Mather

Many modelers are interested in the program and support it in various ways. Some actively seek a team position, others enter area trials with no intention of going to the Finals, and others assist at contests. Each one makes an important contribution and this report is meant to provide details on how a program develops.

The team is selected during the year preceding the World Championship to allow the team some months of preparation, so the program to select the 1970 Team began Jan. 1, 1969. By August, 1968, AMA had taken no action, so Bud Tenny and Bob Champine got the program under way. The program administrator is not allowed to fly in area trials so Bud and Bob looked for someone to fill that role. I volunteered because someone was needed and I felt that the 1968 team experience would be helpful. Also, I felt that those of us who had benefitted so much from others' work should "take a turn".

By October, 1968, the program format and schedule were generally set up. Usually the Administrator decides on type of program, dates and locations. For his assistance there are Area Coordinators; Joe Bilgri, Bob Champine, Dick Ganslen and Jim Richmond served in 1968; I added Bud Tenny to form a committee of six.

In November, 1968, the first memo went out suggesting goals for the program and giving some views on the Finals. Committee members and a number of other indoor fliers responded with their opinions, so very quickly I had a good idea of the general feelings on the program.

The time for the Finals was easily decided since nearly everyone favored Nats time so both events could be entered during one vacation period. The Finals site was a much bigger problem. Ideally, the site should approximate the World Champs site, be centrally located, and be available at the proper time. Preliminary reports indicated Poland would host the 1970 World Champs in a large hall, but this site was too drafty and another site was selected later.

In March Dick Ganslen reported that Will Rogers Coliseum in Ft. Worth, Texas, could be obtained for the Finals. That was good news because the Coliseum is a good medium-height, centrally located site. Some fliers suggested holding the Finals at Lakehurst since the Polish hall was very high and many of the participants planned to attend the Nats anyhow. I contacted AMA to see if Lakehurst was available was advised it was not, unless the Finals were flown during the Nats or at night following Nats events.

In April it was announced that the World Champs would be held in a Romanian salt mine. I then recommended that the Finals be held at Lakehurst. AMA and some of the committee felt that the qualifiers should be polled because Lakehurst was not a central site. This was a good idea, except that time was getting short. The poll was undertaken, with twenty-five favoring Lakehurst, seventeen choosing Ft. Worth and six picking West Baden, Indiana, site of the 1968 Team Finals. There were strong comments in favor of each site, as could be expected. Surprisingly, West Baden was mentioned as a central site, even though it is far from central U.S. and most Western fliers prefer the small additional travel to have the use of Lakehurst. However, each opinion was the voice of a serious indoor flier and received careful consideration.

Finally AMA approved Lakehurst and the committee members were notified in a May 12 memo. We then expected to hold the Finals in the evenings after the Nats events, but Julius Rudy notified me that the eastern fliers were able to use a different hangar on Sundays and that we might be able to do the same. This was good news, because the night time visibility in the hangars was reported to be marginal. I decided to try for a Sunday, as the advantage

of having a hangar to ourselves for a full day seemed to be worth the possible inconvenience of late notification of the finalists - especially since just one day was involved. Through the efforts of Chester Wrzos and C. V. Russo permission was received to use the hangar, and Chester volunteered to CD the Finals - much to my relief! He did an excellent job and deserves many thanks.

In general I felt the program went well and I would not reverse any of the major decisions if it was to be done over. The total number of entrants was down, and I doubt there was any one reason. There seems to be more indoor flying than ever around the country; hopefully more of these fliers will try FAI. The 65 cm model is easy to build, transport and fly in small sites. Some suggested the lack of high sites caused the decline in entries, but San Francisco and Chicago had good sites regularly available and had only a handful of entries.

There were a few suggested changes for the program. A couple of fliers recommended eliminating the Quarter-Finals; but I believe the extra step gets fliers out and improves the quality of the flying. If fliers are staying out because of too many steps perhaps they should be reduced. One group recommended having no area flying at all - just a one-shot team selection contest. I feel this is a bad move that would lower flying quality, reduce local flying and reduce the number of entries. Another recommendation was to keep the program as is except to advance all quarter-finalists who make 80% of the top time at their Quarter-Finals.

Now is the time to suggest changes in the program and present them to INAV so they can be thought over and acted upon by a large number of fliers. Also, now is the time to think about who will be the next program administrator and area coordinators.

STATE OF THE ART

This month's feature model is John Triolo's record autogyro; it held the record just prior to Fred Weitzel's 8:27 (set at Lakehurst June 11, 1967). The model is also noted for the minor furor it caused - John had to write a brief justifying the design and the FFCB upheld his interpretation of the rules (regarding the distribution of wing and rotor area vs. stab area). Ironically enough, the record was set with the model wound somewhat less than full turns; a handling accident prevented another flight.

POSSIBLE NEW EVENT?

The Jan. '70 INAV reported a proposal to create a new model class intended to help introduce indoor flying to beginners. The suggested features were: FAI span, a minimum weight equal to a U. S. nickle (approx. .2 oz.), and rubber weight limited to half the airframe weight.

Tom Vallee opposed the event and said that Easy B can be changed to allow wood braces which make a maximum angle of 45° to the wing posts, and that if a minimum weight is used it should be .05 oz. He also opposed restriction of rubber weight. I countered that present Easy B rules do not prohibit bracing; we are discussing the rest.

Hal Crane suggested that the maximum weight is a bit too high, that perhaps .1 oz. (approx. a penny) would be adequate. Frank Ehling approved the minimum weight concept, with the notation that the event should result in a model that can be built to a minimum weight using outdoor supplies. He also proposed a standard motor and fixed prop diameter and pitch. The last two suggestions would be too difficult to check during processing, but one of "our" problems is local availability of indoor materials. Frank's last point is also valid - entrants in "beginner" events should not enter more advanced events.

To expand on Ehling's ideas a bit, outdoor wood comes in certain fixed sizes, regardless of the wood density. The beginner class should then be such that a model built with outdoor wood, and using wood sizes compatible with beginner skills would "come in" about the specified weight or just over. Rubber limits may or may not be acceptable, but I feel a limit of half the specified airframe weight would help prevent high speed, hard-to-trim models.

In regard to using the Easy B event, two difficulties arise: using outdoor wood and beginner-skill wood sizes, the Tenny Easy B (Oct. '67 AM) weighed exactly .08 oz. It was a "lead sled" (thanks to Jim Clem for the name!) and definitely suffered in the performance department. If the model had been .2 oz. and FAI size, the wing loading would have been about the same and performance would have been much better, even with rubber weight limits.

Meanwhile, the Chicago Aeronuts are trying a minimum weight event at their Feb. contest (see Contest Calendar). It is called the Pennyplane event and the rules are:

1. Model must weight as much as a new copper penny.
2. Must not exceed 18" in length (including propeller) or wing span.

3. Motor stick must not exceed 10" in length (from front of thrust bearing to rear hook).
4. Single rubber motor and propeller (no gears).
5. Motor must not be enclosed in body or motor stick.
6. Model must be weighed prior to each official flight.
7. (Comments on scale design; omitted to save space).
8. Five official flights are allowed. Highest single flight is used to score.
9. Timing stops when model touches any object, except in case of mid-air collision with another model. Both contestants may then elect to take the flight over or accept the time as of the impact. (This rule may be modified according to local conditions.)
10. Any type of covering material or construction may be used. Configuration (number of wings, pusher, low wing, etc.) is the free choice of the builder.

INDOOR CONSTRUCTION TECHNIQUES

Accuracy Is Our Policy

And we sometimes achieve it - but not last month! At least five people wrote in to point out that the position of "A" grain and "C" grain cuts were reversed in the illustration "Balsa Compass". This change affects also the comments in paragraph #4; substitute "A" for "C" in that paragraph.

In addition to the well documented comments which told me how I had goofed, Bill Bigge offered these comments:

"Once upon a time - about twenty years ago - I believed I could see annular rings in sheet balsa, and for a time made the mistake of identifying the speckles in quarter-grain balsa with the annular rings. As you have probably been informed by now, the grain directions in the drawing "The Balsa Compass" are in error by 90 degrees. The speckles are medullary rays - in effect plates of denser cells that grow in a radial direction. When you consider that the tree is at most ten years old, you see that there cannot be many annular rings to be seen. A hard streak running the length of a sheet is part of an annular ring.

Of two sheets of wood the same density and quality, the quarter-grain sheet is stiffer both across the grain and lengthwise. I infer that it has less resistance to crushing in the direction of the thickness of the sheet than a tangent-cut sheet. ("B" grain - Ed.) Probably the crossgrain tensile and shear strength is greater in the radial than in the circumferential direction. But whereas the crossgrain stiffness may be several times as great for quarter-grain, the lengthwise stiffness is about 3% to 6% greater for a square spar loaded in the circumferential direction than for the same spar loaded in the radial direction. Comparison between different sheets would be meaningless for detecting this effect - sheets that are otherwise indistinguishable may differ by more than 20% in stiffness. (Ed. Note - this is why wood density and spar dimension notes on indoor plans are relatively meaningless to anyone except the man who made them - he is the only one who has that particular sheet of wood!) I have just finished testing a 6.5# 3/8 x 3/8 and a 5# .042 x .044, to get the above numbers. The difference is noticeable when sanding a round prop spar to get uniform stiffness in all directions - it needs to be out of round. No, I don't locate wing posts to get quarter-grain on the sides - never thought of it!"

That should clear up last month's goofs - let's start with a clean slate this month!

Part II - Wood Density

Balsa wood density varies from less than four pounds/cubic foot to over sixteen pounds/cubic foot. Indoor modelers use the entire range up to 6.5 #/cu. ft., with wide divergence of opinions regarding which density should be used for any given purpose. Much of the difference in opinion is caused by the wide variations in quality among sheets of a given density - as reflected in Bigge's statement on stiffness above. In general, it is possible to compute "equivalent" spar cross sections to be cut from sheets of different density, if you ignore the variations in the wood.

For example, suppose you had two pieces of "B" stock for wing spars - one of 4.5# density and one of 6.5# density. Your past experience tells you that .022" x .030" spars from the 6.5# wood are adequate for your level of handling experience. What size should spars from the 4.5# wood be? Multiply width x depth x density for the known spar (22 x 30 x 6.5 = 4300) and divide by the density of the other sheet (4300/4.5 = 950). By trial we find that a spar .026" x .037" gives an equivalent cross section (26 x 37 = 950), so this can be considered an "equivalent" spar. However, there will be differences! The following comparisons are valid in the general sense: The 4.5# spar will be much stiffer; enough so that the cross section can be reduced considerably if the model never has to rafter-

bang or be steered, and if your handling skill is enough to avoid collapsing parts as you handle it.

The 4.5# spar will be brittle (a very occasional sheet of light wood will not be brittle), so that flight or handling damage will result in complete spar collapse. The 6.5# spar may fall, but it is far more likely to break without a clean fracture. This leaves a few wood fibers to bridge the break and make repairs easier. However, the 6.5# spar will usually deflect much farther before breaking; thus it is a better choice for models which must take repeated abuse.

The motor stick is a different case. The stick must be as stiff as possible, since any deflection under full winds only increases the "leverage" the motor has, which in turn further loads the stick. Thus, the very stiffest wood must be chosen, and the density must be as low as possible, consistent with high quality. In general, the stiffness of the stick increases in proportion to the diameter of the tube. For a given length and wood density, the stick weight increases in proportion to the diameter. Thus, the stick blank must be as thin as possible to give a large diameter, lightweight stick. With the extremely thin wall, it is easy to see why stiff wood must be used. Stiffer wood holds the circular cross section and retains the stiffness. Later, it will be shown how to further increase the stiffness with internal braces.

Ribs are another case where stiff, light wood must be used. With wide chords prevalent in current FAI practice, the ribs become miniature "spars" which simply must be stiff to hold their shape - essentially no bracing is possible except for compression ribs.

Moisture absorption is another factor in choice of wood, and the remarks to follow may leave me out on a limb for someone to saw off! I believe that low density wood absorbs more moisture per unit volume. Since larger cross sections must be used for "equivalent" spars, it is likely that models built from low density wood will gain more weight in high humidity than models built from higher density wood. Thus it may be advisable to build models with small cross section spars from higher density wood if they will be exposed to high humidity.

Very little wood we buy is graded for density, and each builder should grade his own when he begins to get serious about light weight models. The formula for density, furnished by Dan Domina is:

$$\text{Density (\#/cu. ft.)} = \frac{\text{Weight in oz.} \times 108}{\text{length} \times \text{width} \times \text{thickness}}$$

Dan programmed a computer to calculate the weight of wood sheets of different densities, using the above formula. A sample of the data thus created is shown below:

#/cu.ft.	Oz.	#/cu.ft.	Oz.	#/cu.ft.	Oz.
<u>18" x .010" x 1.1875" (Sheet Size)</u>					
3.6	.0071	3.8	.0073	4.0	.0079
4.2	.0083	4.4	.0087	4.6	.0091
4.8	.0095	5.0	.0099	5.2	.0103
<u>18" x .0156 x 1.1875</u>					
3.6	.0111	3.8	.0117	4.0	.0124
4.2	.0130	4.4	.0136	4.6	.0142
4.8	.0148	5.0	.0155	5.2	.0161
<u>18" x .020 x 1.1875</u>					
3.6	.0142	3.8	.0150	4.0	.0158
4.2	.0166	4.4	.0174	4.6	.0182
4.8	.0190	5.0	.0198	5.2	.0206
<u>18" x .0313 x 1.1875</u>					
4.2	.0254	4.4	.0273	4.6	.0285
4.8	.0297	5.0	.0310	5.2	.0322
5.4	.0335	5.6	.0347	5.8	.0359
<u>18" x .125" x 3.0"</u>					
3.6	.2250	3.8	.2375	4.0	.2500
4.2	.2625	4.4	.2750	4.6	.2875
4.8	.3000	5.0	.3125	5.2	.3250
<u>18" x .250" x 3.0"</u>					
3.6	.4500	3.8	.4750	4.0	.5000
4.2	.5250	4.4	.5500	4.6	.5750
4.8	.6000	5.0	.6250	5.2	.6500
<u>18" x .250" x 4.0"</u>					
3.6	.6000	3.8	.6333	4.0	.6667
4.2	.7000	4.4	.7333	4.6	.7667
4.8	.8000	5.0	.8333	5.2	.8667

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

WALTER GODLESKI, 315 Walnut St., Homestead, Pa. 15120
 IRVING HOPKINS, 859 Longmeadow St., Longmeadow, Mass. 01106
 DENNIS M. JAECKS, 61 S. Ringold St., Janesville, Wis. 53545
 DAVID SANDELIUS, 17204 Sylvester Rd., SW, Seattle, Wash. 98166

Honorary Members

ALBERTO A. BARILARI, Castro 1169, Buenos Aires, Argentina

Family Memberships

DIANNA L. DAVIDSON }
 JAMIE L. DAVIDSON } 1815 Melbourne Ave., NE, Huntsville,
 SUSAN L. DAVIDSON } Ala. 35801

Change of Address

EDDIE CAPOGRECO, 1423 Andrews Dr., Cahokia, Ill. 62206

Back Issues?

In years past there have been plenty of back issues, but the total number of copies in print dwindled as membership got closer to the number of copies printed each month. Recently, the number printed was increased to 400, which means that 18 months from now there will be lots of back issues available again. Meanwhile, there is a "loaner" set which is complete back to Dec. '61, if you have access to a copier. It costs about \$1 to mail and insure this package, and it is loaned on a first-come-first-served basis. If you want to copy these back issues, get your name on the waiting list!

Correct it, Please

Last month, I goofed on the date in the masthead for the Feb. '70 issue. Hal Crane remarked that since I missed an issue last year, I must be making up for it by sending out two in one month! So, please scratch out Jan. and write Feb. at the top of the second Jan. '70 issue. That way, you won't panic sometime next year and decide you have two Jan. '70 issues and no Feb. '70!

Lost Issues?

If you move, or miss an issue, please drop us a line immediately, so that the error can be corrected. Labels are typed with an original and two carbons, at the last minute, under a lot of pressure. Each "typo" is thus duplicated twice more; if one issue goes astray, the next two will also! We use first class postage so that most of the errors "bounce", but this usually results in about two weeks delay before you get the issue. If you know someone who just joined and missed the issue with his name in it, get him to notify me. The chances are that his file card has an error, and I can't tell where to send the issue after it comes back! Assume that you have been missed if you don't have the newsletter by the 20th of the month.

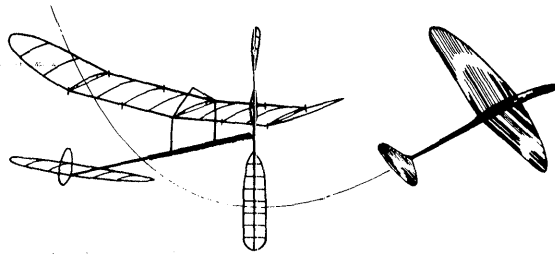
Site Survey

Herman Adams, P. O. Box 491, Rome, Ga. 30161, is taking over the site survey since I wasn't getting it done. If you received a form and haven't sent it in, send it to Herman. If you haven't received a form, you should soon get one. Please fill it out and return it promptly.

Certificate of Permanent Record?

Bob Meuser has proposed an idea which he would like to have comments on. Suppose that whenever a record is dropped from the record books due to a rules change, that the person holding that record be awarded a special "certificate of permanent record" to denote that his record stood until removed by legislative action. Does this seem to be a suitable and appropriate action?

If you buy that one, how about this: periodically drop all the records that have stood for some specific length of time, such as three years, and award the certificate mentioned above?



CONTEST CALENDAR

ALABAMA - Huntsville. AA Indoor contest at Madison Co. Coliseum in Huntsville, Mar. 15, 1970. HLG - Jr & Open; Easy B - Jr.; Paper Stick, Indoor Stick & Scale - Open. CD - E. J. Minter. For info: J. T. Davidson, 1815 Melbourne Ave., NE, Huntsville, Ala. 35801, ph. 539-1509.

ARIZONA - Phoenix. Indoor sessions in Arcadia High School Gym, 7 pm to 10 pm, the second Tuesday each month. Contact Terry Thorkildsen, 3103 W. Willow Ave., Phoenix, Arizona, 85029 for further details. Cat. I site.

CALIFORNIA - Edwards AFB. Cat. II Record Trials scheduled for Feb. 15 and Mar. 15, 1970 at Edwards AFB. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda, Cal. 92354 for details and possible need for clearance.

ILLINOIS - Chicago. Indoor sessions at Forest View High School Gym, Arlington Hts., Ill., each Sunday through Mar. 29, 1970. Call Al Sortwell at 312-439-1497 for directions to site.

INDIANA - West Lafayette. Purdue Aeromodelers Indoor Contest, Old Purdue Fieldhouse in W. Lafayette. Easy B, HLG, Indoor Scale; all ages combined. Trophies through 3rd in each event. Chris Matsuido, Box 617, Cary Hall, W. Lafayette, Ind. 47906, ph. 495-2667. Mar. 8, 1970, 9 am-4 pm.

MASSACHUSETTS - M.I.T. Cat. II indoor session at MIT Armory, Mass. Ave. & Vassar St., Cambridge, Mass., 3:30 pm to 6:30 pm, Mar. 7, 1970. Indoor contest April 11, 1970, 1:30 pm to 8:30 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass., ph. 358-4013.

MISSOURI - St. Louis Area. Indoor contests at Duchesne High School, St. Charles, Mo., Mar. 15 and Mar. 22, 1970, 11 am to 4 pm. Indoor Scale, Delta Dart, Easy B, Indoor Stick, HLG. Special rules for Open Delta Dart, Scale, Easy B; contact Jim Bennett, 324 Helfenstein, Webster Groves, Mo. 63119 or Lou Merlotti, 9214 Mackinan, Affton, Mo. 63123 for rules and entry blank.

NEW YORK - Long Island. Cat. II indoor contest at Cantaligue Park, Hicksville, L. I. May 3, 1970. Site is 190' dia. dome, 50' high. HLG, Easy B, Indoor Stick, Paper Stick, Scale. CD - Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L.I., N. Y.

OHIO - Wright-Patterson AFB. Indoor meet on Mar. 8, 1970, AMA Delta Dart, AMA Scale and Peanut Scale. Marty Richardson, 7130 Claybeck Dr., Dayton, O. 45424.

TENNESSEE - Manchester. Cat. II indoor contest in Manchester Central High School Gym, Manchester, Tenn., 8 am to 5 pm, April 5, 1970. Easy B (Jr. only), Paper Stick, Microfilm, HLG, Scale. Contact Lee Webster, 1000 Sycamore, Manchester, Tenn. 37355 for more details.

WISCONSIN - Milwaukee. Indoor sessions each Thursday from 7:30 pm to 9:30 pm at Sherman Social Center, North 51st St. and W. Locust St. Ken Kraemer, 3945 N. 41st St., Milwaukee, Wisc. 53216, ph. 414-442-5864.

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TOP TEN CEILING DODGERS

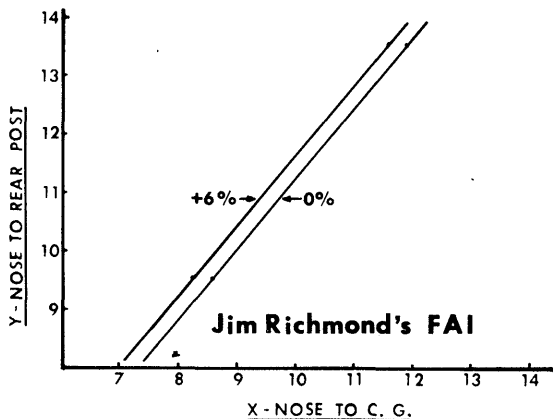
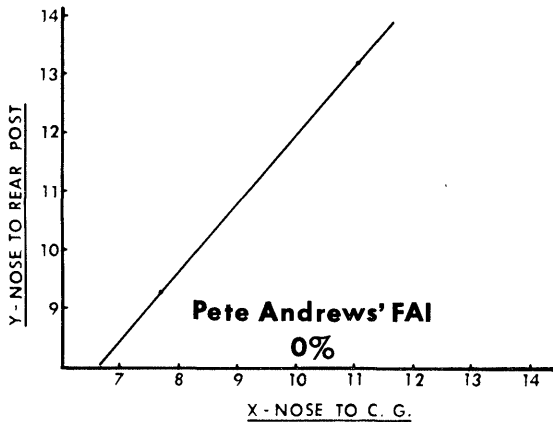
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STATE OF THE ART

This month we feature the top two models from the FAI Team Selection Finals, held at Lakehurst in July, 1969. The three-view is of Pete Andrews' second place model, and then there is a drawing below to show the moments of Jim Richmond's 41:45 model. The usual CMOS charts appear below also; both were computed at 0% stability margin. Jim flew his model at +6% margin, and Pete's model flew at very nearly 0%. Note the second balance line on the CMOS chart for Richmond's model, computed for +6%. (See the Nov. '68 INAV for a three-view of Richmond's model.)

Pete had the following comments about his model and flying strategy at the Finals: "The ship is a cut-down version of my 30 minute 'C' of 20 years ago and it seems to fly as well as my old ship. The prop as usual is 75% of the secret of high time. For the type of flying we were doing in Lakehurst, we needed a low pitch prop with high flare that would use up all the turns at a higher altitude than normal without overloading the plane with a heavy motor."

"In the eliminations I was using .042 pirelli (17" loop) and 1700 to 1800 turns for 34 to 35 minute flights. At the Finals my best plane was lost in the third round, and I used my remaining plane - badly warped surfaces and all - with .045 pirelli to fly rounds 4, 5 and 6."



NIMAS POSTAL MEET

The 5th Annual NIMAS Postal will be held during March and April, with entries to be postmarked by Apr. 30, 1970.

Events: Easy B, paper covered only, solid motor stick and boom, with unbraced surfaces.

HLG - AMA Rules except two ceiling classes - Class I - 18' to 25'; Class II - 25' to 35'

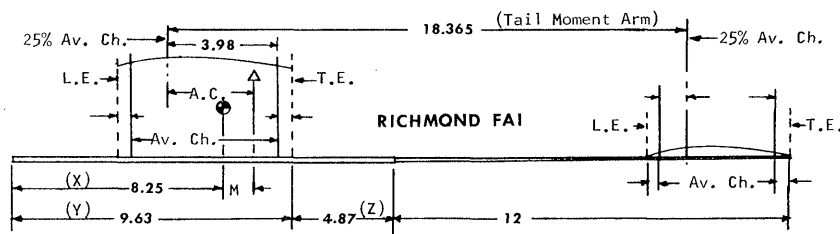
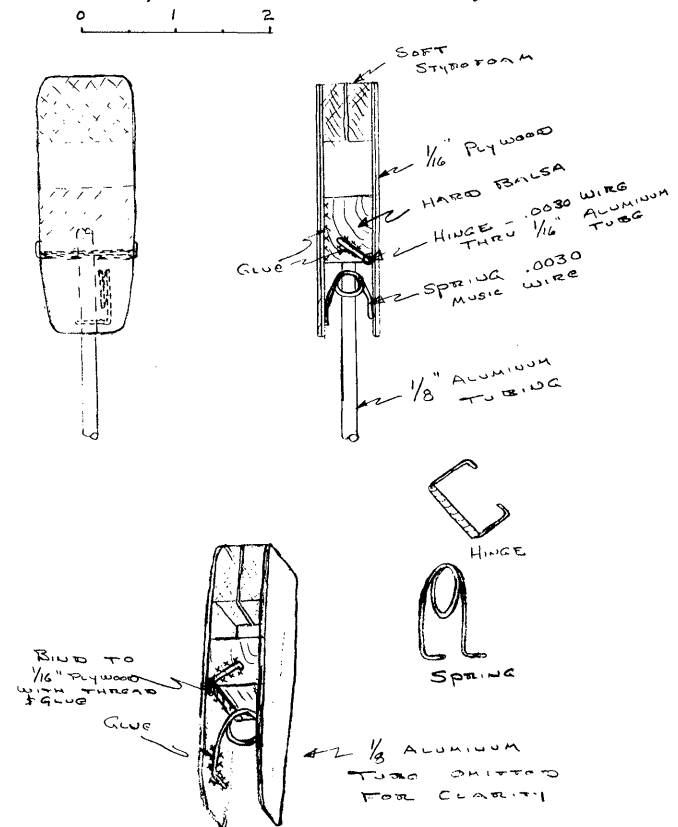
Indoor Stick - AMA Rules except use FAI ceiling measure to compute fudge factor.

General Rules: Entry fee 15¢ per event, stamps preferred. Separate events may be flown at different sessions, but all flights for a given event must be flown at one session. Please note ceiling height with each entry, as it will be used to figure fudge factors, using standard NIMAS fudge factors. Separate class for Juniors in all events, with awards for high placing Seniors. Separate class for Sub-Junior (age 12 and under) in HLG. Open entry to all, no need to be NIMAS member! Send entries to Bob Putman, 507 Darlene, Arlington, Tex. 76012.

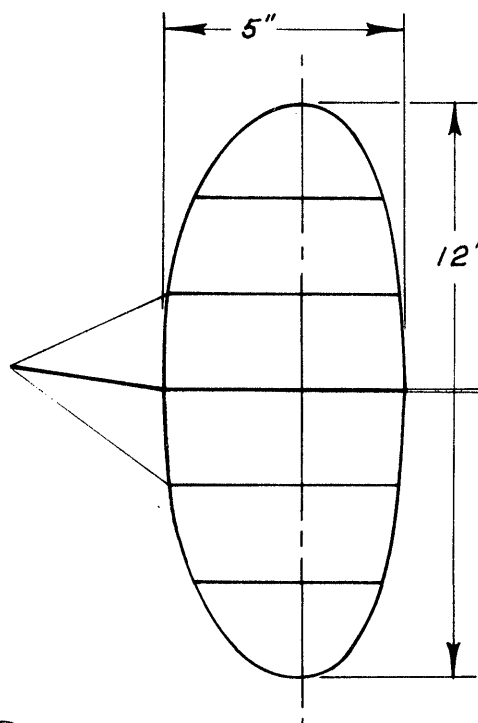
NOTE: Present Top Ten Easy B listing will be cancelled as of April 30, 1970, with Easy B winners from the Annual becoming the new Top Ten Easy B.

HINTS AND KINKS

One of the handiest accessories we use on the flying field is the run-down stand. Most of them just serve to hold the model between flights - and to let the motor unwind if we don't use an unwinding stoooge. The one shown below, designed and drawn by Bill Hulbert, is an extra-special run-down stand in that it holds the model firmly without crushing the fuselage. The drawing is mostly self-explanatory, except for the notation "soft styrofoam". The material Bill used is usually referred to as foam rubber, and is much softer than styrofoam.



PETE ANDREWS FAI PROP
 17" X 29.5 PITCH 4/28/69
 1.75:1 SPAR .06 X .09 RECT.
 TAPER TO .03 X .03 SQ.
 .045 PIRELLI OR 1/16 BROWN
 1800 TURNS

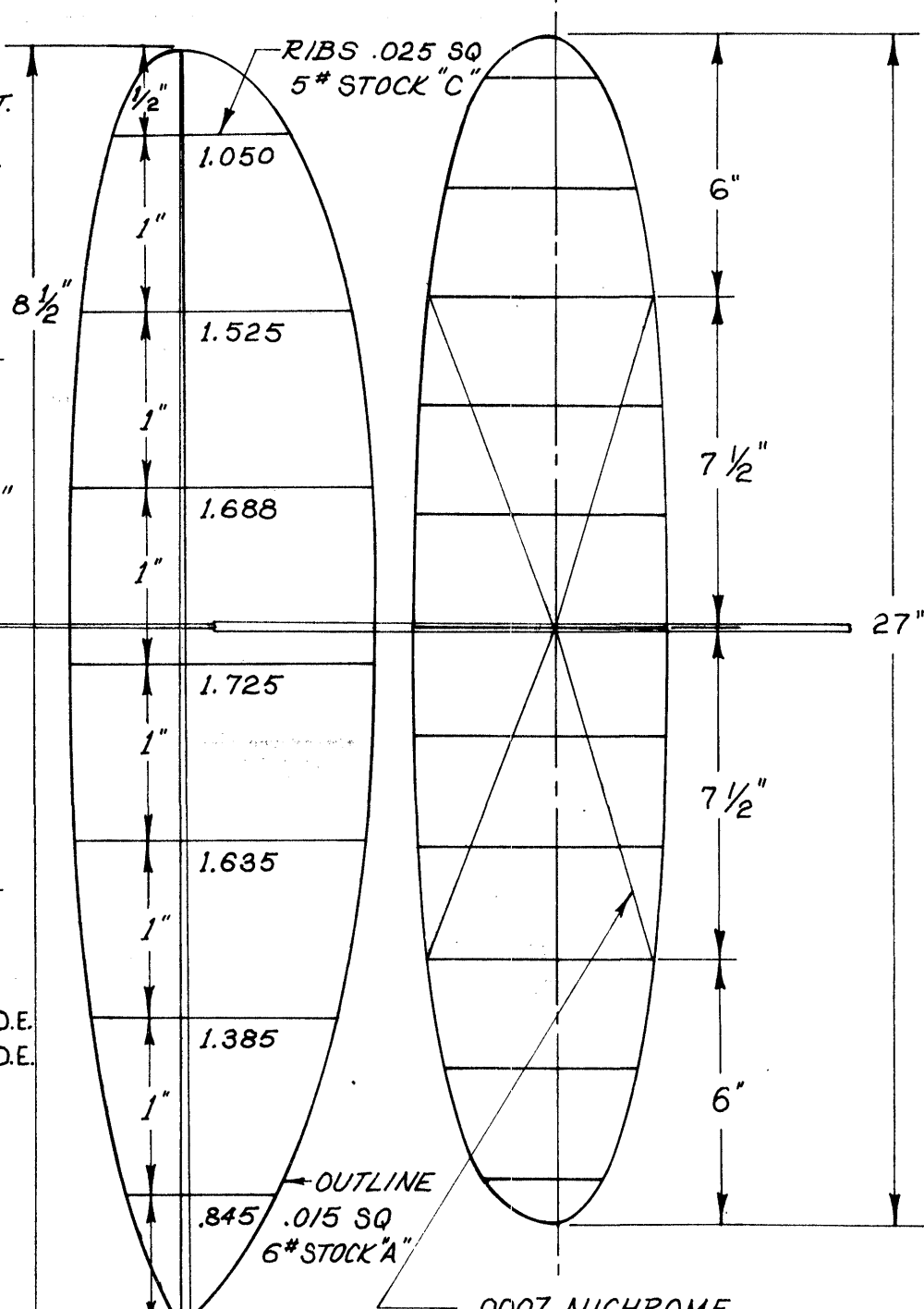


UNBRACED STAB

WING	.0082	1/3-2/3 D.E.
STAB	.0021	1/3-2/3 D.E.
RUDDER	.0003	
MOTORSTICK	.0070	
TAILBOOM	.0017	
PROP.	.0045	
TOTAL	.0238	

MOTOR 17" LOOP
 .045 PIRELLI
 1800 TURNS - 34+

AIRFOIL 5.5%
 AT 40% CHORD



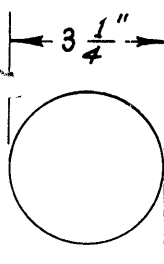
3/4"

FULL SCALE
 .06

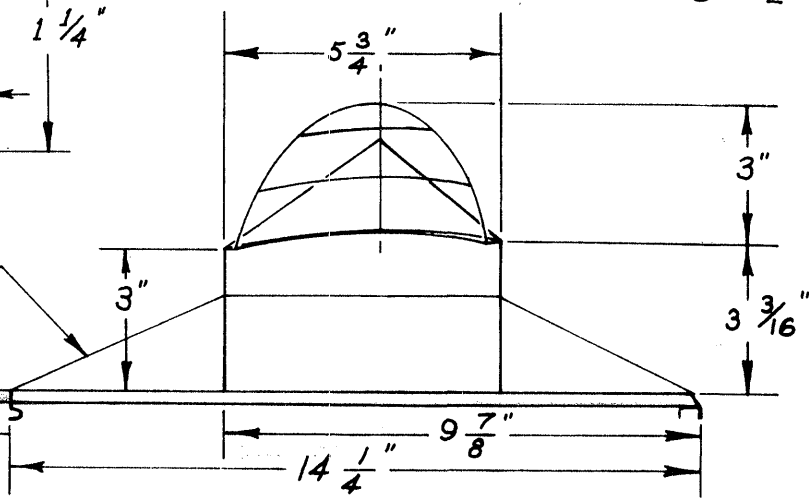
NOTE:
 CONSTRUCTED ON BUILT UP JIG 2" X 3 5/8" X 8 1/2"



1/4" = 1"



.001 TUNGSTEN
 SINGLE BRACE
 REMOVABLE & ADJUST.



OPTIMUM TUNE FOR LOW-CEILING FLIGHT

by Bob Meuser

When flying under a limited ceiling should you use a heavy motor partially wound? -- or a light motor fully wound? -- and should the model land just as the motor unwinds or should it land completely unwound?

When Hacklinger's paper, published in the Journal of The Royal Aeronautical Society, first came to my attention I became intrigued with the idea of extending his method of analysis to cover the limited-ceiling condition in order to answer those questions. Over the past winter, when I should have been building models, I did just that.

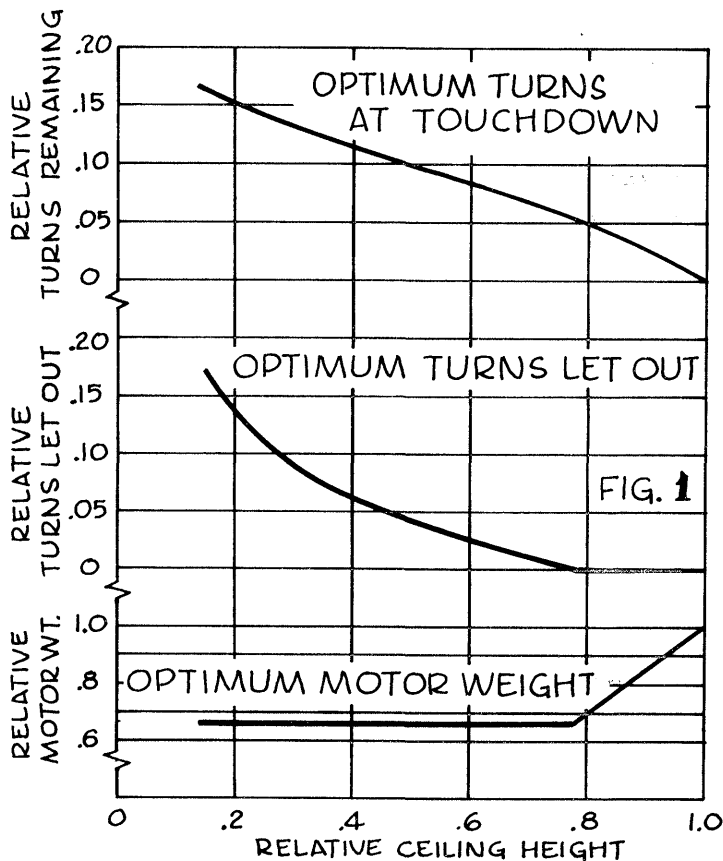
The graphs show the results, and here is how you would use them. First you decide, from experience, guesswork, measurement or a crystal ball, just how high your super Class D Stick would climb if it were set up to give maximum duration in a hall having an unlimited ceiling height -- say, 250 feet. You divide your ceiling height -- say 90 feet -- by that number getting $250/90 = 0.36$. This is your "relative ceiling height". Go to Fig. 1, find the 0.36 point along the bottom, and read the following three quantities from the curves:

Relative motor weight = 0.67
 Relative turns let out = 0.07
 Relative turns remaining = 0.12

This means that the motor should weigh about 67% as much as the one you would use in a hall having an unlimited ceiling, and the motor tube and prop could be a little lighter with the lighter motor. Then you should back off 7% of the turns from the fully wound motor, or only wind 93% of the maximum turns in the first place. Finally the model should be tuned to touch down with 12% of the maximum possible turns remaining in the motor (NOT 12% of the 93%).

Now all you have to do is work out the prop-motor combination that will accomplish all of that. That's your problem! The graphs show you what to do -- it is up to you to figure out how to do it.

How long will it fly? First you decide how long your model would fly when tuned for unlimited ceiling height -- say 50 minutes. (Dreamer!) Then from Fig. 2, again for a "relative ceiling height" of 0.36, you find a "relative duration" of 0.67, so in the 90 foot hall you would get $0.67 \times 50 = 33.5$ minutes. Congratulations -- you have just broken the Class D Stick, Cat. II record by a cool four minutes!



A complete description of the theory and its application would be too long -- and perhaps too long-haired -- to go into at present. However the assumptions or approximations used in developing the theory should be stated. A theory is only as good as the assumptions behind it, and all theories require some simplifying assumptions or approximations. So here they are:

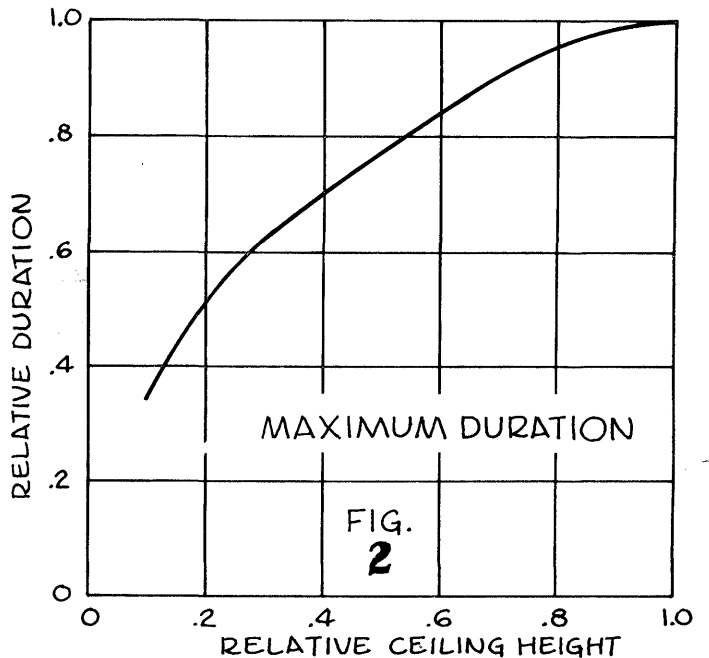
1. The angle of climb is small (but even a 30 degree climb will result in only 1% or 2% error.)
2. The same values of C_L and C_D are used for all conditions.
3. The prop has constant efficiency all thru the flight.
4. The energy that can be released from a fully wound motor divided by the weight of the motor is independent of the dimensions of the motor.
5. The shape of the torque vs. turns graph is independent of the dimensions and weight of the motor. A particular graph is used in the calculations, and it is essentially the same as the one appearing in the Hacklinger paper.
6. The prop speed decreases throughout the flight according to the following recipe:
 $RPM/RPM \text{ fully wound} = (\text{torque}/\text{torque fully wound})^{0.17}$
 This gives a burst/cruise RPM ratio of 1.2. (Hacklinger used a constant RPM.)
7. Ceiling-bouncing does not occur.
8. The structural weight varies with the motor weight in such a way as to make the optimum value of motor weight to airframe weight equal to 1.0 for the unlimited-ceiling condition. (Motor weight/total weight = 0.5) (See my article, "Optimum Rubber Weight..." in the March 1968 Free Flight Digest.)

Except for the no-ceiling-bouncing condition, which is an entirely separate case, I think the assumptions are quite reasonable. Perhaps the burst/cruise RPM ratio is a little low, but I don't think the final results would be greatly affected.

Bear in mind that all three of the conditions shown Fig. 1 must be met for the tune to be optimum. For example, the curve of optimum turns let out and optimum motor weight might be quite different if you impose the condition that the model touch down with zero turns remaining, instead of touchdown with optimum turns remaining.

Like most optimizations, the various curves--duration vs. turns let out for example; are quite broad near the optimum condition, so you don't have to worry if you are not exactly on the optimum point.

There are many fine points that I didn't feel it would be appropriate to discuss at this time. If sufficient interest is shown I would be glad to go into them later. I could consider the condition where ceiling bouncing does occur, for example.



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

FRED R. HARLOW, 9724 Royerton Dr., Richmond, Va. 23228
 JAMES ILLBECK, 1415 Hamilton Ave., Janesville, Wis. 53545
 ROBERT W. PARKS, 290 Mass. Ave., Cambridge, Mass. 02139
 CHARLES J. STILES, IRC Co., Div. TRW, 6th Floor R & D,
 401 N. Broad St., Philadelphia, Pa. 19108

Family Memberships

BILLY COOK, 6319 Marty, Overland Park, Kan. 66202

Honorary Members

LAURIE BARR, 4 Hastings Close, Bray, Berks, England

Correction, Please

Last month we introduced Theodore Katsania, but his name really is Katsanis. Our apologies, Theodore!

Change of Address

Bill Haught has moved from Ohio to Texas, his new address is 1600 Tyler, Arlington, Tex. 76010.

Special Action Committee

Here is an up-to-date listing of S.A.C. instructors:

Cy Baucke, 2225 Loma Alta Dr., Fullerton, Cal. 92633
 Harry Cook, 6319 Marty, Overland Park, Kan. 66202
 Jim Davidson, 1815 Melbourne Ave. NE, Huntsville, Ala. 35801
 Bob Dunham, P. O. Box 7151, Tulsa, Okla.
 John English, 4233 East 52nd Place, Tulsa, Okla.
 Vern & Dale Hacker, 25100 Euclid Ave., Euclid, Ohio
 Bob Hanford, 3838 South 88th E. Ave., Tulsa, Okla. 74145
 Carl Jaeger, Dixon, Mo. 65459
 Phill Lawry, 221 Auburn St., Auburndale, Mass. 02166
 Dave Linstrom, 12 Holcomb St., Simsbury, Conn. 06070
 Jim Noonan, 7454 W. Thurston Cir., Milwaukee, Wis. 53218
 Carl Nye, R. D. #1, Cortland, N. Y. 13045
 Jim Richmond, 131 Pamela Dr., Bensenville, Ill. 60106
 Roger W. Schroeder, P. O. Box 95, Holbrook, Neb. 68948
 Jess Shepherd, 5312 Odessa, Ft. Worth, Tex. 76133
 Charlie Sotich, 3851 W. 62nd Place, Chicago, Ill. 60629
 Orval Stewart, c/o Falls College, 128 8th Ave. S,
 Nashville, Tenn. 37203
 Donald Sump, 1429 Grelle, Lewiston, Ida. 83501
 Bud Tenny, Box 545, Richardson, Tex. 75080
 John Thornhill, R. D. #1, Mt. Airy, Md. 21771
 Robert Underwood, 4109 Concord Oaks Dr., St. Louis, Mo. 63128
 Tom Vallee, 444 Henryton So., Laurel, Md. 20810
 Lee & Brian Webster, 1000 Sycamore, Manchester, Tenn. 37355
 Dale R. Wilson, 2626 Clement, Flint, Mich. 48504
 Chester Wrzos, Rt. 3, Box 517, Madison Hts., Mich. 24572

NIMAS Awards

Silver Cat. I HLG Award - 0:29.5, Harry Cook

Gold Cat. I HLG Award - 0:31.0, Harry Cook

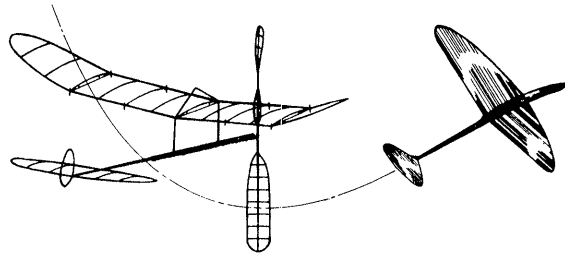
Junior NIMAS Awards

Silver Cat. I HLG Award - 0:22.4, Billy Cook

Help Wanted!

The NIMAS renewal slip includes a request for suggestions for topics to be covered in future issues of INAV. Two recurring requests are for material on indoor scale, with emphasis on Peanut Scale, and for HLG material.

HLG material, particularly in State Of The Art, has always been presented as received. There simply isn't as much HLG material made available as there is of rubber topics - and it isn't cricket to make it up! So, all you HLG fliers have an opportunity to make yourselves heard.



Indoor scale presents particular problems to the INAV format, since full size plans seem to be the most useful info needed by scale buffs. Due to the overseas mailing requirement, three sheets of paper is our limit; this will not support full size plans. What other service can we give to scale fliers?

Manny Radoff Speaks!

Dear Bud;

May I say "I told you so?" The Easy B is not a beginner event anymore. The experts are beating the kids and the newcomers, so we need a new event. The "Pennyplane" is as good a name as any and is representative of the minimum weight idea. Pray tell me: Who is going to win this one? Experts, again! I say again, drop the "event" idea. Pick up the "beginner" idea. Run the newcomer event for modelers who have never placed in a contest before. Set the limit for "placed" as never having won 1st, 2nd or 3rd before, or wherever it is needed to keep them coming. With apologies to Gertrude Stein: a novice is a novice, is a novice; an expert is an expert, is an expert, and never the twain shall meet (apologies to him too!). If you want to give the novice a chance, a push onward, a thrill, a bit of hope, let him compete in his own class against novices, not experts.

However, if the same one wins more than twice, define him as an expert and move him up to another class. Keep this up until you run out of novices, then recruit more! But a weight event? Who needs it?

Indoor Book Reprinted

Lew Gitlow has added a section on indoor scale to his indoor handbook and reprinted it. The price is \$2, and it is available from P.O. Box 2338, Leucadia, Cal. 92024.

CONTEST CALENDAR

ARIZONA - Phoenix. Indoor sessions in Arcadia High School Gym, 7 pm to 10 pm, the second Tuesday each month. Contact Terry Thorkildsen, 3103 W. Willow Ave., Phoenix, Arizona 85029 for further details. Cat. I site.

ILLINOIS - Chicago. Indoor Scale Contest, April 26, 1970 at Forest View High School, Arlington Hts., Ill., 9 am to 4 pm. Event is not sanctioned, but uses AMA rules. Two age groups: Junior - thru 15 years; Open - 16 and over. CD: Pete Sotich, 3851 W. 62nd Place, Chicago, Ill. 60629 ph. 312-RE 5-1353.

MARYLAND - Silver Spring. Indoor sessions at JFK High School, 1901 Randolph Rd. April 10, 24; May 8, 22; June 5, 1970, 7 am to 11 pm.

MASSACHUSETTS - M.I.T. Cat. II contest, April 11, 1970 at MIT Armory, Mass. Ave. & Vassar St., Cambridge, Mass., 1:30 pm to 8:30 pm. Indoor Stick - Jr.-Sr. & Open; HLG - Jr.-Sr. & Open; Delta Dart - Jr. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. ph. 358-4013.

MICHIGAN - Detroit. Michigan State Meet, May 16-17, 1970 at Michigan State Fair Coliseum. May 16 - youth events: AMA Cub, HLG, Pre-Fab; 3 age groups below 16, 10 am to 3 pm. May 17 - AMA events: HLG - Jr. & Sr.-Open; Paper Stick - Jr. & Sr.-Open; Indoor Stick - Jr.-Sr.-Open Indoor Scale - Jr. & Sr.-Open. CD - Walter Hartung, 14759 Kilbourne, Detroit, ph. LA 7-7620.

NEW YORK - Long Island. Cat. II indoor contest at Cantigue Park, Hicksville, L. I. May 3, 1970. Site is 190' dia. dome, 50' high. HLG, Easy B, Indoor Stick, Paper Stick, Scale. CD - Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L. I., N. Y.

WISCONSIN - Milwaukee. Indoor sessions each Thursday from 7:30 pm to 9:30 pm at Sherman Social Center, North 51st St. and W. Locust St. Ken Kraemer, 3945 N. 41st St., Milwaukee, Wisc. 53216, ph. 414-442-5864.

VIRGINIA - Hampton. Cat. I Indoor contest, Apr. 25-26 at Willis School. 20' ceiling. Hal Crane, 4002 Buchanan Dr. Hampton, Va. 23369.

INDOOR RULES

Ornithopter/Autogyro Commentary

The Jan. '70 INAV published some comments for reader reaction; these comments pointed out that indoor gyros and ornithopter flown by Goldberg and other old-timers didn't have and didn't need large fixed wings. In essence, why do present day models have them? One excellent comment came from Bill Hannan:

"I'll confine my comments to autogyros, although in my opinion the semi-ornithopters are just as guilty of 'bending' the rules.

In commenting on any rules, it must always be remembered that some participants delight in the form of gamesmanship known as 'bending the rules', 'beating the rap', 'finding the loopholes', etc. And, no doubt, this may offer just as much satisfaction to the proponents as playing the game 'straight'." (Editorial note: In reality, the original commentary dealt with current record holders, all of which came under FFCB scrutiny and were approved as meeting the letter of the existing rules. Several people have commented on the "intent" of the rules; the intent was never recorded for benefit of the FFCB and their discussions were necessarily limited to what the rules say.)

"However, when it comes to autogyros, any craft, model or full-size that REQUIRES (as distinct from features) fixed wings is a clinogyre, not an autogyro. Perhaps one of the chief reasons that participation in the autogyro class is limited, is that so few people have ever seen a true gyro in action.

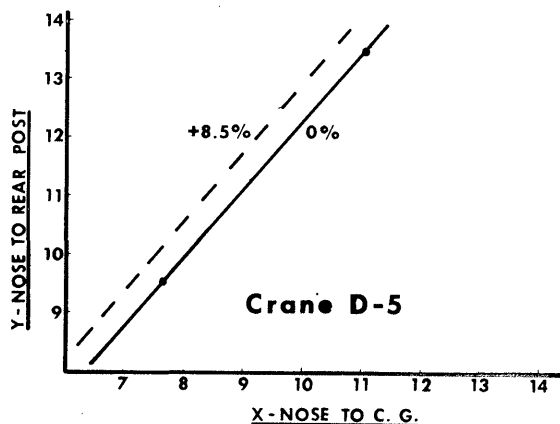
Actually, very few model builders understand the basic principles of autorotation. Witness the fact that some model gyro plans have been published which feature rotor blades mounted at a positive angle of incidence. Had these models not featured large fixed wings, they would have been unable to fly, since their rotors actually resisted flight. Even some of the designers who didn't make this particular error still relied upon large area fixed wings, with rotors adding little except visual interest.

Louis Garami, one of the most versatile model aircraft designers of all time, pointed out in the 1946 AIR TRAILS ANNUAL that the majority of model autogyros would fly with the rotors removed, but not with the wings absent!

Admittedly, making a true model gyro fly well 'ain't easy', but it can and has been done, and therein lies the challenge. There is little point in adding an anemometer to a conventional model and calling it an autogyro. Let's get a few more people interested in true autogyros. As a pleasant change of pace and a real spectator pleaser, they have few equals.

STATE OF THE ART

Hal Crane was the first U.S. flier to break 20 minutes in Cat. I, and he has made two official flights over 20 with the model of the month. Both flights were under FAI sanction, and were filed on as possible world records. The record stood briefly, only to be recaptured by Jiri Kalina. Hal's top mark was 20:21.8, and Jiri boosted it to 21:06. Both Hal's 20 minute flights were ceiling-scrubbing flights (as was Kalina's), and the model is one of a long line of models Hal has developed especially for this type of flight. The prop is also quite stiff; unlike most Cat. I props, it does not flare appreciably under the low values of launch torque used in Cat. I. Stiff wing tips have proved to be important in the Willis site, where models often drift into the wall. Stiff tips greatly improve wall recovery, besides aiding steering so often needed in small sites like Willis.



TOP TEN CEILING DODGERS

	Time/ceiling	Fudge (to 35')	Est. Altitude	Score
1. Tom Vallee	810/20'	1.32	19'	1068.2
2. Hal Crane	682/20'	1.32	19'	850.2
3. Dick Hardcastle	602/23'	1.23	22.5'	743
4. Howard Haupt	456/22'	1.26	15'	575
5. Hewitt Phillips	428/20'	1.32	7'	564.9
6. Harry Cook	471/26'	1.16	24'	546.5
7. Jim Davidson	280/13'	1.64	9'	459
8. Richard Sironen	308/37'	.972	33'	396.6
9. Roger Schroeder	239.5/15'	1.53	13.5'	365.9

TOP TEN EASY B

The Top Ten Easy B listing is suspended annually, as the winners of the Easy B section of the NIMAS Postal are enthroned as the new Top Ten after the postal.

NIMAS POSTAL MEET

Remember that all entries in the NIMAS Postal must be postmarked by April 30, 1970. Send them to Bob Putman, 507 Darlene, Arlington, Tex. 76012. See the Mar. '70 INAV for complete rules listing.

RECORDS? MAYBE!

BRAINBUSTER RECORD CHALLENGE MEET, Mar. 7, 1970, Cat. I Willis School, Hampton, Va. 20' ceiling.
Open FAI Cat. I FAI - 19:13.2, Hal Crane
Open AMA Cat. I FAI - 19:58.0, Hal Crane

INDOOR ELSEWHERE

In recent weeks we have received results from the national indoor contests of three countries. The 1969 Nats of Argentina were held last April, with the 1970 Nats scheduled for March. The New Zealand Nats were held in Jan. '70, and the Romanian Nats in February.

Argentina Nats; 65 cm models, 33' ceiling.

Contestant	Best 2 of 6 (sec.)
Nereo Beggiatto	1467
Julio C. Martinez	1274
Alberto Barilari	1262
Hector Beggiatto	1108
Alberto Collazzo	1107
Miguel A. Leone	665
Eduardo Grippo	356
Domingo Saacone	227

Argentine fliers are enthusiastic, but are limited by lack of good materials, especially balsa. Indoor flying was added to their Nats schedule in 1960. The activity has grown slowly each year, until 1969 activity had grown to five contests with good entry in each.

New Zealand Nats; 28' max. ceiling with cluttered ceiling.

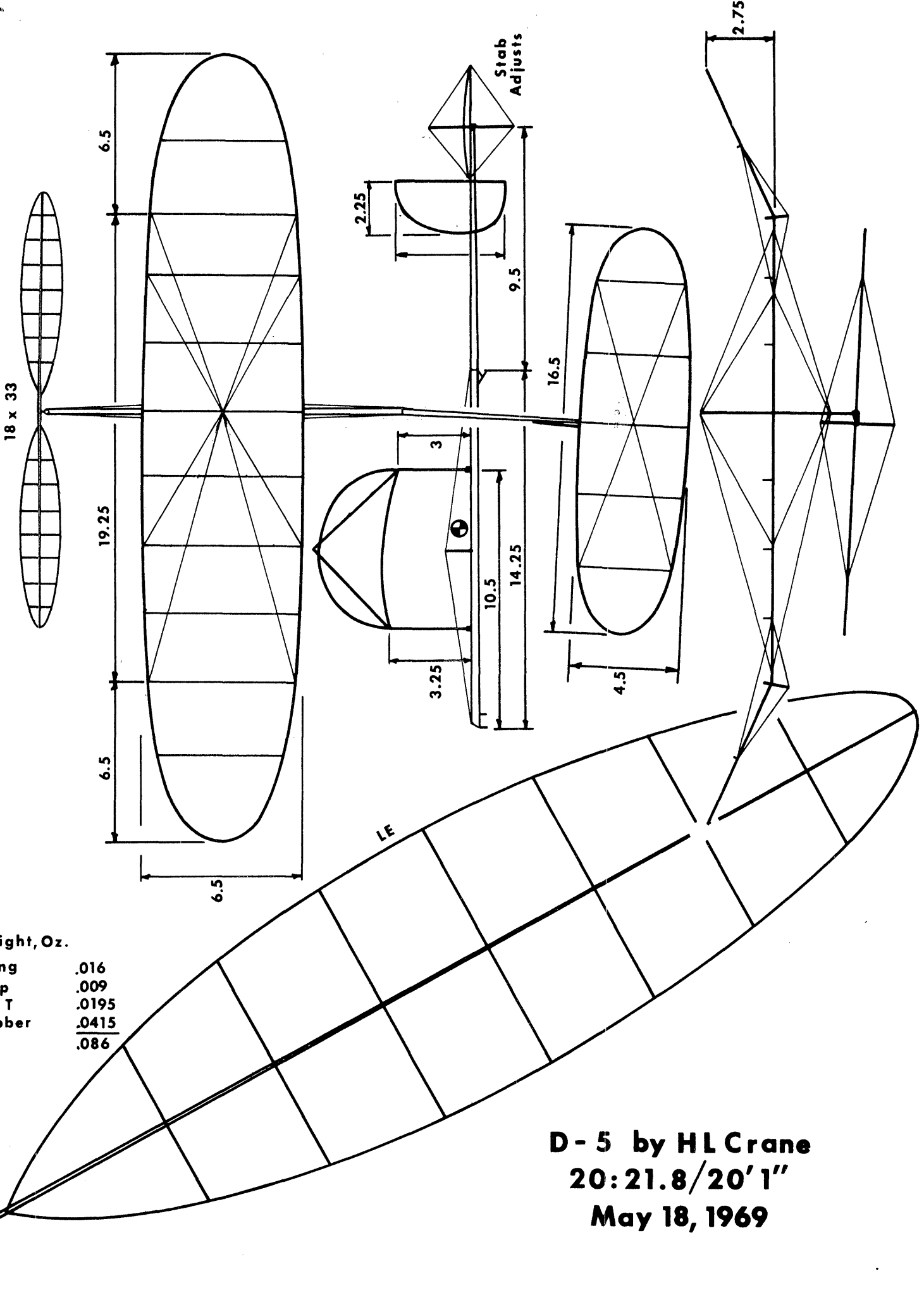
IHLG	Easy B	Open Spar
M. Stringer 27.5	P. Lagan 7:27	T. Martin 8:32
T. Martin 26.2	T. Martin 5:15	P. Lagan 7:33
P. Lagan 25.2	M. Stringer 4:48	B. Keegan 6:09
R. Magill 24.8	R. Magill 4:09	M. Stringer 4:09
M. Bundock 24.3	W. Clemens 3:54	R. Magill 3:52
G. Burrows 23.8	A. Graves 3:37	B. Roots 3:45

HLG, with 35 entries, was hotly contested. The single best of six flights decides the winner, and the cluttered ceiling bothered everyone but Stringer, whose very light 16" Sweepette did its time under 24". Paul Lagan's model resembled a Stompette, and did 31.4 after the meet for a new national record. The Easy B event's 15 entries were permitted to use microfilm, so some of these models also turned up in Open Spar (indoor stick). Trevor Martin's Spar winner was FAI size, while other entries varied considerably in size.

Romanian Nats; 65 cm models, Slanic salt mine.

Aurel Popa	33:16	34:00	67:16
Otto Hints	30:30	34:09	64:16
Aurel Moraru	23:32	23:45	47:17
Ferencz Boloni	22:52	23:17	46:09
Vasile Nicocara	22:28	22:50	45:18

This contest drew 33 contestants from 11 towns, who enjoyed several improvements in the site made in preparation for the World Champs. The team from Turgu-Mures won the championship for the 17th year in a row, with 18 year old Aurel Popa leading the way. Results have not been received from an international meet held in Slanic in March, but teams from Hungary, Czechoslovakia and Germany were expected to attend.



Weight, Oz.

Wing	.016
Prop	.009
MST	.0195
Rubber	<u>.0415</u>
	.086

D-5 by HL Crane
20:21.8/20'1"
May 18, 1969

AERONUTS PENNYPLANE MEET

QUESTIONS AND ANSWERS

The Pennyplane meet, first sponsored by the Chicago Aeronuts (rules in Feb. '70 INAV) produced the following results from an entry list of 14 fliers: (AMA scoring)

- Open (18 and over)
1. Chuck Markos 4:17.8
 2. Jim Richmond 4:10.2
 3. Charlie Sotich 3:58.2
 4. Gordon Wisniewski 3:50.0
 5. Jim Noonan 3:47.5

- Juniors
1. Robby Lyons 1:11.0
 2. Scott Wisniewski 1:08.0
 3. Tim Noonan 0:36.2

LOW CEILING TUNE - FOLLOW-UP

Not long after Bob Meuser sent his "Optimum Tune For Low Ceiling Flight", Jim Richmond sent a graph of flights made with his models over a couple of years. This graph is in Fig. 1 below, with some of the data points identified according to site and date or time. Note also that the points are marked according to whether the models weighed about .020 oz. or .024 oz. Of the graph Jim says, "I just got the idea that a chart of my best flights might be of interest, but the points proved to be so uniform that I believe a fairly accurate performance curve has been generated. Perhaps this kind of curve is typical for indoor models? None of the flights were aided by rafter-banging and the altitudes shown are flight altitudes and not ceiling heights." (Ed. note - the flight identified as "Wash. Pk. II Rcd." did hit obstructions, but these were collisions with lights, etc., which caused the model to lose altitude. Thus this flight might have fallen on the curve instead of below if the lights hadn't been there.)

"One interesting observation is that the .020 oz. planes don't really show a clear-cut advantage over the .024 oz. planes anywhere except perhaps at the 145' level. This is definitely inconclusive though, due to the lack of testing done at heights over 100'."

Fig. 2 is snuggled into the corner of Fig. 1, and was the work of Bob Meuser in response to Richmond's graph. He normalized Jim's data for a maximum altitude of 200' and 250', after setting the Richmond curve equal to his Fig. 2 at $h/h_{max} = 0.4$. The two normalized Richmond curves are coincident at low values of h and spread at high h , as can be seen in Fig. 2.

It is interesting to see such good agreement between theory and practice, and also interesting to have such a well documented flight performance curve!

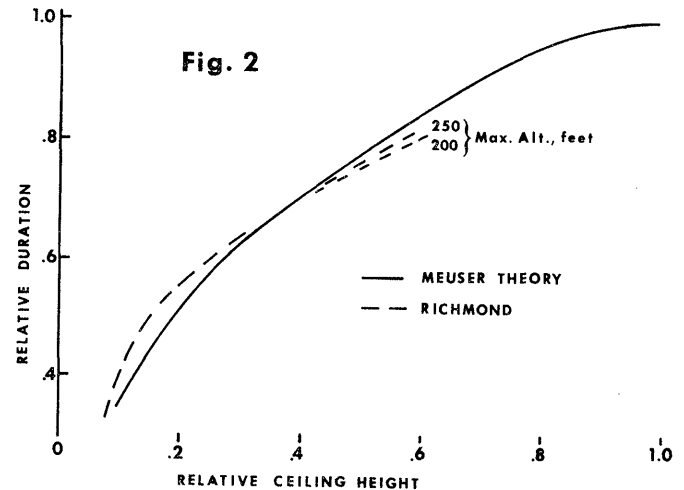
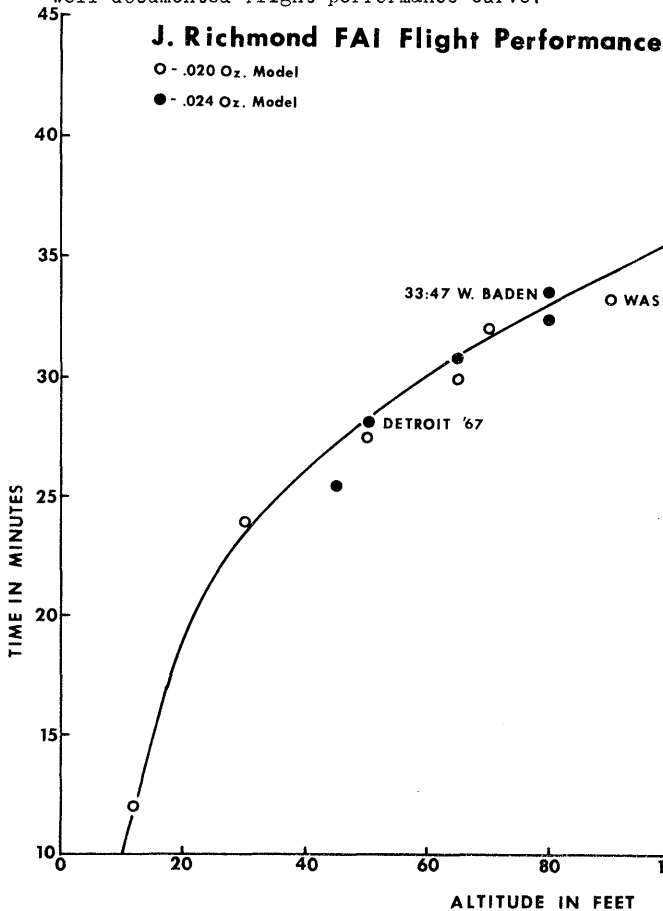
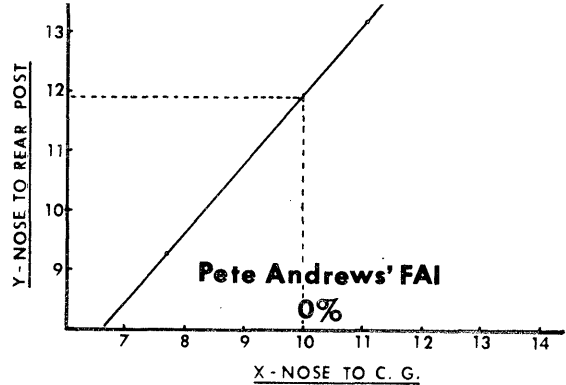
41. How is the CMOS balance chart used to locate the wing on (1) a model built from INAV three-view; (2) a new model or new design?

In either case, you must decide what margin of stability to use. General practice on top-notch models seems to average about 0% margin, with a few models even set up for -10% or -20%. It seems unlikely that more than -5% margin is useful for any but very good conditions, but special record attempt models can gain marginally in efficiency by using a more sensitive adjustment.

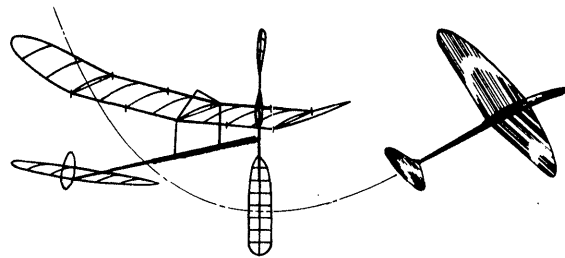
If we assume that 0% margin is satisfactory (as shown in INAV), balance the model, complete with prop, motor and tail surfaces, just as always. Measure from this balance point to the thrust bearing; this is the distance "x" on the CMOS chart. Extend "x" upward to the balance line and then project this intersection point horizontally to the "y" ordinate and read the "y" value. Locate the rear wing post "y" inches from the thrust bearing and the front post to fit wing width. The model's basic characteristics are now established, and final trim is all that remains.

On a new design, the CMOS chart must be drawn. This procedure is detailed in the Jan. '69 INAV, and a packet of instructions is available on request from Box 545, Richardson, Tex. 75080.

If other than 0% margin is used, the new balance line will be parallel to the 0% line, but displaced to the side. For example, if the model's average wing chord is 4", a balance line corresponding to +10% would be .4" to the left of the 0% line; -10% would be .4" to the right.



INDOOR



NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

OFFICIAL RESULTS - 1970 INDOOR WORLD CHAMPIONSHIP

1.	Jiri Kalina	Czechoslovakia	<u>37:52</u>	34:13	15:55	<u>36:25</u>	26:44	34:58	74:17
2.	Jim Richmond	U. S. A.	5:34	<u>32:04</u>	31:54	<u>32:10</u>	00:14	00:27	64:14
3.	Aurel Popa	Romania	25:16	21:40	<u>32:50</u>	00:07	30:23	21:58	63:13
4.	Andras Ree	Hungary	<u>28:21</u>	<u>31:28</u>	21:08	00:11	00:08	18:27	59:49
5.	Vilim Kmoch	Yugoslavia	24:36	<u>29:04</u>	27:21	27:55	20:30	11:07	56:59
6.	Clarence Mather	U. S. A.	24:13	27:10	22:45	<u>27:12</u>	<u>23:28</u>	15:53	55:40
7.	Eduard Chlubny	Czechoslovakia	<u>25:55</u>	00:00	08:11	<u>28:20</u>	19:02	22:08	54:15
8.	Karol Rybecky	Czechoslovakia	00:00	00:21	<u>25:44</u>	<u>27:42</u>	00:11	21:29	53:26
9.	Gyorgy Buzadi	Hungary	18:10	24:25	<u>25:55</u>	00:58	<u>25:54</u>	22:47	51:49
10.	Esko Hamalainen	Finland	<u>23:47</u>	<u>27:48</u>	02:12	18:54	06:55	11:52	51:35
11.	Carlo Cotugno	Italy	<u>24:18</u>	23:45	00:34	<u>26:21</u>	20:57	13:37	50:39
12.	Pete Andrews	U. S. A.	<u>27:52</u>	<u>22:11</u>	17:03	13:41	16:41	18:32	50:03
13.	Nieu Bezman	Romania	<u>22:43</u>	<u>27:17</u>	18:24	19:57	00:16	00:32	50:00
14.	Pentti Nore	Finland	00:13	13:36	00:38	<u>23:20</u>	<u>24:48</u>	07:43	48:08
15.	Otto Hints	Romania	20:22	21:16	<u>23:50</u>	21:40	<u>24:11</u>	13:10	48:01
16.	Antal Egri	Hungary	12:57	<u>23:01</u>	19:21	<u>24:07</u>	22:58	00:09	47:08
17.	Werner Wetzel	Germany	<u>23:04</u>	20:22	20:09	13:55	<u>23:04</u>	00:38	46:08
18.	Kurt Vogel	Germany	10:48	00:08	<u>21:41</u>	00:09	<u>19:27</u>	17:33	41:08
19.	Gabriel Leopold	Yugoslavia	<u>20:43</u>	19:52	07:25	07:22	<u>19:53</u>	14:28	40:36
20.	Germano Masciullo	Italy	00:45	00:26	15:00	<u>16:42</u>	12:25	<u>22:23</u>	39:05
21.	Stefan Bombol	Poland	13:23	17:55	00:18	<u>18:26</u>	<u>18:06</u>	17:32	36:26
22.	Edward Ciapala	Poland	<u>18:19</u>	15:06	09:23	13:59	<u>18:06</u>	00:27	36:25
23.	Guy Cagnet	France	11:01	02:33	<u>15:36</u>	12:25	<u>19:34</u>	04:58	35:10
24.	Hans Beck	Germany	<u>18:39</u>	00:30	01:09	<u>16:07</u>	13:53	00:00	34:46
25.	Ryszard Czechowski	Poland	<u>13:17</u>	09:43	00:58	<u>21:02</u>	00:16	00:17	34:19
26.	Egizio Corazza	Italy	10:00	<u>16:47</u>	03:17	<u>16:19</u>	07:42	11:36	33:06
27.	Teodor Strasberger	Yugoslavia	07:17	00:50	<u>19:19</u>	11:06	07:09	<u>12:53</u>	32:12
28.	Jean C. Souvetou	France	05:39	09:01	09:43	10:15	<u>11:35</u>	<u>15:10</u>	26:45
29.	Harri Raulio	Finland	00:20	09:54	10:26	08:02	<u>12:35</u>	<u>11:58</u>	24:33
30.	Daniel Degaugue	France	00:00	00:00	00:00	00:00	00:00	00:00	00:00

TEAM STANDINGS

1.	Czechoslovakia	74:17	54:15	53:26	181:58
2.	U. S. A.	64:14	50:03	55:40	169:57
3.	Romania	48:01	63:13	50:00	161:14
4.	Hungary	59:49	51:49	47:08	158:46
5.	Yugoslavia	56:59	32:12	40:36	129:47
6.	Finland	51:35	48:08	24:33	124:16
7.	Italy	33:06	50:39	39:05	122:50
8.	Germany	34:46	41:08	46:08	122:02
9.	Poland	36:26	36:25	34:19	107:10
10.	France	35:10	26:45	00:00	61:55

THE 1970 INDOOR WORLD CHAMPS

I would like to dedicate this issue to the Romanian Aero Club and all the many others in Romania who made such a dedicated effort to make the Championship a meaningful and memorable experience for all who attended. Outstanding hospitality and careful attention to detail were the order of the day, according to all who attended.

My thanks to Jim Richmond and Clarence Mather for the two reports below, and to Erwin Rodemsky for the pictures. Erwin has a report in the Aug. '70 AAM, but these pictures had to be specially developed and were delayed beyond the deadline of the magazine.

Report by Clarence Mather: The 1970 Indoor Internationals involved a long, arduous journey and the most challenging of flying conditions. Yet I found both extremely interesting and I had a great time. I'm very appreciative of the opportunity to go. The living and working conditions of many European peoples should be seen by every American.

There was great competitive spirit at the contest, yet I found the contestants to be friendly and helpful without exception.

The officials organized the contest and the personnel arrangements very well so that everything went smoothly. We were housed in a small hotel which made it possible to visit and confer with other contestants by merely taking a few steps down the hall. The mine entrance was within walking distance of the hotel. The hotel people worked diligently to make our stay pleasant.

Flying conditions were most difficult. We had been warned of the cold and so we tried to prepare. I built very thin wings and lower pitch, stiffer props. Together with my faithful helper, Fudo Takagi, I test flew in the chill early-dawn hours at our small site.

I used two-inch motors together with a carefully weighted stick to simulate a full-length motor. The models would easily out-climb the twenty-two foot ceiling on 200 winds - less than full turns. The models were test loaded at full winds on oversize motors to be certain of their strength.

In the mine the models climbed about 100 feet and came down in about twenty-five minutes. The models that were doing well were rocketing up the first 100' in two minutes or so! All models seemed to stop climbing in five or six minutes. We built new props (from old ones) right at the hotel - mainly lower pitch and with more area behind the spar. Such a prop got my models up well, but now they un-wound and dead-sticked some 80-90 feet up in just over 30 minutes. We also used larger rubber, and after some testing we decided that Pete had the best. He generously shared it with us.

I modified a second prop and it tested somewhat better than the others, but the model drifted into a wall and still hangs there in the mine! A prop that would flare into slightly lower pitch for the initial climb then go to higher pitch for the cruise and descent was needed. It was difficult to get it just right.

The real disappointment was the drift. The extra lights and additional people really stirred up the air and we had up-drafts, down-drafts and drift resulting in hung models. Pete's models hit the wall several times and wrecked at least one wing. One of Jim's models still is on the wall, and he damaged at least one other model on the wall. I hung three models on the wall and left two of them there. But all in all, international travel is a fine experience and I heartily recommend it!

Report from Jim Richmond: I wish we could say "we won it", but such is not the case this time. The salt mine proved to be a terribly difficult flying site, especially for us because of our lack of experience there. The conditions were much different from any we had ever encountered before. I have made good flights in cold air, but this experience didn't help at all. All of us found it necessary to use much more power than we had ever used before to get the planes up. Our props were also found to be inadequate, and we resorted to building new ones and to bracing and twisting lower pitch into the ones we had. In order to get good time, it was necessary to get all the way up (and all the way back down), but few people were able to do this successfully. Kalina and Aurel Popa (an amazingly capable 18 year old competitor) were the only ones showing any degree of consistent high altitude capability. Planes that got only 1/2 or 2/3 of the way up were lucky to get 30 minutes or to get down at all without drifting into the wall and hanging on the salt crystals.

I had two flights get all the way up. The first was a test flight which went "dead-stick" while still half-way down for about 37 minutes. The second was an official with more turns which lost about 35' sliding down the tapered top wall section; it finally hung on the wall about 35' up. This was my fourth round flight which still managed 32:10, but I felt it would have cleared 40 minutes if it hadn't had problems on the way down (Kalina thought so too).

This site is probably excellent ordinarily, but it was filled with convection currents, drafts and what seemed to be temperature inversion layers after all the people, lights and electric heaters were introduced. The carnage of planes lost and wrecked on the walls was much worse than anything I had seen before. The U. S. team members were all down to their last planes (pieced together from whatever was left) in the last round.

It is a shame that one of my last two attempts didn't make it. I had the right prop-motor combination with plenty of turns (2200), but there was no way to test the flying capability of such laced-up machines as no testing was permitted between rounds. My Round 5 flight tucked under and came down and the 6th round flight climbed too steeply, got over on its back and collapsed the wing. Both planes destroyed themselves. The 1st round model was adjusted well, but got into the wall at about 100' and came to rest on a ledge. It will spend eternity there in good company with one of Chlubny's models.

No balloons were used during the meet, but most planes were dislodged from the wall with long poles or with puffs of air from a blanket. Most of the retrieved models were damaged to some degree in the process.

My third round flight had a good start but was in a down-draft and just flew around with the nose up, trying to climb. It got no more than 2/3 of the way up. Kalina made some excellent flights from the same spot, but he seemed to have the air under control. It behaved for him instead of killing his climb as it did for me.

Oh well. We had our problems, but we did manage to make a fair showing. The salt mine is a fantastic place with its gigantic underground chambers. The ride up and down was an adventure we will never forget. The elevator was an unlighted steel box hung on a single cable and it was operated, it seemed, with wild abandon. The thing went up and down like a shot and was guided by banging against the walls of the shaft.

We were treated like royalty in Slanic and the whole town was decorated with posters, banners and flags. I think it must have been the biggest event in the country. We were on TV and radio, and movies were made of us.

During the opening ceremony, we were all lined up behind our respective flags with the team managers in front. Girls brought flowers to each manager and gave him a kiss. Our time in the cold mine had already made Joe Bilgri a little sick, and he was in bed for two days afterward. We all had our problems with illness of one kind or another, and the Romanians were about frantic with concern for our health.

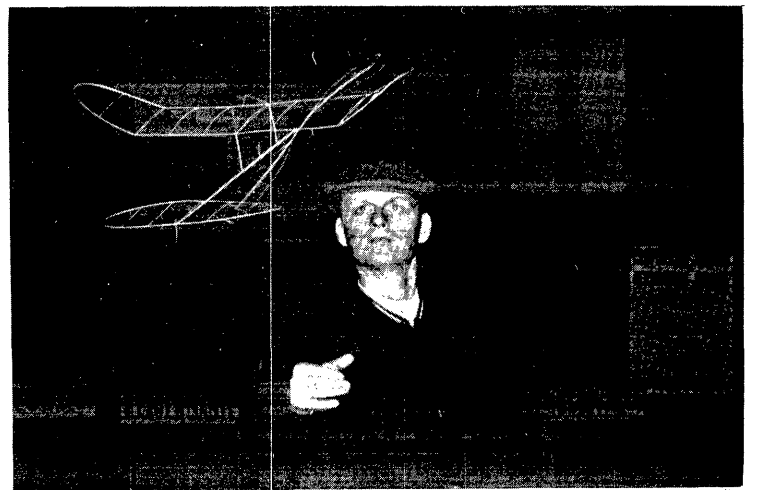
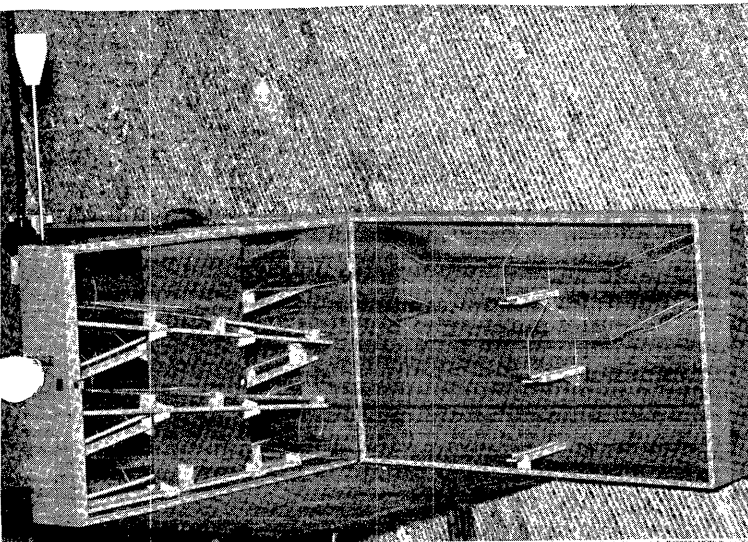
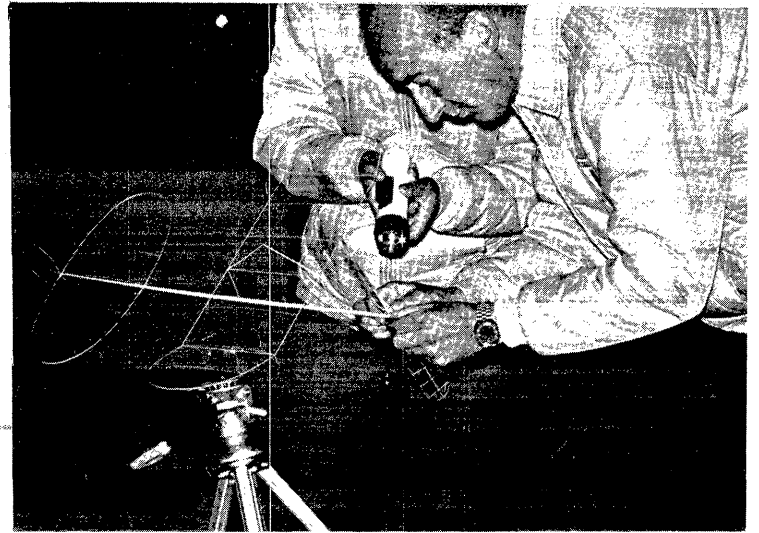
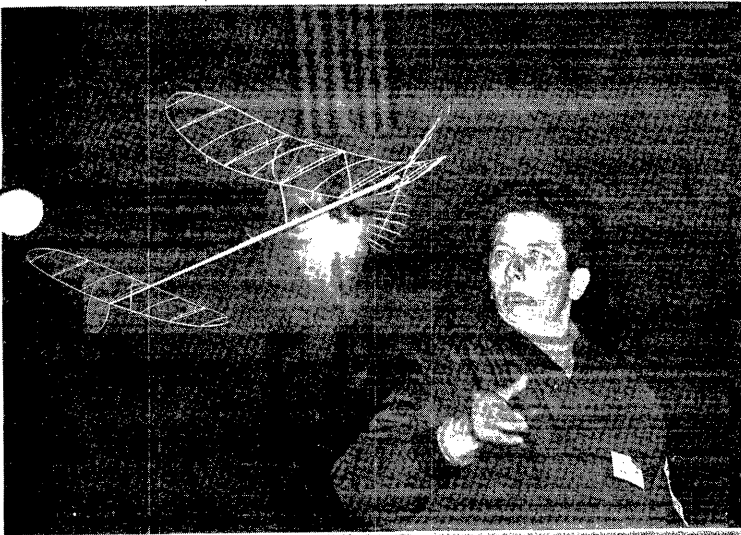
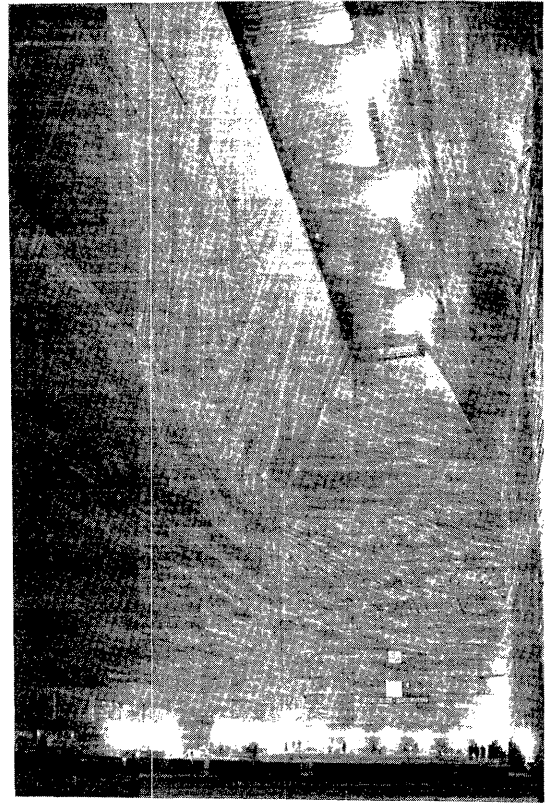
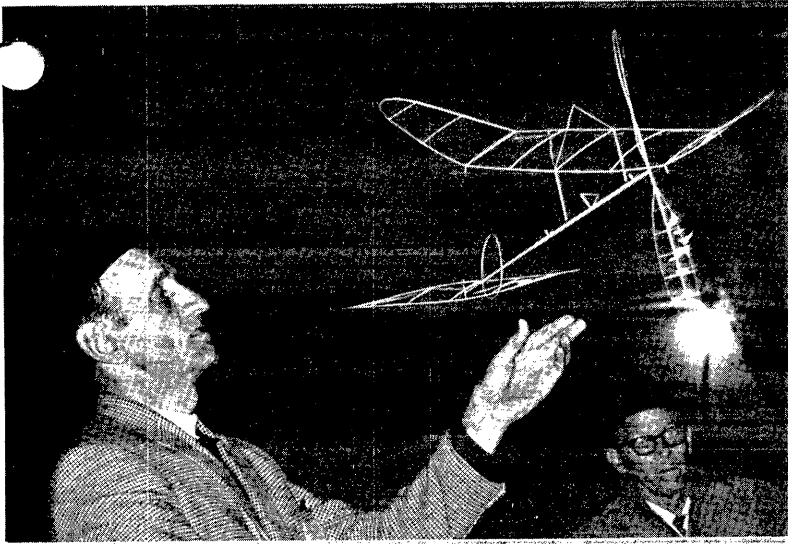
None of us will forget this visit to a far corner of the Earth. Traveling behind the Iron Curtain was quite a unique and memorable experience. I wish certain segments of our population could make the same trip. I'm sure most of them would count their blessings all the way home and would have a new respect for our fine way of life.

Additional Details

Kalina's model was reportedly similar to previous models he has flown, with his usual excellent craftsmanship. The prop was 17 x 32 with narrow, symmetrical blades, and the very light weight of the model (.017 to .019 oz.) permitted relatively small cross section rubber to be used for high number of turns. Even so, the model would dead-stick from about 50 feet.

Even though extra lighting was furnished, several of the fliers had helpers with head-mounted lights (coal mine style) which they aimed at the model's rear hook area to aid in motor hookup.

Informal FAI meetings yielded a majority consensus to require international class models to weigh a minimum of one gram, and to power them with a maximum of one gram of rubber. This was prompted both by the extreme loss of models and by the general unavailability of balsa suitable for ultra-light weight construction. The one gram weight is about right to permit craftsmen of all nations to compete on the basis of building and flying skill, without handicapping those who have no access to superior balsa.



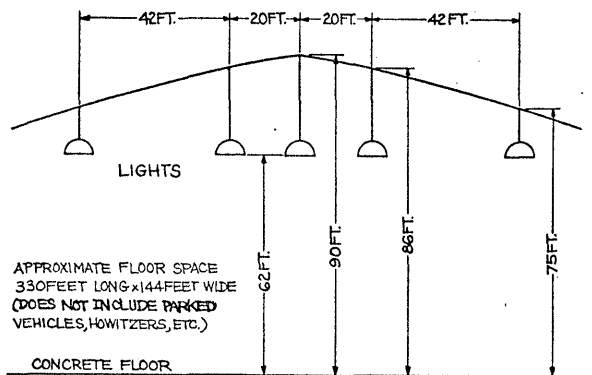
****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Honorary Members

H. HALMSHAW, 57 Stockdale Rd. Traralgon, Victoria,
Australia 3844
MARBER A. MARTINEZ SPOSITO, calle Pernas 2490, Apto. 102
Montevideo, Uruguay

170 Nats

The indoor portion of the 1970 Nats will be held at the Washington Park Armory, 5200 S. Cottage Grove Ave. in Chicago. Indoor rubber powered events (Indoor Stick, Paper Stick and Indoor Cabin) will be flown 9 am to 9 pm, Monday, July 27, 1970; Indoor HLG and Flying Scale will be held the same hours on Tuesday, July 28, 1970. Some sort of time split will be made for HLG and Scale, but this has not been announced. An end view elevation of the Armory is shown below, and the June and July issues will carry directions for reaching the Armory from Glenview NAS. All registration must be done at Glenview NAS; registration can be completed at Glenview NAS on Sunday, July 26, 1970.



"Extra" Nats Events

The Cloud Busters Club of Detroit is sponsoring the Peanut Scale event at the Nats; it will be flown at the same time as the regular scale models. These rules will be used:

1. Model can be to any scale; contestant must furnish proof of scale for rare or unusual subjects, but magazine or other published plans are OK.
2. Flight points = one point/second of flight for a three flight total.
3. Unlimited attempts for 3 official flights.
4. Five seconds constitutes an official flight.
5. No microfilm allowed.
6. Bonus points awarded for the following:
R.O.G. (1 allowed) 5 points
Workmanship Up to 5 points
Scale Documentation Up to 5 points

The Chicago Aeronauts will sponsor a PennyPlane event at the 1970 Nats, to be flown concurrently with IHLG and Indoor Scale at the Washington Park Armory. The rules to be used are:

1. Model must weigh (less motor) at least as much as a new copper penny.
2. Model must not exceed 18" in length (including prop) or wingspan.
3. Motor stick (from front of thrust bearing to rear hook) must not exceed 10"
4. Single rubber motor and prop (no gears).
5. Motor must not be enclosed in body or motor stick.
6. AMA scoring (best single flight of five).

Attention, Teachers!

Pat McDonald, 3539 B Street, Oxnard, Cal. 93030, has received permission and backing to begin a model building program for his sixth grade youngsters. He would like to correspond with others who now have a similar situation, or have had such in the past. So, drop him a line and both you and he stand to learn a lot!

Postal Rates

It seems likely that postal rates will soon be raised 33 1/3% on First Class mail. Although this directly increases cost per issue of INAV by 16%, it will not be reflected in subscription rates at this time. However, each of us continues to receive numerous Third Class or "junk mail" items each week, and the cost of this service (?) may be a luxury we can no longer afford. Perhaps a dramatic protest would be in order! How about saving all of your junk mail, and sending each week's receipts to one of the following addresses: (Use First Class postage so you can include a note explaining your feelings.)

Senate Post Office And Civil Service Committee
U. S. Senate
Washington, D. C.

House Post Office And Civil Service Committee
U. S. House of Representatives
Washington, D. C.

Postmaster General
1200 Pennsylvania Ave, N.W.
Washington, D. C.

CONTEST CALENDAR

ARIZONA - Phoenix. Indoor sessions in Arcadia High School Gym, 7 pm to 10 pm, the second Tuesday each month. Contact Terry Thorkildsen, 3103 W. Willow Ave., Phoenix, Arizona 85029 for further details. Cat. I site.

MARYLAND - Silver Spring. Indoor sessions at JFK High School, 1901 Randolph Rd. May 22, June 5, 1970, 7 am-11 pm.

MICHIGAN - Detroit. Michigan State Meet, May 16-17, 1970 at Michigan State Fair Coliseum. May 16 - youth events: AMA Cub, HLG, Pre-Fab; 3 age groups below 16, 10 am to 3 pm. May 17 - AMA events: HLG - Jr. & Sr.-Open; Paper Stick - Jr. & Sr.-Open; Indoor Stick - Jr. & Sr.-Open; Indoor Scale - Jr. & Sr.-Open. CD - Walter Hartung, 14759 Kilbourne, Detroit, ph. LA 7-7620.

TEXAS - Wichita Falls. Class AAA meet with FF, Combat and Rat Race PLUS Paper Stick, Indoor Stick, HLG and Scale, July 3, 4, 5, 1970. The indoor events are to be held in the evening on July 3 and July 4 in a new 76' domed coliseum which appears to be an excellent site. Contact Sam Casey, 3900 Gayle, Apt. B, Wichita Falls, Tex. 76301.

WASHINGTON - Seattle. Model Aeronautics Scholarship Contest with FF, Rocket (NAR not AMA), U/C, RC and Indoor. Indoor events - HLG and Easy B. Sponsored by Boeing Management Association, Boeing Aircraft, P. O. Box 3999, Seattle, Wash. 98124. For details of indoor site: Jim Walters, 240 SW 184, Seattle, Wash. 98166. June 20-21, '70.

WISCONSIN - Milwaukee. Indoor sessions each Thursday from 7:30 pm to 9:30 pm at Sherman Social Center, North 51st St. and W. Locust St. Ken Kraemer, 3945 N. 41st St., Milwaukee, Wisc. 53216, ph. 414-442-5864.

NIMAS POSTAL MEET

The entry was exceptionally light this year, as can be seen below. In particular, there are no entries from the South; Tulsa activity has been low and loss of the Dallas-Ft. Worth site stopped activity entirely. Don't put all your site "eggs" in one basket!

OPEN EASY B	Time/ceiling	Fudge	Adj. Time
1. Bob Platt	558/8/20'	1.323	739.2
2. Clarence Mather	556/22.3'	1.26	696.6
3. Joe Portecorvo	485/17.75'	1.404	681
4. Hal Crane	511/1.25'	1.32	675.9
5. Harry Cook	538/26'	1.16	624.2
6. Jim Walters	382/17.75'	1.404	536.4
7. Fudo Takagi	356/21'	1.29	459.6
8. Howard Haupt	312/21'	1.29	402.8 1st Sr.

JUNIOR EASY B	Time/ceiling	Fudge	Adj. Time
1. Dave Sandelius	449/17.75'	1.404	630.5
2. Rick Sironen	331/17.75'	1.404	464.8

Class I Open HLG	Time/ceiling	Fudge	Adj. Time
1. Don Teeples	58/20'	1.25	72.5
2. Jim Walters	59.4/25'	1.0	59.4
3. Joe Deady	54/25'	1.0	54.0

OPEN INDOOR STICK	Time/ceiling	Fudge	Adj. Time
1. Bob Platt	1266/20'	1.323	1674.7
2. Howard Haupt	465/21'	1.29	600.3 1st Sr.

THE PICTURE STORY

Upper Left: Clarence Mather launches, Bilgri in background. Note warm clothing.

Center Left: Hans Beck, 1966 World Champion.

Lower Left: Excellent box design by Eduard Chlubny. Note that it opens in three sections, giving access to all models. A smaller box of same design by Vilim Knoch had built-in lighting system!

Upper Right: Time exposure, wide angle lens shot of The Site. Note the size of the people in lower right foreground. This is entire official area.

Center Right: Egizio Corazza; he used a camera tripod for winding stooge.

Lower Right: Jiri Kalina and championship model.

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

STEVE BANDT, 4 N. Wisconsin St., Janesville, Wis. 53545

Honorary Members!

RON DRAPER, 15 Court Leet, Binley Woods, Coventry CV3-2JQ, England

Special Action Committee

Add the following name to your list of instructors who will help people to learn to build and fly indoor models:

RICHARD MILLER, JR., P.O. Box 877, San Leandro, Ca. 94557

Nats Info - SPECIAL NOTE

Last month's announcement that Indoor registration could be done at Glenview NAS on Sunday was in error - no contestant access to the base will be permitted until Monday, June 27, 1970. Therefore read the following memo supplied by AMA HQ carefully:

Special arrangements have been made to permit advance entrants (those who postmarked Nats entry forms to AMA HQ no later than June 22) to register and have certain problems taken care of at the Indoor site as follows:

1. Monday, July 27, 9 am to noon.

- a. Nats registration (officially check in, obtain Nats identification and contestant information kit). This is necessary before any official flying takes place.
- b. Housing Priority. If your copy of the entry form indicates you have such priority, you may claim it.
- c. Navy Meals. Tickets for same may be purchased.
- d. Add Events. These may be entered and paid for.
- e. Entry Discrepancies. Any money or entry form problems, indicated by "report to desk P" notation on entry form.

2. Tuesday, July 28, 9 am to noon.

- a. Nats Registration only, as above. No housing, meals, or event problems can be taken care of at the indoor site on Tuesday.
- b. Entry discrepancies, as above.

Note: Noon is the cutoff time on both Monday and Tuesday. HQ workers who will provide these services must be at Glenview NAS by 2 pm each day.

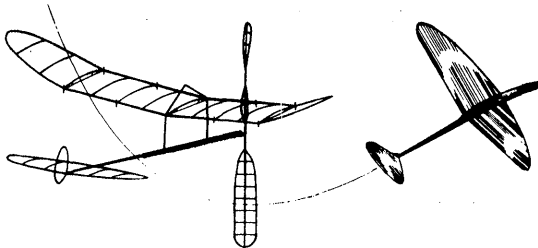
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- 3. Unlimited attempts for 3 official flights.
- 4. Five seconds constitutes an official flight.
- 5. No microfilm allowed.
- 6. Bonus points awarded for the following:

R.O.G. (1 allowed)	5 points
Workmanship	Up to 5 points
Scale Documentation	Up to 5 points

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- 1. Model must weigh (less motor) at least as much as a new copper penny.
- 2. Model must not exceed 18" in length (including prop) or wingspan.
- 3. Motor stick (from front of thrust bearing to rear hook) must not exceed 10"
- 4. Single rubber motor and prop (no gears).
- 5. Motor must not be enclosed in body or motor stick.
- 6. AMA scoring (best single flight of five).

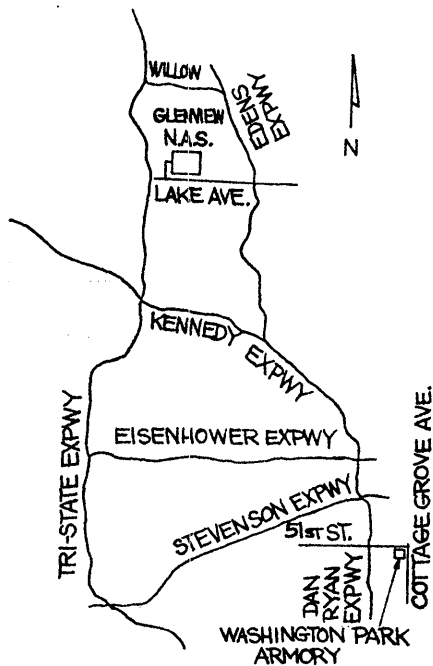
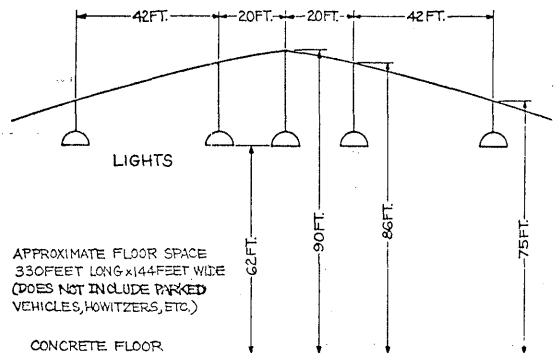
Proxy-Fly PennyPlane

The latest news about the Nats PennyPlane event (see above), is that you can have your model proxy-flown. The entry fee (regular or proxy) is 1¢ per entry, and you can enter in person or send your entry to Erwin Rodemsky, 205 Frances Lane, Barrington, Ill. 60010.

Other Nats Info

1970 Indoor Nats events will be held in the Washington Park Armory in Chicago. Immediately below is a cross-section view of the site, and below that is a map of Chicago and areas north to Glenview NAS, with a description of the best route to follow.

The event schedule is as follows: Indoor rubber powered events (Indoor Stick, Indoor Cabin and Paper Stick) will be flown July 27, 1970 from 9 am to 9 pm. Indoor HLG and Indoor Scale will be flown Tuesday, July 28, for the same hours.



You must enter the Armory at the North end of the building. It is 28.3 miles from the main gate of Glenview NAS to the Armory. The Armory is located on the southeast side of Chicago and is readily accessible from the Dan Ryan Expressway. Probably the most direct route by automobile from the main gate of Glenview NAS is:

1. Proceed to stop sign at Greenwood Avenue.
2. Turn left and drive south to stop light at Lake Ave.
3. Turn left and drive east to Edens expressway (I-94). You may enter expressway by making a right turn just beyond stoplight.
4. Edens expressway runs into John F. Kennedy expressway which in turn becomes the Dan Ryan expressway. Route is now I-90 & I-94.
5. Remain on Dan Ryan expressway and stay in the "express lanes" at about 26th Street.
6. As expressway heads southerly at about 31st Street, stay to right hand lanes where you will notice a sign stating that the next exit is 51st Street.
7. Exit expressway at 51st Street. Stay in left hand lanes when exiting. Turn left (easterly direction).
8. Travel approximately 1 1/4 miles to Cottage Grove Ave. (800 east). You will see the Armory on your right (south) about one block. Turn right. You may park your car along the east side of the building. Please lock your cars and do not leave any valuables exposed to view. (The above by courtesy of Pete Sotich)

FAI INDOOR REPORT

One Gram Model?

The reports from the 1970 Indoor World Championship have all contained comments relating the possibility that specifications for the 65 cm international class model might be changed. Although it doesn't work that way, it is possible that the specifications could be changed at the Fall CIAM meeting. The first step toward this goal has been taken; two proposals were circulated recently to the FF Subcommittee for comment. One was a Romanian proposal to limit rubber weight to one gram and require the model to weigh at least one gram. A second proposal came from Italy, suggesting that the rubber could weigh no more than the model.

The news about the proposals came too late to permit an investigation about their status, but my "educated guess" is that only that proposal considered most favorable by members of the Subcommittee will actually make it to the agenda. Final vote would then come at the CIAM meeting, and a favorable vote could be implemented one of two ways: immediate adoption and applying to the 1972 World Champs, or some form of delayed adoption.

Meanwhile, there has been considerable discussion of the one g model/one g rubber concept here in the U. S., and INAV will be open for pro and con comments on this matter. However, all interested fliers should immediately send their views to Box 545, Richardson, Tex. 75080. The "votes" will be tabulated and passed on to Dave Linstrum, the U. S. Subcommittee member.

To lead off the discussion, Jim Richmond makes these comments against the proposal:

1. I like the basic pure simplicity of FAI Indoor flying as it exists, and the freedom to strive for ultimate performance.
2. I am basically opposed to any unnecessary rules or complications. I think this tends to discourage people who might be interested in participating and it certainly complicates the job of processing during competition.
3. I question the ability of a one gram weight rule to help Europeans with their wood problems. It might help initially, but the excess weight would soon be used for the addition of technical devices to enhance performance (I have a few in mind already). That could be interesting but the wood problem wouldn't go away.
4. Instead of changing rules why not help the wood problem with a direct solution? Two NIMAS members (names have been omitted, since there was not time to check with them about release of this information) have a program under way to make good wood available to those who need it. The only real wood problem is availability of quality lumber, and this approach would seem to be ideal. (Editorial comment: My understanding of the balsa wood supply situation is that it is a complex problem, and Jim's approach may be overly simplified. This is an avenue to explore!)
5. I see no purpose in having any restriction in rubber weight.

Some other fliers were invited to comment on the proposal, but none have yet responded. This space is open to further comments - please keep them reasonably short and to the point. Meanwhile, the remarks below will show that

I have mixed feelings on the matter.

1. **Esthetics:** Some of the grace and beauty and much of the total performance potential would be lost by a change to a one gram model, as was the case in changing to 65 cm.
2. **Practicality:** The one gram model is far more practical and travel-worthy than any unlimited model. Also, the availability of suitable wood for unlimited models is becoming less and less; thus the new rule will allow a less stringent choice of material.
3. **Challenge:** Contrary to some opinions, the challenge of the proposed model will be considerably greater, and a truly champion competitor will be an excellent craftsman and a very clever designer. Further, he will spend twice as much building time per model and perhaps 100 times as much time in study of rubber and choice of suitable rubber (loop length and cross section will be far more critical). Within two years, detailed flight profiles and performance analysis will become necessary.
4. **Officiating:** As a CD, I see little technical problem in processing all models each round - essentially negligible in comparison to other FAI events.
5. As a competitor, I don't object to rules that everyone must fly under, but I tend to dislike the concept of any processing. The need for checking my work somehow seems to reflect on my honesty. However, adoption of maximum rubber weight will effectively remove me from any serious competitive effort, due to present commitments on my time.

REMINDER: Send your votes (see above) immediately!

CONTEST CALENDAR

NEW YORK - Long Island. Cat. II indoor contest at Canteague Park, Hicksville, L. I., Sept. 27, 1970. Site is 190' dia. dome, 50' high. HLG, Easy B, Indoor Stick, Paper Stick, Scale. CD - Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L. I., N. Y.

TEXAS - Wichita Falls. Class AAA meet with FF, Combat and Rat Race PLUS Paper Stick, Indoor Stick, HLG and Scale, July 3,4,5, 1970. The indoor events are to be held in the evening on July 3 and July 4 in a new 76' domed coliseum which appears to be an excellent site. Contact Sam Casey, 3900 Gayle, Apt. B, Wichita Falls, Tex. 76301.

WASHINGTON - Seattle. Model Aeronautics Scholarship Contest with FF, Rocket (NAR not AMA), U/C, RC and Indoor. Indoor events - HLG and Easy B. Sponsored by Boeing Management Association, Boeing Aircraft, P. O. Box 3999, Seattle, Wash. 98124. For details of indoor site: Jim Walters, 240 SW 184, Seattle, Wash. 98166 June 20-21, '70.

RECORDS? MAYBE!

The following records should have been listed in the May '70 issue, and have already been homologated; they were set in Willis School (20') in Hampton, Va.:

Open FAI Cat. I FAI - 20:37, Bob Platt
Open Indoor Stick - 21:06.2, Bob Platt

RECORD CHALLENGE CONTEST, May 30-31, 1970, Cat. I (20')
Open FAI Cat. I FAI - 20:49.6, Tom Vallee
Open AMA Cat. I FAI - 20:35.8, Tom Vallee

TOP TEN CEILING DODGERS

	Time/ceiling	Fudge	Est. Altitude	Score
		(to 35')		
1. Stan Chilton	1115/35'	1.00	33'	1115
2. Tom Vallee	810/20'	1.32	19'	1068.2
3. Hal Crane	682/20'	1.32	19'	850.2
4. Dick Hardeste	602/23'	1.23	22.5'	743
5. Hewitt Phillips	528.2/20'	1.32	15'	698.7
6. Howard Haupt	456/22'	1.26	15'	575
7. Harry Cook	471/26'	1.16	24'	546.5
8. Jim Davidson	280/13'	1.64	9'	459
9. Richard Sironen	308/37'	.972	33'	396.6
10. Roger Schroeder	239.5/15'	1.53	13.5'	365.9

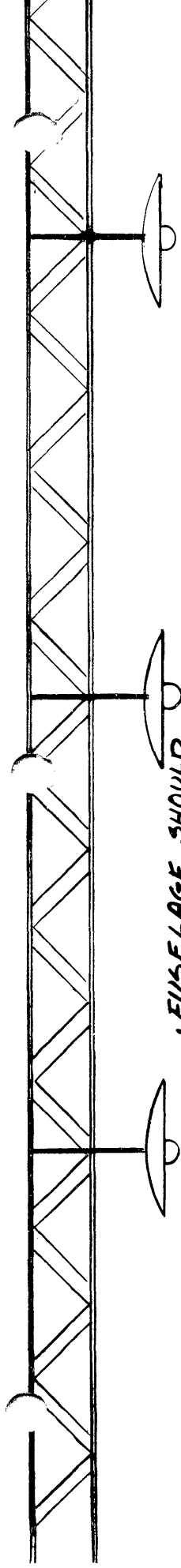
STATE OF THE ART

Instead of a formal plan for State Of The Art, this month we have specific information about low ceiling HLG. John Thornhill responded to a recent INAV plea for more HLG information by interviewing Dan Belieff; the result is the presentation on page 3. Thanks to both Dan and John!

HINTS AND KINKS

Condenser Paper Hint

Numerous methods have been advanced to avoid warps in models covered with condenser paper, and Jim Walters adds another: "After drying the paper in the oven at 150-200°

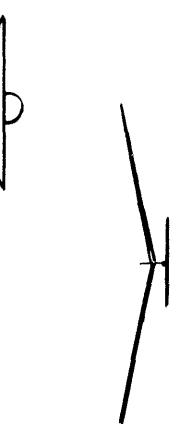


• FUSELAGE SHOULD BE CUT FOR STRAIGHT GRAIN FOR EVEN FLEXING, THE GRAIN OF WOOD SELDOM FOLLOWS THE EDGES OF BALSAM SHEET

WING SUPER-LIGHT "C" GRAIN "A" OR "B" IS NOT RIGID ENOUGH TIPS MUST BE PAPER THIN

TOTAL WEIGHT SHOULD BE ABOUT EQUAL TO A NICKEL

• FINISH IS IMPORTANT SAND SLOWLY AND WITH CARE TO AVOID WARPING THE PARTS, RE-SAND AFTER A WEEK, MOISTURE IN THE AIR RAISES A "HAP" THAT CAN BE REMOVED FOR A SMOOTH FINISH



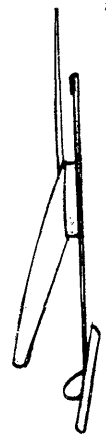
• LEARN TO STAND IN ONE SPOT ON THE FLOOR, SO THE SHIP CAN BE THREADED THRU THE OBSTRUCTIONS ON OFFICAL FLIGHTS TO GET THE BEST FROM THE SITE

• TAIL SURFACES SHOULD BE SMALL A CATI GLIDER COULD HAVE A RUDDER THE SIZE OF A DIME

• FULL SIZE PLANS FOR THIS AND OTHER CATI SHIPS CAN BE HAD BY WRITING DAN BELIEFF 306 GRUNTHUR AVE ROCKVILLE MD. 20810

• USE WHITE GLUE THRUOUT SOLVENT TYPES WILL WARP AND PULL SO THAT THE SHIP WILL NOT HOLD TRIM BETWEEN SESSIONS

DC. MAXECUTERS



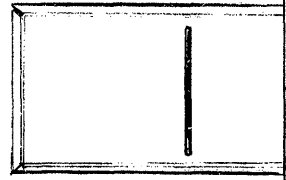
• THE TRIM IS BEST WHEN THE SHIP SLOWS DOWN ALMOST TO A STAND STILL. SO SLOW THAT ANY TURBULENCE WILL UPSET THE SHIP

• THE LAUNCH STRAIGHT UP WITH "ENGLISH" A LOWER ANGLE PUTS MORE STRAIN ON THE WING. NO WRIST ACTION PLEASE!

RIGHT. RIGHT PATTERN FOR

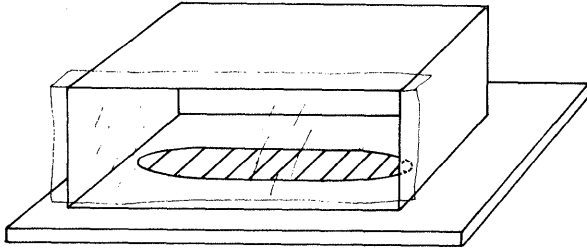


WELCOME TO CATI HLG DAN BELIEFF



for 5-10 minutes, iron it (medium heat) between the folds of a heavy-duty Scott paper towel. This gives a uniform waffle texture which seems to provide good expansion under dry-hot conditions."

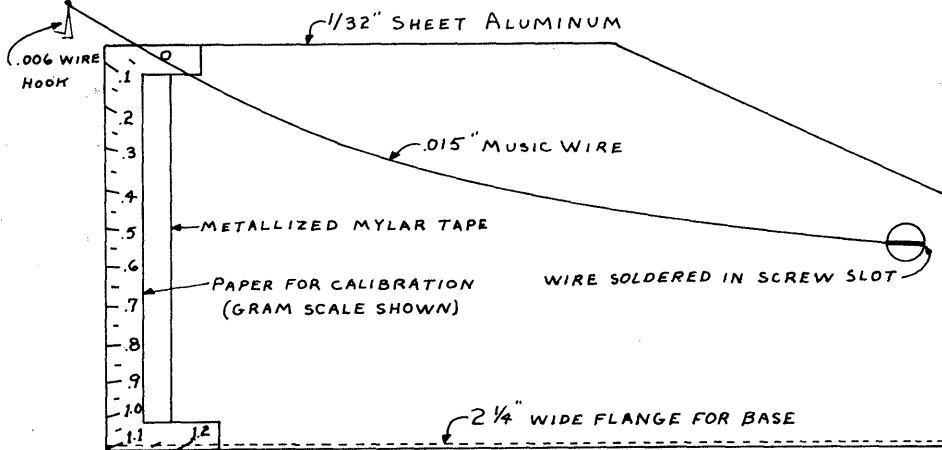
Jim's hint is perhaps the simplest to implement, and is probably as effective as any other method to allow for moderate variations in humidity. However, condenser paper is a strange beast, and quite treacherous toward the unwary builder. It is safe to say that condenser paper is likely to warp your models unless it is applied while it is less humid than it will ever be again. To this end, I have had good luck by covering inside a "hot box" set up for that purpose. First, I place a heating pad on the work area, covered by a single sheet of cardboard. The work area is then covered by a box with one end open, but with a plastic curtain closing the gap. A heat lamp and thermometer/hygrometer combination monitors the conditions in the box, and both the surface to be covered and the paper cut to approximate size is placed inside the box. After 20 or 30 minutes, the box will reach about 110° and 5% to 10% humidity, and the part can be covered by lifting the edge of the curtain to work. For some reason, our house seldom gets below 50% humidity, but this method has never failed me yet. This box is a small price to pay for the results gained!



The plastic can be from any source - for example, the bag used by dry cleaners to protect clothes is good, if it is used single thickness. It is flexible enough that you can work behind it easily.

Simple Scale

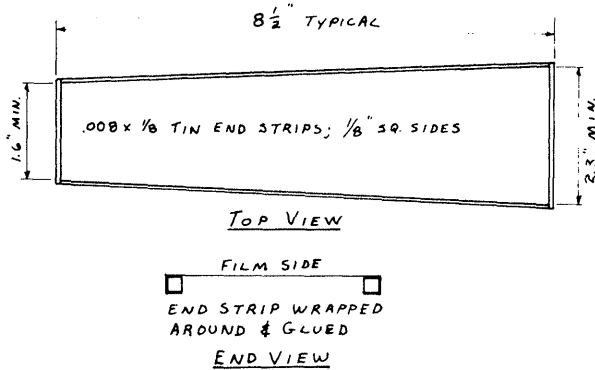
Jim Richmond submitted the scale design shown below, which was patterned after ones used by the Czech team at the 1968 World Champs in Rome. Although this is not a new idea, it bears repeating. This type of scale is as accurate as you make it (typical with most indoor scales) and indefinitely repeatable to that same accuracy. It is also capable of being packed in small spaces and rugged enough to be dependable in the flying site - which can't be said of most scale designs. Note that this design has a "mirror scale" similar to precision laboratory meters; this is done by using metallized mylar tape adjacent to the scale. In practice, you align your eye so the pointer appears to cover its reflection in the "mirror", and thus errors due to parallax are eliminated. If you are really finicky about weights, make a second spring for the other side of the scale, using smaller wire. For example, .008" diameter wire would be about 4 times as sensitive (full scale deflection of .3 grams), and would permit greater accuracy in weighing lighter parts.



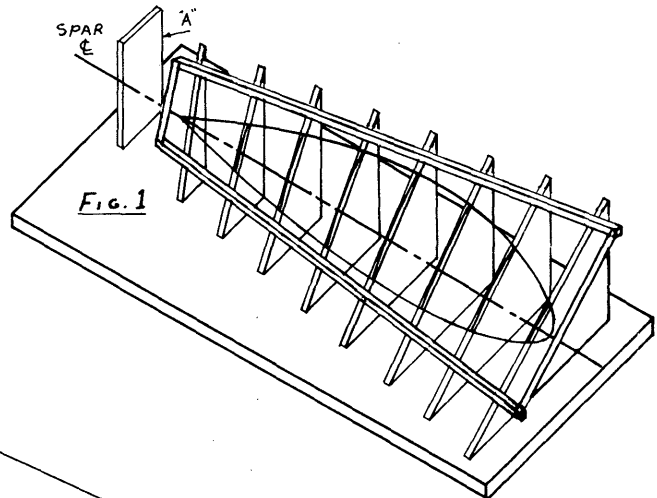
Prop Covering Hint

Indoor props remain the hardest component to cover, because competitive weight props are flexible and easily distorted, and because microfilm is basically a planar surface like paper. Therefore, it is ideal to have the prop on the building block or jig while it is covered and until the covering has "set", or until the prop is dry.

A simple framework with flexible ends, sketched below, enables this to be done easily. The side pieces of balsa are held joined by narrow pieces of tin can stock (Jim Clem, from years of experience building speed model tanks, says that Budweiser cans have the thinnest metal of any available cans) which are bent around the end and held by epoxy or numerous coats of glue.



To cover a prop, the gadget is first covered with film by using rubber cement to attach the film. Then the prop is laid on the building jig and spot-glued at the tip to hold it steady. Moisten the outline and the ribs using a fine brush. Pin the lower edge of the gadget just below the trailing edge of the prop as shown below, then lay the upper edge of the gadget against the prop and pin it down. Blow on the film to insure it touches the blade outline and ribs every place it should, and let the blade dry for at least an hour. There will be fine wrinkles in the covering, but these can be minimized with heat from a small soldering iron if you wish. If you do this, do it while the blade is still on the jig.



The SYMPO '70 Report



NFFS

MINIMIZE YOUR RATE OF SINK

By correlating test results on 21 Nordics, Peter Allnutt and Ken Kaczanowski have developed a relationship between basic airfoil parameters, aspect ratio, and rate of sink. Use it to get the best wing design for your next model. -- John Krouse helps by presenting the effect of undercamber on endurance. -- Hank Cole rounds it out by determining the effects of Reynolds Number on rate of sink and presenting a simple test for determining whether your aspect ratio is the optimum one for your Reynolds Number. -- Finally, Hewitt Phillips discusses experimental methods for determining the L/D of models and presents some test results obtained with radio controlled gliders and with free flight models.

MAXIMIZE YOUR RATE OF CLIMB

Bob Meuser presents a paper on choosing the best Wakefield propeller that is a classic. It answers virtually all of the questions you've had on P/D, diameter, no. strands motor run, etc. -- Dave Mendel's paper makes it easy to find the best prop for your power model, be it FAI Power or R/C (e.g. 8,000 rpm). All you have to do is to use his graphs with their illustrated examples. He also shows how much altitude suffers if your climb path is not vertical.

HOW TIGHT A TURN AND HOW BIG A VERTICAL TAIL

Peter Soule shows what happens to your rate of sink as a function of bank angle in a coordinated turn and tells you how to minimize your altitude loss during a turn when you are heading the wrong way and have run out of altitude. -- Bill Bogart correlates the vertical tail volumes and dihedral of Nordics, Wakefields, and FAI Power models, shows how to use the data for designs, and explains what happens to a model in a steady state turn and why.

WING STRENGTH AND STABILITY IN PITCH

What's the best structure: D-Box, sheet on bottom, multi-spar? What happens to torsional and bending stiffness as wood size and type of structure on a Wakefield wing is varied? Don Goldberg has the answers for you. -- Hal Crane comes up with an even simpler approach (than the one in Sympo '69) for locating the neutral point and fixing your c.g.

THE OPTIMUM INDOOR MODEL

Walter Erbach uses a computer to evaluate the effects of tail size, wing position, and c.g. position on power required. There is an optimum c.g. position for each tail size. -- Bob Platt developed an equation for the power required as a function of average chord, and using it, he calculated the optimum chord for an FAI indoor model. His latest model, based on these results, has already broken two low ceiling records.

Order yours today. It contains twelve outstanding papers plus the Ten Free Flight Models of the Year as selected by NFFS, including three-views and background data.

Detach this coupon, fill in and mail to Annie Gieskieng, NFFS, 1333 So. Franklin St., Denver, Colorado 80210. Check or money order should be payable to NFFS. Price: \$3.50-NFFS, AMA member, \$4.50 non-member. \$6.00-'69 and '70 reports, \$8.00-'68, '69, '70.

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INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

H. LEWIS MERTON, P. O. Box 703, Ft. Rucker, Ala. 36360

Change Of Address

STEPHEN FAUBLE, 714 N. Jefferson Ave., Dixon, Ill. 61021

Nats Info - SPECIAL NOTE

The announcement in May '70 INAV that indoor registration could be done at Glenview NAS on Sunday, Jul. 26, 1970, was in error. No contestant access to the base is possible before Monday, July 27, 1970. Therefore, please read the following memo supplied by AMA HQ carefully:

Special arrangements have been made to permit advance entrants (those who postmarked Nats entry forms to AMA HQ no later than June 22) to register and have certain problems taken care of at the Indoor site as follows:

1. Monday, July 27, 9 am to noon.

- Nats registration (officially check in, obtain Nats identification and contestant information kit). This is necessary before any official flying takes place.
- Housing Priority. If your copy of the entry form indicates you have such priority, you may claim it.
- Navy Meals. Tickets for same may be purchased.
- Add Events. These may be entered and paid for.
- Entry Discrepancies. Any money or entry form problems, indicated by "report to desk P" notation on entry form.

2. Tuesday, July 28, 9 am to noon.

- Nats Registration only, as above. No housing, meals, or event problems can be taken care of at the indoor site on Tuesday.
- Entry discrepancies, as above.

Note: Noon is the cutoff time on both Monday and Tuesday. HQ workers who will provide these services must be at Glenview NAS by 2 pm each day.

Indoor Scale

The June '60 MAN had plans for a direct reading indoor scale which was sensitive to about .0001 oz, with .05 oz full scale reading. Fred Harlow, 9724 Royerton Dr., Richmond, Va. 23228, will construct and calibrate these scales to order for \$10 each. This sounds like a good price!

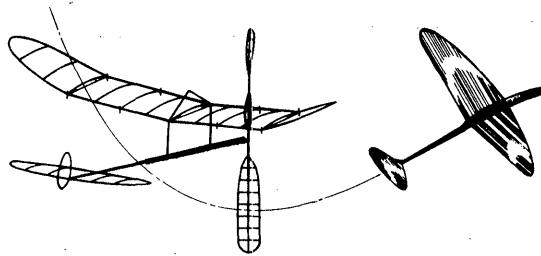
FAI INDOOR REPORT

One Gram Model?

Last month we began this topic with a recap of what had been reported on the possibility of FAI Indoor models being required to weigh one gram, coupled with a maximum of one gram of rubber. Comments by Jim Richmond followed, along with my own comments. Readers were invited to send their comments also. At this point, certain observations can be made:

1. Many, but not all fliers agree that scarcity of wood usable for .5 g to .6 g models (the present competitive standard) is very great. It is easily demonstrated that this wood is scarce, and the proportion of top-notch wood to lesser wood in any shipment is very low. This is not surprising, because the final distinction between good wood and almost good wood only turns up after you build the motor stick (the most critical part) and it breaks on less than full turns. The one gram limit would relieve this pressure on supplier and builder alike.

2. Some comments took the stand that the one g rule was surely intended to make it easier for inexperienced fliers



to win. No proponent of the new rule has said this, and the idea is quite mistaken. The only way to "legislate" newcomers into the winner's circle is to prevent more experienced fliers from flying against them! What has been advanced is that more newcomers are expected to be drawn into the event. Although this may seem like splitting hairs, the distinction is not all that subtle. The reason more newcomers are expected is that a one g model is more "believable" for those who are attracted to indoor models but are unwilling to operate for several years at a 2:1 or worse weight disadvantage. They are also reluctant to buy substantial amounts of specialized supplies even if they feel competent to build the lighter models; this reluctance tends to disappear as they get more experience.

The comments will begin with one by Andras Ree, of Budapest, Hungary, and currently the leading flier from that country:

"During the W/Ch we spoke very much about the necessity and possibility of new FAI Indoor rules. Fliers from 4 or 5 countries spoke about the problems and their suggestions. I'll try to summarize the main problems as I see them:

- There are no good young fliers (about 20 years old). The way to the top is very long and the number of newcomers is very low.
- There is a great distance between a few top fliers and others in most of the countries.
- Good materials (balsa and rubber) are not equally available, or are not available at all.
- The models are too breakable under 0.7 g.
- Transportation of very light models is dangerous, and 6 or 8 models requires a very big box.
- Flight times are too long. This causes problems for the organizer, and we have much chance to hit the wall.
- To get good sites is very difficult.

I think the aims of possible new rules must be:

- Middle class balsa must be suitable, to equalize possibilities of supply for all fliers.
- To get more newcomers.
- To make stronger models with less transport hazard.
- To reduce the flight times considerably.
- The models must remain "indoor" models.
- The rules must be as simple as possible, and processing must be easy.

I think these objectives would make indoor more popular. There were a lot of suggestions to realize these aims. One was 65 cm span, one g minimum weight of model, and one g maximum model weight. Another was 50 cm span, 0.7 g minimum model weight, maximum rubber weight 0.7 g.

My opinion is that we must not limit rubber weight! There are big differences in rubber quality available, and indoor fliers are not rubber makers. We can only choose from what we can get, so the direct rubber limitation is a big advantage to those who can get good rubber. So, my own suggestion is: 50 cm span model, 0.75 g minimum weight, 20 cm maximum distance between motor hooks, maximum prop diameter 35 cm, and no gears or double motor permitted.

The 0.75 g (50 cm) model needs only middle class balsa, while the other points limit the Rubber only indirectly. The models would be stronger, the boxes smaller, and four models would suffice for a big contest. Smaller models, lower flight altitude and shorter flights would make the sites relatively larger and more suitable." (Ed. note - Pete Andrews and C. V. Russo flew one g models at a recent Lakehurst session. Times approached 30 minutes on a day when Pete's top time with a standard FAI was 36 minutes. These results tend to discount the possibility of greatly reduced flight times with heavier 65 cm models!)

In addition to the above, Boyd Felstead (Australia) is not in favor of the new proposal, primarily because of an increase in time required to process the models. And from Austria, Manfred Koller indicated that he would expect an increase in indoor activity with such a rule. (Austria did not have a representative at the '70 W/Ch since Manfred was unable to go and Walter Hach was unwilling to go alone.) It is interesting to note that Boyd Felstead can

be considered to be the originator of the 65 cm model, as he suggested it in the Dec. '62 INAV.

Other comments have been received from U. S. fliers:

Tom Vallee: With regard to weight rules (for FAI), I'm 100% against them, for these reasons:

1. I like the freedom, the wide variety of approaches now available to reach ultimate indoor performance under the present rules.
2. Only too often, rules meant to aid the average flier (like the 65 cm span), only confound and discourage these average fliers and increase the gap between him and top competition. The proposed weight rules represent a real challenge and would widen the gap. This would be harmful to the sport. (Ed. note: Felstead's original comments cited easier transportation, smaller sites required, less flight time - which didn't prove out!, and a bigger challenge due to smaller wing area. Whatever the reasons for adopting 65 cm, Boyd made no mention of average fliers as a reason for suggesting 65 cm models!)
3. I agree 100% with Richmond that there is no logical purpose in restricting rubber weight.
4. Poor wood supplies in Europe is the only logical reason for a model weight rule. Even so, the lightest models at the '70 W/Ch were European models.
5. Rodemsky's outstanding performance with very heavy models suggests it is possible to be competitive with a heavier model.
6. I think the rule proposal is partly due to reaction to heavy model destruction at the W/Ch. Heavy models would have been in as much trouble in the salt mine, especially if they had insufficient power to punch through low level turbulence.
7. If we must have weight rules, why not adopt a 1.5 g, 75 cm model with a limited motor stick length and ban multiple motors and gears. This model would be easier for newcomers to fly, if there were no rubber restrictions.

Pete Andrews: I personally will go along with any rule with the idea that the ability and experience of good builders will put them consistently on top. However, any restrictions on model and rubber weight will not solve existing problems and will create a few, particularly in contest processing.

Lew Gitlow: The only change in the FAI rules that I would favor is to require a minimum rubber weight of .035 oz. This would encourage one to build a little heavier, without going to extremes. I agree with all the reasons in June '70 INAV against change. The above would be at best a compromise. If the change is made, the processing of both rubber and model, probably both before and after each flight, would be enough to discourage me from competition.

I feel that modelers will always want the best available balsa to work with, whatever the wing loading. The availability of good balsa would admittedly be made easier by working with 5.5 to 6.5 lb./cu. ft. balsa. But it is questionable that modelers would use the heavier wood even if the wing loading was increased!

In my opinion, there is much more to be lost than to be gained by change, and I would hate to see change occur without a popular majority vote, after the pros and cons are brought to the attention of all concerned, and after at least 2 years of discussion and experimentation. Let's not ram-rod change!

George Honda: If the rules go to size and weight just to make it easier - I think it is the wrong way to go. It did no good in either FAI Gas or Wakefield! You will just kill the event as it is and make it like slot cars or model railroad. Just to justify more contestants, you get mediocrity, not skill.

Curtis Janke: Don't be too cheerful about the difficulty of processing by weight. There are always drafts, so some sort of box would probably be required, with the attendant dangers of damage.

Other problems: great difficulty in getting just the right amount of weight of rubber and lube in the right length of loop. Good rubber is at a premium, and should not be wasted by such experimenting. Also, the emphasis on good rubber would be increased, until it is likely that rubber supply would be an even greater problem than the present wood supply. It seems unlikely that Europeans can get good rubber any easier than good wood!

Besides that, I doubt that the wood quality is that important anyway. Reasonably good wood, if properly used, results in a good ship and the extra weight doesn't show up that glaringly on the watch anyway. I can remember Carl Goldberg beating me and everyone else repeatedly, well into WWII, with a heavy and aging airplane he built in 1935! Remember how well the fellows with reed sticks and booms did at the early Cardington meets? I for one probably would drop all FAI interest if such a rule went

through, though I would not object to a further decrease in span. (Though even that must stop somewhere!)

Finally, Hal Crane offers an alternate proposal, with progressive approach to the final formula (coded by year):

- 1972 - Model equal to or greater than one g; rubber unlimited or 1.5 g maximum.
- 1974 - Model unchanged from 1972; rubber to weigh no more than model.
- 1976 - Model unchanged from 1972; rubber equal to or less than one g.

Manny Radoff also suggested an alternate proposal: Limit the total rubber weight to 1/2 g, with no other restrictions on the event.

Last month we requested that all comments be sent to INAV, so the above remarks could be extracted before they were forwarded to Dave Linstrum, the US member of the FF Subcommittee of the CIAM. Please forward any further comments directly to Dave at 12 Holcomb St., Simsbury, Conn. 06070. Dave will soon formulate an official US position, looking toward a final vote in late Fall.

POSSIBLE WORLD RECORD!

Andras Ree made a contest flight in Budapest, in a 14.9 m site. The flight conformed in all respects to FAI World Record procedures, so the 27:58 flight has been sent to the CIAM for evaluation. The present Cat. II World Record is held by Jiri Kalina, and was set with a 90 cm model during the time that FAI ceiling categories were on provisional status (summer of 1966).

INTERNATIONAL CONTESTS

CZECHOSLOVAKIA - Brno. Third Brno International Contest, July 11-12, 1970. The site is the big international pavilion, site of the Czech Nats.

HUNGARY - Debrecen. The second Hadju-Cup International Contest will be held Aug. 16-19, 1970 at the 98' social hall at Kossuth University.

CONTEST CALENDAR

NEW YORK - Long Island. Cat. II indoor contest at Canticone Park, Hicksville, L. I., Sept. 27, 1970. Site is 190' dia. dome, 50' high. HLG, Easy B, Indoor Stick, Paper Stick, Scale. CD - Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L. I., N. Y.

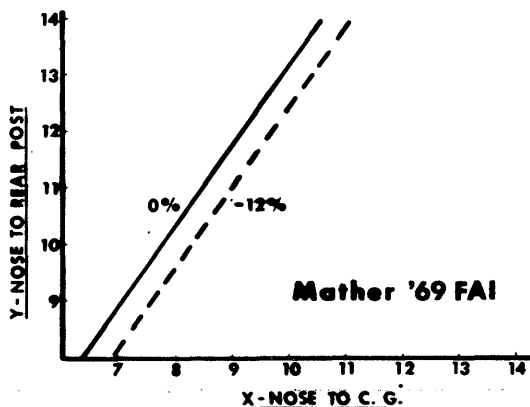
STATE OF THE ART

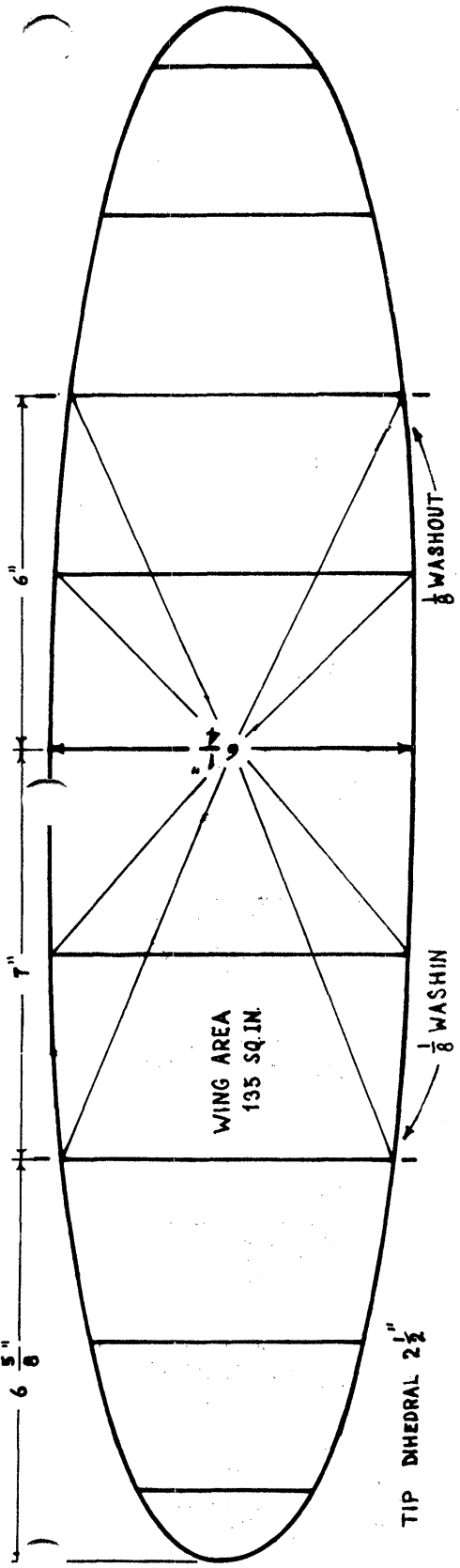
The model for this month is by Clarence Mather; the model which he used to qualify for the 1970 W/Ch. It is modified from his earlier design (Sept. '67 INAV), and is described in his remarks below:

"I went to the curved wing outline when straight spars bowed in during covering. I tried motor sticks up to 16" long, but could detect no performance advantage and went back to 12".

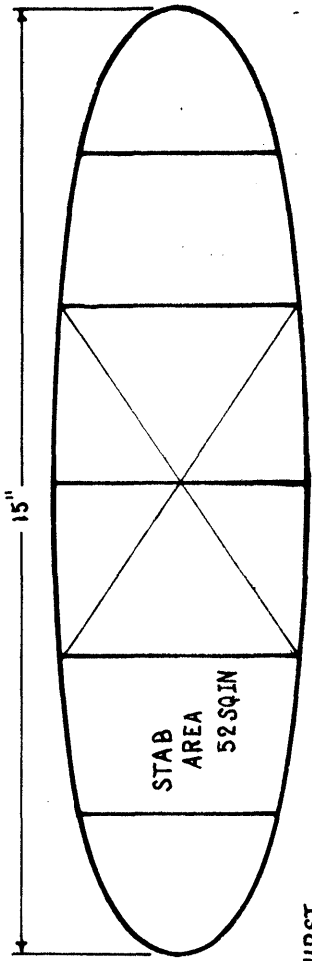
Originally the CG was at 80% and the models flew, but they were touchy - a little more power and they would stall repeatedly. With the CG at 70% they seem much more stable. (Ed. note: with CG as drawn, the model is flying at -12% margin, so quite likely the model is quite close to maximum trim sensitivity.)

I had a lot of problems at Lakehurst finding the right combination - on my longest flights the model dead-sticked at some altitude so I feel it is capable of considerably more time. A longer motor (18") of the same rubber broke, and it was the last I had of that size and batch."





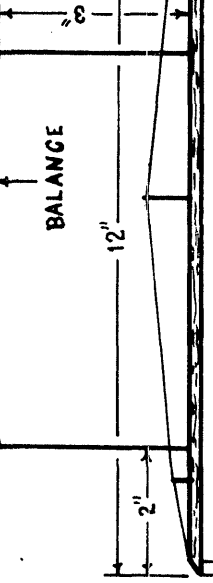
WING 4% ARC
FULL SIZE AIRFOILS



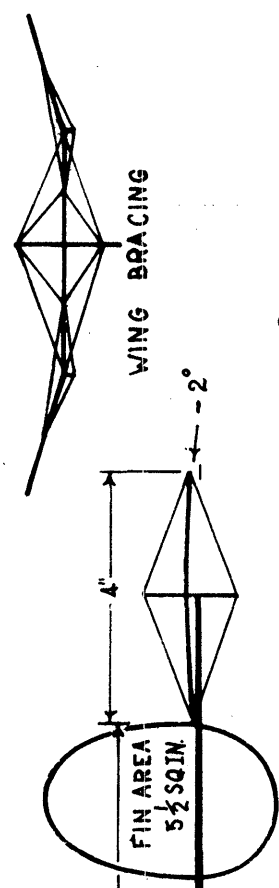
STICK-TAIL .012 OZ.
WING .006 OZ.
PROP .004 OZ.

.022 OZ.

BEST TIME - 32" LAKEHURST
1480 TURNS - .045 X 14" PIRELLI



$\frac{2}{16}$ ID. STICK - VEE BRACING



1969 FAI MODEL

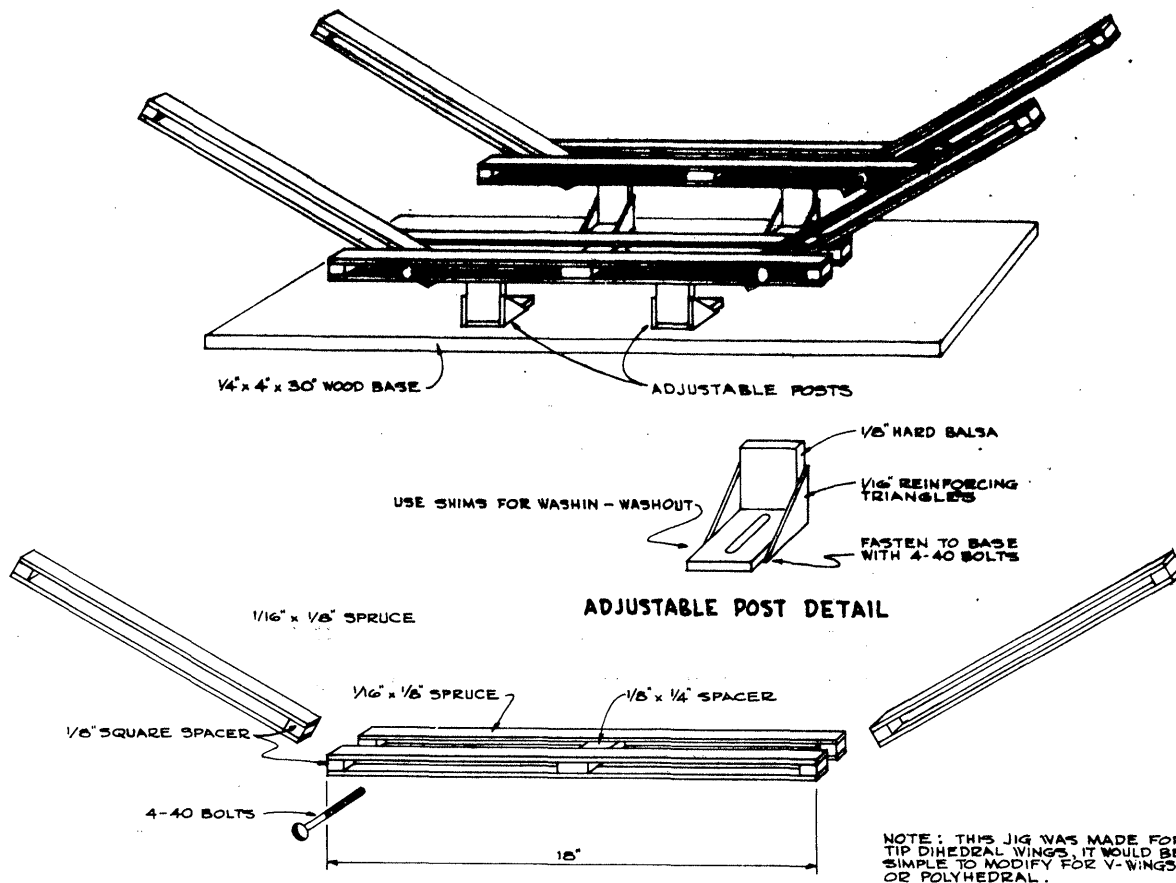
C. Mather

SAN DIEGO
ORBITEERS

18/34 PROP ACTUAL BLADE SHAPE

AIRFOIL

1" S" RUBBER HOOK



THE VARIABLE DIHEDRAL - CHORD - WASHIN - WASHOUT WING BRACING JIG

BY PAT PERCIVAL - LAKE ERIE MODEL CLUB

HINTS AND KINKS

Good Records Are Useful!

An interesting keynote of many of the most successful indoor fliers is their system of record-keeping. It has been noted that lightweight construction depends heavily upon detailed records of the weight of each part of our models; when you manage to build a part so light it breaks in routine handling, you have then discovered your own building and handling limitations. The record of weight for that part is then the guide to building one just about right next time!

Detailed flight records are also essential to consistent model performance. Hal Crane is perhaps the one most consistent Cat. I flier, while Jim Richmond has things his own way in Cat. II and Cat. III. Since their style of flying is entirely different, it is interesting to note which items of model performance they each find important to make note of.

Hal flies heavier than usual models that ceiling-scrub during much of the flight. Besides noting which prop is used on which model for a particular flight, he also keeps the following information: Loop length and cross-section of rubber, rubber weight, model weight, turns and torque at launch (including how many turns were put in and how many turns were backed off), turns left at landing and the torque level at landing. Finally, flight time, number of times model was steered, and average RPM are recorded.

On the other hand, Jim Richmond's models rarely touch anything in flight; in fact, some of us privately wondered if his very lightweight models would hold together if they did hit anything. All doubt was removed when he set the 33:20.5 record in Chicago's Washington Park Armory. This was one of his lighter models; it seemingly tried to remove every light in the place and continued to fly with a large hole in the wingtip. Nonetheless, this isn't the way he usually does it, so he records the following for Cat. III flying: Model and prop, flight time, maximum

height reached, turns in and backed off, rubber dimensions and weight, and reasonably detailed comments about flight adjustments, general performance, and flying conditions. Absent from the records he furnished was torque info; he commented that for Cat. III you wind it up all the way!

Adjustable Wing Jig

The sketch above is a wing bracing jig design by Pat Percival. The sketch is largely self-explanatory, and can fit a large number of different model designs.

INDOOR ELSEWHERE

England

Cardington has been opened for monthly sessions, and the first session found Laurie Barr leading the pack (65 cm fliers) with 23:55. Several other fliers also turned out, including Ron Draper. Ron had his 40 minute model (still in good shape from the '62 W/Ch), which he had to balloon after 25 minutes to keep it out of the top.

Hungary

The Hungarian National Championship was organized at an earlier date than usual, and bad weather outside messed up flying conditions for the first 4 rounds. Two flight totals for the winners were: (Kossuth Univ., Debrecen)

1. A. Ree	53:57	4. I. Soltesz	31:56
2. A. Egri	46:18	5. G. Varszegi	31:51
3. Gy. Buzady	33:43	6. Z. Ocsody	29:44

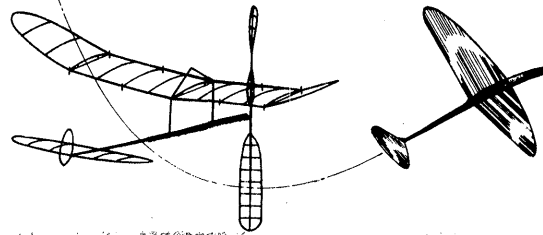
A new challenge cup contest was organized in Budapest, in the 14.9 m hall at the Politechnical University, and the conditions were better. The winners:

1. A. Ree	53:48	4. Gy. Buzady	30:37
2. A. Egri	44:01	5. G. Varszegi	26:39
3. K. Biro	42:01	6. Z. Reti	19:04

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



Indoor Stick

Junior

1. Tom Sova	18:26.1
2. William Schlarb	11:05.0
3. Bruce Paillet	10:47.0
4. Michael Kuehne	10:43.1
5. Barry Paillet	9:34.0
6. Michael Parykaza	9:19.4

Senior

1. Jan Serviates	14:45.0
2. Ronnie Ganser	14:09.8
3. Terry Kuehne	13:19.6
4. Jeffrey Annis	12:27.0
5. Susan Weisenbach	12:25.0
6. Dale Hacker	10:58.0
7. Dan Domina	8:36.7
8. Richard Hixon	8:18.3

Open

1. Jim Richmond	34:33.8
2. Clarence Mather	30:44.0
3. Ron Plotzke	28:14.2
4. Dan Belleff	26:55.6
5. Manny Andrade	25:08.0
6. Ron Ganser	23:09.7
7. Ed Stoll	22:51.0
8. Paul Tryon	22:35.4
9. Al Rohrbaugh	22:37.5
10. Wayne Zink	22:16.4

Paper Stick

Junior

1. Barry Paillet	10:37.1
2. Tom Sova	10:26.8
3. William Schlarb	9:47.8
4. Michael Kuehne	9:06.5
5. Steve Bandt	8:57.0
6. Kim Mather	8:08.6
7. Bruce Paillet	7:16.0
8. Timothy Noonan	7:09.4
9. Jason Tryon	4:44.0
10. Ronnie Stransky	3:37.6

Senior

1. Jan Servaites	16:45.6
2. Jeffrey Annis	11:47.9
3. Richard Hixon	11:30.1
4. Susan Weisenbach	11:29.2
5. Dale Hacker	10:32.2
6. Dan Domina	10:20.7
7. Ronnie Ganser	10:02.5
8. George Pharr	8:00.0
9. Terry Kuehne	7:24.0

Open

1. Jim Richmond	21:34.2
2. Al Rohrbaugh	20:20.3
3. Clarence Mather	18:50.6
4. Ed Stoll	18:24.0
5. Joseph Sova	16:44.7
6. Charlie Sotich	16:44.6
7. Bob Clemens	16:33.1
8. Dan Belleff	16:09.0
9. Ron Ganser	14:23.2
10. Larry Cailliau	12:35.3

Indoor Cabin

Junior

1. Tom Sova	11:23.4
2. Michael Kuehne	7:41.8
3. Barry Paillet	5:03.0
4. Bruce Paillet	4:55.0
5. William Schlarb	4:33.8

Senior

1. Ronnie Ganser	13:51.7
2. Dan Domina	13:43.2
3. Terry Kuehne	7:50.2
4. Dale Hacker	7:48.5
5. Susan Weisenbach	5:24.2
6. Jan Serviates	4:33.0

Open

1. Jim Richmond	20:25.2
2. Bucky Serviates	19:16.2
3. Ron Ganser	17:29.2
4. Charlie Sotich	17:19.4
5. Al Rohrbaugh	16:36.2
6. Wayne Zink	14:14.6

Indoor HLG

Junior

1. Marty Thompson	118.2
2. John Lorbiecki	100.2
3. Jim Haught	89.6
4. Michael Taibi	85.3
5. Michael Kuehne	85.2
6. Brian Pardue	82.3
7. Carl Johnson	80.8
8. Rod Wilson	78.0
9. Bruce Paillet	54.7
10. Robert Sylvia	69.6

Senior

1. Richard Hixon	116.0
2. Paul Andrade	108.6
3. George Pharr	105.7
4. Paul Tobie	104.9
5. Dan Domina	101.3
6. Jan Serviates	99.8
7. Bobby Hanford	96.1
8. Terry Kuehne	93.8
9. Gary Price	89.5
10. Susan Weisenbach	87.2

Open

1. Dennis Bronco	128.6
2. Robert Watson	123.6
3. Bucky Serviates	121.4
4. Ron Higgs	119.8
5. Rudy Kluber	114.0
6. Dan Belleff	110.0
7. V. Cunningham, Jr.	107.9
8. John Sites	107.7
9. Ed Franklin	105.3
10. Joseph Macay	104.8

The 1970 Indoor Nats was held in the Washington Park Armory in Chicago, and was blessed with good entry, very good conditions, and excellent performances. A higher proportion of Junior and Senior entrants made flights than in previous years, while many Open entrants never made it to the meet.

The meet format was the same as for 1969, with rubber events on Monday and HLG and Indoor Scale flying half a day apiece. Scale models were judged during the HLG flying, and the scale flying began promptly at 3 pm. Peanut Scale and Navy Scale were again "extra" events, sponsored by the Cloud Busters club of Detroit, and Erwin Rodemsky ran PennyPlane under the sponsorship of the Chicago Aero-nuts. An excellent crew of Navy timers was on hand both days, eliminating the need for volunteer timers used at both the '68 and '69 Nats. These timers worked hard and in a very conscientious manner, and were quite interested in doing a good job. Several contestants took time to say how pleased they were, and this word was passed on to the proper Navy officials.

This year the Indoor events had a new award - Indoor Category Champion. The specifications for the award make it similar to Grand National Champion, in that the winner must have the highest championship points from indoor events (only) of any Indoor entrant, regardless of age. Each contestant must declare intent to compete for this award, and may choose any three events to be scored in. (Actually, Category Champs are allowed to compete in half as many events as are flown in that category; Indoor has only five events in the Nats so three is the maximum number an Indoor Champ can declare.) Jim Richmond became the first Indoor Champion by winning first in each of his declared events. It was noted that Jim cheated himself - his entry fee covered five flights in each event, but he used only four of the fifteen flights to get three first places!

Besides the Navy crew, meet administration was handled by Bud Tenny and Jim Perdue, with Ralph Kuenz as CD for the Scale events. The Scale judges were Al Burczyk, Al Koehler and Robert Mosher, all of the Cloud Busters. They

worked for eight hours with only a fifteen minute break to complete the judging of 56 AMA Scale models, and all the Scale fliers owe them a special vote of thanks. George Pickel and John Hatch assisted with score posting at HLG, providing a welcome relief. Thanks to all who helped!

Two or three "happenings" stuck in the mind from the day of Indoor Rubber. Jim Richmond put his Paper ship up on its second flight, and it threaded its way through all the lights and stuff, hardly touching at all to rack up a fair margin of victory. However, when his FAI was up on its flight, the timer counted 15 contacts, with one or more tailslides as it drifted half the length of the site. In sharp contrast, Erwin Rodemsky put up five officials, all of which hung. Then there was the Navy timer who came back from a timing stint convinced he was a jinx. He had timed three members of the same family; each model had hung on a light fixture, and two of them on the same one! This meet also confirmed a suspicion about the light fixtures; I had been convinced each one had teeth up there. It was discovered that the lights could be lowered and the models lifted off, so I examined one of the fixtures while it was down. Sure enough, there were several sharp vertical protrusions well suited to "eating" models!

On HLG day the fliers were there very early, before 7 am. By starting time many fliers were zeroed in, but times didn't really start to climb until about 11 am. Dennis Bronco had good times early, and was essentially in a leading position most of the day. However, the rest of the places changed several times during the day. In the Junior division, Marty Thompson posted two good ones in seven tries early, but wasn't able to help his score in later attempts. Luckily, no one came close and he held his lead long enough.

Indoor Scale held few surprises, but a few of the models were a departure from the expected entry. A Ford Tri-motor, with the outboard motors geared to motors in the wings had its problems but finally made its flights. The model was very well done, and it was the opinion of several bystanders that the model was simply too small. Ron Martelet's Pilatus Porter was obviously a model built

PennyPlane Report - 1970 Nationals

by Bob Clemens

to fit the existing rules exactly - it was beautifully constructed, but ultra-light and flew very well. The construction was perhaps typical to lightweight indoor scale, but the model was covered with Microlite which had been inked to show all hatches, movable surfaces, etc. on the real airplane. The result was greater than usual scale markings with no weight penalty. Charlie Sotich and Jim Richmond had similar approaches, with Pilatus Porter and Turbo Porter models. Thus the flying part of the rules were emphasized, to the detriment of many models with more scale features. It is possible that this will result in rules proposals to more nearly equalize the concepts of flying vs. scale; at least this is being considered.

Very little mention has been made of Navy Scale, and perhaps more should be said. The event is judged by AMA rules, but must be a model of a Navy aircraft. The trophy for this event was donated by the Cloud Busters, in order to insure continuation of the event.

Other trophies for the extra events were donated as follows: PennyPlane (very nice desk pen sets) - Erwin Rodemsky; The Golden Peanut (First in Peanut Scale) - Flying Aces GHQ; Craftsmanship (Peanut) - Bill Hannan; High Point Junior (Peanut) - Long Island Association of Model Airplane Clubs.

Indoor Scale

Junior

1. Michael Kuehne	Pietenpol	105
2. Bruce Pallet	Pilatus Turbo Porter	83
3. Michael Parykaza	Pilatus Porter	78.3
4. Marty Thompson	PT-19	77.5
5. Barry Pallet	Hello Courier	72.5
6. Ronnie Stransky	Nesmith Cougar	61.5
7. Robert Sylvia	Piper Pawnee	47.5

Senior

1. Dan Domina		115.5
2. Terry Kuehne	Pietenpol	103.5
3. Brian Webster	Eindecker	103
4. Bobby Hanford	PT-19	102

Open

1. Ronald Martelet	Pilatus Porter	172.5
2. Earl Thompson	1911 Cessna	160.3
3. Jim Richmond	Pilatus Porter	154.7
4. Charlie Sotich	Pilatus Turbo Porter	151
5. Bucky Servaites	1911 Cessna	141.7
6. Frederick Stark	DeHavilland 29	141
7. Ken Johnson	Piper Vagabond	135 1/2
8. Don Garofalow	Corbin Super Ace	133.8
9. William Patton	SE-5A	126 1/3
10. Tom Peardon	Vickers Bleriot	116 1/2

Navy Scale

1. Joseph Macay	Curtis Seagull	151 2/3
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Peanut Scale Results

1. Clarence Mather Wittman	Buster	214
2. F. T. Stark		164
3. Don Garofalow	Nesmith Cougar	140

High Point Junior

Kim Mather	134
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Best Craftsmanship

Bob Clemens	Demosielle
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PennyPlane Results

Junior

1. Tim Noonan	6:32.2
2. Chris Clemens	3:57.0
3. Michael Parykaza	3:26.0
4. Jack Tisinal	2:55.0
5. Stephen Robbins	1:59.0
6. Giff Gaynor	1:38.0
7. Kim Mather	1:16.0
8. Tom Gaynor	0:16.0

Open

1. Clarence Mather	8:28.0
2. Erwin Rodemsky	8:16.0
3. Bob Clemens	6:48.0
4. Al Rohrbaugh	6:24.0
5. Fudo Takagi (1)	6:21.0
6. Dave Linstrum (2)	6:05.3
7. Charlie Sotich	5:58.8
8. Charles Markos	5:16.5
9. Wayne Zink	5:04.0
10. Donald Wright	5:03.0
11. Jim Richmond	4:55.0
12. Dave Linstrum (3)	4:38.0
13. Patty Thornhill	4:35.0
14. John Thornhill	4:28.0
15. Bill Hannan (4)	4:25.0
16. Gene Simpson	4:16.0
17. Dave Linstrum (5)	2:42.0
18. James Noonan	0:52.0

Proxy Open Fliers

(1) Ed Lidgard
(2) Hardy Brodersen
(3) Ron Plotzke
(4) Bill Bigge
(5) Jim Jones, Jr.

Can an indoor event be highly competitive, give reasonably good performance, use easy-to-build models, and be downright fun in the bargain? If the unofficial PennyPlane event held at the 1970 Nationals is any indication, the answer would seem to be a resounding Yes!

Making its Nationals debut, PennyPlane saw 28 contestants - nine Juniors and 19 Sr.-Open - turn in a total of 117 official flights. The Chicago Aeronuts sponsored the event, with Erwin Rodemsky serving as CD and Mrs. Rodemsky sitting in as recorder. Entry fee was - that's right - one penny!

Rules were purposely kept simple. The chief stipulations were that the models had to weigh, less rubber, at least as much as a new copper penny; (this is .1 oz.) wing span or total length could not exceed 18"; the motor stick could not exceed 10 inches.

Five minutes would have seemed good duration for such a model, but it didn't take many flights to show that a well-trimmed PennyPlane could do much better than that. Erwin Rodemsky set the early pace with a 6:43 flight on his first official. His ship was conventional, and covered with white tissue. Clarence Mather, flying a ship with very short wing posts and a large diameter prop, then took the lead with 7:14. These two models, as did many others, took advantage of the lack of restriction on wing chord to use wings roughly four inches or more in width.

Duration kept improving through the second and third rounds of official flights, as the contestants got the feel of their models, most of which had not been flown under high ceiling conditions before. Air conditions were very favorable, with only light drift. However, light cords and beams began claiming some victims as more models reached the vicinity of the 90' Washington Park Armory ceiling. Most trapped ships were ballooned down without incident or serious damage.

Rodemsky's third official flight climbed right to the roof, avoided getting hung up, and came down at 8:16. This gave him the lead over Mather, who had upped his best time to 7:27. Al Rohrbaugh made 6:24 for third place, while Dave Linstrum's model, proxy flown by Hardy Brodersen, did 6:05 for fourth, followed by Bob Clemens with 6:04.

The final official flights of Mather and Clemens told the story of the top three places. Clarence put up a splendid 8:28 effort to win Open; Rodemsky's 8:16 gave him second; Bob Clemens turned 6:48 to nose out Al Rohrbaugh for third place.

In the Junior division, Tim Noonan put up a terrific 6:32 flight on his first official and was never in danger after that; Chris Clemens took second at 3:57 and Michael Parykaza finished third at 3:26.

Trophies - beautiful desk pen sets made by Rodemsky - were presented to the top three finishers in each division and PennyPlane had made a successful showing at the Nats.

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members:

BUDD CHANDLER, 46701 Frances Lane, Utica, Mich. 48087
CAPT. JOE CHANDLER, CMR 2459 603 DASS, APO San Francisco 96570
ARTHUR MANSFIELD, 621 Glendale Pl., Tullahoma, Tenn. 37388

Honorary Members

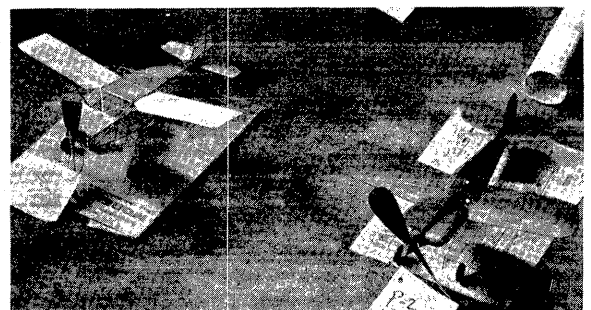
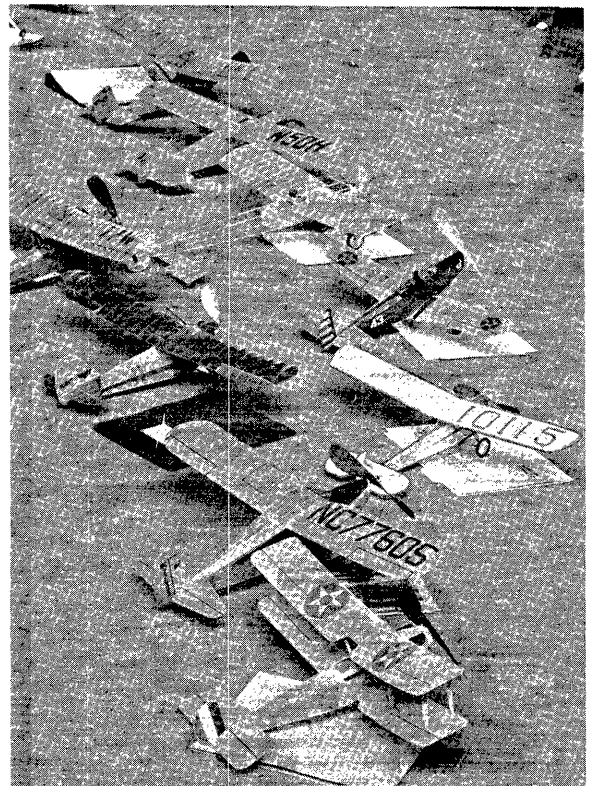
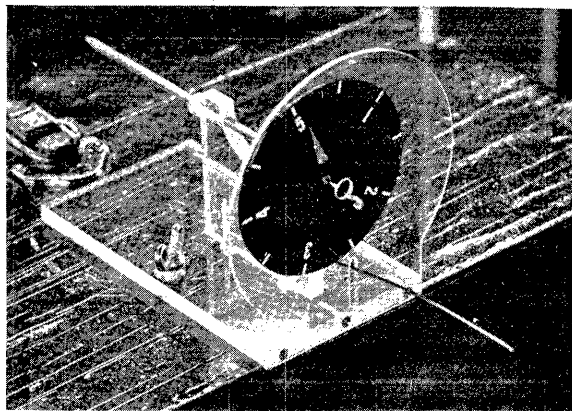
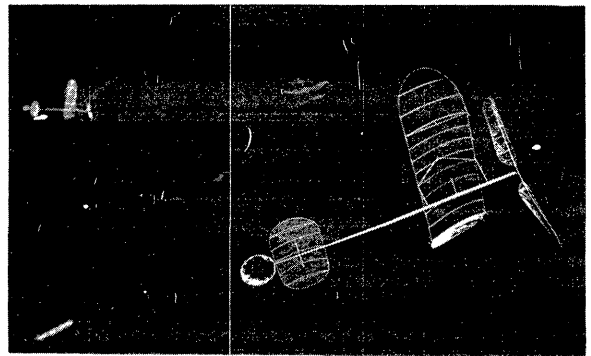
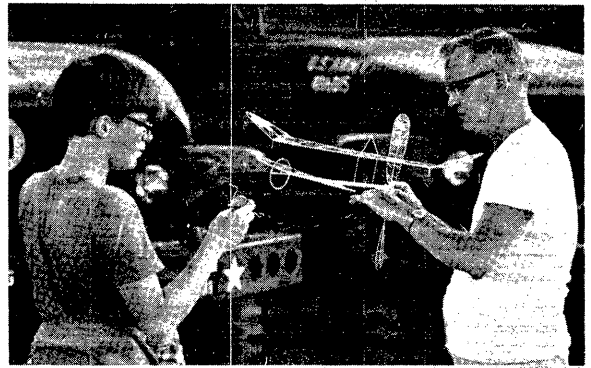
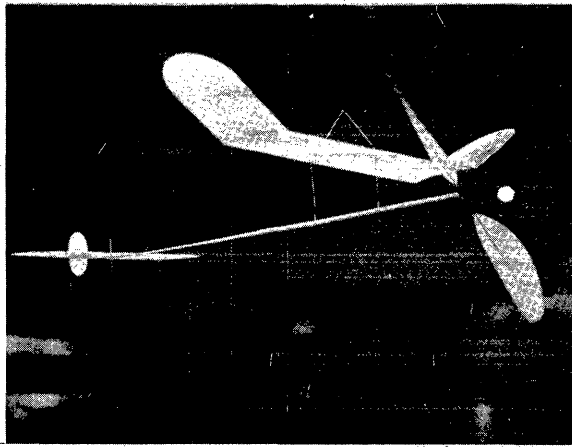
URS SCHALLER, Glaserbergerstr. 74, 4056 Basel, Switzerland

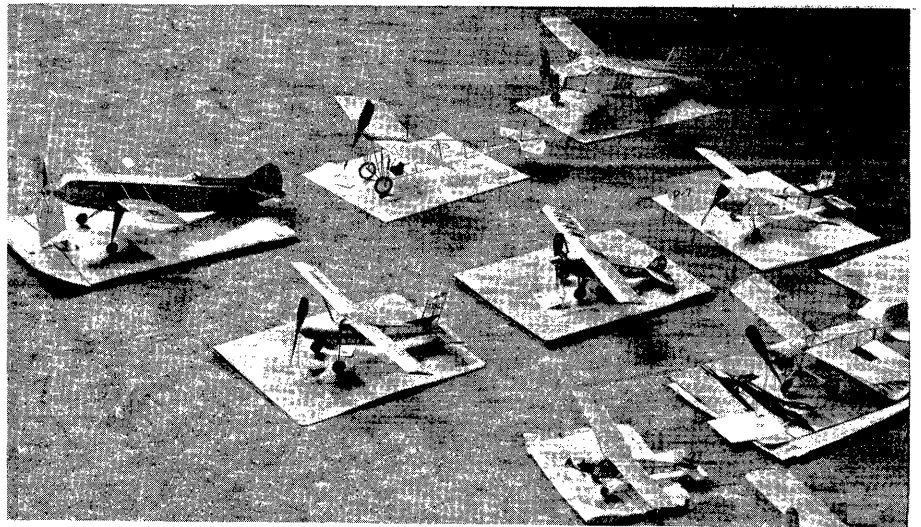
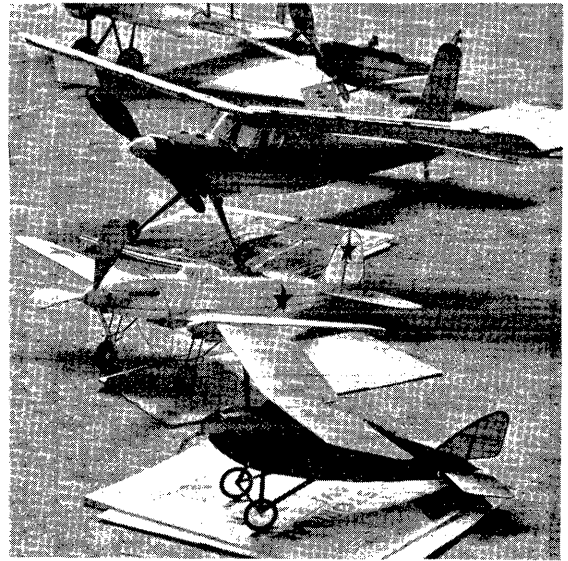
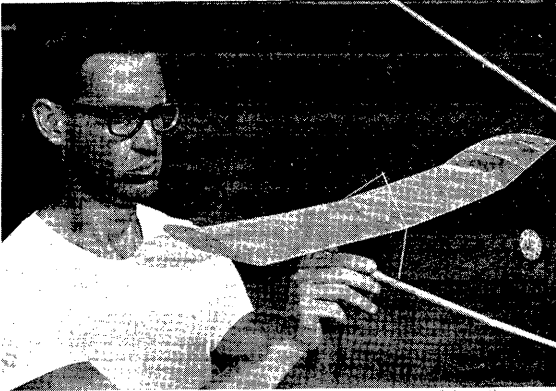
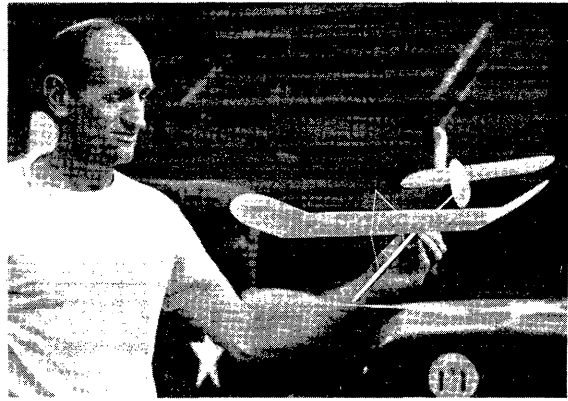
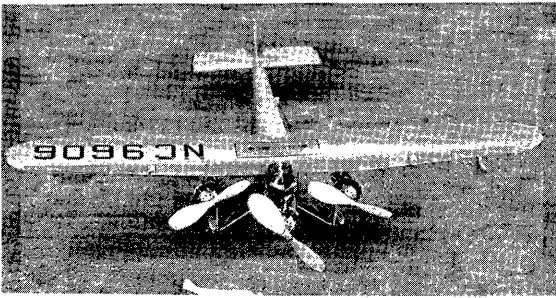
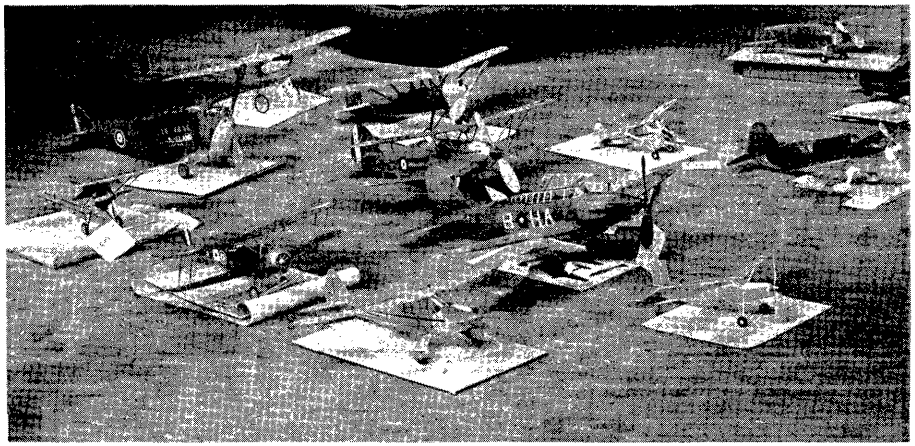
Recent Publications

"Sympo 70", the third NFFS Symposium Report, contains three papers of direct interest to indoor fliers, besides several other papers of interest to most FF'ers. These three indoor papers are:

"Optimum Chord For FAI Indoor Models", by Bob Platt. This paper explains various aerodynamic factors involved in choice of wing chord for FAI indoor models, and concludes that a substantial increase in chord over preset values would be beneficial.

"A Simplified Method For Estimating The Neutral Point Of New Designs", by Hal Crane. This paper is Hal's second commentary on the importance of proper location of neutral point, and compares results obtained with the explained method, the method outlined in Sympo 2, and the Cole method (Jan. '69 INAV). The gain from a few minutes of computation is explained: The flight efficiency of an endurance model airplane can be made optimum by using an adequate but not excessive margin of stability. - A5





"Computer Evaluated Aerodynamic Design Criteria For Indoor Models", by Walter Erbach. This paper details how a computer was used to "fly" a typical indoor model at different trim settings and with different amounts of stabilizer area, while solving for lowest power required for level flight. One implication of the results is that smaller stabilizers than usual provide a more efficient airplane. The conclusions include an indication that variations in indoor airfoils have essentially no effect upon power required for level flight, and that the computer simulation is a valid approach.

Where can you get a copy of Sympo 70? Send \$3.50 to Annie Gieskleng, 1333 So. Franklin St., Denver, Colorado 80210. To get previous Symposium reports, send \$6 to get both '69 and '70 or \$8 for three - '68, '69 and '70.

Pen Pal Wanted

Rudolf Drnec, Krasneho 4, Brno, Czechoslovakia, is interested in free flight scale models and would like to exchange correspondence with U. S. fliers on the topic. A copy of Czech rules is available from INAV by sending a stamped, self-addressed envelope with the request.

CONTEST CALENDAR

MARYLAND - College Park. Second Annual Eastern Indoor Championships, Sunday, Aug. 30, 1970, 8:30 am to 4:40 pm. Site is Cole Field House at Univ. of Maryland; 98' ceiling and usually has good conditions. HLG, Scale, Paper Stick, Indoor Stick, Easy B, Unorthodox Aircraft, Peanut Scale. For other details, and special rules on Peanut, Easy B and Unorthodox Aircraft, contact Bill Bigge, 5131 Mass. Ave. NW Washington, D. C. 20016, ph. 202-OL 2-5606.

NEW YORK - Long Island. Cat. II indoor contest at Cant-lague Park, Hicksville, L. I., Sept. 27, 1970. Site is 190' dia. dome, 50' high. HLG, Easy B, Indoor Stick, Paper Stick, Scale. CD - Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L. I., N. Y.

RECORDS? MAYBE!

1970 NATS, July 27, 1970, Cat. II (90' ceiling)
Washington Park Armory, Chicago, Ill.
Open Indoor Cabin - 20:25.2, Jim Richmond

FAI INDOOR REPORT

One Gram Model?

Anyone wishing to express an opinion pro or con about a proposal before the CIAM should send these comments to Dave Linstrum, 12 Holcomb St., Simsbury, Conn. 07060. The proposal would require the FAI model to weigh a minimum of one gram and permit the motor to weigh no more than one gram. Numerous comments pro and con have been aired here in the June and July issues of INAV, and copies of these will be furnished on request.

Meanwhile, a couple of new viewpoints have been expressed. Hewitt Phillips suggested that the basic model not be changed, but that it be required to carry a stipulated weight. This would tend to minimize the difference in model weight due to inconsistent wood supply, and would greatly simplify processing difficulties.

Paul and Nan Tryon brought up the valid point that a change in model specs late this year (the pertinent CIAM meeting is in December) would greatly handicap all who would try out for the team, in that there would be very little time to develop models before competition begins.

Because of the very late CIAM meeting, AMA HQ will help disseminate news about the results. All interested fliers should send a stamped, self-addressed envelope to AMA HQ in the middle of November. As soon as the meeting is over, the pertinent information will be sent out to all who request it in this fashion.

THE PICTURE STORY

Columns are numbered from top to bottom. Pictures by Bob Clemens unless otherwise noted.

Page 3 - Left Column

1. Jim Richmond's Paper Stick, touching down after winning flight.
2. Susan Weisenbach launches her Cabin job.
3. Very neat torque meter, designed by Paul Crowley and Bob Bienenstein.
4. Clarence and Kim Mather wind Kim's Paper Stick.

Right Column

1. Jim and Bill Haught prepare to fly a mike ship.
2. An unidentified mike ship climbs out.
3. Some of the AMA Scale entries.
4. Kim Mather's Nesmith Cougar (l.) and Clarence Mather's Buster. First in Peanut and high Junior in Peanut.

Page 4 - Left Column

1. Bill Bigge and his dirigible, after it lost some helium. It flew around with motor stick and prop suspended below the gas bag.
2. Ford Trimotor model. Outboard props driven by angle drive from motors in wings. (Chris Clemens photo)
3. Charlie Sotich checks his Paper Stick.
4. Ron Plotzke repairs his mike ship.

Right Column

1. More AMA Scale entries. Richmond's Pilatus Porter in lower right hand corner.
2. Clarence Mather and his Paper Stick.
3. AMA Scale entries; PT-19 at top, Helio Courier next, Stormovik by Mather, Waterman Racer by Bob Clemens.
4. Peanut Scale entries. Demoiselle in top center by Bob Clemens; winner of Best Craftsmanship trophy.

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

New Members!

EDWARD CATTEY, 39 Pequot Rd., Wallingford, Ct. 06492
MELBURNE C. OICKLE, 119 Martha Rd., Glen Burnie, Md.
21061

LARRY REIMER, 1321 Ruger Ave., Janesville, Wis. 53545
EDMUND A. WINTER, 1401 Longmeadow St., Longmeadow, Mass.
01106

Honorary Members

JOHN BLOUNT, 3 Cromwell Hill, Luton, Beds, England
GORDON BURFORD, 51 Jetty St., Grange, S. Australia,
Australia 5022

JULIO H. FERREYRA, Ateneo Popular de Versailles,
Aeromodelismo, Roma 950, Buenos Aires, Argentina

Snowed Under!!

Although several things appear to have been forgotten, we prefer to believe certain matters have merely been a bit delayed! That is, if you have NIMAS Award certificates coming, or if you won a place in the NIMAS postal - any of several things which must be "spare time" projects here - be assured that they will be completed reasonably soon. However, due to an acute lack of time - membership and subscription renewals are not being acknowledged unless they contain some message which requires an answer.

Site Survey Continues

Homer Adams, Box 491, Rome Ga. 30161, is still sending out site survey forms. If you received one and haven't returned it, or if you get one soon, please return it so he can complete the initial survey. For those who haven't heard of this effort, the end result will be a pamphlet or book which lists all the sites in use around the country, site characteristics, and a contact man. If you're moving or traveling, you can visit these sites and maybe join a flying session.

A Survey

Beginning in March, those who received renewal notices also received a questionnaire which outlined a new event concept. This questionnaire was worded thus:

What would be your reaction to the following concept:

1. Novice event- 3 or 4 gram minimum weight.
2. Intermediate or regular competition event- 1 gram minimum weight.
3. Expert or Records class- no minimum weight.

All models to be 65 cm span and flown in accord with standard AMA rules except that fliers would be permitted to enter only one of the three events, thus declaring himself to be novice, intermediate or expert and taking his lumps as they come. Also, what would be your reaction to disqualifying flights which rafter-bang or ceiling scrub? The intent of this concept is to relieve the pressure to have super-good wood, and to increase the useful life of the models and to make competition more fun and less pressure.

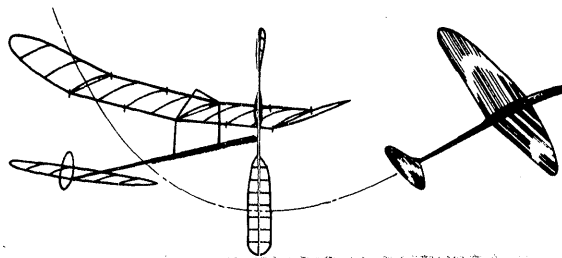
In stark contrast to the questionnaire circulated by Clarence Mather (see FAI Indoor Report), this sampling of the NIMAS membership yielded the following results from a total of 54 responses:

Against the concept - 14 votes (26%).

For some part or all - 40 votes (74%).

For (with reservations) - 15 out of the 40 above, or 38% of total For vote.

13 of those with reservations would permit ceiling scrubbing, especially for Novice and Intermediate classes. Other suggestions were to have only one extra class, and it was suggested that either 1 gram or 2 grams be the top weight. 75 cm max span was also suggested. Finally, one



suggestion was to require contestants to advance after winning a certain event. However, this would place us in a position of creating a new indoor event to attract new fliers, then making the successful ones junk their models and build new ones just as soon as they get the old models to fly decently!

Since so many people favor the concept of a weight limit AMA event, the next logical step would be to set up trial events at local contests and see what the participation would be. Perhaps PennyPlane will fill this need, or perhaps PennyPlane would fill the novice event slot. Perhaps another name would be more appropriate for that event - such as "introductory" event. After all, the purpose of the event is to provide a competitive event which emphasizes design and flying skill in place of choice wood and handling skill required for "full house" indoor. Any advancement to lightweight classes should be made by the fliers themselves, and true novices would have to be separated from more experienced fliers to give them a chance. Much has been said about how wonderful the AMA Cub/Delta Dart program is for beginners; can you imagine how much like Easy B the event would become with experts flying it?

FAI Benefit Meet

The concept "FAI Benefit Meet" was developed by Clarence Mather, and is this: a model contest is held which offers low cost prizes. Excess entry fees are donated to the FAI Inboard Travel Fund (fund maintained largely by FAI program fees and donations). The meet can be for any type of model, and a couple of outdoor FF meets held in 1969 donated their "take" to the Indoor Fund! The point is this: the Program can use the help, and these small meets can be fun.

Recent Publications

"Salt Mine Saga", by Clarence Mather, is his story of the 1970 Indoor World Championship. It is well written and interesting, and covers points not told in other articles on the subject. It appears in the Oct. '70 Model Airplane News.

NIMAS Awards

The NIMAS Awards program was proposed in its final form in Dec. '64 INAV. The concept is that NIMAS Awards would be "an incentive award for performance which did not exceed the existing record but was better than average flying." Since then, 128 fliers have received Awards, and 17 of these have received all three awards in a given category to become NIMAS Aces. The program offers an award for three levels of performance (Silver, Gold and Diamond) in both HLG and rubber flying, for each AMA ceiling category for a total of 18 Awards. The Awards are certificates suitable for framing or for keeping in a scrapbook. A parallel system with lower qualifying times is set up for Juniors. For more details, send to Box 545, Richardson, Texas 75080 for application blanks. The latest flier to gain awards is Dan Domina; Crane is a Cat. I Ace.

SILVER CAT. III GLIDER AWARD - 0:58.0, Dan Domina

GOLD CAT. II GLIDER AWARD - 0:57.0, Dan Domina

GOLD CAT. II RUBBER AWARD - 26:56, Hal Crane

FAI INDOOR REPORT

Advance Information

There has been considerable concern over possible changes in the specifications for FAI Indoor models. If any changes are made, this will be accomplished at the CIAM meeting in December. Since this is a very late start toward building models for the Team Selection Program next year, special arrangements are being made by AMA HQ to get the word out. If you want information of rules changes by the CIAM, send a stamped, self-addressed envelope to AMA HQ with your request.

FAI Questionnaire

Last spring AMA HQ distributed a questionnaire from Clarence Mather; the questionnaire covered both the specs

for the model and the Team Selection Program. Below are listed the results of this questionnaire, in abbreviated form.

- 46 fliers approved the 1969 Team Selection Program, and 11 suggested changes.
- Weight rules for FAI Indoor models were voted down, by the margin of 40-14.
- Given the assumption that some form of weight rules must be adopted, the vote was:
 - one g min. model/one g max. rubber - 8.
 - one g min. model weight only restriction - 36.
- Choice of model size if min. weight rule not adopted:
 - 50 cm - 4.
 - 65 cm - 35. (present size)
 - 75 cm - 17.

CD's Needed!

It is quite likely that the next Team Selection Program will closely parallel the 1969 program managed by Clarence Mather, in view of the good acceptance of the 1969 program as outlined above. It will be necessary to have many CD's to help run the program, and all who are interested in helping are requested to drop a line to Box 545, Richardson, Texas 75080.

CONTEST CALENDAR

Only one listing has come in to firm out the schedule for this season, so let's get them in! Flying sessions, contests, club meetings and special programs are all good things to list here. Please be sure to send information to Box 545, Richardson, Tex. 75080, by the 5th of any particular month to assure listing in that month.

VIRGINIA - Hampton. Record trials at Willis School, Oct. 17-18, 1970. Hal Crane, 4002 Buchanan Dr., Hampton 23369.

STATE OF THE ART

The model of the month is Jim Richmond's Cabin model, which currently holds the Open Cat. II Cabin mark at 20:25 and won both the 1969 and 1970 Nats. Jim describes the model in this way:

The plane is a conglomeration of parts from other designs and therefore qualifies for the kind of name* that Manfred Koller hangs on his ships except that it has proven itself to be deserving of something better. Maybe I should call it "Lo FAI" or something since it uses a heavy old Bienenstein "Lo Down" fuselage with modified gear and tail assembly, and an FAI wing and prop. It is a good thing that the fuselage is so strong, because I blew a motor in it prior to my Nats flight and was able to repair it (after a few hours of desperate work and a few yards of patching film). Lesson: "don't ever try to attach a motor to a rusty hook." I sanded it smooth and coated it with cement before the next try. The plane went off with about 1620 turns on the record flight and climbed to about 67 feet.

*Koller claims to copy other models, and names the result "Bastard"!

RECORDS? MAYBE!

CAT. III RECORD TRIALS, Aug. 2, 1970, 180' ceiling
Santa Ana Hangar, Santa Ana MCAS, Calif.
Senior AMA Cat. III FAI - 23:58.6, Bill Gibbs

2nd ANNUAL EASTERN INDOOR CHAMPS, Aug. 30, 1970 Cat. II
Cole Field House, Univ. of Maryland, 98' ceiling
Open Cat. II Helicopter - 7:01, Tom Vallee

THE "TOP TEN" LISTINGS

The Top Ten Easy B listings began in September '69 and are based on the winning flights from the Annual NIMAS Postal Meet, which is held during March and April each year. After the Postal, fliers can submit new times to "bump" their way higher in the listings. Fliers who did not enter the Postal can submit times to make it into the listing.

The Top Ten Ceiling Dodgers came into being in Jan. '70, and is set up to encourage experimentation on model design and trim. The idea is to get the highest time possible in a given site, without letting the model touch the ceiling.

Any model which will meet AMA rules for any indoor event will qualify for the Ceiling Dodgers. The basic Easy B rules in the AMA Rule Book define the size of the Easy B, and the models must have solid motor stick and tail boom, have unbraced surfaces and be covered with paper. Ground rules for both listings are that flights are to be made according to AMA rules. Submit the times and measure the ceiling height of your site according to FAI measure (see Rule Book). Also submit your estimate of how high the model went (for Ceiling Dodgers only). The

times will be corrected to 35' ceiling height and listed in order as below.

Top Ten Easy B

OPEN	Time/ceiling	Fudge	Adj. Time
1. Bob Platt	558.8/20'	1.32	739.2
2. Clarence Mather	556/22.3'	1.26	696.6
3. Joe Portecorvo	485/17.75'	1.404	681
4. Hal Crane	511/20'	1.32	675.9
5. Harry Cook	538/26'	1.16	624.2
6. Jim Walters	382/17.75'	1.404	536.4
7. Fudo Takagi	365/21'	1.29	459.6
8. Howard Haupt	312/21'	1.29	402.8

TOP JUNIORS

1. Dave Sandelius	449/17.75'	1.404	630.5
2. Rick Sironen	331/17.75'	1.404	464.8

Top Ten Ceiling Dodgers

	Time/ceiling	Fudge	Est. Altitude (to 35')	Score
1. Stan Chilton	1115/35'	1.0	33'	1115
2. Tom Vallee	810/20'	1.32	19'	1068.2
3. Hal Crane	682/20'	1.32	19'	850.2
4. Dick Hardcastle	602/23'	1.23	22.5'	743
5. Hewitt Phillips	528.2/20'	1.32	15'	698.7
6. Howard Haupt	456/22'	1.26	15'	575
7. Harry Cook	471/26'	1.16	24'	546.5
8. Jim Davidson	280/13'	1.64	9'	459
9. Richard Sironen	308/37'	.972	33'	396.6
10. Roger Schroeder	239.5/15'	1.53	13.5'	365.9

To submit times for listing in either Top Ten, send the time, ceiling height and estimated altitude to Bob Putman, 507 Darlene, Arlington, Tex. 76012 by the first of the month that the listing is intended for.

INDOOR ELSEWHERE

Indoor activity is growing in South America, and is centered primarily in Argentina and Uruguay. The Argentine indoor Nationals took place on March 27, 1970 in a 15 m site.

1. Hector A. Beggiatto	778	851	1629
2. Eduardo A. Grippio	880*	742	1622
3. Alberto A. Barilari	732	867	1529
4. Nereo Beggiatto	772	719	1491
5. Domingo A. Sassone	703	773	1476
6. Alberto C. Collazzo	517	552	1069
7. Luis M. Coronel	372	372	744
8. Hector M. Ferreyra	210	245	455

*New Argentina national record.

CONTEST RESULTS

Two fliers, Bob Clemens and Hal Crane, made partial reports of the activity at the Maxecutors' 2nd Annual Eastern Indoor Championships. The attendance was somewhat low, but the competition was tough in the good conditions which prevailed in an excellent site.

Open HLG

1. Stitts	92
2. Thornhill	89

Jr. Easy B

1. Fisher	5:51
2. Chris Clemens	4:29.5
3. Ronnie Ganser	4:25

Open Easy B

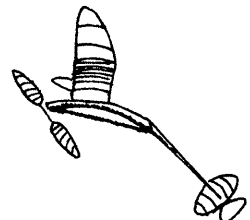
1. Bob Clemens	11:01.1
2. Bob Platt	10:58.8
3. Tom Vallee	10:49

Paper Stick

1. Bob Clemens	16:11
2. Tom Vallee	15:54
3. Bob Platt	15:43

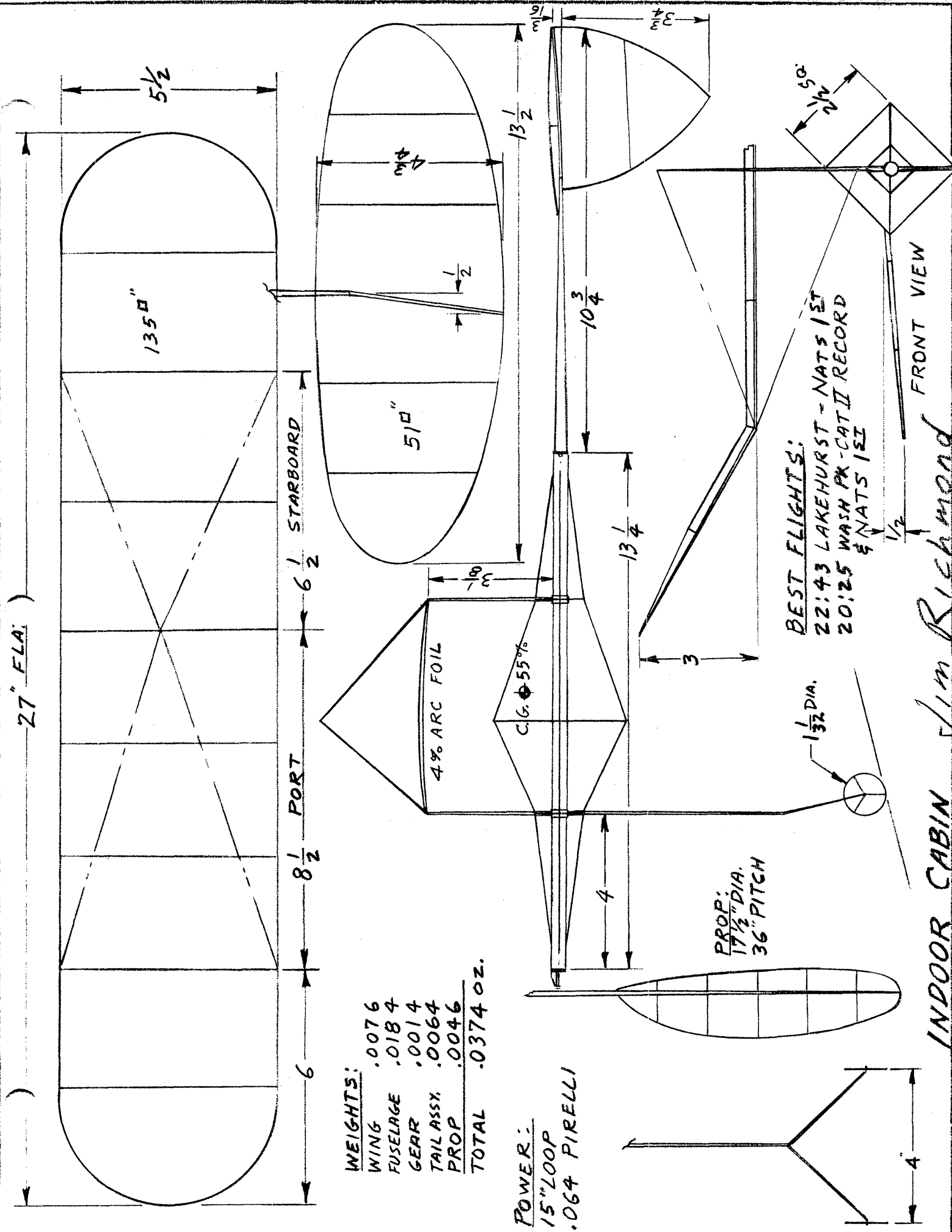
Indoor Stick

1. Bill Hulbert	27:06.2
2. Hal Crane	26:56.4
3. Bob Platt	25:38



TRY IT WITH LESS WINDS, SAM





WEIGHTS:

WING	.0076
FUSELAGE	.0184
GEAR	.0014
TAIL ASSY.	.0064
PROP	.0046
TOTAL	.0374 oz.

POWER:
15" LOOP
.064 PIRELLI

BEST FLIGHTS:
22:43 LAKEHURST - NATS I ET
20:25 WASH PK - CAT II RECORD
NATS I ET

INDOOR CABIN Jim Richmond

CHANGE OF PACE

Last month we had a photo of Bill Bigge's model dirigible which actually flew. In response to my query for details of this model, Bill sent the following:

The airship weighs .175 oz. covered, .097 bare without fins or accessories. The frame is all .040" sq. medium soft balsa with dacron bracing. The center of gravity of the aerostat is well behind the CG of the displaced air. Consequently no attempt was made to save weight in the power unit slung under the nose.

Speed is about 2 feet per second on just over one row of knots in a loop of .041 pirelli. The prop is an old 15" x 37"!

Gross lift is about .5 oz. on methane, and roughly 1.0 oz. on helium. The Microlite weighs about .00006 oz./sq. in., so the surface is about 1300 sq. in. Polyethylene dropcloths are available as light as .00013 oz./sq. in. - that's getting pretty close to condenser paper. The stuff has pretty good immediate or slightly delayed (seconds) elastic recovery of stretch. It can be shrunk with heat and patched like microfilm. I have been using it for small airplane-like kites and it looks promising for indoor/outdoor models similar to PennyPlanes. It gives less strain on framework than mylar and has no moisture absorption. Also it holds gas pretty well.

It should be quite feasible to make a sturdier airship covered with polyethylene for about 0.4 oz. It would probably be worthwhile to taper the stringers and use smaller cross-section members for the rear rings.

A LOOK AT YESTERYEAR

Microfilm - 1941 Style

The commentary below is a translation by Manfred Koller, from a 1941 German model supplies catalog.

General items on indoor models:

Building and flying indoor models has been done as a sport since 1937. Since it is a principle not to use foreign materials (at that time WWII forced the Germans to limit expenditures of pounds and dollars for war imports), we have not reached the standard of the other countries which also fly indoor models.

Nevertheless, the performance of German models, still using some foreign materials (they mean balsa), is so high that every modeler who tries this kind of modeling gets most enthusiastic about it.

The development of these models depends upon keeping the whole model light. Even the covering material plays an important role. Thus high performance indoor models are covered with microfilm, which has been available in Germany since 1937.

The technique of covering indoor models with microfilm.

Before starting you must have the following:

1. A large basin of lukewarm water; the basin must be thoroughly cleaned before filling.
2. A hoop consisting of a frame of wires with two bows.
3. A small bottle of UHU-microfilm. (comment by Manfred: This solution was sold by a big firm which produced a glue called UHU-hard. The solution was still available in the late 1950's. I tried one bottle, getting film with red, green, blue and silver, but it was a thick film which seemed heavier than condenser paper.)
4. A small brush, and the wings and stabilizers of the model.

First, place the wire frame of the hoop on the bottom of the water basin and pour (they say drip or trickle) four or five drops on the surface of the water. See that the drops are placed in a line, so the film is gets large enough to cover the hoop. Do not drip all drops at the same place on the water! If you do not use colored microfilm (red, green, yellow or blue), you can see the film only by looking on the water from the side, thus seeing the film in all colors of the rainbow. Two minutes later you lift the hoop to the surface of the water. When you are sure the hoop is covered on all parts with film and it is overlapping the hoop all around, pull the frame up very carefully since by moving fast there is danger of tearing the film. Hold the hoop vertically for a few seconds so the water can drip back into the basin.

Then the covering begins. (There were no remarks about drying or storing the film for days or even hours - Manfred) Wet the frame with saliva and place the part to

be covered on the film, where it sticks by adhesion. To remove the overlapping parts of the film, use the fine brush dipped in glue and guide the brush around the outline one or two cm away from the edge of the model. The film will melt immediately to the edge of the model and we can remove it from the hoop.

Though the technique sounds relatively simple, a certain amount of experience and practice is necessary. This is especially true when removing the film from the water; it tears very easily and the work should be done very carefully. If one has a few failures it is not too bad, because one bottle of UHU-microfilm lasts for 10 or 20 models.

HINTS AND KINKS

This article by Richard Miller comes from an early INAV, but it is still a good idea today.

An Indoor Light Box

I don't think I've built a single HLG wing or stab in the last few years but what I thought how nice it would be to work over a piece of glass which was illuminated from below and thus be able to watch the sanding as it progressed. The idea finally caught up with me and I went off to the neighborhood glass shop and got the fixin's, stopped at the local lingerie shop for some gift wrapping paper and picked up a GE bulb FG (for gliders?) #1048-AX which is a tubular frosted bulb about five inches long. An hour after getting home I had used this assortment of odds and ends to make a stabilizer and was very excited about the results.

The first place that the under-lighting came in handy was in placing the template on the sheet of balsa. Grain doesn't always run parallel to the edges - why should the surface cut from the plank? After some preparatory planning the stab-to-be was placed on the glass for the majority of the sanding. Not only was it possible to work much more quickly by this method but the fine graduations of light which showed through the wood permitted a degree of control in sanding the surface that I had never before experienced.

The technique need not be limited to the HLG however. It should prove just as handy on motor stick and tail boom blanks for mike and paper ships as well as on tapered sheets from which spars are cut. Of course, if anyone is still carving wooden props the application is obvious.

The pieces of glass I got from the glazier measured 6" x 24", one frosted and one clear, and were taped together. The use of frosted glass (like the back plate on a camera) was to diffuse the light. I got the gift wrapping paper in case the diffusion provided by the glass wasn't adequate - and it wasn't, so one layer of the paper was sandwiched between the two layers of glass. The bulb was frosted for the same reason and was laid end-wise under the glass-paper-glass sandwich which itself was supported on a couple of cans.

Although the glass didn't cost much - \$2.50 for the two pieces - I think you can do better. I looked for, but could not find, ordinary glass shelving. These standard glass shelves have several advantages, not the least being that they are manufactured in the long thin shapes we want. Secondly they usually have rounded edges which the glazier's glass doesn't - thus the tape. Finally they are designed to be supported at their ends with a load between. If charring were a problem you might try some of the asbestos or glass cloth used by photographers to diffuse spots or floodlights. Otherwise two such shelves, with opaque paper between them might be better. And the ideal solution to the light source might be fluorescent bulbs which give off a diffused light and come in a variety of lengths.

QUESTIONS AND ANSWERS

42. If a paper stick and a microfilm model of the same design are balanced to the same margin of stability, will they fly alike?

Two models of the same design, balanced to the same margin of stability, and adjusted the same (including turn radius, wing warps and thrust line), should fly in similar fashion. That is, recovery from ceiling scrubbing and collisions, flight attitude and power handling capability should be the same. However, the paper ship will be about 70% heavier and thus will have significantly lower flight times in virtually all circumstances. In other words, if the models weighed the same they should fly the same.

INDOOR

NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Honorary Members

FRIOLI ADALBERTO, Via Gambalunga 10, 47037 Rimini (Forli)
Italy

Family Memberships

BRENDA McDOWELL, 205 N. 4th St., Champaign, Ill. 61820

Change of Address

DAVE LINDSTRUM, 972 Plum Grove Circle, Buffalo Grove, Ill.
60090

AMA Election

By the time you read this, you doubtless will have an AMA ballot to participate in the election of an AMA president to replace John Patton who declined a nomination for another term. Also at stake this year are District elective offices for even-numbered AMA Districts. Of course, the other District offices (Contest Board members, Contest Coordinators and Associate VP's) are indirectly involved since each VP candidate submits a slate of his appointive officers at the time he accepts the nomination.

Thus, you can help assure proper functioning of your District by informing yourself of the capabilities of the candidates and his appointees, supporting the best slate of officers and encouraging fellow AMA members to vote for them also.

Two regular nominees are on the ballot for President, and Cliff Piper (Dist. I VP) is running on a write-in campaign. The other two candidates are John Clemens, known far and wide for his Nats publicity work, and John Pond, an old-time FF flier and most recently known for his work in establishing the Old Timer FF activity at its present popularity. It has been shamefully traditional for less than 20% of the AMA membership to participate in these elections. Is it possible that we might muster a few more voters this year?

First Come, First Served

Joe B. Barkley, 1308 Koblan Dr., Hixson, Tenn. 37343, has a copy of Ron Warring's "Indoor Flying Models" in fair condition with all pages intact. He will sell it for \$1 postpaid to the first applicant. The book was published in 1946, and is quite interesting as a source of historical information.

FAI INDOOR REPORT

Team Selection Chairman And Committee Chosen

Bud Tenny has been chosen as Chairman of the 1971 Indoor Team Selection Program. The following fliers have agreed to act as members of the Indoor Committee. They will assist with final decisions about the program and help coordinate the program in their area. All fliers who are interested in the program are urged assist their nearest coordinator in lining up CD's and sites for the qualification trials.

Bob Gibbs
5005 Halifax Circle
Cypress, Cal. 90630

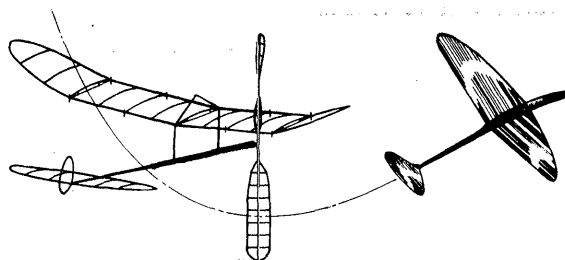
Paul Crowley
32604 Tecla
Warren, Mich. 48093

Bob Dunham
P. O. Box 7151
Tulsa, Okla. 74105

Hal Crane
4002 Buchanan Dr.
Hampton, Va. 23369

CIAM Agenda Settled

The text below came from a report to Dave Lindstrum from Luigi Bovo, Chairman of FF Subcommittee. It was abstracted from the complete report by Mr. Bovo to the Subcommittee; presumably this is the only proposal on the agenda affecting Indoor, since this is the only one mentioned in the report.



B. Proposal from the S/C, after the Indoor World Championship in Romania. The proposal is:

Add to par. 3.4.2 - The weight of the model without rubber shall not be less than 1 gram.

Reasons:

Models are easier to build and this should attract more people in agreement with the CIAM policy as discussed during the 1970 Bureau Meeting.

Models are stronger (the percentage of crashed models in Slanic Franova was over 50%).

Performance is reduced, making it easier to organize a World Championship should the number of entrants further increase, as hoped.

Indoor World Records

The record listing below was furnished by AMA HQ, and was current to approximately Oct. 1, 1970.

Cat. I	21:06	9/13/69	Jiri Kalina	Czech.
Cat. II	27:28	6/7/70	Andras Ree	Hungary
	*30:07	8/26/70	Jiri Kalina	Czech.
Cat. III	33:07	8/3/70	Jim Richmond	U. S. A.
Cat. IV	45:40	9/22/62	K. H. Riecke	W. Germ.

*Tentative record; will supercede 27:28 mark if it is homologated.

INDOOR ELSEWHERE

Last 1970 Cardington Session

While reporting these results, Bruce Edwards said, "On Sept. 27 we had our last meeting for the year at Cardington and our first competition, so this really could be labelled our 1970 Nats. Conditions were perfect, and I do mean perfect. Once into pattern the models stayed centered. To all us newcomers we suddenly found out what indoor is all about."

1. Reg Parham	29:55	*33:13	63:08
2. Stan Wade	26:17	27:48	64:05
3. Laurie Barr	26:16	25:48	52:05
4. John Blount	25:21	23:48	48:41
5. Mike Fantham	17:24	18:02	35:26
6. Martin Shepherd	17:40	16:58	34:38
7. Bruce Edwards	13:40	16:38	30:18

*New British record and first 30+ 65 cm flight in England.

CONTEST RESULTS

LIAMAC Indoor Meet, Sept. 27, 1970, Cantiague Park, Hicksville, New York. 50' ceiling.

<u>Jr. HLG</u>		<u>Sr./Op. HLG</u>	
Bob Dujat	62.8	Don Edson	75.2
Ron Stransky		Ed Franklin	
Barry Pallet		Art Slater	
<u>Easy B Jr.</u>		<u>Easy B Sr./Op.</u>	
Chris Clemens	5:45	Bob Clemens	9:04.8
Barry Pallet		Frank Haynes	
Bob Dujat		Bob Nelson	
<u>Scale Jr.</u>		<u>Scale Sr./Op.</u>	
Barry Pallet	106	Don Edson	155
Bruce Pallet		Don Garofalow	
Gerald Jones		T. Quermann	
<u>Indoor Stick</u>		<u>Paper Stick</u>	
Don Garofalow	9:58	Bob Clemens	9:32.4
Joe Nuszer		Frank Haynes	
Jean Pallet		Ed Franklin	

Jr. Hi Point - Barry Paillet
 Sr./Op. Hi Point - Jean Paillet
 Meet Hi Point - tie between Barry & Jean Paillet

Special Thanks to Pan Am Athletic and Social club for continued sponsorship of this meet!

PAPER STICK PERFORMANCE SURVEY

Recently a question came up about who might be rated as "top paper stick flier". This is a difficult question to answer, since such a rating might be established by any of several methods of evaluation. However, information necessary to make such a choice is presented in the chart below. Names were presented essentially in the order they were taken from back issues of INAV; all flight times were converted to Nats Championship points, since these points express performance based on top time. For example, for a top time of 20 minutes, winner gets 100 points and a time of 15 minutes would get 75 points, regardless of numerical contest placing. All the scores below are from Nats Paper Stick results for the year heading the column.

	'62	'63	'64	'65	'66	'67	'68	'69	'70
Klintworth	100		100	86	88		94	62	
Bigge	94	62							
Gough	89								
Stoll	86	99		78	100			79	85
Atwood		100	89	87					
Sotich		82	96	81	70	80	90	68	78
Mumper			99	89	77		99		
Kopeccky				100					
Cummings				95					
Hindes				90					
Richmond				87	76	75		100	100
Randolph					94	100	100	62	
Powell						95			
Gitlow						91			
Belieff							99	67	75
Rohrbaugh					75		75	75	95

QUESTIONS AND ANSWERS

43. On a C.M.O.S. chart, what is the meaning of the 0% notation?

Simply put, 0% margin means that the model would have neutral stability; that is, there would be zero restoring force to right the model after an upset. "Would have" is the correct statement, since we are using a stability chart designed for A-2 gliders. Indoor models have different constants, but the method and chart remains valid for comparison if not for absolute measurements. If the proper chart yielded a negative value of stability margin, the model would tend to diverge farther after an upset. A positive margin would indicate that the model will tend to right itself.

The exact amount of error in the NIMAS C.M.O.S. chart has been estimated to be between 15% and 40%. For our purposes we simply say that 0% to perhaps -8% margin (as computed on the NIMAS chart which appears in Jan. '69 INAV) is about ideal for most indoor models in average to poor conditions. We may be able to use -15% for ideal conditions for record attempts, but the charts in INAV will continue to be computed for 0% for simplicity.

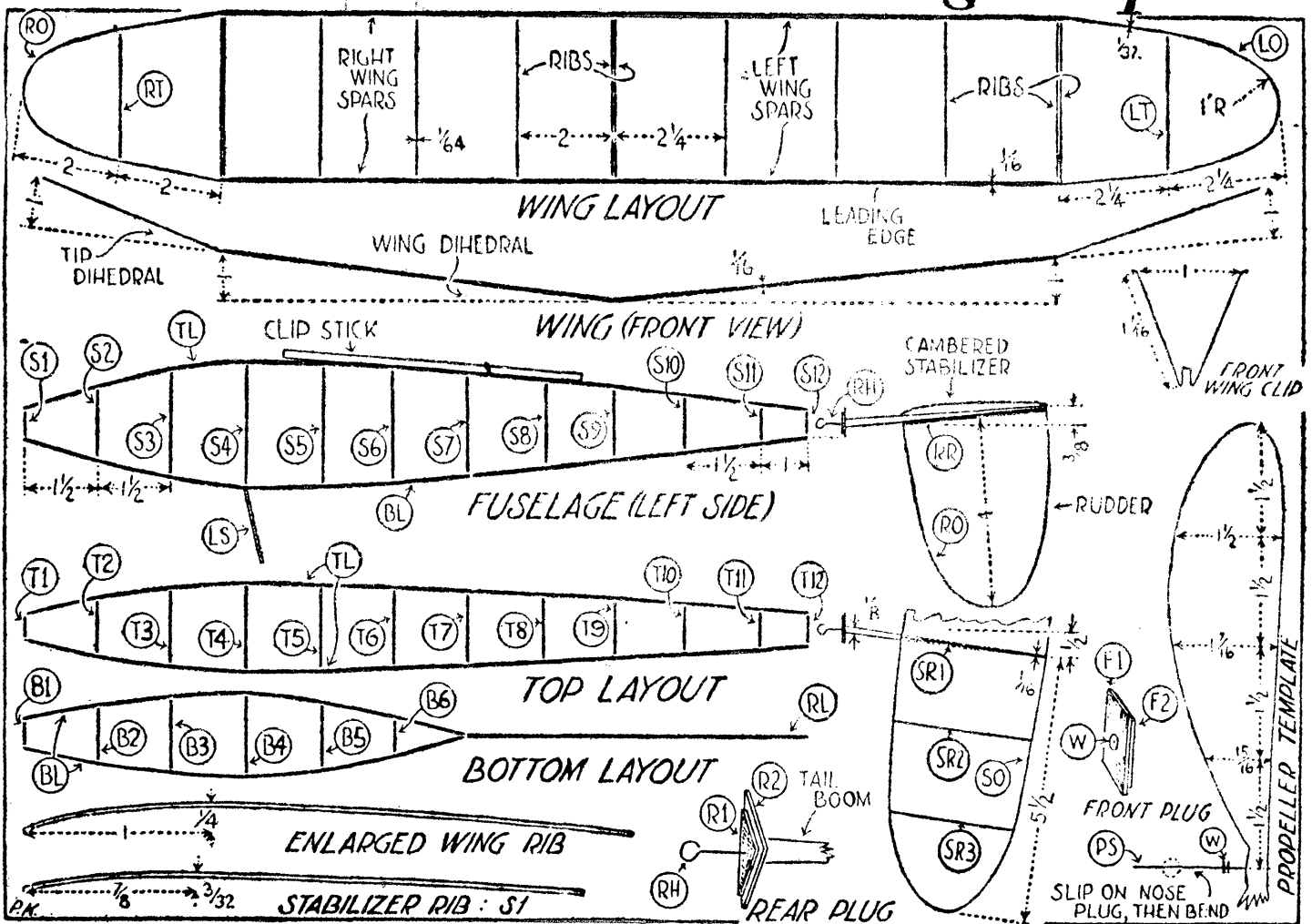
STATE OF THE ART

The model of the month is Tom Vallee's late Cat. I cabin model "Snarf". It twice broke the record, and was an excellent approach to "tailoring" a model to a specific site (JFK Jr. High, 20' ceiling). Part of the design concept was short-coupled fuselage and low pitch prop to insure reliable flights in small low ceiling sites.

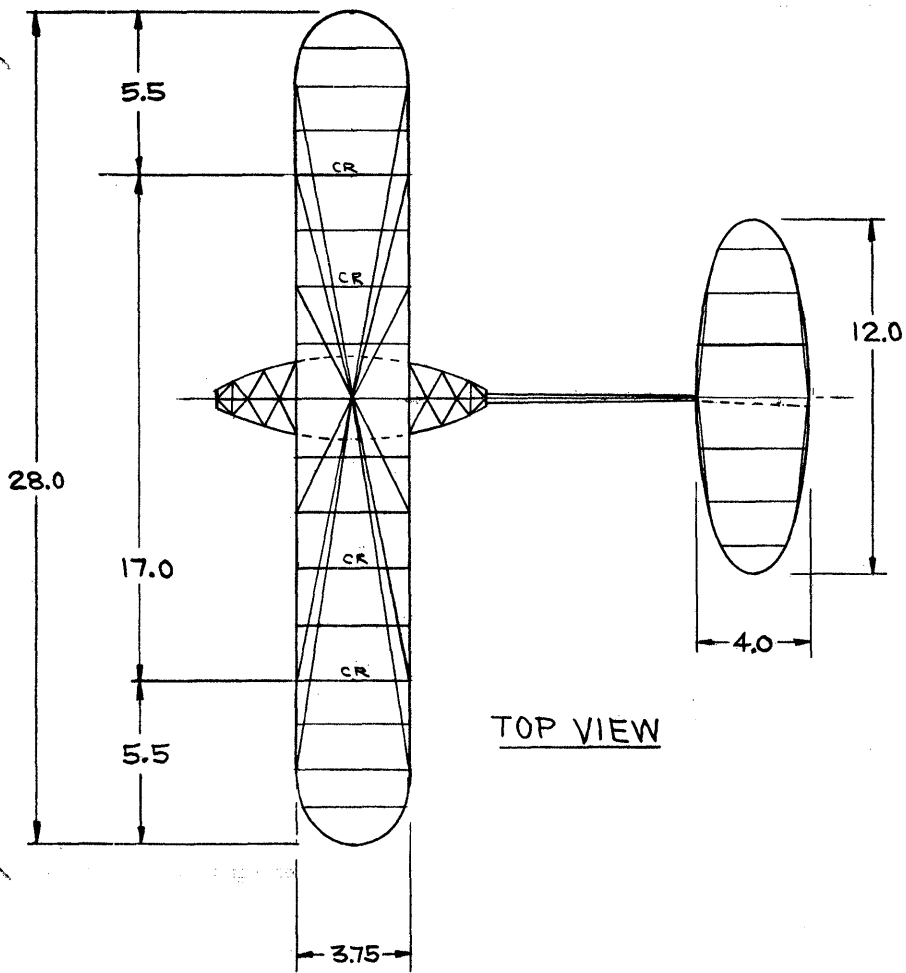
A LOOK AT YESTERYEAR

One of the problems which has always been with indoor modelers has been where to get information on models and flying. In the early 1930's, Philadelphia was a major center of indoor activity, largely due to the assistance of the "Philadelphia Evening Bulletin" newspaper. This paper published a model plan and building instructions every Saturday, thereby helping the activity. One such plan, furnished by Bill Lindsay and enlarged by Harry Keshishian, is shown here. A question: Who was the first designer to use the present-day cabin model layout, with a separate motor pod and fixed wing location? (Stokes used fixed wing incidence and moved the wing fore and aft to change trim, as was done on stick models of the same era.)

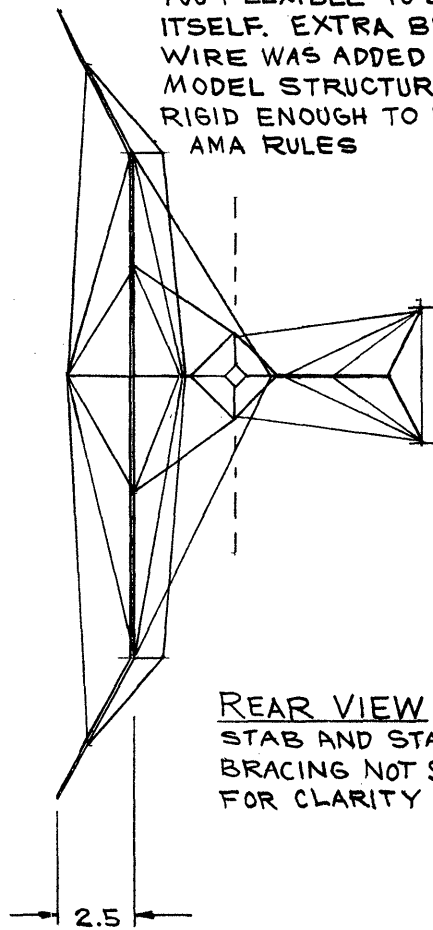
How to Build Stokes' Fuselage 'Ship'



COMPLEX WING AND
LANDING GEAR BRACING
NECESSARY AS MODEL WAS
TOO FLEXIBLE TO SUPPORT
ITSELF. EXTRA BRACE
WIRE WAS ADDED TILL
MODEL STRUCTURE WAS
RIGID ENOUGH TO MEET
AMA RULES



TOP VIEW

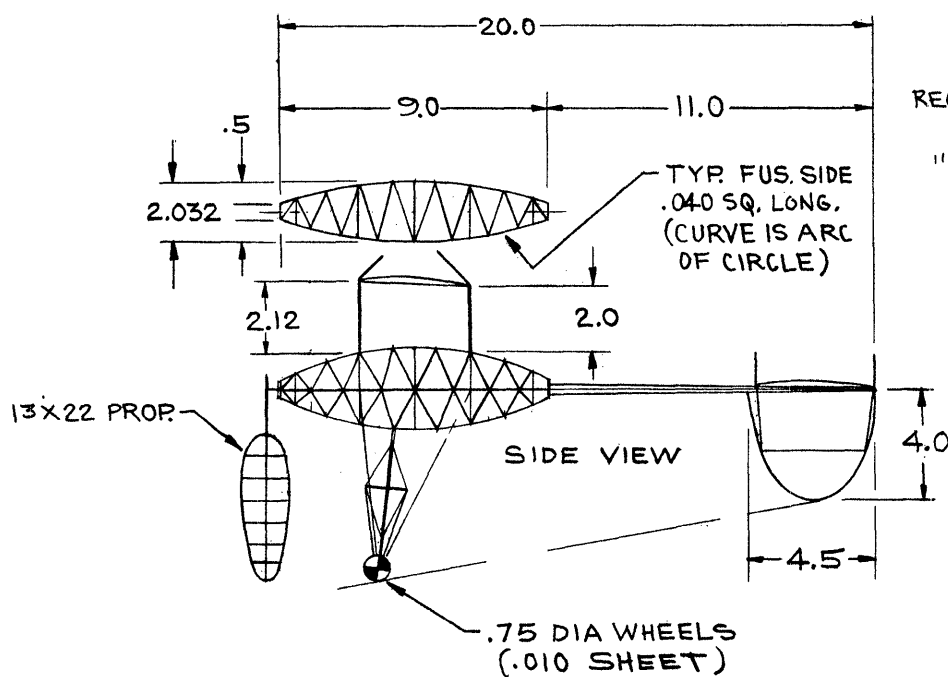


REAR VIEW
STAB AND STAB
BRACING NOT SHOWN
FOR CLARITY

SNARF
B CABIN MODEL

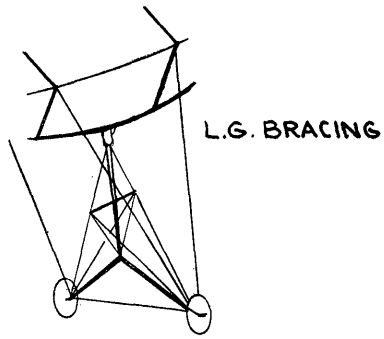
BROKE B CABIN
FOR CAT I - TWICE

SHT. #1 TFV 8/22/68



SIDE VIEW

REQ'D CROSS SECT. AREA = $\frac{L^2}{100}$
" " " " = $\frac{400}{100} = 4 \text{ in.}^2$



L.G. BRACING

SNARF
B CABIN MODEL

SHT. #2 TFV 8/22/68

INDOOR CONSTRUCTION TECHNIQUES

This particular series was started in Jan. '70 INAV, and Part II - Wood Density appeared in Feb. '70 INAV. Due to a press of time upon your editor and on some of the invited contributors, the series had to be delayed. We now have two more "parts" on hand, and hopefully other parts will come in as these are presented. Jim Richmond agreed to comment on motor sticks, since his sticks are both longer and lighter than most others now being built.

Part III - The Motor Stick

by Jim Richmond

In order to build light motor sticks, it is necessary to utilize light, yet strong materials in such a way that a minimum quantity does the job. The motor stick blank is ordinarily heavier than the bare wing frame and two or three times as heavy as the prop spar. As the heaviest single component, the motor stick becomes the major influencing factor in total model weight. Because of this, I have made extensive efforts to minimize motor stick weight.

I have tried a single solid stick braced with wires for both torsional and bending stresses. Also, built-up structures were tried. In addition to excess drag, the major problem with these approaches is that they are utterly dependent on each and every stick and glue joint. The failure of any one results in instant destruction of the entire model, as I learned the hard way. The rolled tube has proved to be just as light as any other structure for this application, and it is much more forgiving and dependable.

Selection of good wood for the motor stick blank is of paramount importance. Above all, it must be light, preferably 4 lb/cu. ft. density. It must also be "C" grain, free of defects and exhibit a reasonable degree of stiffness. Stiffness can be checked in a relative manner by holding the ends of two sheets side by side on the edge of the work bench to see which one bends the least under the influence of its own weight. The size of the wood depends on its application, but my current recommendation for FAI models is .012 x .750 x 14, which weighs about .005 oz. Thicknesses from .010 to .0135 and widths from .675 to .875 have been used successfully in the past. Tapered blanks have been tried but are not recommended; strong ends are just as important as the center area.

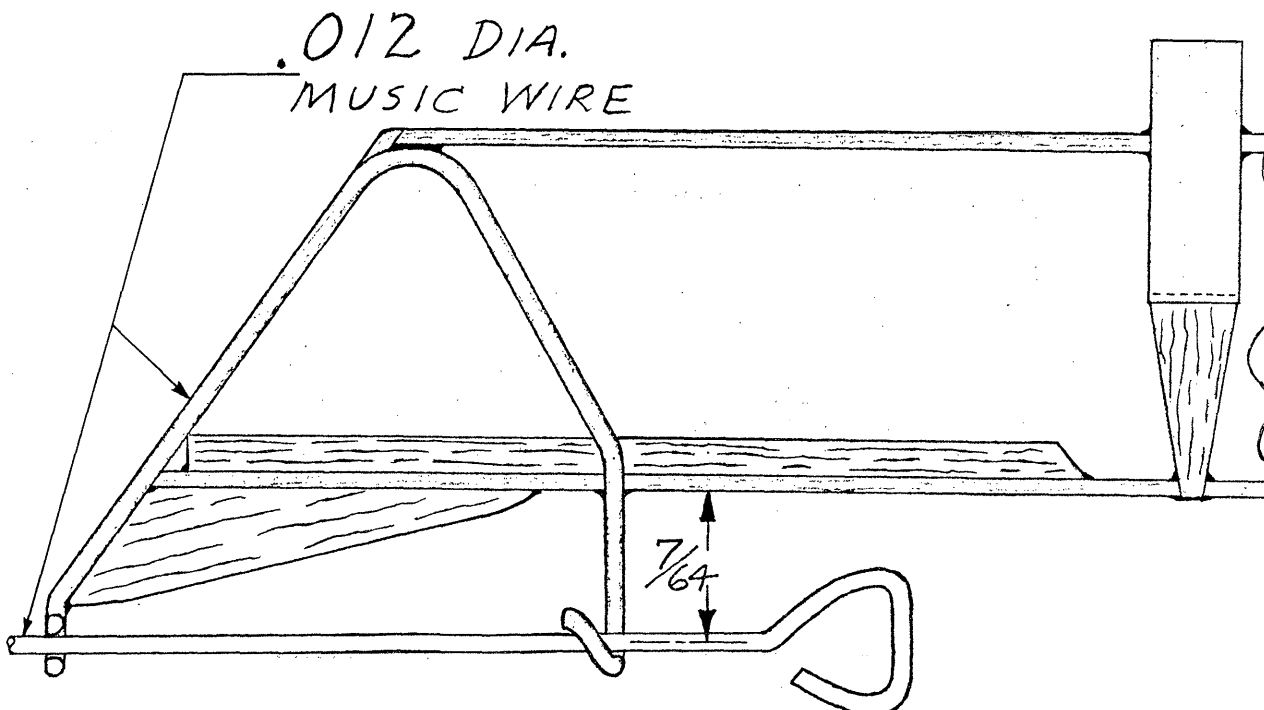
Double wire bracing is a necessity for a motor stick made from the above blank. I use a different bracing method on each new stick, but I like the current one which simply consists of a balsa "v" mounted on each paper wing mount tube with .001 nichrome strung over the ends of the V's and attached at each end of the stick. A motor stick without bracing must be larger and heavier to withstand the bending stresses, so bracing is used as an expedient to permit the use of lighter material.

Cementing the seam of the rolled tube can add a lot of unnecessary weight if it is not carefully done. Cement is needed only in the seam - not all over the surrounding wood. In order to get the cement into the right place, I apply it with a jeweler's fountain oiler, which is simply a small glass tube with a small hypodermic needle-like metal tube in one end. The business end is carefully rounded to prevent scratching the wood. A magnifying eye loupe is used to observe the flow of cement. The fountain oiler is filled by sucking cement up into it, and it is blown out and washed with thinner immediately after use.

The rolled tube should be carefully examined for any weak spots or areas. Any weak areas in the tubular shape (detected by careful squeezing) can be strengthened by running a piece of 1/64 sq. balsa through the tube and cementing it at both ends. I like to use the strongest end of the tube for the front of the motor stick due to the handling abuse expected there. I glue a .025 sq. x 3/4 piece of balsa on the inner bottom surface of both tube ends. This aids in preventing buckling and serves the same purpose as the vertical web used by others, but it is much lighter. The position of the glued seam doesn't seem to matter much, but I think I like it on top better since any weak spots are less likely to cause trouble there. It is desirable for the tube to bow downward prior to bracing in order for the tube to have tight wires. The desired bow can be induced by slipping the tube over a pre-bowed hardwood dowel and baking it at about 200° F (be careful).

The double prop bearing and rear hook that I use are both made from .012 music wire. The double prop bearing is bent in an inverted V shape with a closed loop on one end and a pig-tail loop on the other (see sketch). The closed loop is the front bearing, and it is ground flat on the front to provide a surface for the washer. The pigtail loop provides positive control of thrust angle and still makes it possible to attach and remove the prop. These loops are made by worrying them into shape with pliers. Sometimes it helps to insert a .013 wire through the roughly formed loops and then squeeze them into shape - this prevents the loops from closing too much and helps to make them round. The openings can be enlarged and rounded with a careful application of a .013 drill. Both the front bearing and the rear hook extend all the way through the motor stick to provide attachment points for the bracing. The combined weight of both bearing and rear hook is only .0008 oz., but if you are really fussy (as I am sometimes) you can make them out of aluminum or titanium and reduce the weight even more. The complete motor stick with everything on it should weigh between .007 and .008 oz.

One last word - a sheet of wood that is a bit on the thick side or one that has thick areas can be corrected by careful sanding with a block on a large piece of glass. I suspect that sanding can weaken the wood, so use fine grit paper and take it easy. Also, you will probably find that the center area of a freshly sanded sheet is thicker than the edges, so trim off both edges - straight, please. Good Luck!



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members:

DAVID BEASLEY, MAG 32, VMA 324 Avionics, MCAS Beaufort,
S. C. 29902
GARY BRUNO, 1825 Holloway Rd., Holland, O. 43528
JOHN W. GREGA, 355 Grand Blvd., Bedford, O. 44146
THOMAS MAHURIN, 6409 Brookside Rd., Kansas City, Mo. 64113
HARRY STUNE, 637 Maye St., Westfield, N. J. 07090

Honorary Members

RAY MONKS, 232 Westwood Rd., Sutton Coldfield,
Warwickshire, England
OVE PETERSSON, Ganglatten 25, 421-46 Vastra-Frolunda,
Sweden
STAN WADE, 39 Beacon Dr., Loughborough, England

Financial Report

With this issue NIMAS begins its tenth year, and it is still growing, though not as fast as the last two years. The average circulation for 1970 (Nov. '69 thru Oct. '70) was 289 - a 3% increase. However, the average for Sept. and Oct. '70 was 298, and the member listing above shows that circulation is rising again. Income for the year was \$845.30, and expenses totalled \$825.46. The expenses are as follows:

Producing INAV	\$353.06
INAV Postage	235.88
Correspondence postage	103.52
Supplies & other expenses	102.98
Special Action Committee	30.02
	<u>\$825.46</u>

Each issue requires about 65 hours of effort, counting the help of family members on mailing nights, and all help donated by draftsmen and other contributors. This doesn't include time spent in correspondence, which totalled 706 pieces incoming, and 1046 pieces outgoing.

Junior NIMAS Awards

SILVER CAT. II RUBBER AWARD - 18:26.1, Tom Sovo

SPECIAL INTERNATIONAL ISSUE

This issue is dedicated to those "honorary members" of NIMAS who reside away from the North American continent. These fellows now total 37 fliers in 19 countries, and most of them are faithful in reporting their activity. We appreciate these letters, and reader comments indicate a strong interest in international indoor activity. Thanks to all my friends overseas!

FAI INDOOR REPORT

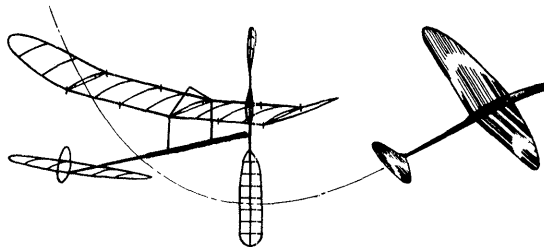
FAI Rule Change?

The CIAM will meet early in December, and will spell out rules for the models to be flown at the 1972 Indoor World Championship. These rules will be in effect during the U. S. team selection effort, so all who plan to fly will need to know. AMA HQ has arranged to send a copy of the CIAM meeting results to all who furnish a stamped, self-addressed envelope. If you want advance notice of the new rules, send the envelope to HQ right now! Every possible effort will be made to send the Dec. IVAV out shortly after word is received. However, our house is newly remodeled and still torn up, so no promise is made!

In recent weeks, the Hungarians have decided that the one gram rule should be "ironed out" as provisional rules to be sure it will have the effect expected, and will make such a proposal at the CIAM meeting. If this happens, the Champs will likely use the same rules as now are in effect for International competition.

Team Selection Program

The text below was submitted to AMA HQ for publication in Competition Newsletter, Model Aviation and AMA Charter



Club mailings. Most likely these publications will have the same thing, but the official version will be as published by AMA. The program is structurally quite similar to that used in 1969, but various inputs (Indoor Committee and Clarence Mather's questionnaire) indicated concern with the extremely tight schedule of qualification meets and excessive long distance travel. It is hoped that these problems have been alleviated to some extent in the new program, but the general nature of indoor flying prevents effective team selection unless a unified Finals is held.

1971 Program Details

Program Entrants: The Indoor Team Selection Program is open to all indoor fliers who have a 1971 AMA License and an FAI Stamp. Fliers chosen for the Team must be at least 14 years old by the time of the 1972 Indoor World Championship.

Program Structure: There are three levels of qualification: Local Qualification Trials, open to all program entrants; Semi-Final Trials, open to Local qualifiers and to certain others (see Qualification Requirements below); and Team Selection Finals, open only to Semi-Final Qualifiers.

Program Entry: The program may be entered two ways. First, fliers may send the proper fees to AMA HQ; each will be issued a program entry form which entitles him to unlimited attempts to qualify for the Semi-Final Trials, up to the Local Qualification deadline. Second, he may enter the program by paying the same fees to the CD of a Local Qualification Trial. All who qualify at any Trials will be issued a Notice of Qualification, while those who enter at a Local Trials and fail to qualify will receive a program entry form entitling them to continue to try to qualify.

CD Entry: CD's of Local Qualification Trials and Semi-Final Trials may fly in those events provided that two contestants or other officials time the CD's flights. The CD of the Finals may not compete in that meet.

Qualification Requirements

Local Qualification Trials: Entry Fee - \$2 for Juniors, \$5 for all others. 75% of the entrants in each Local Trials will qualify for the Semi-Final Trials; also any flier whose score is 75% of the winning time for that Trials will qualify for the Semi-Finals. Program entrants who enter via AMA HQ may also qualify by entering a regular sanctioned AMA indoor contest. In this case, qualification is achieved by scoring 75% of the winning time in a regular contest event. The flier must use a model which qualifies for FAI Indoor*, and qualification score is computed from the contestant's regular contest flights.

Special Note: Program entrants who would have to travel 200 miles or more to enter either a Local Trials or an AMA indoor meet may bypass the Local Trial level and enter the Semi-Final Trials by paying the entry fee. However, this action must be cleared through the Program Administrator, and the flier must have made entry via AMA HQ before the Local Trials deadline.

Semi-Final Trials: Entry fee - \$2 for Juniors, \$8 for all others. Two-thirds of the Semi-Final entrants plus all fliers who have 80% of the winning time for that Trials will qualify for the Team Selection Finals.

Team Selection Finals: The top three entrants in the Finals will represent the U. S. at the 1972 Indoor World Championships. Entry fee - \$10 for all entrants.

*Specifications of the FAI Indoor model to be used in the 1972 Championships will be spelled out at the December, 1970 meeting of the CIAM. In general, models the same span or smaller than the FAI models will qualify if these models meet any other rules for FAI Indoor. (For example, Easy B models and Paper Stick models usually qualify.)

Qualification Trials Schedules

Local Qualification Trials: An unlimited number of local Trials may be held in the U. S. between Jan. 1 and May 15, 1971. Each Trials must be sanctioned through normal channels as for AMA contests and have a minimum of four entrants as defined above. Each program entrant may enter

any or all the Local Trials he wishes, until he qualifies. Each Local Trials may be flown under any ceiling height, but must use full FAI rules except that rounds need not be flown. In the case of AMA contests used for qualification, AMA Rules shall apply and the qualification scores must be computed from the regular contest results. Note: Program entry for purposes of qualifying via AMA contests must be accomplished before the contest; the entry fee must be postmarked to HQ not later than midnight of the day before the contest. Program entry does not constitute entry into the contest.

Semi-Final Trials: At least four Semi-Final Trials will be held: one on the West Coast, one on the East Coast, and two in the Central U. S. In addition, any area at least 450 miles from a scheduled Semi-Finals may apply for a Semi-Final meet through the Program Administrator, provided this area has a minimum of five qualifiers who will enter such a Semi-Finals. Semi-Finals must be completed by July 15, 1971, and may be flown under any ceiling height. Full FAI Rules will be used, including the use of rounds. Each qualifier may enter only one Semi-Finals, but he can enter any Semi-Final in the country.

Team Selection Finals: All reasonable effort will be made to schedule the Finals reasonably close in time to the Nationals, but the program's need for an adequate site and sufficient flying time must override other considerations. A two-day Finals is planned in order to adequately accommodate the anticipated increase in Finals entry. FAI Rules will be strictly observed, and contest management will be patterned after World Championship practice so far as possible.

CONTEST CALENDAR

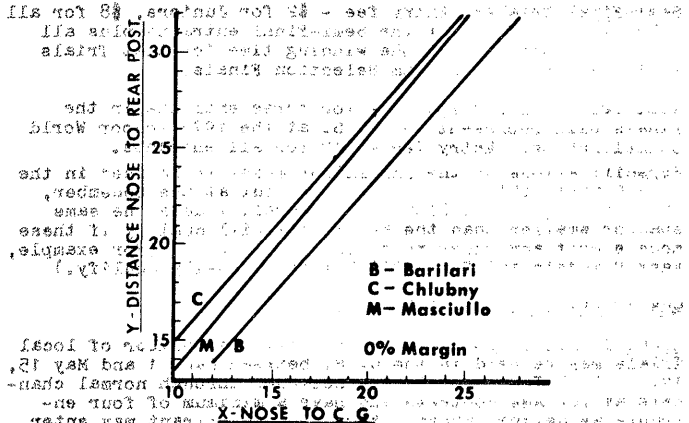
MASSACHUSETTS - M.I.T. Indoor sessions at M.I.T. Army, corner of Mass. Ave. and Vassar St. in Cambridge, Mass. Jan. 9, Feb. 20, Mar. 20, 1971; 3:30 pm to 6:30 pm. Contest April 10, 1971, 1 pm to 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. 01778, ph. 358-4013.

NEW JERSEY - Lakehurst. Preliminary arrangements have been made to obtain Hangar #5 for Team Qualification Trials. Volunteer to CD or otherwise help by contacting: C. Vy. Russo, 143 Willow Way, Clark, N. J. 07066.

TEXAS - Mesquite. Indoor contest at Florence Community Center, corner of Linhaven and Oates Drive. Sponsored by Mesquite Mad Modelers; events: Paper Stick, Indoor Scale, HLG, Matchbox and 30 Minute HLG. Rules for Matchbox model ready to fly (including prop if model is powered) do not fit inside standard kitchen matchbox. 30 Minute HLG - each contestant receives one piece of balsa 2" x 6" x 1/32" and one piece 1/16" x 1/8" x 6". Model must be airworthy 30 minutes later, and no other materials except adhesive may be added, even for balance! The Mad Modelers strike again! Contest time 1:30 to 6:30 pm, Dec. 6, 1970. Paul Cardwell, 2633 Greenland, Mesquite, Tex. 75149, ph. 279-0516.

STATE OF THE ART

This month we offer top models from three countries, and two of the three flew in the 1970 World Championship. Eduard Chlubny, from Czechoslovakia and Germano Masciullo, from Italy, were participants at the Champs, while Alberto Barilari, hails from Argentina. Full size prop outlines for their models appear on p. 3, and three-views on p. 4. A composite Stability Margin diagram appears below; as usual the chart is for 0% stability. Chlubny's model was trimmed at 0%, Masciullo flew his at +18%, and Barilari trimmed his to +25%.



COVERING WITH MICROLITE

Micro-lite is the new lightweight covering material sold by Micro-X, 5200 Seven Pines Dr., Lorain, O. 44053. Historically, the material is a relative of condenser paper which most of us are familiar with. That is, condenser paper has been used for years as an insulator in electronic components known as condensers or capacitors; Micro-lite is a space-age material which does the same job better. Micro-lite is a plastic film, identified in the electronics trade as polycarbonate film, and is somewhat lighter than the best grade of condenser paper. Since both materials are used as insulators, they are required to be continuous sheets (no holes, not even tiny ones!)

Charlie Sotich offers the following advantages and disadvantages of Micro-lite:

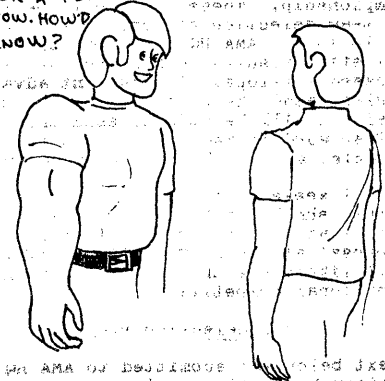
- Advantages**
1. It is lighter than condenser paper; weighing about .006 to .007 oz./100 sq. in.
 2. It is not affected dimensionally by humidity, and in fact is waterproof.
 3. It is strong and not easily punctured.
 4. It can be marked using waterproof inks, and can be "washed off" with thinner on a cotton swab.

- Disadvantages**
1. It tears easily once started.
 2. Special techniques must be used to get good covering jobs, since wrinkles cannot be removed by shrinking.
 3. Standard adhesives don't work very effectively.
 4. Micro-lite does not come in a variety of colors, so techniques must be developed where colors are needed.

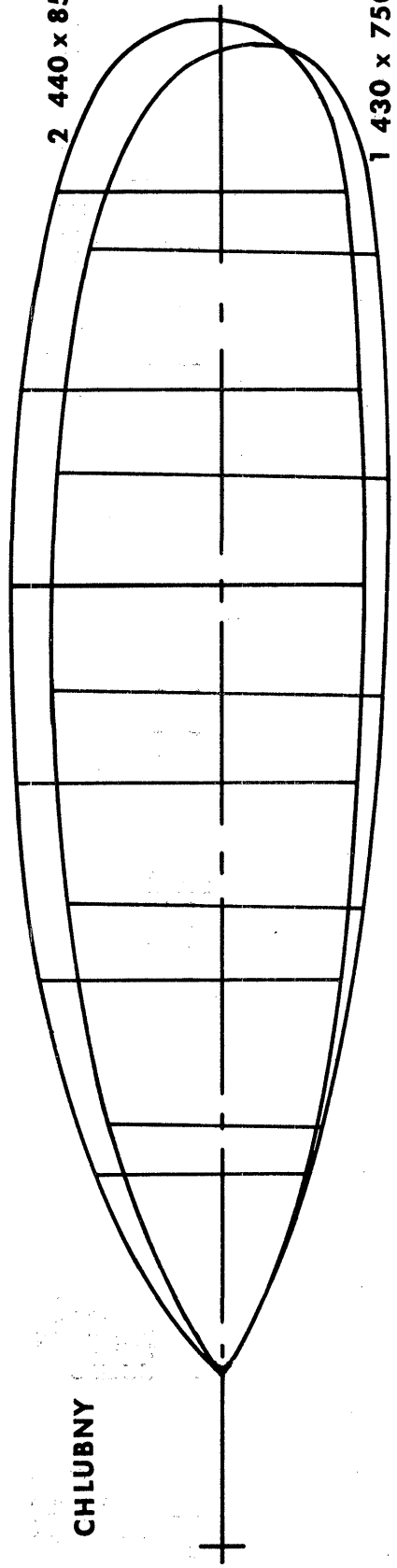
Ron Martelet won Indoor Scale at the Nats with a large Pilatus Turbo Porter covered with Micro-lite. Scale markings were drawn on, and the overall effect was impressive. Ron relates the following step-by-step system for covering and finishing with Micro-lite:

1. Build a balsa frame 1" larger all around than the structure to be covered (1/4" x 1/4" is adequate).
2. Coat the frame with full strength rubber cement.
3. Unroll the Micro-lite on a flat surface and smooth out as many wrinkles as possible.
4. Press the coated side of the frame onto the film and cut out, leaving 1" border all around.
5. The film may now be tightened on the frame by lifting and pulling. Work from the middle toward both ends. CAUTION! The film can be made drum tight on the frame, but it will warp light structures after transfer.
6. If graphics are to be applied to the film (AMA number, club emblem, etc.), lay out the art work on paper. Place the framed film over the paper and trace the art work with "Pentel" waterproof pens. (Ed. note - Ron used photostats of aircraft details, enlarged to the proper scale to fit his model.)
7. Coat the structure to be covered with thinned rubber cement. Use two coats of cement thinned to be only slightly more viscous than water. Lay the structure on a flat surface, or otherwise support it so the area to be covered is accessible.
8. Line up the film over the structure and press the frame down lightly. Burnish the film down along the glue lines with a smoothly rounded balsa stick.
9. Cut the film close to the structure with a razor blade and burnish down any loose edges. Use a new single-edge blade for best results.

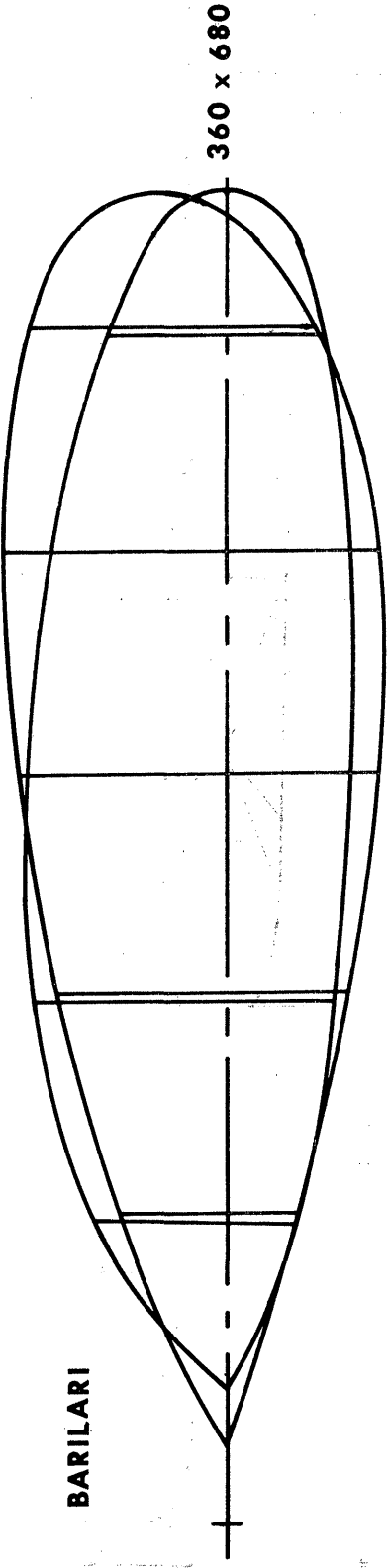
YEAH... I'VE BEEN FLYING H.L.G. FOR A FEW YEARS NOW. HOW'D YOU KNOW?



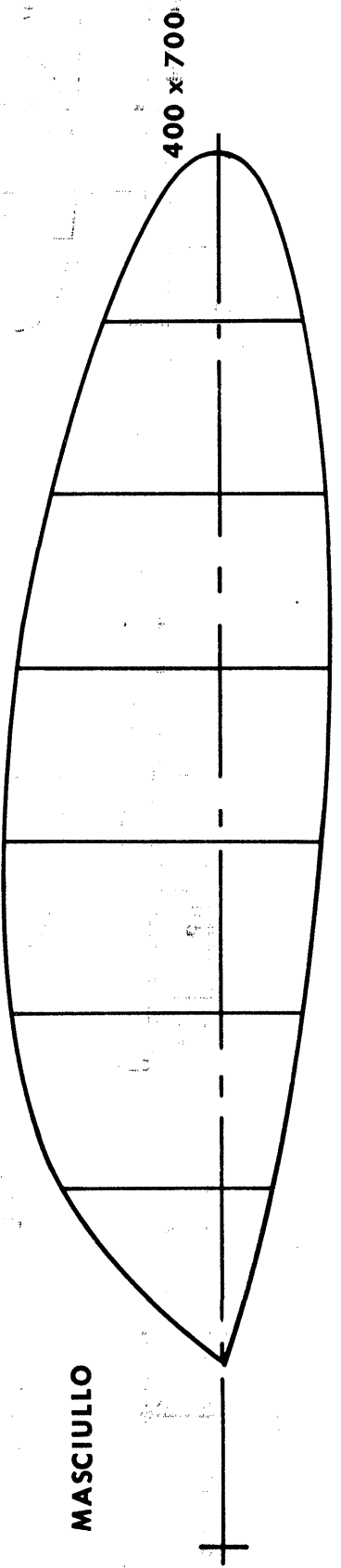
CHLUBNY



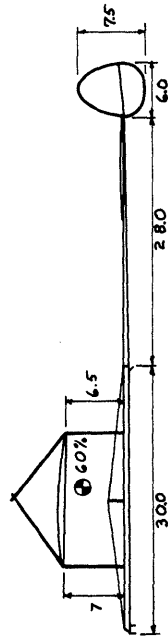
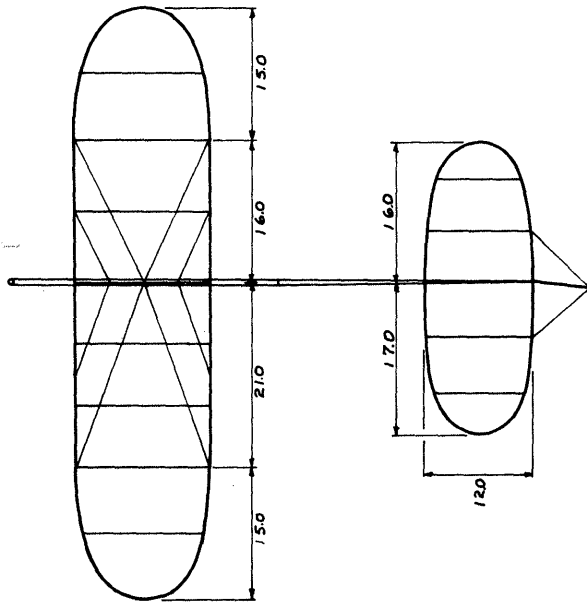
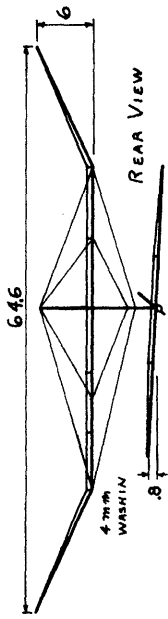
BARILARI



MASCIULLO



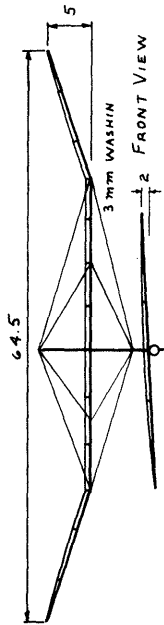
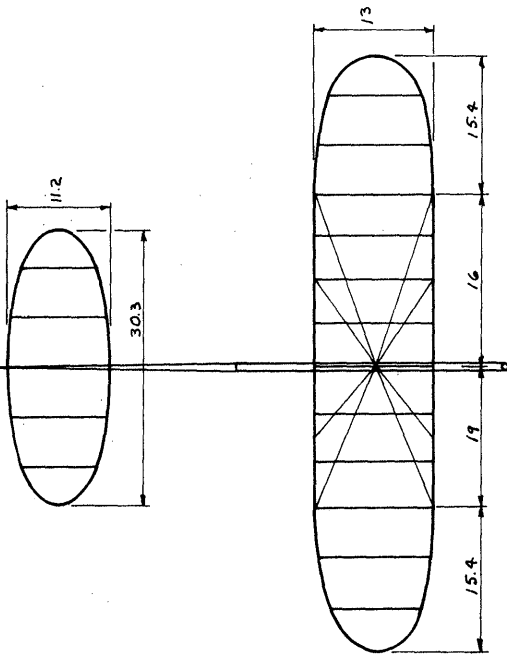
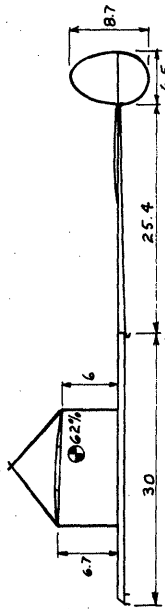
[All P x D in mm]



CHLUBNY

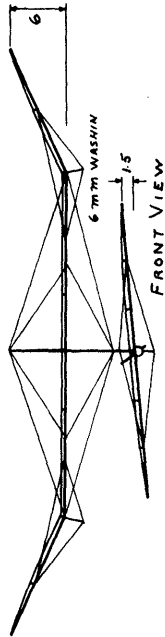
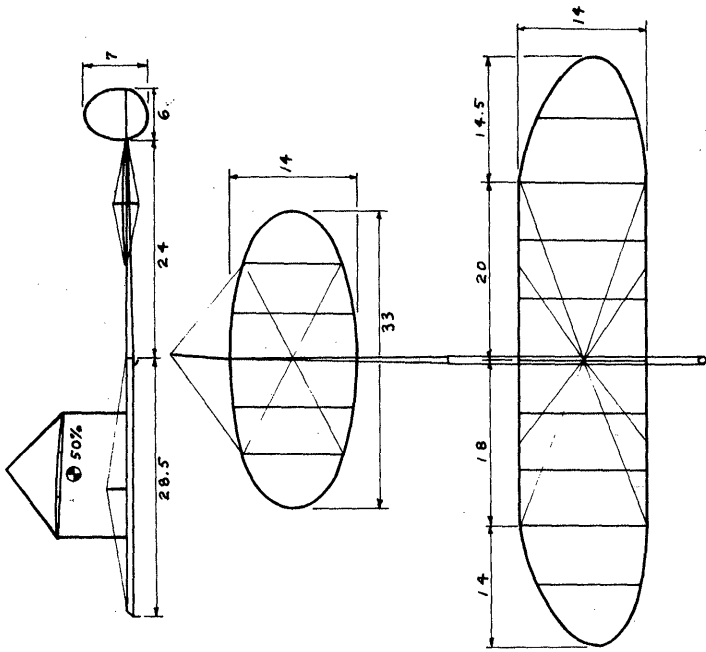
Prop #1 - 28:20 at World Champs
 Prop #2 - 33:29 in 29 m hall in
 Debrecen, Hungary.

Prop	0.100 g	0.087 g
Stick + tail	0.348	0.283
Wing	0.205	0.205
Model	0.653 g	0.575 g
Rubber	0.740 g	0.730 g
Airfoil	(Debreceen) 4% Arc	(W. Champs) 3% Arc



BARILARI

(No weights or times furnished; Barilari has placed high at both the '69 and '70 Argentine Nats, presumably with this model design.)
 A full size plan of this model is available for loan.



MASCIULLO

(Prop outline p. 3 approximate)

Prop	0.115 g
Stick + tail	0.340
Wing	0.245
Model	0.700 g
Rubber	0.150 g

Airfoil 3% Arc
 W. Champs time - 23:10 on 1550 turns
 in 35 cm loop of 1 mm x 1.1 mm
 Pirelli

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

ELWOOD HEIVLY, 7 Overbrook Ave., Mystic, Conn. 06355
LARRY RENGER, 910 Greenwood Ave., Canon City, Colo. 81212
ROALD TWEET, Dept. of English, Augustana College,
Rock Island, Ill. 61201

Honorary Members

JEAN GANIER, Delegeue General, Federation Francaise D'Aero-
Modelisme, 52 rue Galilee, Paris 8, France

Recent Publications

A three-part article on an intermediate indoor model, written by Tom Vallee, begins in the Jan. '71 AMERICAN AIRCRAFT MODELER. The subject model is slightly larger than Easy B size, but uses advanced construction methods.

NIMAS Awards

SILVER CAT. I RUBBER AWARD - 11:06, Ned Smith

AMA Election

The recent AMA election is over, with a startling response - 20% of the AMA membership voted this time, a healthy increase over previous elections. Also, for the first time in years, the winning presidential candidate received a majority of the vote. This is partly due to nominations being limited to two this year, but there was also a write-in candidate to help divide the vote. The new AMA president is John Clemens; we feel that John will do his utmost to do a good job. It seems certain that he firmly intends to be responsive to the membership, which is a quality which has been lacking in this office for several years.

FAI INDOOR REPORT

One Gram Rule Passed

The following report was received from AMA HQ:

1971 FAI INDOOR WORLD CHAMPIONSHIP RULES

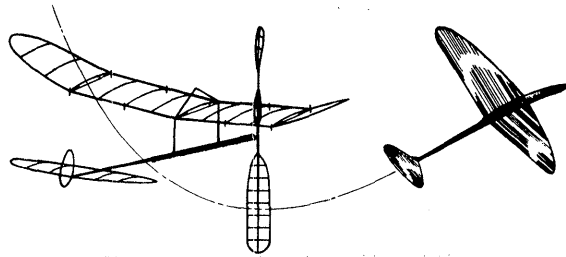
The just-completed meeting of FAI's Committee for International Aeromodeling (CIAM) voted that the "weight of model without rubber shall not be less than one gram". Otherwise, the specifications will continue as per the present rules.

John Worth's report from Paris (before his return to AMA HQ) indicates that the one gram rule passed by a vote of 10 for, 5 against, and 8 abstentions. He indicates that the U. S. tried to overturn the vote by challenging lack of a majority vote "for" (13 votes not "for"), but this was not accepted during the meeting.

The only hope for this decision to be changed is that the FAI Director General will check the record for precedents concerning this point of challenge. The check is expected to be made and announced in the minutes of the CIAM meeting - available about January 1, 1971. "It's only a slim hope," John says.

England Bids For World Championships

The following information has reached us second-hand: England was the only country to bid to hold the 1972 Indoor World Championship. If this proves to be official, Cardington (site of '61 and '62 World Champs) will be the site of the '72 Champs. At least two things could happen to change this; either England could withdraw the invitation, or another country could present a bid at the next CIAM meeting. In the event of two conflicting bids, past practice has been to accept that bid which, according to results of an informal survey, would attract the largest entry. The total entry is a crucial item, since a minimum of five countries must enter to qualify the contest as a



World Championship. Those who have followed FAI Indoor for that long will remember that the '64 Champs had to be cancelled for lack of entry (Cardington was the proposed site). If any World Champs is cancelled twice in succession, that event will be removed from the Champs schedule.

INTERNATIONAL CONTESTS

2ND Hadju-Cup International Contest - Aug. 17-19, 1970
Kossuth University, Debrecen, Hungary (98' ceiling)

1. E. Chlubny	Czech.	31:46	32:34	64:20
2. R. Czechowski	Poland	32:05	31:42	63:47
3. Andras Ree	Hungary	31:43	30:47	62:30
4. J. Zolcer	Czech.	29:40	28:45	58:25
5. E. Ciapala	Poland	28:10	29:37	57:47
6. V. Niccoara	Romania	25:58	26:47	52:45
7. S. Bombol	Poland	27:17	25:02	52:19
8. Z. Ocsody	Hungary	25:52	26:10	52:02
9. Otto Hints	Romania	24:44	26:45	51:29
10. A. Moraru	Romania	26:02	25:25	51:27

This meet had no team competition, but two national Cat. III records were set: Ree's 31:43 is a new Hungarian record, and Czechowski's 32:05 is a new Polish record.

Championship of Budapest - Sept. 13, 1970
Politechnical University, Budapest, Hungary (14.9 m)

1. Andras Ree	23:25	27:39	51:04
2. Antol Egri	24:09	22:19	46:28
3. J. Garzo	16:31	19:31	36:02

CONTEST CALENDAR

ILLINOIS - Chicago. Indoor sessions will be held each Sunday between Dec. 6, 1970 and April 25, 1971, with the exception of three Sundays to be announced later. Flying hours 9 am to 5 pm, and the site is the Forest View High School Gym, 2121 Goebbert Rd., Arlington Hts., Ill. Indoor contest, same site and time, Jan. 10, 1971. HLG and PennyPlane events. CD - Pete Sotich, 3851 W. 62nd Pl. Chicago, Ill. 60629 ph. RE 5-1353.

MASSACHUSETTS - M.I.T. Indoor sessions at M.I.T. Armory, corner of Mass. Ave. and Vassar St. in Cambridge, Mass. Jan 9, Feb. 20, Mar. 20, 1971; 3:30 pm to 6:30 pm. Contest April 10, 1971, 1 pm to 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. 01778 ph. 358-4013.

NEW JERSEY - Lakehurst. Tentative dates for hangar #5 or #6 - May 2, June 6, July 3-4, 1971. Contact C. V. Russo, 143 Willow Way, Clark, N. J. 07066

OHIO - Cleveland. Usual Great Lakes meet cancelled due to increase in rental of hall. AMA sanctioned Record Trials for all ages, held concurrently with Cleveland record trials for the normal youth events and age classes held at previous Great Lakes meets. Jan. 17, 1971, 11 am to 6 pm. Contact Chuck Tracy, c/o CLEVELAND PRESS, 901 Lakeside Ave. Cleveland, O. 44114 for more information.

OHIO - Painesville. Indoor sessions each Wednesday night at Painesville National Guard Armory. Contact Dick Smola, 650 Hoyt St., Painesville, O. 44077 ph. 261-354-8260.

TEXAS - Abilene. Cat. I Indoor contest planned late Feb. or early March in 25' site. Tentative events - Paper Stick, Easy B, HLG, Scale, Peanut Scale and (for Jr. only) AMA Cub. Contact Eddie Thomas, 5349 Harwood, Abilene, Texas 79605 ph. 915-692-5456.

TEXAS - Dallas/ Ft. Worth. Permission requested for use of ballroom at Texas Woman's Univ. in Denton, Texas on Jan. 31, Feb. 28, Mar. 28, and Apr. 28, 1971. Contests will be held, pending receipt of permission. Possible events: HLG, Paper Stick, Easy B or PennyPlane, AMA Cub. Bud Tenny or Jim Clem, 8240 Green Hollow, Dallas, Texas 75240 ph. 235-4603.

VIRGINIA - Hampton. Cat. I Record Trials, Jan. 2-3, 1971 at Willis School. Hal Crane, 4002 Buchanan Dr., Hampton, Va. 23369 ph. 703-723-0861.

DESIGN FOOTNOTES

The One Gram Model

This is being written before results of the CIAM meeting are known; it will therefore serve either as a source of ideas to design your own one gram models or as a report on previously constructed one gram models.

To begin with, there are many possibilities inherent in the basic concept of a model weighing a minimum of one gram. Normal indoor models are built to have the absolute minimum weight consistent with adequate strength for flying stresses and ground handling stresses, but optimum one gram design will shift the emphasis. The average competitive model will have to be about 60% heavier, so the rubber weight will have to increase in similar ratio. A larger motor will call for a slightly heavier prop with perhaps slightly larger diameter to handle the extra power output. Due to the higher model weight, larger wing area will give lower wing loadings to minimize the higher speed a heavier model will need. The tail surfaces will thus be slightly larger and stronger.

To this point, natural design tendencies will have "used up" perhaps 25% of the extra weight required. Since the larger motor is required, a stronger (and probably longer) motor stick will yield both extra weight and some extra margin of strength. At this point, it would be well to consider any possible aerodynamic improvements which

add weight but may increase flight efficiency. Some designers will include gadgetry such as gears, but they should be sure that such additions do not decrease the new reliability inherent in the properly designed one gram model.

The plan page shows three models now flying which are at least one gram in weight. The first model is by Bill Gibbs, and he used it to set the current Sr. AMA Cat. III record at 23:58.6. As a one gram model, it would actually be 10% overweight!

The second model, by Hal Crane, is also heavier than one gram. It has been flown extensively in the 20' site (Willis School) in Hampton, Va., spending the majority of each flight in ceiling scrubbing. The best time under these conditions has been 19:58, while the average time of 13 consecutive flights one weekend was 18:00. If 658 has been flown in higher sites, this is not reflected in the records Hal furnished.

Bob Platt constructed the third model of the series, which has been an outstanding performer in Willis School. The first three flights on the model averaged over 20 minutes, and it holds the Open Cat. I Stick record (21:06.2), set at Willis School in April, 1970.

Very little prop data were furnished on these models but Crane's prop was believed to be 17.5 x 30, and Platt used an 18" prop.

Certain other developments and ideas have come to light in recent weeks. For example, Richmond is reported to be trying a 10" chord, and Rodemsky has settled on 8" chord with fairly blunt, rounded tips. Rodemsky also feels that wide chord indoor wings may have an optimum thickness, unrelated to the actual % thickness. Crane is building a 7.5" chord wing of 3/16" maximum thickness, or only 2.5% thickness. Previous results with wide chord, thicker airfoils led him to feel a lower thickness would be beneficial; each rib is also slightly stiffer, due to the reduced camber.

PROP FORUM

Salt Mine Props

by Jim Richmond

The Salt Mine in Slanic, Romania is like no other indoor site in the world, and the props required to function well there have a most unusual and challenging job to do. They must haul the plane up 170 feet within 5 or 6 minutes before the motor's initial burst torque lets up, then run slowly enough during the next 35 minutes to keep from spinning off the rest of the turns. How do you make a prop that will do that? How do you determine the best size? How do you match it with the best motor? How do you solve these problems in a site that eats your planes faster than you can come up with the answers?

Such were the trials faced by your determined team last April. In addition to illness and midnight repair sessions, sleepless nights were spent wrestling with the "Problem of the Prop". Very little was known previously about the kind of performance to expect from a reverse flare prop, but now it seemed that this was the only kind that could do what we wanted. We needed low pitch for the rocket-like climb and high pitch for a low RPM cruise. The symmetrical prop did a fair job once (37 minutes) with a short loop. Climb altitude was OK, but it dead-sticked

when it was still half-way up. Reverse flare props were built and tried. Clarence had good luck with his. I used mine on my first official flight and the prop was doing fine. The only trouble was that the plane flew into a cave about 100 feet up the side of a wall and that was the end of it.

Some real brain-twisting was required to come up with the braced symmetrical prop shown. The answer to this one became an absolute necessity when the other two props shown were destroyed and lost on the wall. I had no more good wood to build more props or time to do it, so I had to find a way to make the ones I had do the job. Testing had proven one thing for sure: the diameter had to be 17" (as Kalina already knew and was kind enough to tell us the first day). The braced prop was originally 18" diameter but was cut down and the spar spliced as shown. The offset was used in an effort to encourage some reverse flare effect. The spar was strong enough and the bracing really added torsional strength. This prop was used on my last four official flights and I have no complaints - about the prop anyway. It proved capable of both high climb and long cruise; getting both these in one flight was my problem - with no help from the drift or the walls.

One thing was impressed upon me during our efforts in the mine - something about the set-ups we used was very right. In spite of the unusually bad air (and bad luck), it was obvious that 40 minutes was well within reach. If that was so, how much time could you do in a "normal" site with the right combination? Food for thought!

These props are really only of academic interest now unless another meet is held in a mine similar to the one in Slanic. Positive flare is the only way to go in a normal site unless you happen to have a plane that just won't get up.

The following remarks tie into the above from the fact that they were made by Jim shortly after his return from Romania.

The following are design changes I would utilize if we ever fly at Slanic again:

1. Use a 17 x 32 reverse flare or braced symmetrical prop.
2. Increase washin to about 3/8".
3. Use stronger wing bracing wire - .0007 karma instead of .0005 nichrome.
4. Make stronger motor sticks, stabs and wing posts.
5. Shift the CG forward to about 65%.
6. Shorten the wing posts about 1/4".
7. Use more left thrust and down thrust.
8. Design hooks to prevent deadstick motors from dropping off, which happened several times during test flying.
9. Hold stab tilt to between 1/2" and 5/8", since some problems occurred with too much and too little tilt.

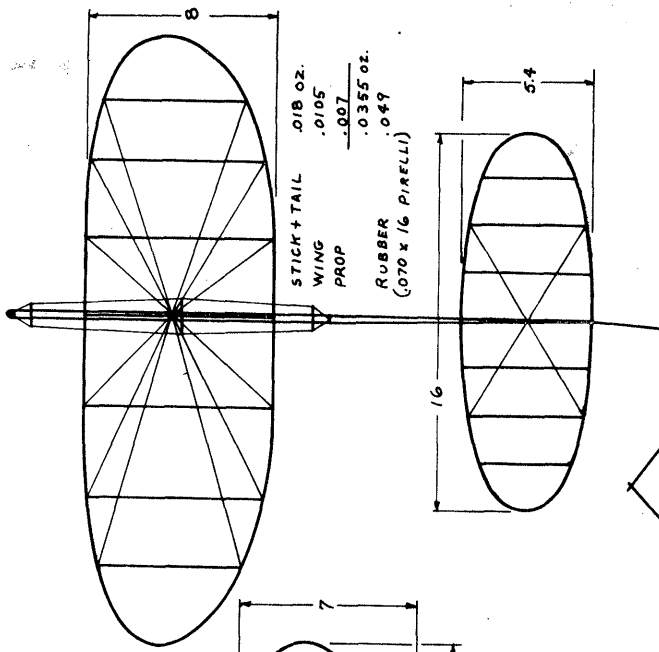
I plan to incorporate some of the above in future models so they will be able to handle a power burst without getting into trouble.

CHANGE OF PACE

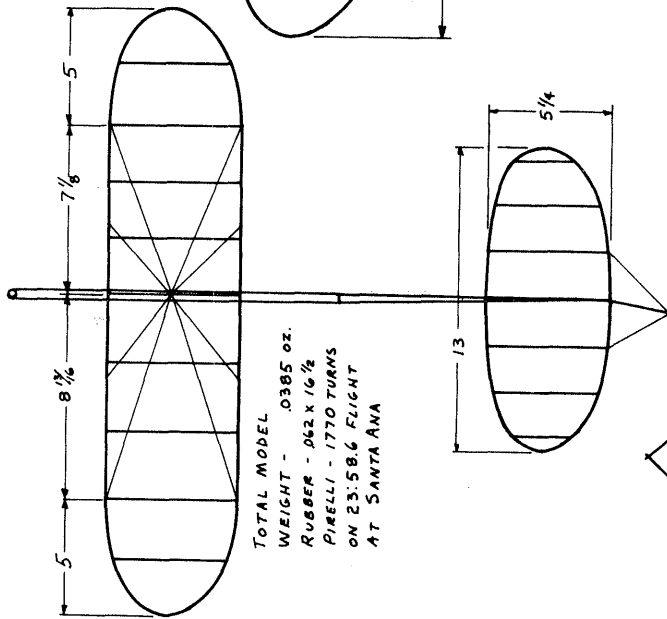
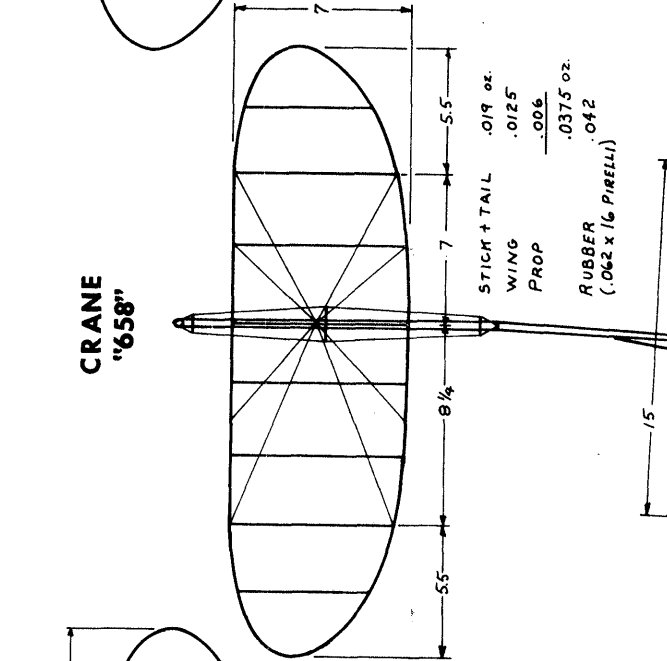
A recent missive from Bob Meuser contained the following tidbit:

You were probably just a wee tad at the time and don't remember, but us old guys used to fly Towline Gliders in the Gud Auld Dayes under the Junior Birdmen. There is one by Duke Fox in an old Zaic Yearbook. Every once in awhile someone mentions the old event and we decided to give it a go. Unfortunately, because of a conflict of schedules, not many showed up and only three actually flew.

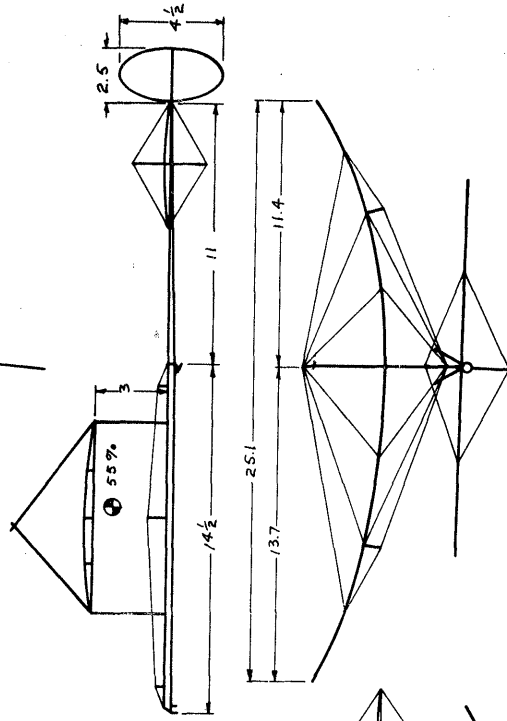
We flew in the Cow Palace. The portable seats and a rassing ring were all in place and the rafters were festooned with drapes which hung down 15 feet or so, and guy wires supporting the PA speakers ran the width of the hall at low altitude. We had to do sort of a Limbo Dance with our gliders to get under the wire, then run up one aisle, across the end and out under the balcony. The rules prohibited models larger than 300 sq. in. (it might as well have been an acre) and also prohibited microfilm (who needed it?). Bud Romak and George Foster built superlight models especially for the event - around 230 sq. in. I made some hasty repairs to a marginally stable and quite heavy paper stick model which had turned a cool 12 minutes using a .008 oz. balsa prop 30 years old. I had to add a few braces, but then I could tow quite fast and feel a good tug on the nylon-monofilament-sewing-thread towline - poor thing must have been pulling 20 G's - and also I added an adjustable offset towhook. The towhook was too far back and I was disinclined to move it. So I'd go up, do one loop, up again, and release. I suppose I got to 80 feet. Bud and George's models usually collapsed, but they only had to get half as high as mine to beat me. George finally got enough altitude to do the trick, but couldn't get the model off the line. I turned in half a dozen flights around 2 1/2 minutes to win the Oakland Cloud Dusters Leonardo Perpetual Trophy.



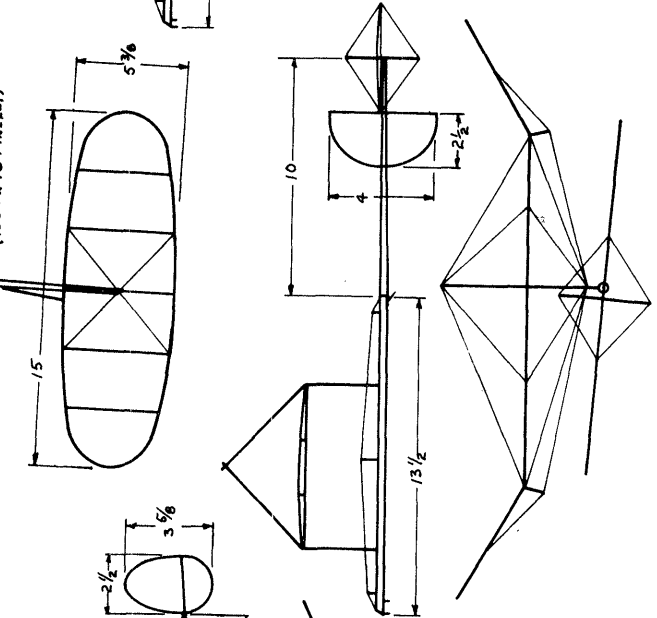
**CRANE
"658"**



GIBBS



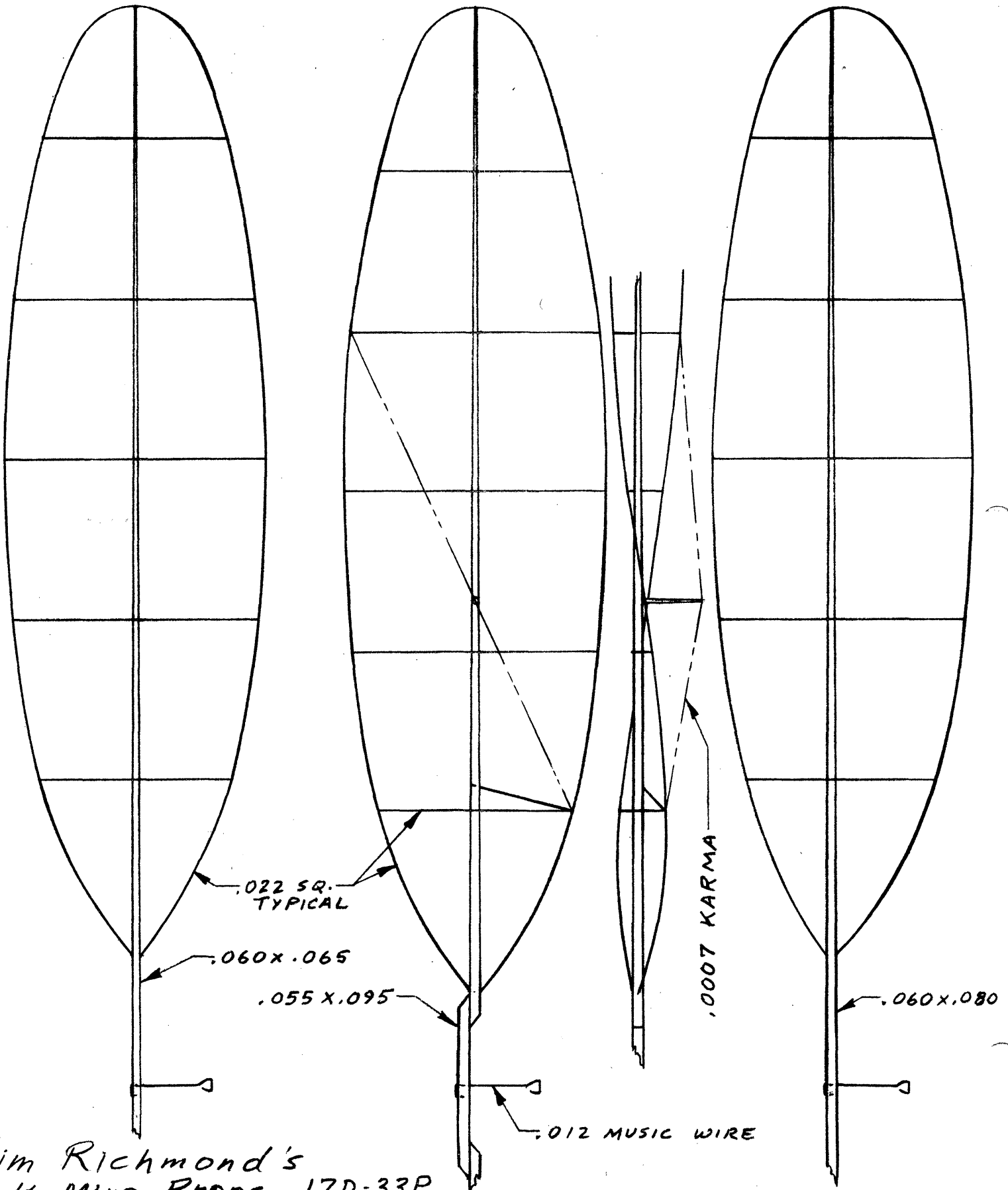
PLATT



SYMMETRICAL
.0033 oz.

BRACED
SYMMETRICAL
.0034 oz.

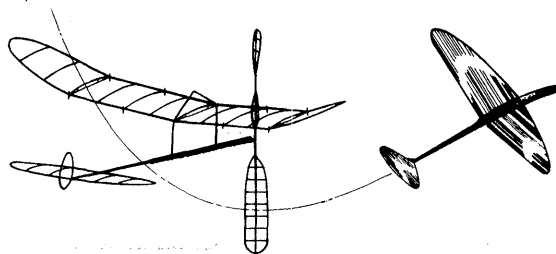
REVERSE FLARE
.0034 oz.



Jim Richmond's
Salt Mine Props 17D-33P

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

HAL BLUBAUGH, 555 Moline St., Aurora, Colo. 80010
 JERRY M. BRICKEY, 109 Pennsylvania Ave. Apt. 6,
 Loves Park, Ill. 61111
 R. W. CARLISLE, 706 Beacon St., Newton Centre, Mass. 02159
 JAMES R. FIORELLO, P. O. Box 143, Barre, Mass. 01005
 TED GONZOPH, 12996 East 2nd Ave., Aurora, Colo. 80010
 RAYMOND E. MORRIS, 4431 Marvin Dr., Ft. Wayne, Ind. 46806
 R. W. OBARSKI, 3353 Charring Cross Dr., Stow, O. 44224
 FRANK J. PARYKAZA, P. O. Box 43, Willingford, N. J. 08046
 S/Sgt. F. E. SMITH 444 Ralph St., Apt. 323, Ft. Worth,
 Texas 76108
 ANDREW TOMASCH, 15641 Baintree Way, Mishewaka, Ind. 46544
 DON WEINS, 19732 Bixby Dr., Cupertino, Cal. 95014

Help Wanted!

Several readers have written to request more information on indoor HLG flying. That includes plans, hints, comments, flying strategy, etc. Sure, the Sweepette is still winning, but other gliders are being flown and are winning. How about some plans?

NIMAS Awards

SILVER CAT. I RUBBER AWARD - 11:04, Fred Harlow
 GOLD CAT. I RUBBER AWARD - 12:56, Fred Harlow

Scale Goodies!

Bill Hannan has announced that his new catalog "Plans & Things" is available for 25%. This booklet is a fascinating collection of illustrations, showing a wide collection of fun models, Peanut Scale models, Obscure Aircraft, and scale drawings of a wide variety of aircraft.

New Supplier

While aiding a local club in getting low cost indoor beginner kits, Jim Noonan bought materials in volume. He now has assembled a price listing of indoor parts, outdoor parts, and oldtimer items. Send a stamped, self-addressed envelope to Oldtimer Models, 7454 W. Thurston Cir., Milwaukee, Wis. 53218 to get a copy of the listing.

Postal Contests!

At one time, NIMAS members conducted a large number of postal meets, and the activity was coordinated thru NIMAS. Briefly, two clubs (or individuals) with similar sites would challenge each other to contests in specific events and exchange the results by mail. NIMAS Fudge Factors were then developed to give fairly equitable comparison between dissimilar sites, but not allowing for differences in flying conditions on specific days. This activity was responsible for many clubs having more fun with their indoor sessions, and getting to know club members in some other state (or country). It is interesting to note that recent postal activity has been nil (or unmentioned in letters to NIMAS), so what happened? Even the NIMAS Annual Postal meet participation fell off last year - are we too serious with our models and forgetting how to have fun at our sessions?

FAI INDOOR REPORTTeam Selection Program

The Team Selection Program which will name the 1972 U. S. Indoor Team opened on Jan. 1, 1971. A full text of the rules governing the Team Selection was printed in the Nov. '70 INAV, the Nov. '70 Competition News, and Feb. '71 AAM. A very important provision of those rules is aimed at those fliers not located in an area where FAI Indoor activity is high. Those fliers can enter the program by sending the proper fees (including \$1.25 for FAI Stamp if you don't have one) to AMA HQ. In fact, this is a good idea anyway - occasionally, a late-scheduled qualification trials will be unavoidably cancelled. Those who counted on entering the program at that event may be left out in the cold.

One Gram Model

At the time of this writing, all FAI Indoor models to be flown in U. S. Team Selections must weigh one gram less motor, and have wingspan equal to or less than 65 cm. It remains unlikely that the U. S. appeal of a less-than-majority vote will cancel the one gram ruling. (It was reported in Dec. '70 INAV that the vote adopting one gram was 10 "for", 5 "against" and 8 abstentions. Thus the "for" votes were a majority of those voting, but not of those present, and the ruling was appealed.)

Team Selection Trials Schedule

CALIFORNIA - Los Angeles. Local Qualif. Trials, Feb. 14, 1971, Santa Ana Hangar. Bob Randolph, 25145 Lawton Ave., Loma Linda, Cal. 92354, ph. 714-796-9706. All fliers who plan to attend must notify Randolph in advance due to security provisions at Santa Ana MCAS.

RECORDS? MAYBE!

A considerable number of AMA indoor records are now "up for grabs", since the adoption of the one gram rule and revision of AMA age groups. Specifically, the Junior age group now includes only those who will not reach age 15 by July 1, 1971, and Seniors are those who will not be 19 by July 1, 1971. Thus, all Junior and Senior records are open, and all U. S. FAI class records are open. Thus, the Brainbuster's Record Trials was timely:

BRAINBUSTER'S CAT. I. RECORD TRIALS - Jan. 2-3, 1971
 Willis School, Hampton, Va. 20' ceiling.
 Open FAI Cat. I FAI - 19:28.6, Bob Platt
 Open AMA Cat. I FAI - 18:41.4, Hal Crane

The above flights were made with one gram models, and thus qualify for the 1971 record listings.

CONTEST CALENDAR

CALIFORNIA - Los Angeles. Cat. III Indoor Record Trials at Santa Ana hangar. Jan. 24, 1971. CD - Bob Randolph, 25145 Lawton Ave., Loma Linda, Cal. 92354 714-796-9706.

COLORADO - Denver area. Cat. I Indoor contests on Jan. 24, Feb. 21 and Mar. 21, 1971. For more info contact George Batiuk, 2945 S. Teller St., Aurora, Colo. 80227 or D. McGhee, 1260 Elm, Denver, Colo. 80220.

ILLINOIS - Chicago. Indoor sessions most Sundays between Dec. 6, 1970 and Apr. 25, 1971, 9 am to 5 pm, at Forest View High School Gym, 2121 Goebbert Rd., Arlington Hts., Ill. Contact Pete Sotlich, 3851 W. 62nd Place, Chicago, Ill. 60629, ph. RE 5-1353.

MASSACHUSETTS - M.I.T. Indoor sessions at M.I.T. Armory, corner of Mass. Ave. and Vassar St. in Cambridge, Mass. Feb. 20, Mar. 20, 1971 3:30 pm to 6:30 pm. Contest April 10, 1971, 1 pm to 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. 01778 ph. 358-4013.

NEW JERSEY - Lakehurst. Tentative dates for hangar #5 or #6 - May 2, June 6, July 3-4, 1971. Contact C. V. Russo, 143 Willow Way, Clark, N. J. 07066.

OHIO - Painesville. Indoor sessions each Wednesday night at Painesville National Guard Armory. Contact Dick Smola, 650 Hoyt St., Painesville, O. 44077 ph. 261-354-8260.

TEXAS - Abilene. Contest announced as tentative has been postponed indefinitely.

TEXAS - Dallas/Ft. Worth. Contests planned tentatively for Jan. 31, Feb. 28, Mar. 28 and Apr. 25, 1971, pending availability of site. Sanction request for Jan. contest listed Paper Stick, HLG, Catapult Glider and AMA Cub. All events have separate class for Juniors. Special rules for Catapult Glider: 4" maximum projected span, catapult furnished. For Sr-Op. AMA Cub: Must use standard Cub prop, and standard airframe shape and dimensions. Wood sizes and materials optional.

DESIGN FOOTNOTES

One Gram Follow-up

The Dec. '70 INAV presented a summary of reported one gram model activity, but neglected one important facet of the problems involved.

As might be expected, props and rubber choice will be very important. Primarily, our present prop design trends are pretty good, but a new balance of strength vs. flare will have to be settled by trial and error (as usual).

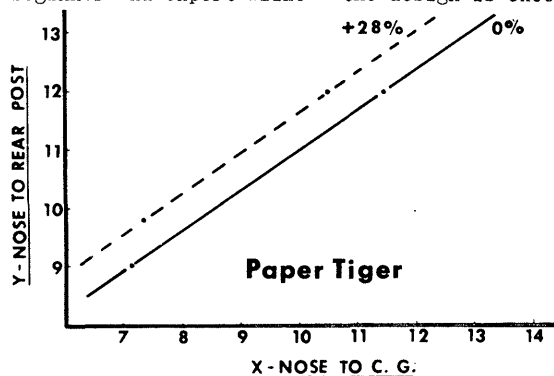
Of more importance will be rubber choice. The serious flier in tough competition must have the best rubber he can obtain, and be proficient in stripping a multitude of sizes. Several prominent fliers have done well in the past by using only standard available sizes of indoor rubber, but it is likely that this sort of flying will now serve only to find the right "ballpark". After the proper range of cross section is found, the proper loop length for a given site, temperature and conditions must be found by trial and error. It begins to be obvious that complete flight records will be helpful, since these records aid in judging just where to start under given conditions.

Locating good rubber will entail extensive testing. Some rubber tests have been printed in INAV in the past, and these will be repeated in future issues. Meanwhile, anyone who has a test that works well for them is invited to share it. Part of the test machinery that will be indispensable for meaningful testing (and flying) is a torque meter. One of the best designs for winding and testing is the design by Paul Crowley and Bob Bienenstein, which appears on page 38 of the Jan. '71 American Aircraft Modeler.

STATE OF THE ART

Jim Richmond's "Paper Tiger" is the model of the month. It has won both the '69 and '70 Nats, and holds both the Cat. II and Cat. III Paper Stick records with 21:55.6 and 26:56.0 respectively. The model is similar in design and trim to Jim's FAI models, which were chosen as the #1 design in the NFFS Top Ten Models.

In our opinion, the model's success is due both to good design and Jim's careful attention to detail, both in flight trim and choice of rubber motor. The CMOS diagram below shows both 0% margin and the +28% margin which Jim flew the model with. This model is heartily recommended for beginner and expert alike - the design is excellent.



LOW CEILING FORUM

Quick Trim Technique

by Hal Crane

First, balance the model in the normal way by locating the CG of the complete model without the wing. Locate the wing so the CG falls at the proper place with regard to the wing chord. For higher aspect ratio wings (6:1), use 80% CG, but for lower A/R (4:1) the CG may have to be as far forward as 50%. Install the wing sockets temporarily on top the stick, using a diagonal brace:



It is possible to trim and adjust the model alone, at home. Several tools and gadgets will be helpful including a winding stooze with the rapid unwind feature, a torque meter, and a scale for weighing. Wire O rings or safetied figure 8 hooks will ease the handling, at least for testing the model:



Be sure that your house has an EL-shaped living-dining room or the equivalent, not too cluttered with furniture. It is a great advantage to fly and adjust the model at home. I usually make a first attempt to trim by glide testing without the prop. Use clay ballast equal to the weight of prop and rubber and locate it slightly forward of the normal CG of the rubber motor. (With prop on and no rubber, a fairly well trimmed model will tend to mush rather than glide.) Start powered tests with about half winds on a motor of adequate size cross section. For scrubbing at Willis (20' ceiling) the motor will be shorter than for Cat. II or Cat. III flying. For Willis, the length will be about 1.1 or 1.2 times the hook span, before breakin. The weight of the rubber should be equal to or larger than the airframe weight.

Launch the model and check for a slight climb. If the wing has 1/8" or 3/16" incidence, adjust negative stabilizer incidence as needed (be sure that it is negative; that is, trailing edge up).

If the model looks OK for a normal launch, launch the model in a stall or near stall to check the recovery. Then launch slightly nose down to check recovery and then more nose down. If recovery is slow from a dive, increase negative stabilizer incidence. Checking trim at home seems to be a very quick method of getting a good adjustment.

Now repeat the tests at higher power. For example, wind fully and back off 200 turns, or use your torque meter to get a better measure of what you have done (the torque meter permits good repeatability of test values).

If the model cannot be trimmed to recover from both a stall and a dive, the wing should be moved backward perhaps half an inch to increase stability. Of course, a neutral point calculation would be desirable to increase the chances of getting the wing location right the first time. (Ed. Note - see "Constant Margin of Stability, Jan. '69 INAV or send stamped envelope for CMOS packet. Also, Hal published an improved neutral point method in the 1970 NFFS Symposium report.)

So far, we have been talking about pitch trim. The model should be adjusted simultaneously for circling. Willis is less than 60' x 60' so the circle must be less than 20' in diameter. Stabilizer tilt should be used to help maintain the circle under full power and prevent power stalling by forcing the tail around. Adequate dihedral, some wing offset and twist all help to maintain trim under high power. One limit we frequently approach at Willis is caused by the model skidding into a large turn under high power. A 50' turn can be a nuisance in a 60' site! Perhaps the best fix for skidding out of the turn would be increased dihedral on the outboard wing tip. A last ditch remedy is to increase the size of the rudder.

The trim technique described lets you arrive at the contest ready to make a fairly good flight. However, the nose may not be trimmed high enough to slow the model down for maximum duration. At Willis the model will then tend to speed up when flying near the ceiling and hit the lights harder than necessary. Worse yet, the model will also probably not recover if it touches a wall.

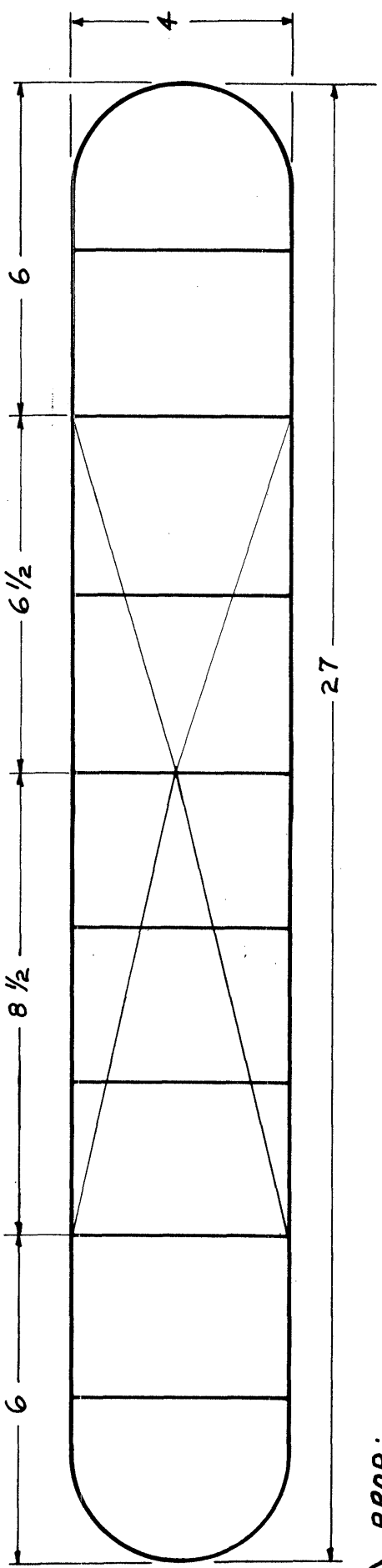
Nose high, or slow flight trim becomes even more essential at Willis, because besides increasing the possible duration, the slower flying model is more likely to survive long periods of scrubbing and bumping. Even more important, the model will tend to stall away from the walls. Drift toward a wall can then be tolerated with little or no need for steering.

To get better nose high, slow flight, trim, I would use moderate wing incidence and more negative stabilizer incidence. Under high power there will be more tendency to stall which can be relieved by using a slack bracing on the motor stick. This permits the rubber tension to reduce the negative stabilizer incidence and provide some downthrust. If trimming becomes difficult, it should also help to move the wing back perhaps half an inch to increase the stability.

This home-test procedure may sound complicated and time-consuming. However, it should be possible to do a good job in about an hour unless the wing has to be re-located. This hour can be very precious at the flying site or contest. Be sure to handle the model and rubber carefully during the testing!

Before we forget, after you are satisfied with the trim, it is desirable to bury the wing sockets in the motor stick. It is also helpful to mark the proper settings of incidence on the wing posts with a felt marker. Then you should be set to blast off, right out of the box, when the time comes. For the first flight, be a little chicken and back off a few turns to make it a safe one!

Jan 71

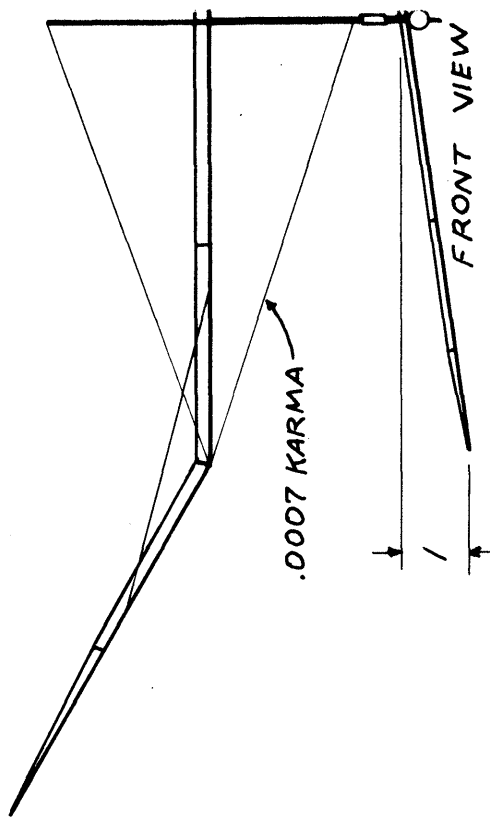
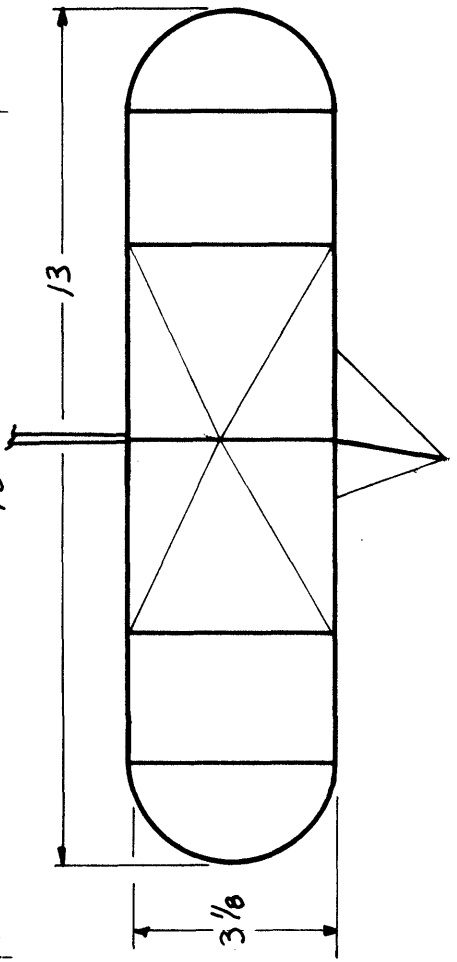
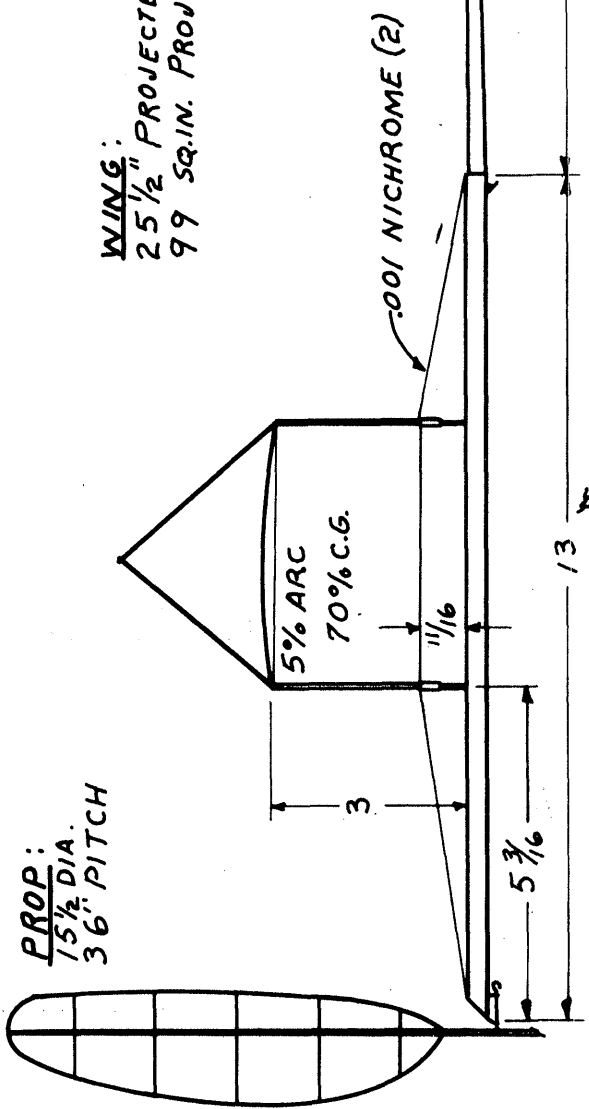


PROP:
1 1/2" DIA.
36" PITCH

WING:
2 1/2" PROJECTED SPAN
99 SQ. IN. PROJ. AREA

WEIGHTS:
WING .0156
BODY+TAIL .0150
PROP .0050
TOTAL .0356

BEST FLIGHT:
21: 55.6- CAT. II



PAPER TIGER by Jim Richmond

THE LAB

Artificial Aging of Rubber

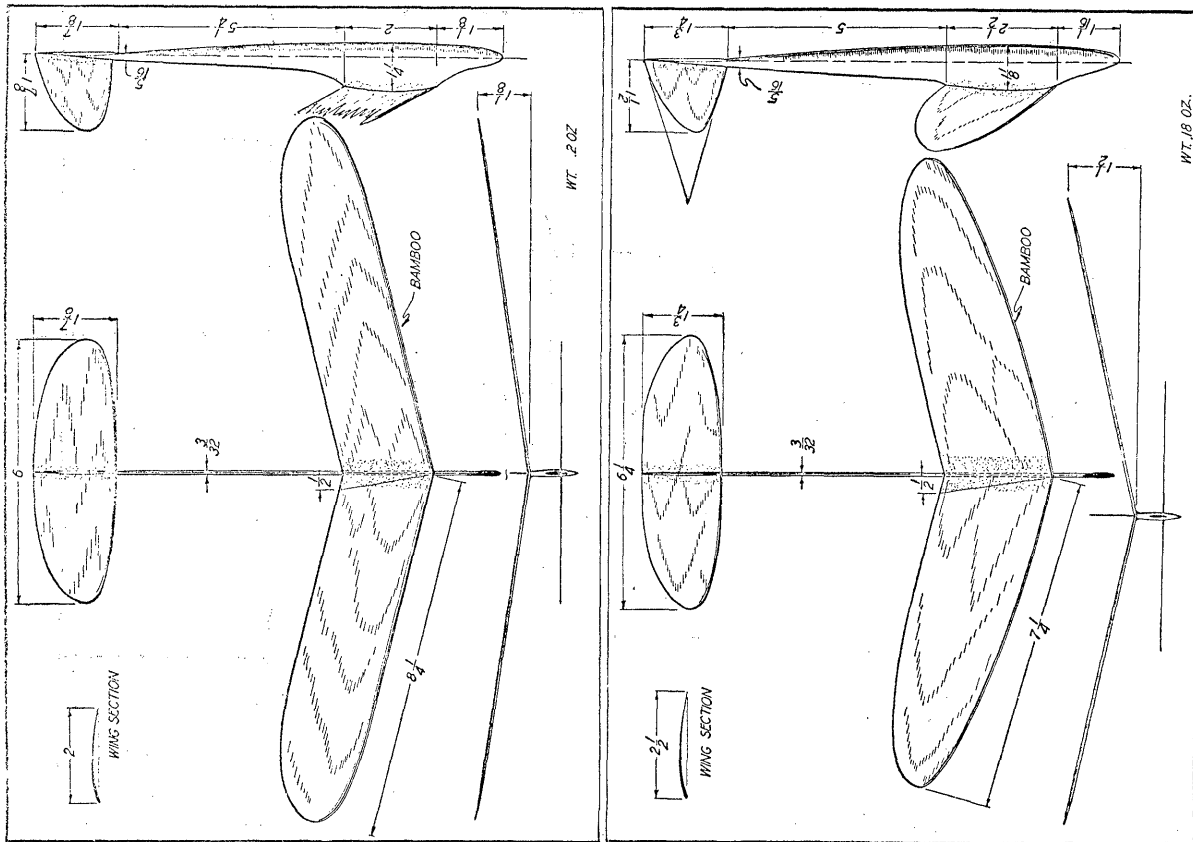
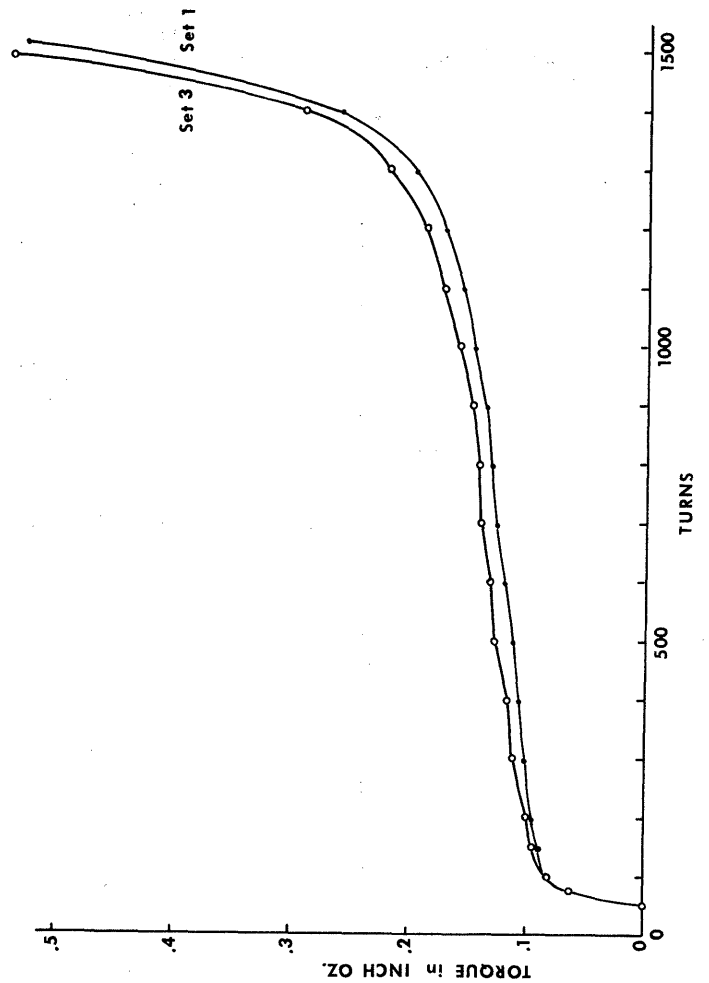
Quite some time ago (early in 1969) an ambitious program of rubber testing was initiated with the help of other fliers around the country. Some of the rubber samples broke under testing, a few of the tests never got started, and some of them were finished properly. To the dismay of the testing personnel, the laboriously generated data vanished into the NIMAS archives while waiting for more to come in. Out of sight-out of mind! Upon proper prodding, the missing data have been exhumed and part of it has presently been computer analyzed by Bob Meuser, and the plots below have been traced from computer generated plots. Each plot is the average of identical tests performed on each of three motors from the same batch, with identical handling and break-in procedures. In this case, the test was to examine change in characteristics of pirelli after storage at elevated temperatures.

Four complete sets of motors were prepared, and coded in groups of three. Set #1 was held as a control, while sets #2, 3 and 4 were subjected to storage at 120° F. for 48 hours, 96 hours and 144 hours respectively. Comparison of 12 graphs (for the third windup on each motor) showed the most interesting change to have occurred with set #3 (96 hours exposure), and this graph is compared to the graph of set #1 (control) below.

Bob Meuser analyzed the results thus: "It appears that aging and prewinding both increase the energy storage for the same maximum torque. But if aging and prewinding decrease the torque that the motor can stand without breaking then the energy may not be increased. It would have been very interesting to continue the testing for several more wind-ups, ultimately winding to deliberate destruction as a measure of ultimate energy storage."

A LOOK AT YESTERYEAR

'Way back in 1938, Model Airplane News ran several features dedicated to explaining the differences between models for blimp hangars and for lower ceiling sites such as the various armory-type buildings then in occasional use around the country. Wilbur Tyler presented the two HLG models shown below as part of that series. At the end of the article, he concludes "A correctly constructed glider is good for about one second of flight time for every foot of effective flying height up to about 40 or 45 feet. Above 45 feet a glider is out of the low ceiling class and requires heavier wing construction."



INDOOR**NEWS and VIEWS**

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

New Members!

DANNY AGGERS, 50 Pueblo Ct., Sayville, N. Y. 11782
 DONALD F. BALKE, 191 Elm Rd., Inwood, N. Y. 11696
 R. D. COONEY, 1381 N. E. Arrington, Hillsboro, Ore. 97123
 P. CUTRONE, Richards Avenue, Norwalk, Conn. 06850
 ROBERT DURIS, 279 Dayton Rd., Trumbull, Ct. 06611
 CHUCK ERIKSEN, 14731 Lull St. Unit 3, Van Nuys, Cal. 91405
 MIKE FEDOR, 1926 Ballaway, Grand Prairie, Tex. 75050
 LEON J. FRIEDMAN, 112 Heatherstone Rd., Amherst, Mass. 01002
 TIBOR GALL, 7650 Hwy 90W, San Antonio, Tex. 78211
 HOWARD E. HEMINGER, 102 W. Montana, Glen Ellen, Ill. 60137
 WALTER P. B. KULZER, 7309 Coronet Ave., Ft. Worth, Tex. 76118
 GLENN R. O'ROAK, JR., Palmer Rd., Plympton, Mass. 02364
 REX RECTOR, 707 Highwood, Greencastle, Ind. 46135
 THOMAS K. SMYLY, 2190 Rosemary St., Simi, Cal. 93065
 HOWARD M. THOMAS, 275 Belmont Ct. W., N. Tonawanda, N. Y. 14120
 LARRY VINCEK, 1911 East 34th St., Lorain, O. 44055

Change of Address

Wayne Zink moved some time ago and wants his new address announced: R.R. #2, Woodburn, Ind. 46797.

As a reminder: any NIMAS member who moves and would like to have his new address published should note this on the change-of-address notice. We are happy to make these announcements, but they must be requested.

NIMAS Founder Honored

Pete Sotich, one of the seven co-founders of NIMAS, was honored last month by the Chicago Aeronuts Club at their annual banquet held Jan. 24, 1971. In a surprise ceremony, Pete was presented with an autographed sketch of himself and an engraved "Tissot" Automatic Calendar wristwatch. Pete was surprised and overwhelmed by the award - but it was well deserved. Pete's service to both the Aeronuts and to modeling in general is legendary. We join the Aeronuts in honoring Pete!

Prop Blocks?

Herman Adams, P. O. Box 491, Rome, Ga. 30161, has investigated the possibility of machine-carved indoor prop blocks, material to be soft pine. Anyone who would be interested should contact Herman; prices would depend upon the number produced. Coordination of orders for each specific pitch would be necessary.

Hannan Address

Last month we announced that Bill Hannan had new catalog sheets available, but listed no address! So: Bill Hannan, P. O. Box A, Escondido, Cal. 92025.

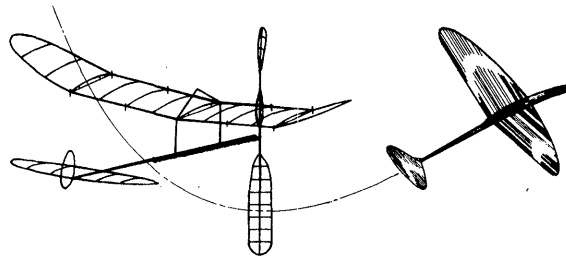
New Supplier

Need a torque meter, bracing wire, stainless steel straightedge, microfilm, motor stick or spar stock? These are a few of the items now being produced by Ron Plotzke, Jim Jones and Erwin Rodemsky. Their main item will be select balsa wood, with each sheet guaranteed usable on competition indoor models. Saw marks, hard streaks, thick or thin spots, or cracks will be reason enough for refund or replacement. For a price list, send a stamped, self-addressed envelope to:

Ron Plotzke
 36659 Ledgestone
 Mt. Clemens, Mich. 48043
 Phone 313-791-9486

Nats Dates

The U. S. Navy has confirmed the dates of July 26 to Aug. 1, 1971 for the 1971 Nats, to be held at Glenview NAS just north of Chicago, Illinois. No announcement has been made of the indoor site or dates, but the indoor events most likely will be July 26 and/or July 27, 1971.



Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

FAI INDOOR REPORTWeighing Of FAI Models

The following memo was made available to members of the FAI Indoor Committee and to AMA HQ for distribution to CD's of Team Selection Trials:

1. Weighing of all models at Local Qual. Trials can be performed at the discretion of CD's. Weighing of all qualifier models must be performed, either before the flight or after. The reason for quibbling at this point is because we have no weighing experience and no guideline for the best and safest (for the model) procedures. Bob Gibbs is planning to check a couple of types of scale and report on what seems best. If any others have comments or suggestions, please send them to me. Meanwhile, at the Santa Ana RT on Jan. 24, Bob weighed several models on a simple spring scale and said there was no difficulty. There was no ground turbulence to complicate matters, and if there is such turbulence, we may have to devise a screen to shield the weighing area.

2. All models shall be weighed before the flight at Semi-Finals and Finals. By that time we should have enough experience to be able to recommend the proper type of scale and the proper safeguards for the models.

3. If ballast is needed, it must be attached in a manner clearly intended to be permanent. Both AMA and FAI Rules are specific on this.

Team Selection Trials Schedule

CALIFORNIA - Los Angeles. Local Qual. Trials, Feb. 14, 1971, Santa Ana Hangar. Bob Randolph, 25145 Lawton Ave., Loma Linda, Cal. 92354, ph. 714-796-9706. All fliers who plan to attend must notify Randolph in advance due to security provisions at Santa Ana MCAS.

VIRGINIA - Hampton. Local Qual. Trials, Apr. 17-18, 1971 subject to site availability. Hal Crane, 4002 Buchanan Dr., Hampton 23369, ph. 703-723-0861.

Register Now

All fliers who plan to compete in the Team Selection Program are reminded that it costs no more to enter via AMA HQ, and this is insurance of being able to participate in the program regardless of site loss or other natural catastrophe! Simply send \$5 to HQ (\$2 for Juniors) and ask for a program entry form. If you don't have the FAI Stamp on your license, you'll need to buy that also.

CONTEST CALENDAR

COLORADO - Denver area. Cat. I Indoor contests on Feb. 21 and Mar. 21, 1971. For more info contact George Batiuk 2945 S. Teller St., Aurora, Colo. 80227 or D. McGhee, 1260 Elm, Denver, Colo. 80220.

ILLINOIS - Chicago. Indoor sessions most Sundays through April 25, 1971, 9 am to 5 pm, at Forest View High School Gym, 2121 Goebbert Rd., Arlington Hts., Ill. Contests on Feb. 28, Mar. 28 and Apr. 25, 1971. For more info contact Pete Sotich, 3851 W. 62nd Place, Chicago, ph. RE 5-1353.

MASSACHUSETTS - M.I.T. Indoor sessions at M.I.T. Armory, corner of Mass. Ave. and Vassar St. in Cambridge, Mass. Feb. 20, Mar. 20, 1971 3:30 pm to 6:30 pm. Contest April 10, 1971, 1 pm to 8 pm. Contest events: Indoor Stick - JSO; Delta Dart - Jr. only, HLG - JS & O; Indoor Scale - JSO. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass.

MASSACHUSETTS - Amherst. Indoor sessions each Sunday am at ballroom of University of Mass. Contact Leon Friedman, 112 Heatherstone Rd., Amherst, Mass. 01002.

MISSOURI - Kansas City area. Indoor contest sponsored by the Winged Motors of Kansas City and Midland Airfoilers of Olathe, Kansas. Meet 1s Feb. 20, 1971, 1 pm to 5 pm, at Olathe Jr. High School. Jr. Rubber, HLG, PennyPlane, Easy B, Indoor Scale. For more info, contact Roger Schroeder, 4111 W. 98 St., Overland Park, Kan. ph. 913-648-4265.

MISSOURI - St. Louis Area. Indoor sessions Feb. 21 and Mar. 21, 1971; contest Mar. 7, 1971 at Ft. Zumwalt High School, O'Fallon, Mo. Contest events - HLG, Delta Dart, Peanut Scale, Easy B, Indoor Stick. Contact Paul Tryon, 735 Riderwood Dr., Hazelwood, Mo. 63042 for times and other details.

NEW JERSEY - Lakehurst. Tentative dates for hangar #5 or #6 - May 2, June 6, July 3-4, 1971. Contact C. V. Russo, 143 Willow Way, Clark, N. J. 07066.

NEW YORK - Hicksville. LIAMAC Indoor meet, May 2, 1971, at Cantiague Park Skating Rink, Hicksville, L. I., N. Y. Paper Stick, Indoor Stick, Easy B, HLG, Indoor Scale. Contact J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, N. Y. 11545.

OHIO - Painesville. Indoor sessions each Wednesday night at Painesville National Guard Armory. Contact Dick Smola, 650 Hoyt St., Painesville, O. 44077 ph. 261-354-8260.

OKLAHOMA - Tulsa. Tulsa Glue Dobbers club meet or RT. Feb. 14, 1971. Contact Bob Dunham, Box 7151, Tulsa, Okla.

TENNESSEE - Manchester. Indoor contest Mar. 21, 1971, Manchester High School Gym, Manchester, Tenn. Paper Stick, Indoor Stick, HLG, Indoor Scale and Peanut Scale. Contact Ben Cleveland, 708 County Club Dr., Tullahoma, Tenn. 37388

TEXAS - Ft. Worth/Dallas. Indoor contest Mar. 14, 1971, 3 pm to 9 pm, Arlington Rec. Center, Arlington, Tex. HLG, Indoor Stick, Easy B, AMA Cub. Bud Tenny, Box 545, Richardson, Tex. 75080 ph. 235-4035. Cat. I site.

VIRGINIA - Hampton. FAI Warmup session, Mar. 6-7, 1971. Willis School, Cat. I. Hal Crane, 4002 Buchanan Dr., Hampton, Va. 23369.

VIRGINIA - Richmond. Flying sessions two Fridays each month in small Cat. I site. Contact Fred Harlow, 9724 Royerton Dr., Richmond 23228, ph. 701-262-9112 for info on place and time.

WASHINGTON - Seattle area. Indoor meets Feb. 27 and Mar. 27, 1971, 6:45 pm to 9:45 pm. HLG, Indoor Scale, Easy B. Contact Bob Stalick, 1120 Shady Lane, Albany, Ore. 97321 for site info.

INTERNATIONAL CONTESTS

Czech National meet, Z Hall in Brno, July 4-5, 1970
Temperature 21 to 25° C, Humidity 40-70%

1. Edward Chlubny	33:38	28:14	61:52
2. Jiri Kalina	30:11	30:53	61:04
3. Jar. Jirasky	20:54	25:46	46:40
4. Tom. Weigert	20:25	26:00	46:25
5. Jan Hrdlicka	19:30	17:43	37:13
6. Rudolf Cerny	19:01	16:38	35:39

Third International meet, Z Hall in Brno, Oct. 31, 1970
Temperature 14° C, Humidity 75%

1. Jiri Kalina	30:35	32:25	63:00
2. Karol Rybecky	30:02	30:53	60:55
3. Andras Ree (Hungary)	26:15	28:20	54:35
4. Eduard Chlubny	28:45	24:56	53:41
5. Rudolf Cerny	26:45	24:57	51:42
6. Josef Zolcer	24:01	27:40	51:41

Czech National meet, Z Hall in Brno, Nov. 7-8, 1970
Temperature 8° C, Humidity 70%

1. Tom. Weigert	21:51	21:30	43:21
2. Karol Rybecky	25:10	16:32	41:42
3. Jiri Kalina	21:19	15:06	36:25
4. Jan Hrdlicka	21:10	14:55	36:05
5. Eduard Chlubny	21:47	10:58	42:45
6. Jar Jirasky	16:07	15:44	31:51

Final Results, Czech National Championship for 1970*

1. Jiri Kalina	61:04	63:00	124:04
2. Eduard Chlubny	61:52	53:41	115:33
3. Karol Rybecky	60:55	41:42	102:37
4. Tom. Weigert	46:25	51:20	97:45
5. Jar. Jirasky	46:40	50:05	96:45
6. Rudolf Cerny	35:39	51:42	87:21

*Placings in this competition may serve to choose the Czech team for 1971 International competition.

NEWS FROM AROUND THE WORLD

AUSTRALIA

After several years of wishing by Boyd Felstead and recent hard work by Boyd, Gordon Burford and others, the 1970 Australian Nats included an event for indoor stick. The site was small, about 30' x 70' with a 20' ceiling and numerous obstructions. Seven fliers entered, and Boyd won the event with 5 1/2 minutes. We can rejoice with Boyd as he says, "We have at last re-started."

CZECHOSLOVAKIA

Increased exhibition activity at Z Hall in Brno has reduced flying opportunities during the warm summer months and cold weather has taken its toll in reduced times. The U. S. PennyPlane event caught Czech fancy, so they have created a new Czech competition category P3. The rules: 450 mm span, 450 mm overall length, 250 mm motor stick length, Czech fifty heller coin (3 g) minimum weight. Score - best two of six starts.

ENGLAND

Laurie Barr is making a concerted effort to increase indoor interest and activity in England, with a three-pronged plan. He is stocking indoor supplies for the convenience of enthusiasts, he is making a concerted effort to find suitable flying sites, and he has written a very comprehensive handbook giving indoor building instructions and is getting the handbook published in FREE FLIGHT NEWS. The NEWS is a very well done FF newsletter, published by Ian Kaynes. Good luck to Laurie and his cohorts!

STATE OF THE ART

This month's offering could almost qualify for A LOOK AT YESTERYEAR - the Sweepette originated early in 1961 or maybe 1960; the product of painstaking cut-and-try testing and improvement. It has withstood the test of time, and remains a formidable contest threat in the hands of many experience HLG fliers. Thanks to Dave Linstrum and NFFS for this use of material from SYMPO 70.

RECORDS? MAYBE!

Indoor Airplane Record Trials, Jan. 17, 1971, Cleveland, O. Cleveland Public Hall, 80' ceiling.
Open Cat. II HLG - 2:22.9, Bucky Servates
Senior R.O.G. Stick - 7:35.0, Dale Hacker
Senior Indoor Stick - 7:35.0, Dale Hacker
Junior Paper Stick - 7:01.3, Tom Didovitsky
Junior Ornithopter - 0:30.0, Susan Johnson
Senior AMA Cat. II FAI, 8:13.0, Alan Szabo

Class A Indoor Contest, Jan. 31, 1971, Mesquite, Texas
Florence Community Center, Cat. I, 22' 9" ceiling.
Junior Indoor Stick - 9:24.0, Kristi Tenny
Junior AMA Cat. I FAI - 9:24.0, Kristi Tenny
Senior R.O.G. Stick - 2:45, Jim Haught
Senior Paper Stick - 4:34.0, Jim Haught

Cat. I Record Trials, Jan. 20, 1971, Hampton, Virginia
Willis School, 20' ceiling.
Open AMA Cat. I FAI - 18:46.8, Hal Crane

Santa Ana Record Trials, Jan. 24, 1971, Cat. III
Santa Ana Hangar, Santa Ana MCAS, California
FAI Stick Record - 27:31, Bob Randolph. (This flight was made with a one gram model, but it is not known which record or records Bob filed on.)

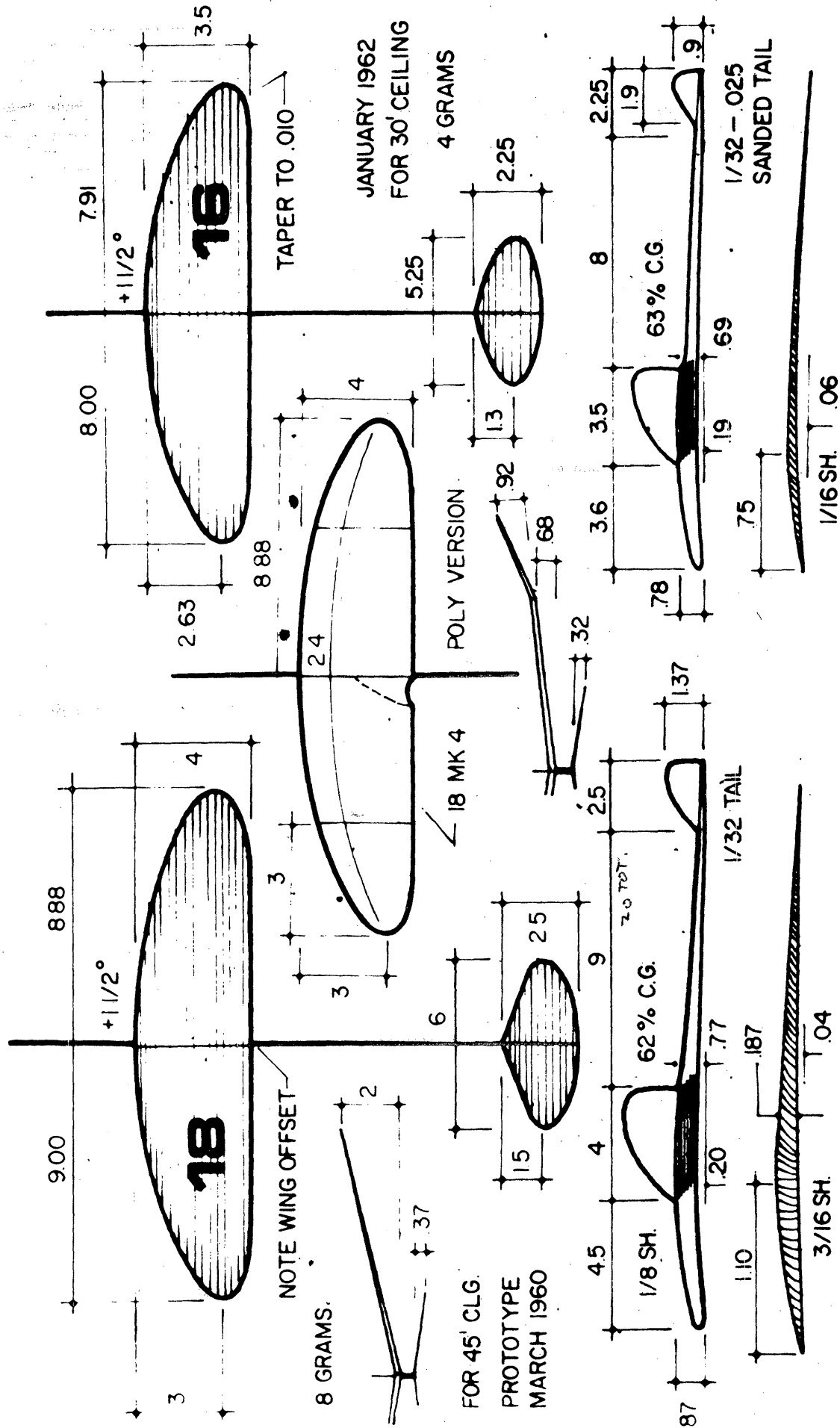
The listing below appeared in the December Competition Newsletter, and the deleted portions are intended as a reminder of which records opened up as of Jan. 1, 1971.

NATIONAL AMA RECORDS--AS OF DECEMBER 21, 1970

INDOOR, AMA CEILING CAT. I				INDOOR, AMA CEILING CAT. II			
Category	Age	Min/Sec	Held By	Category	Age	Min/Sec	Held By
ROG Stick	Jr.	2:35.2	Eric Jones	ROG Stick	Jr.	8:10.0	Don Schoenly
"	"	2:50.0	Larry Loueka	"	"	10:19.5	Larry Loueka
"	Op.	12:10.0	Hubert A. Entrop	"	Op.	15:53.2	Joseph F. Hines
Paper	Jr.	9:52.0	Robert Dunham, II	Paper	Jr.	15:30.5	Linda Randolph
Stick	Jr.	8:50.0	James Skinner	Stick	Jr.	16:45.6	Jan Servates
"	Op.	14:01.0	Robert Randolph	"	Op.	21:55.6	James W. Richmond
HL Stick	Jr.	15:20.0	Robert Dunham, II	HL Stick	Jr.	25:12.1	Linda Randolph
"	Op.	14:55.0	Tom Newman	"	Op.	25:50.0	Jim Skinner
ROG Cabin	Jr.	6:24.0	Robert Dunham, II	ROG Cabin	Jr.	11:52.4	Robert Dunham, II
"	Op.	17:49.4	Robert Randolph	"	Jr.	18:06.4	Larry Loueka
Autogiro	Jr.	2:25.5	H. Schubert, Jr.	Autogiro	Jr.	2:10.0	Harbert Schubert
"	Op.	2:40.5	Edmund Smith	"	Jr.	2:40.2	David Reback
"	Op.	4:19.0	Ronald Ganser	"	Op.	6:32.8	Walter Erbach
Helicopter	Jr.	4:33.0	Nickey Jones	Helicopter	Jr.	2:44.2	David Reback
"	Op.	10:36.0	Hewitt Phillips	"	Op.	4:30.3	Nickey Jones
Ornithopter	Jr.	0:52.5	Robert Postage	Ornithopter	Jr.	7:01.0	Thomas Vallee
"	Op.	3:50.1	Kenneth Johnson	"	Op.	3:44.0	Robert Postage
H.L.G.	Jr.	4:09.2	Robert Postage	H.L.G.	Jr.	5:15.2	Kenneth Johnson
"	Op.	1:18.8	Daniel C. Belleff	"	Jr.	2:42.7	Bill Schubert
FAI Stick	Jr.	15:20.0	Robert Dunham, II	FAI Stick	Jr.	25:12.1	Linda Randolph
"	Op.	11:06.0	Michael Feder	"	Op.	20:57.0	William Gibbs
"	Op.	20:35.8	Thomas F. Vallee	"	Op.	34:57.0	James W. Richmond

INDOOR, AMA CEILING CAT. III

Category	Age	Min/Sec	Held By	Category	Age	Min/Sec	Held By
ROG Stick	Jr.	15:09.0	Arthur Saltzman	Ornithopter	Jr.	1:48.7	Robert Postage
"	Op.	21:52.0	Joseph Foster	"	Op.	3:22.0	John Beck
Paper	Jr.	21:07.0	Linda Randolph	"	Op.	4:30.5	Fred J. Weitzel
Stick	Jr.	15:48.6	Raymond B. Haslan	H.L.G.	Jr.	2:00.0	Randy Richmond
"	Op.	26:56.0	James W. Richmond	"	Op.	3:20.2	Arthur Mackenzie
HL Stick	Jr.	27:17.0	Bob DeStefanis	"	Op.	2:50.4	Curt Stevens
"	Op.	35:06.0	Bruce Norris	FAI Stick	Jr.	11:02.0	Linda Randolph
"	Op.	43:42.0	Ernest Kopschy	"	Op.	23:58.6	William Gibbs
ROG Cabin	Jr.	18:33.1	Randy Richmond	"	Op.	41:45.0	James W. Richmond
"	Op.	19:21.0	Raymond B. Haslan	INDOOR, FAI CEILING--AGES COMB.			
"	Op.	29:06.3	Joe Bilgri	Category	C/H/I	Min/Sec	Held By
Autogiro	Jr.	3:45.2	Edward A. Vargo	Stick	II	20:49.5	Thomas Vallee
"	Op.	4:27.0	David Reback	"	III	19:16.8	Tom Chilton
Helicopter	Jr.	4:27.0	Fred J. Weitzel	"	IV	34:57.0	James W. Richmond
"	Op.	6:45.6	Edmund Smith	"			
"	Op.	8:11.0	Hal Cover				



THE SWEEPETTE

UBIQUITOUS INDOOR HLG LEE HINES CALIFORNIA

3-VIEW BY DAVE LINSTRUM NFFS

103 1/2
280 OK

18

Does Rubber Get "Tired"?

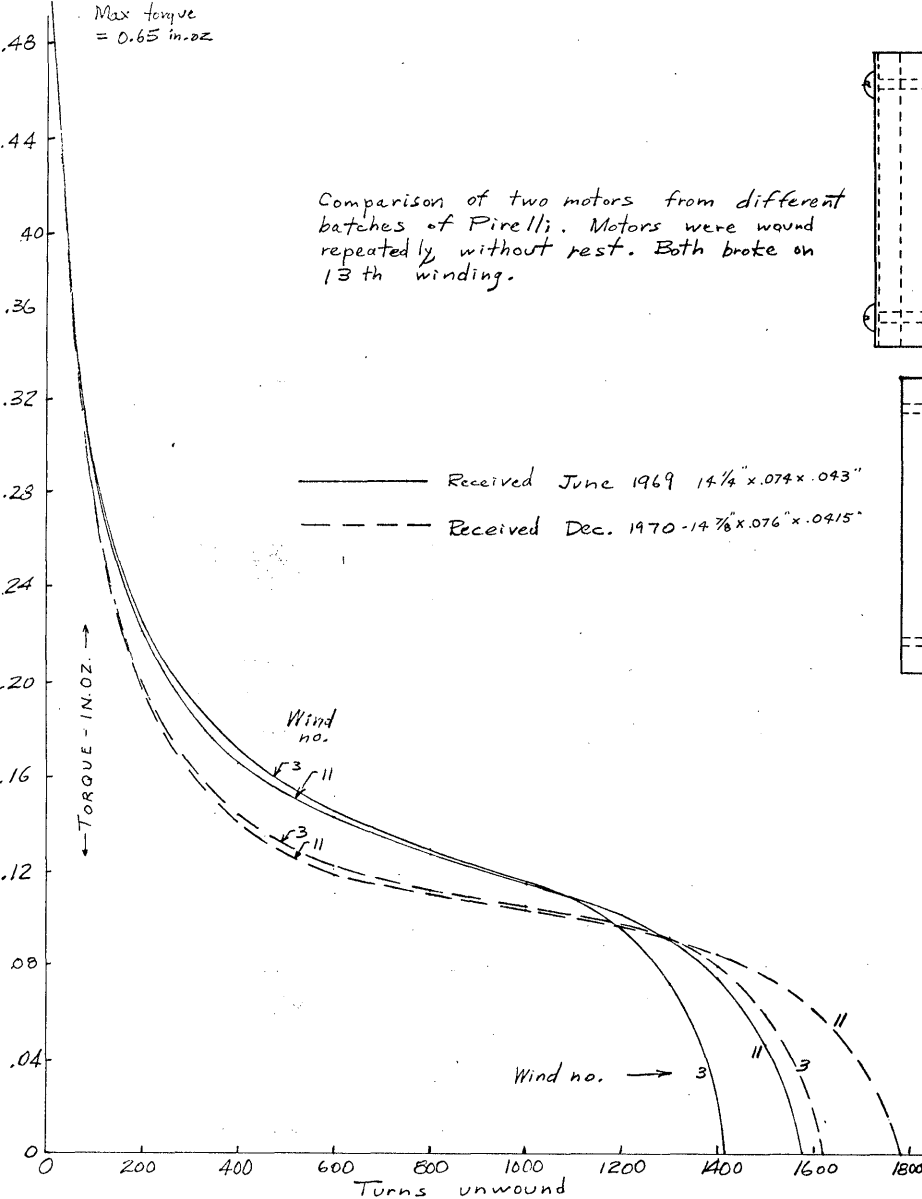
After hearing comments about "tired rubber" which seemed to conflict with his own experience, Bob Platt ran a test which is summarized in the curves shown below. Bob makes these remarks about the test:

"This is pretty similar to the tests I ran about three years ago where I measured torque curves for repeated winding of the same motor. These new data are taken for 11 winds with no rest between winds. There was no break-in before the first wind.

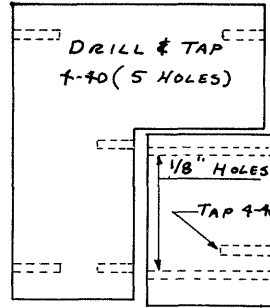
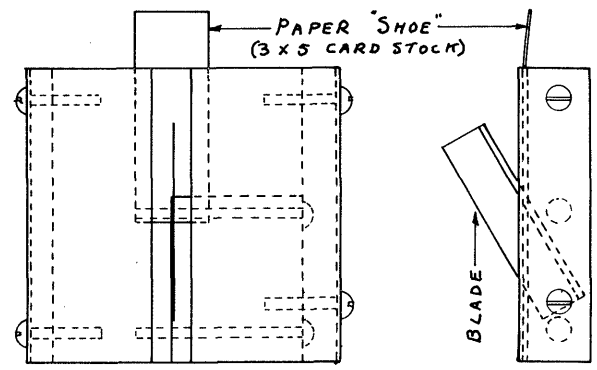
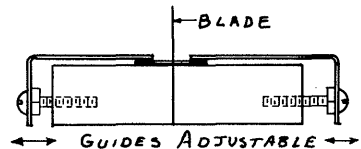
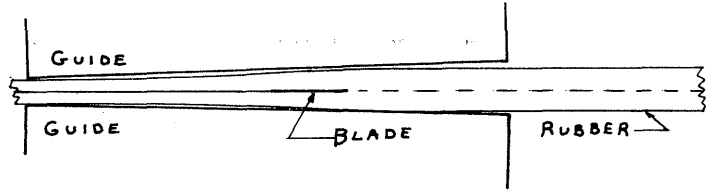
The torque curves are for two different motors, one from rather stiff, old rubber and the other from new and softer rubber of not particularly good quality. This plot is a comparison of the third and eleventh winds of each motor. All runs were wound to the same maximum torque.

As I see it, there is no real tiring of the rubber, for the area under the torque curve is greater for the eleventh winding than for the third winding in each case. There is a little change in the shape of the curve, giving a little lower torque for climb and cruise and more turns to compensate for this. This could be corrected by using a slightly lower pitch prop with a much-used motor, or more simply, by shortening the motor a little.

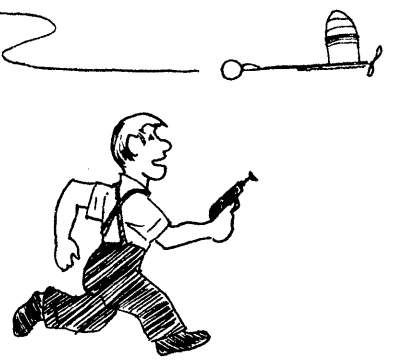
Note that the curves indicate that a motor is never completely broken-in; the number of turns it will take increases with each wind. This will complicate testing if you are trying to find the effect of some variable such as slack."



The drawing below was reprinted from an earlier INAV, and shows a stripper designed by Erwin Rodemsky. As with all pull-type strippers, its application should be to make an approximate 50-50 split in whatever width of strip you have (there is a minimum width of strip which can be cut, depending upon operator skill and luck). In later versions, the paper "shoe" shown below has been made from old movie film. The purpose of the "shoe" is to prevent the rubber from pulling down into the blade clamping channel and distorting the cut. The top part of the sketch shows how the guides should be adjusted closer together past the blade. This is important, since the rubber pulls out to a narrow strip past the blade, and the tapered cutting channel helps maintain even cutting.



STRIPPER BASE
 3/8" ALUM. OR PLASTIC



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

- CHARLES H. ADAMS, 244 E. Sunset Rd., San Antonio, Tex. 78209
 SAM CASEY, 3619 Wheeler, Apt. 232, Dallas, Texas 75209
 HENRY H. COTTRELL, 10857 Larson Dr., Denver, Colo. 80233
 J. JAMES DAVIS, c/o Great Northern Container, Box 948, Appleton, Wis. 54911
 RICK FISHER, 165 King St., Weston, Ontario, Canada
 JOHN P. KUKON, 14 Brandon Rd., Trenton, N. J. 08638
 JAMES I. MILLER, 827 Yorkhaven Rd., Cincinnati, O. 45240
 ARTHUR A. SLATER, 10 Broadview Dr., Commack, N. Y. 11725
 CHRIS WEIR, 209 Coral Ave., Balboa Is., Cal. 92662

Address Correction

In the Jan. '71 issue, Frank Parykaza's address was listed incorrectly; it is P. O. Box 43, Willingboro, New Jersey 08046. Sorry!

Change of Address

Gerald Knoblauch has requested that his new address be announced, it is: 121 Hoskins Rd., Simsbury, Ct. 06070.

Chuck Broadhurst

On Feb. 28, 1971, Chuck Broadhurst passed away in his sleep. Chuck was a NIMAS member, the Executive Director of NFFS, and AMA VP of Dist. X. In addition, he was a Specialty Correspondent (FF Power) for AAM. We will all miss Chuck and his most energetic support of many phases of our activity.

FAI FF Qualification Trials

FF Team Program Director Dave Linstrum has announced that first-round qualification meets for the 1973 FAI FF World Champs will begin April 4, 1971 and can continue through Aug. 1, 1971. Most other aspects of the preliminary qualification sequence are identical to past programs with details of semi-finals and finals to be announced. In other words, get the sanctions set up! If you have any questions, contact Dave at 972 Plum Grove Circle, Buffalo Grove, Ill. 60090.

New Catalog From Micro-X

Micro-X Products, 5200 Seven Pines Dr., Lorain, Ohio 44053, just issued their new catalog. Drop them a 6¢ stamp with your request - the catalog is mailed w/o envelope. This catalog lists several new items - silver microlite, Gitlow's indoor book, 16:1 winders and .0006 nichrome.

Rubber Strippers Available

Bob Dunham's rubber stripper assembly line is starting up again. He sells Bilgri-type strippers which really work well, with a price of \$5.50 postpaid in the U. S. The deadline for ordering them is April 15, 1971; Bob's address is P. O. Box 7151, Tulsa, Okla. 74105.

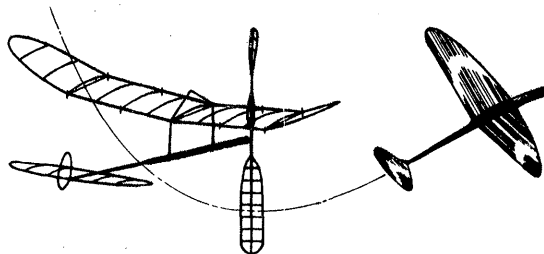
New Product Wanted

It would be very nice if calibrated spacers were made available for Bob Dunham's strippers! Such spacers should be rectangular and large enough to support most of the area of the blades. A set of 7 or 8 spacers would permit sufficient variety of settings for anyone, and would make possible easy repeat cuts. Bob doesn't have facilities to make spacers but surely some NIMAS member does!

FAI INDOOR REPORT

Qualification Via AMA Contests

Some questions have arisen about qualifying for entry in the Semi-Finals by flying in AMA contests. Basically, the procedure is simple: you must enter the Program by sending the proper fees (\$1.25 for FAI Stamp if you don't have one; \$2 for Juniors or \$5 for all others) to AMA HQ. The entry (not return credentials) must be postmarked by midnight of the evening before the contest. At the con-



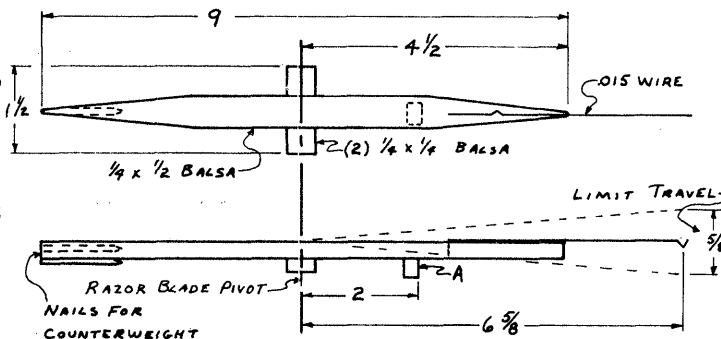
test, enter a model which weighs at least one gram and has less than 65 cm span in a regular contest event. Make the usual contest flights; if your score is at least 75% of the winning time for that event, you have qualified! Now: AMA HQ has no mechanism for sorting your flight out of the contest results, so the following steps are your responsibility:

1. Be sure that the CD checks your model for weight and wingspan limitations.
2. AMA HQ must be notified of your flight. This can be done by being sure the CD includes a separate note with his contest report, or you can get an affidavit from the CD and send it in yourself.

Several people have written me to inquire about their qualification status, citing the fact that they won such-and-such an event, without hearing from HQ. To repeat: the above mentioned documentation must be completed before AMA HQ knows that you specifically intended that flight as a qualification effort. Even though the contest is over and done, and the contest report has been filed without the documentation being made, you can still get an affidavit from the CD and clarify your status. If any questions remain, drop a note to Box 545, Richardson, Texas 75080 and state your problem.

One Gram Balance

The sketch below shows a one gram balance designed by Bob Gibbs to process FAI models. It is perhaps the simplest and safest approach, and works well. Models are hung on the hook, and tip the balance if they are heavy enough. Bob's version used the single hook shown, but a double hook which straddles the prop shaft might be safer. Limit the amount of travel by varying the height of the block marked "A". Construct the balance from medium balsa and apply several coats of dope to waterproof it. Dimensions are not critical, but calibration is. The sensitivity of the balance is such that .0352 oz. will not tip it, but .0354 oz. will (after proper calibration). Place the balance on a smooth, level surface with "A" near the edge. This gives about 4 1/2" overhang, which seems adequate. In case the accuracy changes slightly due to humidity, stick a straight pin in one side of the beam to correct the error.



Team Selection Trials Schedule

CALIFORNIA - Los Angeles. Local Qual. Trials, Apr. 4, 1971, Santa Ana Hangar. Bob Gibbs, 5005 Halifax Cir., Cypress, Cal. 90630, ph. 714-527-0251. All fliers intending to fly should notify Gibbs in advance due to security provisions at Santa Ana MCAF.

VIRGINIA - Hampton. Local Qual. Trials, Apr. 17-18, 1971, subject to site availability. Hal Crane, 4002 Buchanan Dr., Hampton, Va. 23669, ph. 703-723-0861.

Qualification Trial Results

SANTA ANA LOCAL QUAL. TRIAL, Feb. 14, 1971, 155' ceiling
 Eight entrants, six qualifiers

Lew Gitlow	29:46	29:35	59:21
Clarence Mather	28:22	27:07	55:29
Paul Allen	28:13	26:50	55:03

Bud Romak	25:57	27:57	53:54
Bob Gibbs	26:48	23:29	50:17
Bob Randolph	14:01	21:30	35:31

STATE OF THE ART

The model of the month is John Triolo's FAI, which earned him 4th in the 1969 Team Finals and 3rd at the '69 Nats, flying against larger models. John's Nats flight of 37:56.6 proved that he had found the combination of rubber and prop which he had needed the day before when his 6th round flight of 35:00 left him only 44 seconds short of a team slot. Although this late presentation was caused by lack of volunteer help at a crucial time, it can serve well as a contrast to one gram models coming up. Certainly this model showed championship potential and was one of the best. A study of the CMOS chart below and of other recent high performance models shows one thing in common - John flew his model at +5.4%, or very close to the recommended 0% balance line. Compare that with these 65 cm models: Chlubny - 0%, Andrews - 0%, Richmond - +6%, Champine - +5.5%, and Mather - -12%. Mather's comments on his model indicated that he had some problem with the -12% balance point, giving further evidence of the accuracy of a 0% setting for most models.

COW PALACE LOCAL QUAL. TRIAL, Feb. 21, 1971, 98' ceiling*			
Six entrants, five qualifiers			
Jerry Powell	12:57	14:17	27:14
Charles Baccus	13:09	12:39	25:48
Joe Bilgri	10:43	13:08	23:51
Larry Parsons	14:12	7:18	20:40
Carl Rambo	10:21	10:11	20:32

*The Cow Palace has 98' AMA ceiling, with some space taken for girders. For this meet, large plastic sheets hung from all the girders, greatly reducing available ceiling height. In additions, conditions were poor.

CONTEST CALENDAR

COLORADO - Denver area. Cat. I Indoor contests on Feb. 24 and Mar. 21, 1971. For more info contact George Batiuk 2945 S. Teller St., Aurora, Colo. 80227 or D. McGhee, 1260 Elm, Denver, Colo. 80220.

ILLINOIS - Chicago. Indoor sessions most Sundays through April 25, 1971, 9 am to 5 pm, at Forest View High School Gym, 2121 Goebbert Rd., Arlington Hts., Ill. Contests on Feb. 28, Mar. 28 and Apr. 25, 1971. For more info contact Pete Sotich, 3851 W. 62nd Place, Chicago, ph. RE 5-1353.

MASSACHUSETTS - M.I.T. Indoor sessions at M.I.T. Armory, corner of Mass. Ave. and Vassar St. in Cambridge, Mass. Feb. 20, Mar. 20, 1971 3:30 pm to 6:30 pm. Contest April 10, 1971, 1 pm to 8 pm. Contest events: Indoor Stick - JSO; Delta Dart - Jr. only, HLG - JS & O; Indoor Scale - JSO. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass.

MASSACHUSETTS - Amherst. Indoor flying sessions at Univ. of Mass. Student Union Ballroom; Mar. 14, Mar. 28, and Apr. 18, 1971, 10 am to 5 pm. Contact Charles Learoyd, 5 Fairfield St., Amherst, Mass. 01002, ph. 549-1150 (A.C. 413).

MISSOURI - St. Louis area. Indoor session Mar. 21, 1971 at Ft. Zumwalt High School, O'Fallon, Mo. Contest Mar. 28, 1971 at E. St. Louis Armory, 2931 State St., East St. Louis, 11 am to 5 pm; site opens at 9 am. Events: HLG, PennyPlane, Indoor Stick, Peanut Scale, Delta Dart. Contact Jim Bennett, 324 Helfenstein, St. Louis, Mo. 63119 ph. 962-5271 for flying schedule, event breakdown by age, and rules for PennyPlane and Peanut Scale.

NEW JERSEY - Lakehurst. Tentative dates for hangar #5 or #6 - May 2, June 6, July 3-4, 1971. Contact C. V. Russo, 143 Willow Way, Clark, N. J. 07066.

NEW YORK - Hauppauge. Indoor sessions at Hauppauge Middle School Auditorium, 6:30 pm to 10 pm, Mar. 11, Mar. 25, Apr. 1, Apr. 22, May 6, May 20, June 10, June 24, 1971. Contact Bob Sylvia, 28 Holiday Park Dr., Hauppauge, N. Y.

NEW YORK - Hicksville. LIAMAC Indoor meet, May 2, 1971, at Cantiague Park Skating Rink, Hicksville, L. I., N. Y. Paper Stick, Indoor Stick, Easy B, HLG, Indoor Scale. Contact J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, N. Y. 11545.

OHIO - Painesville. Indoor sessions each Wednesday night at Painesville National Guard Armory. Contact Dick Smola, 650 Hoyt St., Painesville, O. 44077 ph. 261-354-8260.

OKLAHOMA - Tulsa. Cat. II Record Trials Mar. 14, 1971. CD Bob Dunham, P. O. Box 7151, Tulsa, Okla. 74105, ph. 918-RI 3-5424.

TENNESSEE - Manchester. Indoor contest Mar. 21, 1971, Manchester High School Gym, Manchester, Tenn. Paper Stick, Indoor Stick, HLG, Indoor Scale and Peanut Scale. Contact Ben Cleveland, 708 County Club Dr., Tullahoma, Tenn. 37388

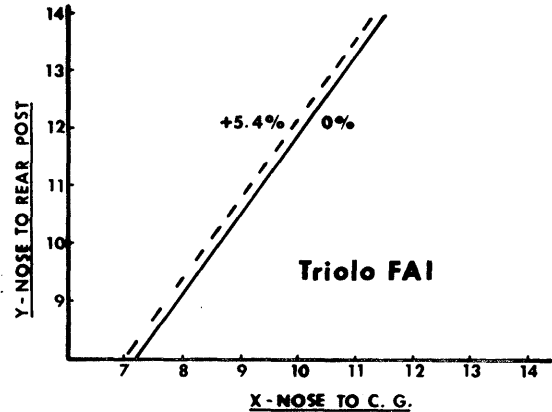
TEXAS - Ft. Worth/Dallas. Indoor contest Mar. 14, 1971, 3 pm to 9 pm, Arlington Rec. Center, Arlington, Tex. HLG, Indoor Stick, Easy B, AMA Cub. Bud Tenny, Box 545, Richardson, Tex. 75080 ph. 235-4035. Cat. I site.

VIRGINIA - Hampton. FAI Warmup session, Mar. 6-7, 1971. Willis School, Cat. I. Hal Crane, 4002 Buchanan Dr., Hampton, Va. 23369.

VIRGINIA - Richmond. Flying sessions two Fridays each month in small Cat. I site. Contact Fred Harlow, 9724 Royerton Dr., Richmond 23228, ph. 701-262-9112 for info on place and time.

WASHINGTON - Seattle area. Indoor meets Feb. 27 and Mar. 27, 1971, 6:45 pm to 9:45 pm. HLG, Indoor Scale, Easy B. Contact Bob Stalick, 1120 Shady Lane, Albany, Ore. 97321 for site info.

WASHINGTON - Seattle area. Easy B and Indoor HLG events held as part of the Boeing Management Association Model Aeronautics Scholarship Contest, June 19-20, 1971. Contact Herman Klegg, m/s 85-48, P. O. Box 3999, Seattle, Wash. 98124 for entry blank and details.



RECORDS? MAYBE!

Some question has been raised about recent listings showing two record applications with one flight, in view of the 1970 FFCB interpretation on a similar topic. The interpretation was "An official flight can only be recorded in one event; the event must be declared when the contestant requests an official flight." It is my personal interpretation that this ruling has no bearing on the 1969 interpretation requiring the contestant to claim either or both records in case a model and flight should meet the requirements of more than one record. At least, this was the intent of the FFCB as revealed during discussion of these issues. In effect, the 1969 ruling placed full responsibility for claiming records upon the contestant and the CD; the 1970 ruling was intended to prevent a single contest flight from applying to two events (such as A Gas and FAI Power), during the contest. That is, a contestant entered in those two events has to make a minimum of eight flights to complete both events with the same model. As stressed above, this is Bud Tenny's personal interpretation; an official differentiation would have to come from the Contest Board.

SANTA ANA FAI LOCAL QUAL. TRIAL, Feb. 14, 1971 155'
Santa Ana Hangar, FAI Cat. IV, AMA Cat. III
AMA Cat. III FAI - 29:35.0, Lew Gitlow
FAI Cat. IV FAI - 29:46.0, Lew Gitlow

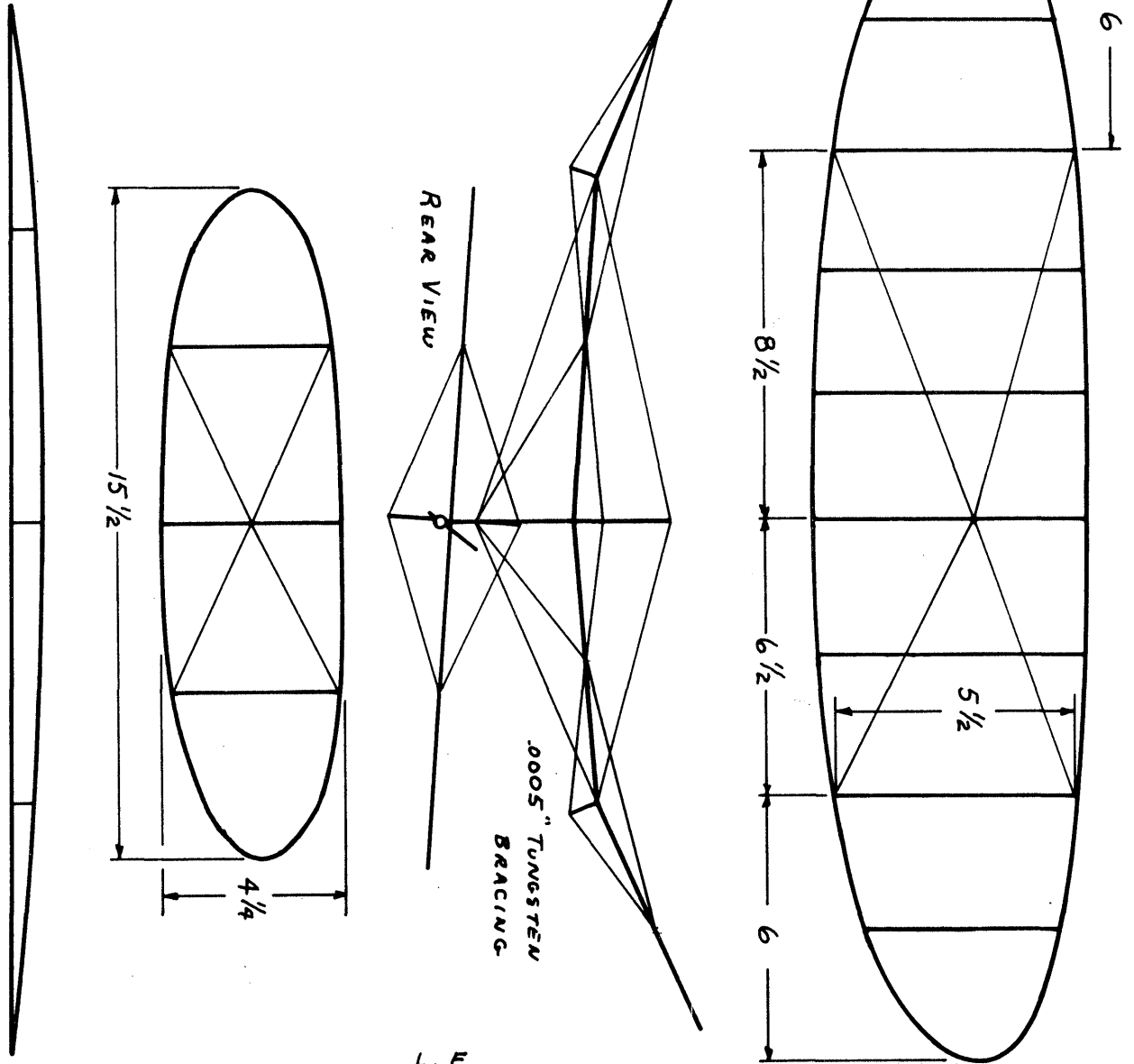
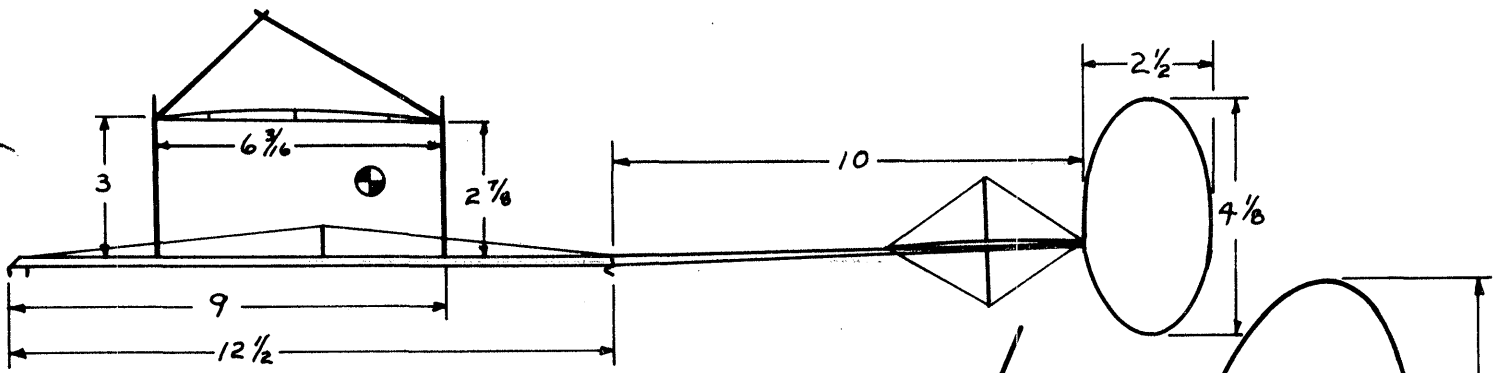
TULSA GLUE DOBBERS RECORD TRIALS - Feb. 19, 1971, 21'
Senior Cat. I Cabin - 3:50, Robert Dunham II
Senior Cat. I HLG - 0:47.5, Bobby Hanford
Senior Cat. I Helicopter - 1:15.0, Bobby Hanford

COW PALACE FAI LOCAL QUAL. TRIAL, Feb. 21, 1971 98'
Jr. Cat. II Paper Stick - 9:04.4, Gerry Geraghty
Jr. Cat. II Indoor Stick - 7:28.3, Gerry Geraghty
Jr. AMA Cat. II FAI - 7:04, Gerry Geraghty
Jr. Cat. II HLG - 1:37.4, Gerry Geraghty

RUBBER STRIPPERS

After having had opportunity to use numerous types of rubber strippers, including each type of rotary shear, the Bilgri-style stripper shown below is my favorite to use most of the time. The accuracy of most rotary units is usually superior, but these are precision machines which must be carefully "tuned" before they work properly. If they are set for the sizes you need, it is a snap to cut as much rubber as you need - otherwise, the task is formidable and not suited to flying field conditions.

The sketch below shows three views of the basic Bilgri stripper, which is constructed from plexiglas. Dimensions are not critical, but the edges of the "rubber channel" must be smooth and the joint "X" must be closed to prevent rubber from squeezing in. The balsa wedge shown in the front view was originally recommended by Bilgri, but isn't necessary in most cases.

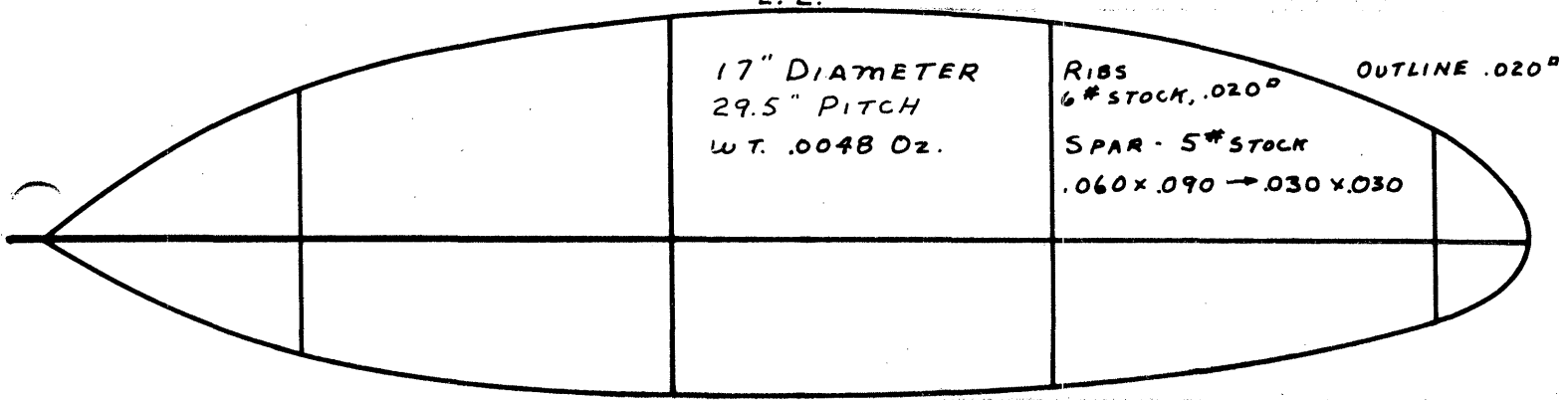


REAR VIEW

.0005" TUNGSTEN BRACING

L. E.

65 cm FAI by JOHN G. TRIOLO
 RUNNER-UP 1970 TEAM 63:53
 3RD PLACE '69 NATS 37:56.6
 MODEL WT. .0242, RUBBER WT. .040 oz.



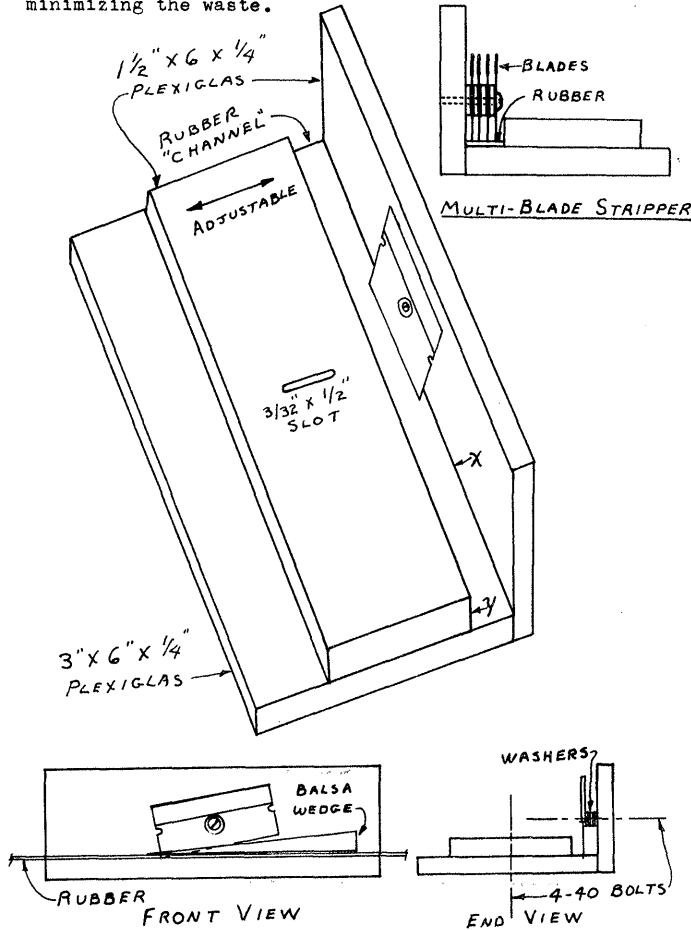
17" DIAMETER
 29.5" PITCH
 WT. .0048 Oz.

RIBS
 6# STOCK .020"
 SPAR - 5# STOCK
 .060 x .090 → .030 x .030

OUTLINE .020"

The stripping method consists of adjusting the width of the rubber channel to fit the rubber being cut, and setting the blade position. Press the tip of the blade into the base, through the rubber. Pull the rubber with slow, even force and move back from the stripper about eight feet. This allows tensions in the two cut strips to even out and minimize variations in width of cut. A basic limitation of this type of stripper is that cuts must be almost 50% of the width of the basic strip.

It is possible to make several cuts at one time with differing widths of cut, by using three or four blades at one time as shown by the sketch titled "multi-blade stripper". This mode of operation yields excellent uniformity from the center strips, but the two outside strips may be fairly non-uniform and have to be scrapped. So it is best to set the blades so the outer strips are narrow, thus minimizing the waste.



THE LAB

Richmond Rubber Test

Jim Richmond spent a lot of time developing and proving this rubber test, and it currently is more effective in evaluating indoor rubber than any test we have heard of to date. His test is based on a rating system, using the following formula:

$$\text{Rating} = \frac{\text{Torque at 50\% turns} \times \text{Maximum Turns}}{\text{Weight of Loop}}$$

Jim says: "In my testing of rubber, I wind to a predetermined torque - found to be the safe maximum torque for that size of rubber, and the corresponding number of turns is 'maximum turns'. I then back off turns to 50% of the maximum and take the torque reading. The back-off is done rather slowly (not at any set speed), while the distance between the hooks is maintained at 14" (or whatever it will be on the model). This method doesn't tell you anything about the shape of the torque curve, but it does provide a pretty accurate evaluation of the loop at the midpoint which can be compared with any other loop."

The effectiveness of Jim's rubber test is most likely due to its close relationship to the actual use. It has several shortcomings, which are still overshadowed by the test's accuracy. These shortcomings are:

1. "Maximum torque" is rather subjective, depending upon Jim's backlog of experience.

2. It is temperature sensitive, but all rubber tests are likely to have this characteristic until enough can be learned about the rubber to apply a correction factor.
3. The test will be slightly sensitive to rate of unwinding, unless torque is allowed to stabilize at full winds and 50% winds.
4. The test takes a lot of time. Jim winds a motor once, and computes the rating. If this rating is high, he winds it twice more and accepts the rating from the third windup. (The rating increases with each wind, since "maximum turns" increases with each use - see Feb. '71 INAV.)

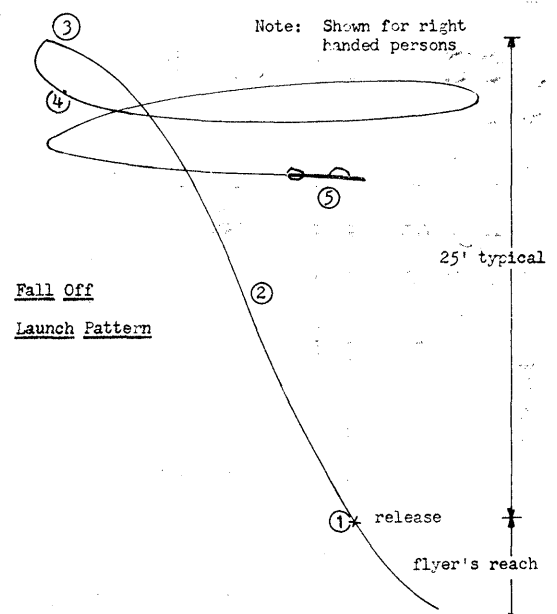
LOW CEILING FORUM

Fall Off Launch Pattern

by Frank Perkins

The "fall off" launch pattern is quite successful for low and moderate ceiling indoor HLG. I've been working on this pattern recently, (with a good deal of coaching and advice from Don Chancey and Dick Mathis) and I've finally gotten a little feel for what is going on. Here is a short discussion of this launch pattern (refer also to the sketch and accompanying comments):

For low ceiling HLG the "fall off" pattern has two advantages over the "s" pattern: the glider is subject to less stress in the launch, and it is easier to thread this pattern through obstructions near the ceiling of typical indoor sites. The glider is set up with a touch of left rudder and a fair amount of washin in the left wing tip. The glide circle is fine tuned with stab tilt after the launch is adjusted. If the model slides back on its tail repeatedly, move the CG forward or bank the launch more to the left. Note: these comments are for left-left pattern.



Fall Off Launch Pattern

- (1) Glider is launched at about 70° angle, with slight left bank. The right arm extends upward and slightly to the left as model is released. Complete extension of arm and smooth follow through important. The glider is thrown somewhat like a dart in that it must point in the direction of flight all through the launch.
- (2) Glider climbs away with wings still banked a bit to the left. Nose pitches up slightly. Glider is drifting slightly to the left.
- (3) At apex of launch glider enters mild turning stall. Glider falls into left wing, yawing rapidly left about 90°.
- (4) The left wing recovers, and the left wing tip and nose "pop" up into glide attitude.
- (5) Glider descends to floor in smooth left circles.

LAST MINUTE BULLETIN

The Santa Ana Record Trials of Mar. 7, 1971 yielded two new 65 cm marks which have been submitted as records. Bud Romak's last flight had to be steered, but clocked 33:42; he applied for the FAI Cat. IV FAI mark. Clarence Mather's biplane turned in 32:43 toward the AMA Cat. III FAI record.

INDOOR

NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

R. L. ANDERSON, JR., 2020 Winchester Rd., Toledo, O. 43613
 CHARLES V. DUNCAN III, 7303 Hirsch Dr. SE, Albuquerque,
 N. Mex. 87116
 GILBERT G. GRAUNKE, 15260 W. Heather Hill Dr., Brookfield,
 Wis. 53005
 ROBERT E. HENDRICKS, 4644 Joanna Ct., Fremont, Cal. 94536
 OSCAR KUMMER, 26 Lakeridge Dr., Matawan, N. J. 07747
 CHARLES H. LEAROYD, 119 Washington St., Marblehead,
 Mass. 01945
 KENNETH H. MARK, 45 Evelyn Ave., Toronto, Ontario, Canada
 ROBERT A. O'NEIL, 20 Forest Rd., Welland, Ontario, Canada
 WILLIAM H. WEAVER, P. O. Box 1387, Frederick, Md. 21701

NIMAS Postal Meet

The 6th Annual NIMAS Postal Meet was supposed to have been announced in the March issue! Because of the late announcement, flights made between March 1 and May 17 will be eligible for entry in the Postal. That will allow any March flights made in anticipation of the Postal to count. Therefore, the entries to the 1971 NIMAS Postal meet must be postmarked not later than May 17, 1971.

Events: Easy B, paper covered only, solid motor stick and boom, with unbraced surfaces.

HLG - AMA Rules except two ceiling classes -
 Class I - 18' to 25'; Class II - 25' to 35'

Indoor Stick - AMA Rules except FAI ceiling
 measure to compute fudge factor.

General Rules: Entry fee 15¢ per event, stamps preferred. Separate events may be flown at different sessions, but all flights for a given event must be flown at one session. Please note ceiling height for each entry, as it will be used to compute fudge factors to equalize ceiling heights. Separate class for Juniors in each event, with awards for high placing Seniors. Separate class for Sub-Junior (age 12 and under) in HLG. Anyone can enter; send entries to NIMAS, Box 545, Richardson, Texas 75080.

Special events: PennyPlane and Ceiling Dodger will be held if five entries are made in these events. Use any model for Ceiling Dodger; count highest time attained on flights which do not touch ceiling. Use Chicago Aeronuts PennyPlane rules.

The Indoor Nats

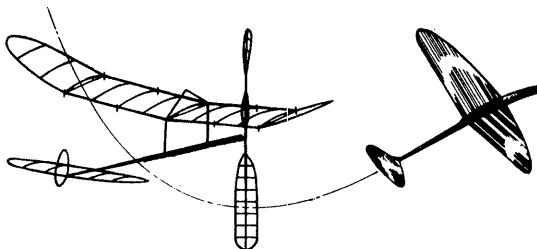
According to a memo from Pete Sotich, IHLG and Indoor Scale will be held on July 26, 1971, and the regular Indoor Rubber events on July 27. Some mention has been made of flying Indoor Scale (regular event) and Peanut and Navy Scale ("extra" events) at some site other than where IHLG and Rubber are flown. Whatever the outcome of that point, two sites are presently under consideration for the Rubber and HLG events: International Amphitheatre (1966 Nats site) and the Brig. Gen. Richard L. Jones Armory (formerly the Washington Park Armory and site of the 1970 Nats). It seems that either may be available, and the decision will be announced as soon as possible. PennyPlane will also be sponsored again by the Chicago Aeronuts, and will be flown at a site and time to be announced.

NIMAS Aces

Fred Harlow posted a Cat. I flight of 17:03 at the March 6 Willis School session. This qualifies him for the Diamond Cat. I Rubber Award; with his previous flights of 11:04 and 12:56 it qualifies him for NIMAS Ace. Fred is the thirteenth NIMAS member to become Ace in a rubber class, and has made large strides in his personal "state of the art" in just over 12 months!

Clubs?

Robert O'Neil, Welland, Canada (see New Members!) is interested in contacting indoor fliers and clubs in his general area (Hamilton and Toronto in Canada and Buffalo and Niagara Falls, New York).



Contacts Wanted

Jim Miller, 827 Yorkhaven Rd., Cincinnati, O. 45240, is beginning modeling classes for youngsters. He would welcome correspondence from others holding similar classes and hopes eventually to schedule postal meets.

Postal Challengers

Fred Harlow, 9724 Royerton Dr., Richmond, Va. 23228, is looking for postal competition in Easy B. He has a small Cat. I site which he uses regularly.

New Publications

On page 120 of the April '71 Esquire is an article called "Flip, Flop The Ornithopt". It features Ken Johnson's ornithopter along with some excellent action and color photography and interesting patter. Mention was made of INAV, which yielded many inquiries. In fact, if you're expecting a letter from here, it has been delayed by responses to those inquiries!

FAI INDOOR REPORT

Team Selection Trials Schedule

CALIFORNIA - Los Angeles. Local Qual. Trials, April 11, 1971 (changed from Apr. 4), Santa Ana Hangar. Bob Gibbs, 5005 Halifax Cir., Cypress, Cal. 90630, ph. 714-527-0251. All fliers intending to fly should notify Gibbs in advance due to security provisions at Santa Ana MCAF.

ILLINOIS - Chicago. Local Qual. Trials, May 2, 1971 at Elk Grove Jr. High, Ridge Ave. & Elk Grove Blvd., Elk Grove Village, Ill. 12 noon to 5 pm, 25' ceiling. Pete Sotich, 3851 West 62nd Place, Chicago 60629, ph. 312-RE 5-1353.

OHIO - Akron. Local Qual. Trials, April 18, 1971, 9am to 5 pm, Wingfoot Hangar. Participants must notify Bill Hulbert in advance due to security problems. Contact Bill at 174 Castle Blvd, Akron, O. ph. 216-864-8030.

OKLAHOMA - Tulsa. Local Qual. Trials, April 17, 1971, at Reed Park Gym in Tulsa; 1 pm to 4 pm. Bob Dunham, Box 7151, Tulsa, Okla. 74105 ph. 918-747-0720.

NEW JERSEY - Lakehurst. Local Qual. Trials Apr. 25, 1971 at Hangar #5. C. V. Russo, 143 Willow Way, Clark, New Jersey 07066.

TEXAS - Dallas/Ft. Worth. Any flier in this area who wishes to qualify should enter the Program via AMA HQ immediately and also notify Bud Tenny by Apr. 20, 1971 so proper planning can be done. Another AMA contest will be held to give prospective qualifiers a chance to fly. Bud Tenny, Box 545, Richardson, Tex. 75080, ph. 214-235-4035.

WASHINGTON D. C./BALTIMORE AREA. Local Qual. Trial, April 24, 1971, at South Post Gym, Ft. Myer, Va., 8:30 am to 12 noon, 36' ceiling. Tom Vallee, 444 Henryton So., Laurel, Md. 20810

Qualifiers Via Contests

	Time	Top Time	%
George Batiuk	8:56	10:01	89
Hal Blubaugh	12:29	15:27	81
Bob Champagne	18:28	18:28	100
Jim Clem	5:14.5	6:27	82
Ted Gonzoph	7:17	7:17	100
Ed Collins	8:32	10:01	85
Kristi Tenny	8:16.4	8:16.4	100
Paul Tryon	7:10.8	7:10.8	100

CONTEST CALENDAR

ILLINOIS - Chicago. Indoor contest April 25, 1971 at Forest View High School Gym, 2121 Goebbert Rd., Arlington Hts., Ill. HLG, Indoor Scale, Gone Goose. Pete Sotich, 3851 W. 62nd Place, Chicago, Ill. 60629 ph. 312-RE 5-1353.

MARYLAND - Silver Spring. Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring, April 23, May 7, May 14, May 21, May 28, 1971. Tom Vallee, 444 Henryton So., Laurel, Md. 20810.

MASSACHUSETTS - M.I.T. Indoor contest at M.I.T. Armory, corner of Mass. Ave. and Vassar St. in Cambridge, Mass. April 10, 1971, 1 pm to 8 pm. Indoor Stick, Delta Dart, HLG, Indoor Scale. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass.

MASSACHUSETTS - Amherst. Indoor Session at Univ. of Mass. Student Union Ballroom, Apr. 18, 1971, 10 am to 5 pm. Contact Charles Learoyd, 5 Fairfield St., Amherst, Mass. 01002, ph. 413-549-1150.

NEW JERSEY - Lakehurst. Confirmed dates for Hangar #5 at Lakehurst NAS - Apr. 25, May 16, June 13, July 3-4, 1971. C. V. Russo, 143 Willow Way, Clark, N. J. 07066.

NEW YORK - Hauppauge. Indoor sessions at Hauppauge Middle School Auditorium, 6:30 pm to 10 pm, Apr. 22, May 6, May 20, June 10, June 24, 1971. Bob Sylvia, 28 Holiday Park Dr., Hauppauge, N. Y.

NEW YORK - Hicksville. LIAMAC Indoor meet, May 2, 1971, at Cantiague Park Skating Rink, Hicksville, L. I., N. Y. Paper Stick, Indoor Stick, Easy B, HLG, Indoor Scale. Contact J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, N. Y. 11545.

OHIO - Painesville. Indoor sessions each Wednesday night at Painesville National Guard Armory. Contact Dick Smola, 650 Hoyt St., Painesville, O. 44077 ph. 261-354-8260.

TEXAS - Dallas/Ft. Worth. Possible contest middle or late April, Cat. II site. Contact Bud Tenny, Box 545, Richardson, Texas 75080 ph. 214-235-4035 for place and time.

VIRGINIA - Richmond. Flying sessions two Fridays each month in small Cat. I site. Contact Fred Harlow, 9724 Royerton Dr., Richmond, 23228, ph. 701-262-9112 for info on place and time.

WASHINGTON - Seattle area. Easy B and Indoor HLG events held as part of the Boeing Management Association Model Aeronautics Scholarship Contest, June 19-20, 1971. Contact Herman Klegg, m/s 85-48, P. O. Box 3999, Seattle, Wash. 98124 for entry blank and details.

HINTS AND KINKS

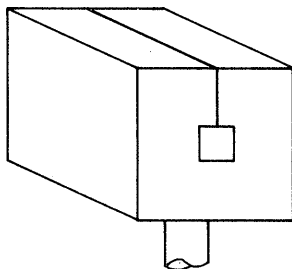
Paper Covering Hint

Bob Randolph is now covering paper ships by coating the framework with rubber cement and allowing it to dry. Then the paper is attached by placing it in place against the frame and moistening the area with thinner. This way, the covering can be done slowly enough to work out the wrinkles as you go.

In addition, Bob's paper ship stabs have been covered on the bottom side of the rib. Whether or not this has any aerodynamic advantage, the stabs tend to stay flat for longer periods of time.

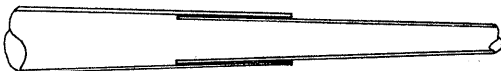
Rundown Stand

The sketch below shows Richard Hardcastle's rundown stand. It is constructed simply by cutting the form out of foam rubber and then cutting a slit and inner channel.



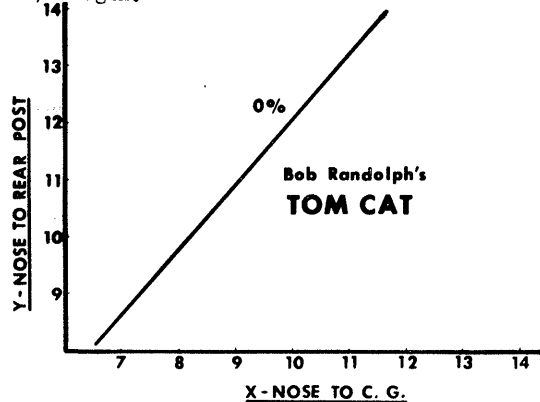
Adjustable Tail Tilt

Tom Sova has a neat way to adjust model circle diameter; the tail boom is two-piece. The rear portion slips over the front stub about 3/4", and holds by friction. The fin is glued on at enough of an angle to give a 25' circle, and alignment marks are made on the two halves of the boom. At the site, it is easy to twist the boom to a new angle of tilt for the proper turn.



STATE OF THE ART

Bob Randolph's TOM CAT was the high time model at the first 1971 Santa Ana session on Jan. 24, 1971. The time of 27:31 was set in cold weather from catwalk height, so the design has more potential. More important, the model should be an excellent transitional design for those who may not want to go all the way to 7 1/2" or 8" chord (see Dec. '70 INAV) models for the new one gram rules. The original TOM CAT was completely destroyed at the next meet and Mk II has the following changes: 13 1/2" stick, 13" tail boom, 17 x 35 reverse flare prop, 4" x 15" elliptical stab and compression ribs at all stations. Bob didn't give any balance data, but as usual the CMOS chart below is computed for 0% margin.



RECORDS? MAYBE!

D. C. MAXECUTORS RECORD TRIALS, Mar. 27, 1971 36' ceiling
Open Cat. II Helicopter - 7:31.8, Tom Vallee

LIAMAC RECORD TRIALS, March 26, 1971, 33' ceiling
Junior Cat. I HLG - 0:45.0, Bruce Pallet
Junior Cat. I Paper Stick, 5:56.6, Barry Pallet

TULSA GLUE DOBBERS RECORD TRIALS, 37' ceiling
Senior Cat. II Indoor Stick - 11:06, Robert Dunham II
Senior AMA Cat. II FAI - 11:06, Robert Dunham II
FAI Cat. II FAI - 11:06, Robert Dunham II

CONTEST RESULTS

CHICAGO AERONUTS INDOOR CONTEST, Feb. 28, 1971

Class A IHLG - Junior 4 entries		Open (7 entries)	
1. Keith Gordey	40.5	1. Charlie Sotich	56.9
2. Mark Kummerow	34.8	2. Chuck Markos	52.6
3. Scott Wisniewski	34.2	3. Mark Heller	51.3
4. Tim Stone	31.2	4. Sam Winters	45.6
		5. G. Wisniewski	45.1

Junior PennyPlane 10 entries		Open PennyPlane 15 entries	
1. Scott Wisniewski	4:24.8	1. Charlie Sotich	4:11.0
2. Tim Noonan	4:00.3	2. Chuck Markos	3:53.5
3. Mark Kummerow	3:01.6	3. Ken Kraemer	3:28.4
4. Jeff Wickland	2:52.6	4. Dave Linstrum	3:25.4
5. Fritz Curth	2:16.0	5. John Rossi	3:13.0

NEWS FROM AROUND THE WORLD

ARGENTINA

The 1971 Argentina Nats was held at Parana, quite a distance from Buenos Aires where most of the indoor fliers live. As a result, attendance was poor at the indoor Nats and the site was also small. The results:

Nereo Beggiatto	776	708	1474
Luis M. Coronel	600	768	1369
Julio H. Ferreyra	311	483	794
Mrs. Coronel	336	279	615

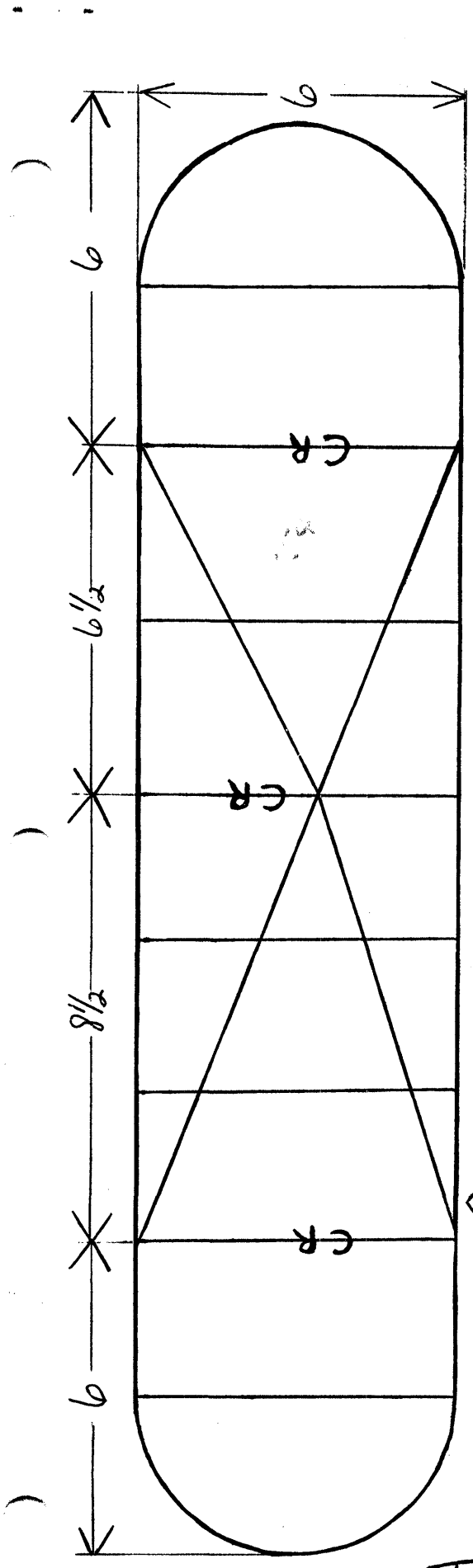
The Argentine aero club has permission to send an indoor flier to the next South American Championship to help introduce indoor flying. Nereo Beggiatto was chosen to make the trip; his excellent models should make a good impression!

CZECHOSLOVAKIA

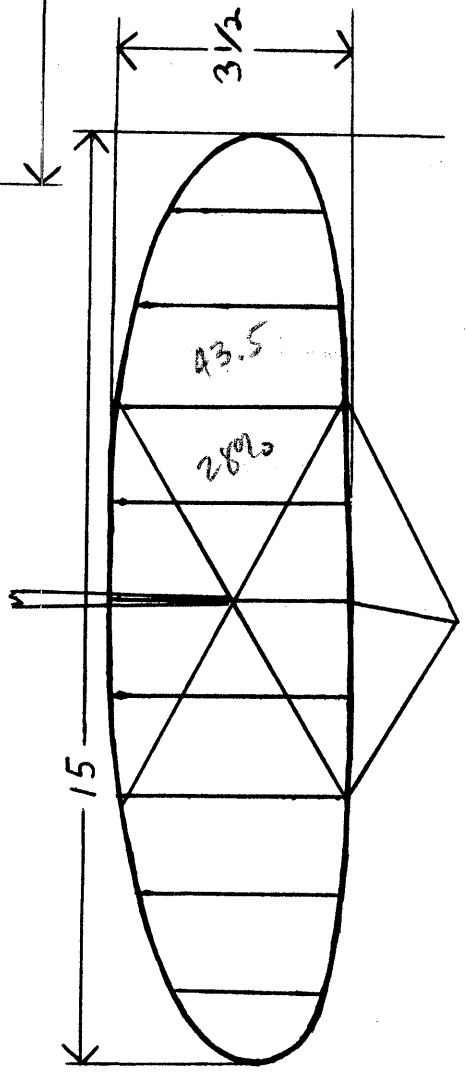
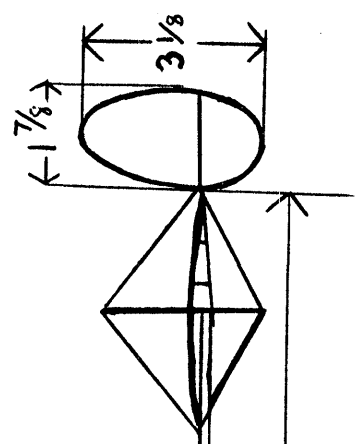
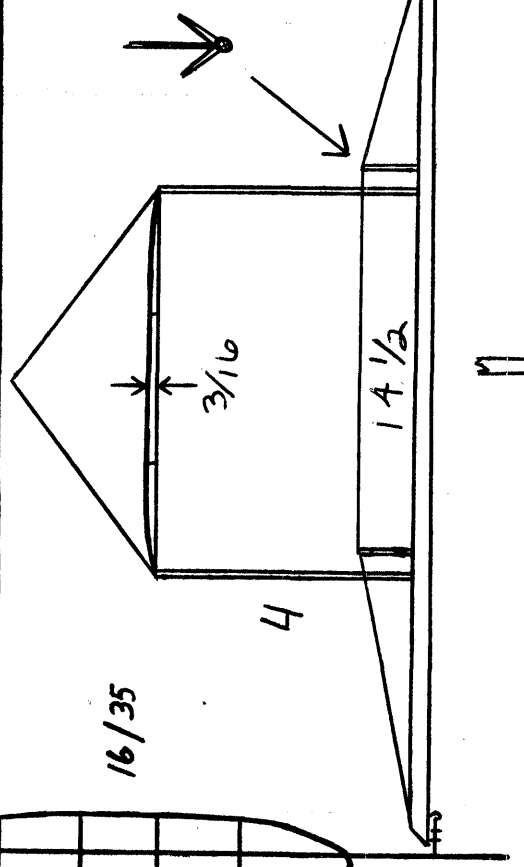
The Czech team selection will be accomplished from the results of three meets scheduled in June, July and October, all flown in the Z Hall in Brno. These three meets are the first Czech meets this year, but many fliers plan to try out their one gram models at Slanic (salt mine) May 7-9.

ENGLAND

English fliers gave strong support to a series of indoor sessions at the RAF Brize Norton hangar, which gave impetus to the movement which got under way at Cardington sessions last fall. Now there are 12 1971 Cardington sessions planned, beginning with April 18, 1971. Center for all this activity is Laurie Barr, 4 Hastings Close, Bray, Berkshire. Besides organizing the activity, Laurie has stocked indoor supplies as a service to local fliers.



1/4" Wing WASH
 3" DIH
 WT. .036 oz.



Tom Cat

RECORD FAI
 27:31 SANTA ANA
 24 JAN 1971

Bob Randolph

ADJUSTING INDOOR RUBBER POWERED MODELS

by Charlie Sotich

(Ed. Note: This has been reprinted from the Feb. '62 IMAC News, edited for years by Pete Sotich.)

The real trick in getting the most time out of an indoor model is finding the best combination of propeller and rubber motor. The only way to find this combination is through a lot of test flying. If you intend to do any contest flying, don't wait until the day of the contest to try out a new model. It will probably be too late then! You can have the lightest and best model at the meet, but if you don't have the right prop and rubber to match it, the model can't give its best performance.

The basic steps to adjusting the flight trim are:

1. Locate the CG in the correct position relative to the wing with the motor in place. (Adding weight to the nose of the model may be necessary.)
2. Set the wing incidence (it should be adjustable).
3. Set the fin for left turn (build it into the model).
4. Have wash-in in the left wing (build it in).
5. Make a test flight with the motor wound to about 1/2 of maximum turns to check wing incidence and fin settings.

After you launch the model, walk slowly behind it on the inside of its circle. By staying close to the model you will be in position to catch it if it should start to dive or stall. Observe the model as you follow it to see what adjustments are necessary to improve it. Reduce the wing incidence if it stalls, give it more left rudder if the turn is too wide, etc.

Some models may seem very sensitive to a slight change in wing incidence. (A very slight increase causes the plane to stall, while a slight decrease results in a dive). Add some weight to the nose to move the CG forward; when you build the next model keep the tail lighter or mount the wing farther back.

As you make successive flights, keep increasing the number of turns by 100 or 200 each flight. The best flights are usually made when the model climbs to the maximum possible altitude and has only about 10% of the turns left at landing.

- If the model will not climb high enough and
- (a) has many turns left - shorten the motor and/or use a larger size rubber.
 - (b) has very few turns left - lengthen the motor and use a larger size rubber.

- If the model climbs to the ceiling and
- (a) has many turns left - shorten the motor and use a smaller size rubber.
 - (b) has very few turns left - lengthen the motor or use a smaller size motor.

The rate of climb and the altitude reached can be controlled to some extent by the winding procedure. By unwinding some turns (50 to 100) when you finish winding, you can eliminate some of the power burst at the start of the flight. Since the initial torque of the motor is several times greater than the cruising torque, backing off turns will cut down the altitude gained and reduce the stress on the model at the start of the flight. Using this procedure allows you to fly on larger rubber than necessary if the correct size is not available.

The size of a model's flight circle depends upon these factors:

1. The size of the building and available floor space.
2. Drift due to air currents.
3. The shape of the building near the ceiling and the location of obstructions such as lights, girders, etc.

From a performance standpoint, a model probably loses some efficiency as the flight circle is reduced. With the smaller circle, however, it is less likely to be seriously affected by changes in flight direction after hitting an obstruction or stalling, etc. Obviously a model flying in the largest possible circle will be in trouble if any change in flight path occurs. A model with a small circle can safely wander over a larger area than one with a large circle. A small circle will usually increase possible flight time in drafty buildings before the model hits an obstruction. During test flying, observe drift patterns so you can launch from the best location, and always check to see if drift is the same at all levels and at all locations on the floor.

Some models tend to lose their normal left turn under full turns, and fly straight ahead. This is caused by

insufficient rudder area to counteract the torque. (Ed. note: high torque can also twist the motor stick so the stab tilt is minimized or reversed - causing loss of turn until the burst dies down.) If the rudder is replaced by a larger one, the model will tend to hold its turn during the initial phase of the climb.

Newcomers to indoor often have difficulty getting their models to climb. This usually can be overcome by changing the prop design. Most articles on indoor models cover very light models, and the props shown are unsuitable for heavier models constructed from the plans by the average beginner. These heavier models must fly faster to stay airborne, and thus require larger rubber and smaller diameter, lower pitch props. It is a good idea to have extra props of various sizes and compare the model's performance with each to determine the best prop size. It may seem strange to consider a faster prop for an indoor model, but the duration can increase due to these factors:

1. With a faster prop, the model should climb higher.
2. Many of the turns formerly left in the motor will be used up descending from the higher altitude.
3. A longer motor may then be used to further increase the potential duration.

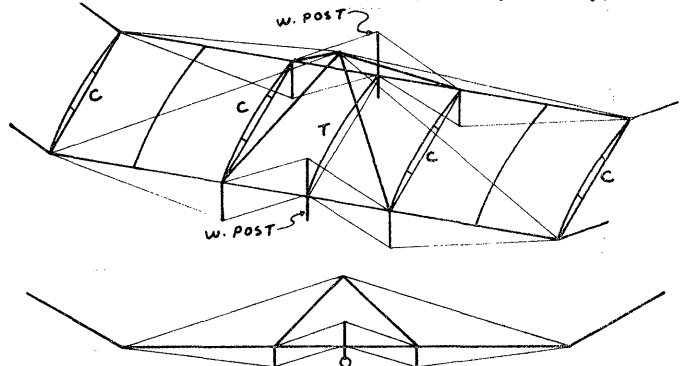
DESIGN FOOTNOTES

This column is set aside to report on design philosophy, proven or speculative, and ways to implement these ideas. This offering is speculative, intended to spark curiosity about possible aerodynamic innovations in one gram model design.

A considerable amount of flight testing by Stan Chilton and myself has apparently demonstrated improved cruise performance with models having between 6% and 8% airfoil thickness. As is well known to blimp hangar fliers, these same models are difficult to use for high ceiling flying. Considerable thought has yielded a possible explanation in addition to the obvious one of excess drag. Indoor models have a high wing location which moves the center of drag well above the thrust line. This causes a nose-up moment which reinforces the normal zoom associated with increased thrust and velocity during the power burst, and is common to all indoor models. By trial and error the high ceiling fliers have adopted thin airfoils to speed up the climb, possibly to the detriment of the cruise.

Another possible result of the nose-up moment is distortion of the wing structure, ribs and covering which increases the wing camber, along with effective lift and drag. Thin airfoils can distort somewhat without large increases in drag, but thicker airfoils obviously have more than their share of increased drag. If the nose-up moment can be eliminated or minimized, is it possible that thicker wings would climb fast enough to permit their use in high ceilings? If so, the improved cruise, which is proportionately a larger part of the flight than for low ceiling flights, should boost flight times considerably.

Since the high wing location is the theoretical culprit, put it next to the motor stick! This may be done by several methods, but Max Chernoff designed a special wing bracing system which is shown below. The wing posts are shortened to lower the wing to within an inch or less of the motor stick, and the cabane becomes four-legged to pass the wing loads to the first rib location outboard of the wing center. Short vertical posts below the ends of the cabane furnish leverage against uploads on the wing; these loads are normally carried by the wing posts. Tip bracing has been omitted in the sketch, but would remain similar to present practice. As usual, compression ribs are needed at the dihedral breaks, and the center rib can be a tension rib. In addition, the ribs at the bottom of the cabane must be compression ribs (compression and tension ribs are marked with "c" and "t" respectively).



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

JEFFREY ANNIS, 5689 W. Betty Lane, Brown Deer, Wis. 53223
LARRY DE CARLO, 842 Lincoln Ave., Baldwin, L. I., N. Y.

11510

BRUCE CLARK, 813 S. Washington, St., Medina, O. 44256
LARRY HERRICK, 849 Hardesty Blvd., Akron, O. 44230
ARTHUR J. HOLTZMAN, 321 June Place, W. Hempstead, N. Y.

11552

I. J. WRIGHT, 63 Molimo Dr., San Francisco, Cal. 94127
ROBERT J. ZAHRADNIK, P. O. Box 161, Mars, Pa. 16046

Honorary Members

KEITH W. BULLOCK, 33 Belmont St., Rainbow Hill,
Worcester WR38NN, England
IAN KAYNES, 11 Parkside Rd., Summingdale, Ascot, Berks,
England

Change of Address

Maj. Gen. Franklin Davis, U. S. Army War College,
Carlisle Barracks, Pa. 17013
Erwin Rodemsky, 1624 St. David Dr., Danville, Cal. 94526

Sponsored Junior Memberships

WALTER LOUNSBURG, 715 Russell Rd., Kansas City, Mo. 64116
KEVIN WEHNER, 712 Russell Rd., Kansas City, Mo. 64116

Walter and Kevin were nominated by Roger Schroeder, after he had worked and counselled with them during his work on the Special Action Committee. The boys are close neighbors, and work together most enthusiastically.

They began modeling during the summer of 1970, flying gas models. They later were able to gain access to a gym and started indoor flying with Sleek Streaks. After their school opened, they sponsored some Delta Dart activity in their science club. With this background, they began to fly indoor in earnest with coaching from Roger.

NIMAS Aces

Ned Smith's flights in the Hampton Local Qual., 14:29 and 15:02, moved him into the Ace ranks. Ned had little chance to fly seriously while at school, but his performance has climbed steadily since he moved to Hampton and has access to a good site. Congratulations, Ned!

'71 Nats

The following information appeared in the Mid-April Competition News:

Indoor Events

The International Amphitheatre (4300 S. Halstead St., Chicago) has been approved as the site for Indoor Events of the 1971 Nats -- Monday and Tuesday as per the schedule published in the March CN. The facility is a Cat. II site, 87' ceiling. The floor area is 283' x 123'.

Special arrangements have been made to permit advance entrants (those who postmarked Nats entry forms to AMA HQ no later than June 21) to register and have certain problems taken care of at the International Amphitheatre, as follows. Late entries may only be made at Glenview NAS and on Monday only.

Monday, July 26, 9am to noon

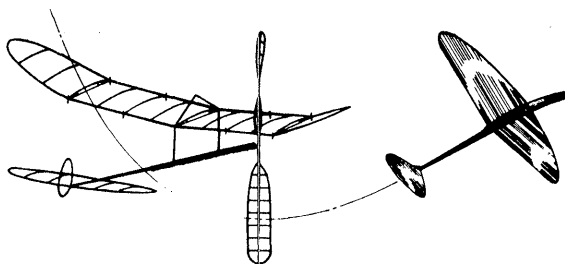
a. Nats Registration (officially check in, obtain Nats identification and contestant information kit). This is necessary before any official flying takes place.

b. Housing Priority. For those who have such priority, it may be claimed.

c. Navy Meals. Tickets for same may be purchased.

d. Add Events. These may be entered and paid for.

e. Entry Discrepancies. Any money or entry form problems, indicated by "report to desk P" notation on entry form.



Tuesday, July 27, 9 am to noon

a. Nats Registration only, as "a" above. No housing, meals or event additions can be taken care of at the Indoor site on Tuesday.

b. Event discrepancies, as "e" above.

Nats Event Schedule

Monday, July 26 - Indoor HLG, Indoor Scale, PennyPlane.

Schedule for presenting scale models will be published as soon as it is known; it will be early due to the need for proper judging.

Tuesday, July 27 - All indoor rubber events.

Note: Nats Entry Blanks are available from AMA HQ; send a stamped, self-addressed envelope with your request.

FAI INDOOR REPORT

Entry Deadline

The deadline for entry into the FAI Team Selection Program now in progress is May 15, 1971. Entry may be accomplished by entering at a Local Qualification Trials, or by sending the appropriate fee (\$2 for Juniors, \$5 for all others) to AMA HQ. In the latter case, the entry must be postmarked before May 15, 1971.

If you want to enter the program and have not entered by the time you receive this newsletter, you should do so even if you plan to enter (for example) the Detroit Local Qual. Trials, which is scheduled for May 9, 1971. If, for some unavoidable reason, the site is unavailable on that date, those who were entered by the deadline will still be in the program. Enter now if you're gonna!

Resignation From Program

By now we have a substantial number of qualifiers in the Team Selection Program. Those who have qualified have the obligation to appear in the Semi-Final of their choice or to formally resign from the Program. This resignation then enables the first runner-up from the same Qual. Trial to advance to the Semi-Finals. Resignation can be done by making this declaration to AMA HQ, or to Bud Tenny, Box 545, Richardson, Tex. 75080. If possible, the runner-up should also be notified as soon as you make the decision. In all fairness to the runner-up, please do not delay once you determine you will not be able to continue in the Program!

Team Selection Trials Schedule

MICHIGAN - Detroit. Local Qual. Trials, May 9, 1971, at Michigan State Fair Coliseum. Paul Crowley, 32604 Tecla, Warren, Mich. 48093 ph. 313-294-0266.

TEXAS - Dallas/Ft. Worth. Indoor contest Cat. II site, May 9, 1971. Qualify via contest; entry must be made (postmark) not later than May 8. Bud Tenny, Box 545, Richardson, Texas 75080 ph. 214-235-4035.

NEW JERSEY - Lakehurst. Eastern Semi-Final, Lakehurst NAS June 13, 1971. C. V. Russo, 143 Willow Way, Clark, New Jersey 07066.

Qualification Trial Results

SANTA ANA LOCAL QUAL. TRIAL, Apr. 11, 1971, 155' ceiling

Entrant	Time	Time	Time
Four entrants, three qualifiers			
Larry Cailliau	26:07	27:18	53:25
Linda Randolph	24:54	24:40	49:34
Warren Williams	19:49	21:22	41:11

CEDAR KNOLLS SCHOOL LOCAL QUAL., Apr. 14, 1971

Entrant	Time	Time	Time
Six entrants, five qualifiers			
C. V. Russo	4:57	4:41	9:38
Sal Canizzo	4:53	3:52	8:45
Ed Franklin	3:53	4:08	8:01
John Triolo	3:44	4:07	7:51
Don Garofalov	3:40	3:22	7:01

TULSA, OKLAHOMA LOCAL QUAL. TRIALS, Apr. 17, 1971

Entrant	Time	Time	Time
Four entrants, four qualifiers			
R. J. Dunham	9:37	10:16	19:53

John English	9:43	9:56	19:39
Robert Dunham II	7:41	7:46	15:27
Dick Ganslen	7:34	7:41	15:15

HAMPTON, VA. LOCAL QUAL. TRIALS, Apr. 18, 1971, 20' cell.

Six entrants, five qualifiers			
Bob Platt	18:24	18:15	36:39
Hal Crane	16:35	18:30	35:05
Fred Harlow	16:23	17:30	33:53
Tom Vallee	15:21	16:52	32:13
Ned Smith	15:02	14:29	29:31

WINGFOOT HANGAR LOCAL QUAL. TRIALS, Apr. 18, 1971

Eight entrants, six qualifiers			
Ron Ganser	19:05	18:38	37:43
Tom Sovo	18:27	17:59	36:26
Bill Hulbert	17:18	18:33	35:51
Dale Hacker	14:09	13:30	27:39
Vern Hacker	12:06	12:10	24:16
Rol Anderson	10:49	9:50	20:39

LAKEHURST LOCAL QUAL. TRIALS, Apr. 25, 1971

Five entrants, five qualifiers			
Dan Domina	5:00	5:02	10:02
John Kukon	5:00	5:02	10:02
Ernie Kopecky	5:00	5:01	10:01
Manny Radoff	5:00	4:59	9:59
Frank Parykaza	3:47	4:02	7:49

Qualifiers Via Contests

	Time	Top Time	%
Richard Hardcastle	7:23	7:23	100

RECORDS? MAYBE!

WINGFOOT HANGAR LOCAL QUAL. TRIALS, April 18, 1971

Jr. AMA Cat. II FAI - 17:59, Tom Sovo
FAI Cat. III FAI - 18:27, Tom Sovo

SANTA ANA LOCAL QUAL. TRIALS, Apr. 11, 1971, 155' ceiling

Sr. Cat. III HL Stick - 24:54.3, Linda Randolph
Sr. AMA Cat. III FAI - 24:54.3, Linda Randolph

TULSA LOCAL QUAL. TRIALS - Apr. 17, 1971

Sr. Cat. I HL Stick - 7:46, Robert Dunham II
Sr. AMA Cat. I FAI - 7:46, Robert Dunham II

HAMPTON FAI LOCAL QUAL. TRIALS, Apr. 18, 1971 20'

Open AMA Cat. I FAI - 19:12, Hal Crane
FAI Cat. I FAI - 20:45, Hal Crane

CONTEST CALENDAR

ALABAMA - Huntsville. Cat. II contest May 16, 1971, Madison County Coliseum. HLG - Jr. & Sr.-Op; Easy B - Jr.; Paper Stick, HL Stick and Peanut Scale - all ages comb. Jim Davidson, 1815 Melbourne Ave. NE, Huntsville, Ala. 35801 ph. 205-539-1509.

CALIFORNIA - Los Angeles. Cat. III Record Trials at Santa Ana Hangar, May 16, 1971; also PennyPlane. Sponsored by San Diego Orbiteers; Clarence Mather, 3860 Ecochee Ave., San Diego, Cal. 92117.

MARYLAND - Silver Spring. Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring, May 14, May 21, May 28, 1971. Tom Vallee, 444 Henryton So., Laurel, Md.

MICHIGAN - Detroit. Annual State Meet, May 15-16, 1971 at Michigan State Fair Coliseum (65' ceiling). Youth contest w/HLG, AMA Cub and Pre-Fab on May 15; regular events on May 16 - HLG, Paper Stick, HL Stick, Scale. Walter Hartung, 14759 Kilbourne, Detroit ph. 527-7620.

NEW JERSEY - Lakehurst. Indoor sessions/contests at Hangar #5, May 16, June 13, July 3-4, 1971. C. V. Russo, 143 Willow Way, Clark, N. J. 07066.

NEW YORK - Hauppauge. Indoor sessions at Hauppauge Middle School Auditorium, 6:30 pm to 10 pm, May 20, June 10, June 24, 1971. Bob Sylvia, 28 Holiday Park Dr., Hauppauge, New York.

TEXAS - Dallas/Ft. Worth. Cat. II Indoor contest, May 9, 1971, 1:30 pm to 6:30 pm. HLG, Indoor Stick, Easy B. Contact Bud Tenny, Box 545, Richardson, Tex. 75080 ph. 214-235-4035 for site and directions.

VIRGINIA - Richmond. Flying sessions two Fridays each month in small Cat. I site. Contact Fred Harlow, 9724 Royerton Dr., Richmond, 23228, ph. 701-262-9112 for info on place and time.

STATE OF THE ART

Clarence Mather's biplane is only the third contest-type biplane we've heard about in recent years. A member of the Grumman Engineering Model Society (Karl Birkel, if memory serves correctly) had a small sport indoor biplane.

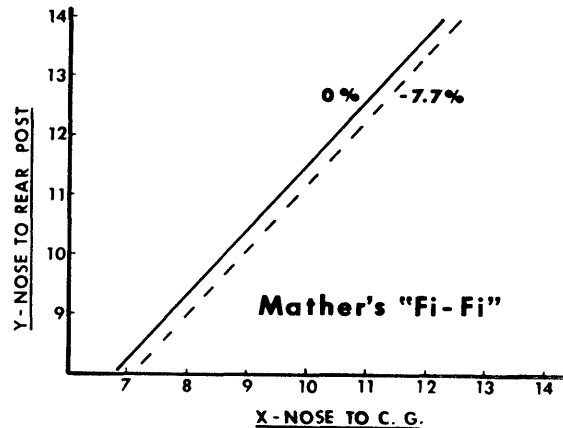
Besides that model, Hal Crane and Warren Williams flew biplanes which helped inspire Clarence Mather's efforts. It is characteristic of Clarence that his models fly well, and the model of the month is no exception. Clarence made these remarks about the model:

I decided a biplane would give a large wing area without the low aspect ratio required by a monoplane. I don't know what penalty is paid due to air flow interference, but I know the wings should be kept as far apart as possible. I decided to use slightly over one chord distance so that bracing wires and wood sizes could be of modest number. The wing has roughly the amount of wood bracing that a picket fence wing has, and the bracing system produced a strong, rigid wing set which has been steered several times without wing trouble. The 90 cm models of 1966 had about 200 sq. in. area for one gram, so this was my goal.

It all adds up to a lot of airplane to drag around, so I used a large prop and a big piece of rubber. The model checks out nicely and shows good potential, but I'm not sure it can keep up with conventional models or to geared models or other developments that surely will appear.

The first model had rounded tips on wing and stab and was slightly underweight, so I felt I could be more sporty with the second. I have flown the two alternately with the same prop and rubber in an effort to determine the better; about all I have concluded is that the raked tips are a better conversation piece. I call the tips "Baxter Tips" since Dick Baxter suggested them. Fudo Takagi noted that raked tips were declared most efficient for models by Joe Ott. Joe's book was copyrighted 1931!

Editorial Note: Clarence's choice of biplane configuration yielded 216 sq. in. with 25.4" projected span, or an apparent aspect ratio of 3:1. Biplanes are figured a bit differently, depending upon the gap between the wings. Hal Crane helped out here, by furnishing a reference from "Elements of Practical Aerodynamics"; Bradley Jones. The book's reference on Equivalent Monoplane Aspect Ratio, or EMAR, gives data which indicate Clarence's model has an equivalent aspect ratio of 3.9:1, or a gain of one-third over a 65 cm monoplane with the same area. This EMAR was used to compute the CMOS diagram below; Clarence flew his model at -7.7% margin (dashed line).



DESIGN FOOTNOTES

Low Wing Follow-Up

The April '71 issue contained speculative comments on possible benefits from lowering the wing of indoor models. In the comments below, Hal Crane presents a certain negative aspect of lowering the wing, while Dick Kowalski has comments which argue against the reasons stated for trying lower wing locations.

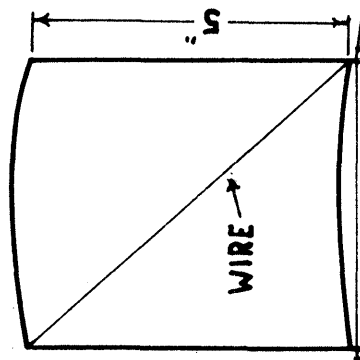
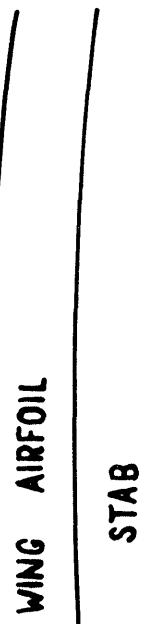
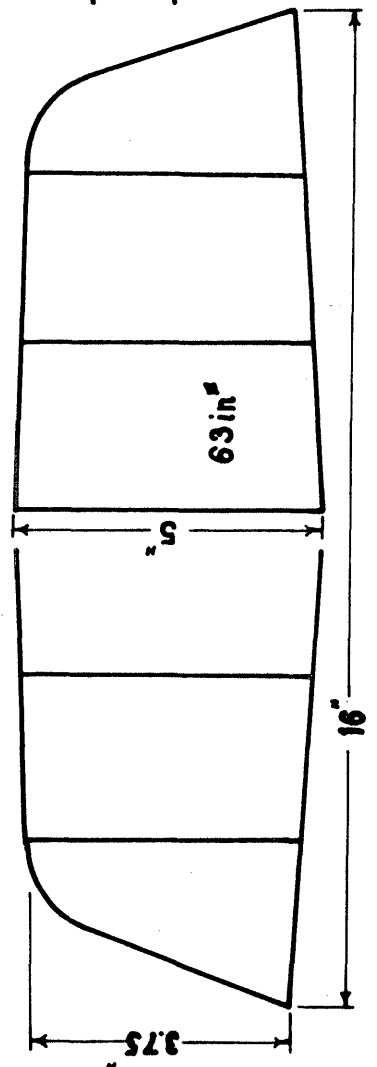
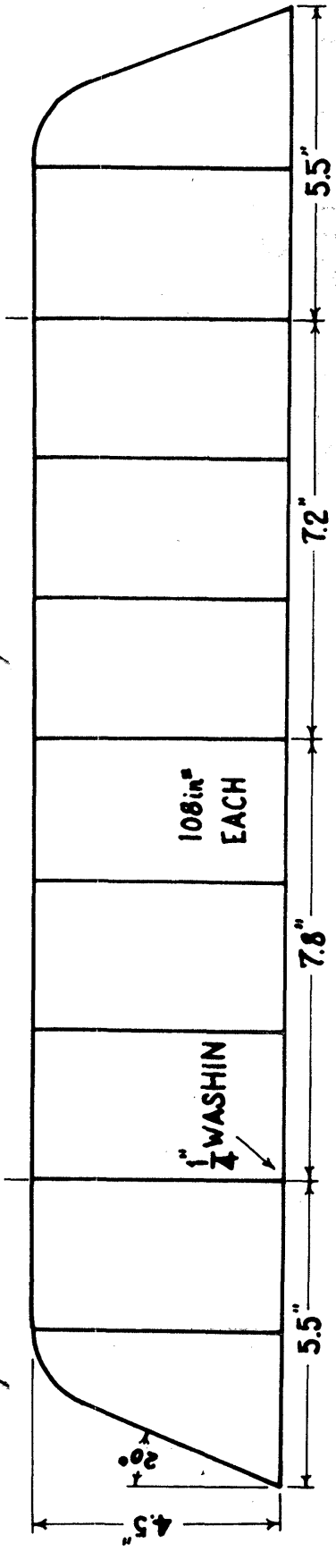
Hal Crane

I've made a very convincing demonstration of the stability increase due to raising the wing. Using my old biplane EZB and flying with one wing at a time, the flights with bottom wing only stalled endlessly. By using the upper wing (longer wing posts) the flights smoothed out.

According to the text books, raising the wing with respect to the CG increases the static margin; that is, raising it 3" increases the static margin about 5%. That doesn't say it is easier to trim with a high wing if you have a large power burst; "soft" bracing to permit motor stick bracing will be more necessary with a higher wing.

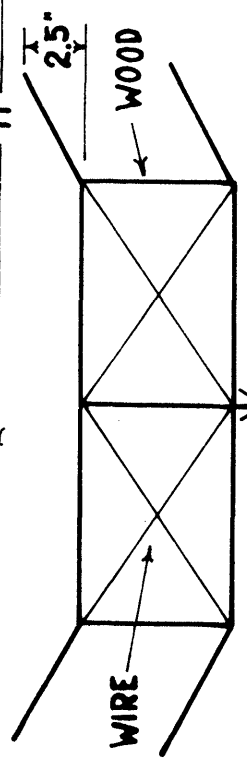
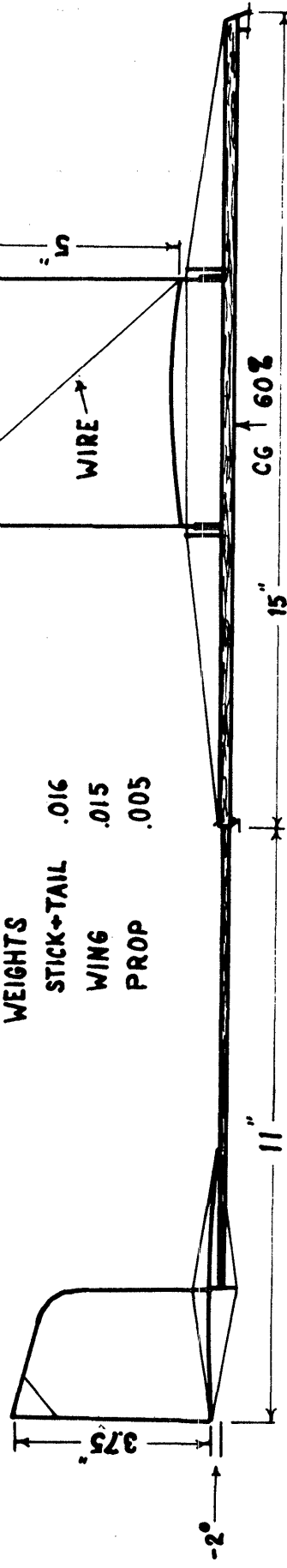
Dick Kowalski

The April '71 column about wing section thickness is apparently based on a faulty assumption that thin wing profiles inherently climb faster than thicker sections. The

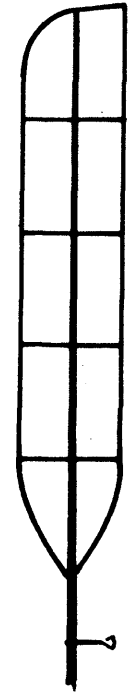


WEIGHTS

STICK+TAIL	.016
WING	.015
PROP	.005



Fiji
1 GRAM FAI MODEL
C.M. 3-71



POWER .065 X 20" PIRELLI
BEST TIME 32:43 SANTA ANA

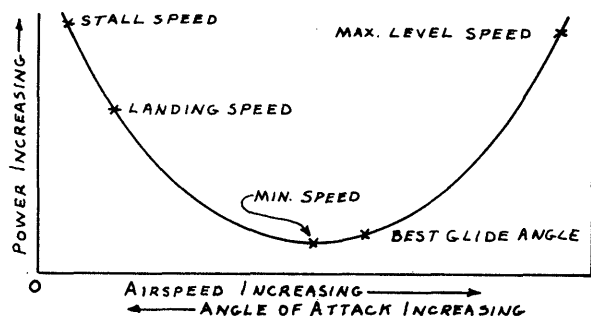
BRACING DETAIL - NO SCALE

idea presented was that thicker sections appear to give improved cruise performance, presumably because the model will fly slower or at a lower level flight RPM. This same section appears to have an inability to climb fast enough (or high enough) to reach maximum duration potential. Aside from the theory and rationalizations presented, I'm not convinced there is much difference if both types of aircraft are properly trimmed with prop matched to the model and flights are made with the objective "hit the roof".

From experience I can see how the idea got started. Meanwhile, I've had a number of hangar models using 7% and 4% sections that would climb like homesick angels; others with similar range of sections would hardly climb higher than my head. The reason can be understood by looking at typical performance curves from full size powered airplanes, where engine RPM is plotted against air speed. Basically, it is important to understand that a powered aircraft can be flown at any angle of attack from negative (perhaps -20°) to very high angles around 20° - up to the full stall angle. This must be qualified by saying "providing enough horsepower is available to maintain flight". It is also important to understand that there is only one point on that performance curve where the aircraft is flying at minimum sinking speed or "minimum power required" to maintain level flight. If we move in either direction on the curve we are less "efficient" even though we may be flying faster or slower. This point on the performance curve is usually just below the stall angle (where indoor models are usually trimmed to fly). If the aircraft is trimmed to fly slower than this "maximum efficiency" speed it will soon stall unless more power is applied. With more power it will keep on flying.

Such a process can be continued until the airplane is at full throttle; it will then stall at full power if we slow it up any more. (All the above does not apply to VTOL aircraft which have power in excess of any needed for vertical flight.)

In similar fashion we can decrease the angle of attack and the airplane will fly faster at a given throttle setting. This does not mean the new setting is more efficient; we are simply operating at a lower C_L/C_D relationship and using the power to provide speed instead of lift. This applies to level flight primarily, but can also be applied to climbing flight. In practice we can continue to lower the angle of attack until all available power is being used for speed or maximum climb angle, up to the limit of power available. Note the performance curve:



How do we make these flight changes in practice? On a full size airplane we pull back on the stick or set the trim tabs to increase angle of attack. On a model we use negative stabilizer angle. It is possible to trim a model so it will not climb at all under full power if you raise the stab trailing edge enough. Similarly, positive stab angles will cause the model to dive in under full power. Thus we can control climb angle and speed independent of the wing section used. Another factor complicates the application of these principles: prop pitch angle. Props can stall just as wings do, except at lower speeds due to a lower Reynolds number. High pitch props cannot tolerate slow models climbing at a high angle (flying on the back side of the power curve, so to speak) as well as can lower pitch props. Therefore I would recommend lower pitch props on thick wing sections when flown in hangars. If the pitch is already low, then the poor climb is probably due to poor trim or CG too far aft.

Returning to the column again, the observed superior cruise performance with thicker sections agrees very well with results from my glide studies. Sections with 4%, 5.5% and 7% camber were carefully tested at Reynolds numbers comparable to indoor models in level, climbing and descending flight. In all cases, the 7% section was superior to the others when trimmed for minimum sinking speed. Therefore, the thinner sections should climb slower at any given airspeed. There is an adverse positive

(nose up) pitching moment inherent with 7% sections (compared with 4% sections) for a given configuration. The correction to this problem should be an increase in stab incidence rather than shortening the wing posts. I've not looked at lower wing locations in detail, but it does occur to me that as the post height changes, the vertical CG also changes; the return on the investment may be very small although I'm not sure.

MORE ON TRIMMING

by Hal Crane

(Ed. Note - this can be considered a supplement to Hal's comments in the Jan. '71 INAV.)

For Cat. I with cluttered ceilings the launch torque must be reduced by backing off more turns - start with 50% as much as would be used at Willis. The climb of a model adjusted to scrub on the 20' ceiling at Willis would be about 100' in unlimited ceilings.

It is my impression that you can get about the same results in a 20' site with at least two approaches, each of which is a compromise situation. First, you can use rubber weight about 1.4 times the model weight (as applied by Bob Platt). Or, you can use a shorter motor stick and shorter, lighter rubber as I used two years ago on 655. Bob Champine and Tom Vallee have done well using this combination. 655 used rubber wt. of .9 W/A, while Champine's model (Sept. '69 INAV) used .75 W/A.

Both 655 and Platt's model (Dec. '70 INAV) weighed one gram, and both set new Cat. I records. Comparison of the times favors Platt's model, but now we have better props and larger wings than used on the other models. I guess the point that I'm trying to make is that you can do very well and have less breakage (in Cat. I) when using shorter motor sticks and lighter loops of rubber. The optimum motor for Cat. III would be between these two extremes in cross section, but would be wound to and launched at full torque. For example, launch torque on my models would be .3 in. oz. at Willis, .2 in. oz. for 35' maximum climb in unlimited ceiling, and .6 in. oz. at Lakehurst for a one gram FAI model. These launch torques can be increased if a flaring prop is used.

Of course, a motor stick that seems plenty strong in Cat. I may prove to be woefully weak in Cat. III - as Bob Champine and I found out in the '69 FAI Semi. It is best to have a lower pitch prop than you think you will need in the Cat. III site. This prop is reserve and can salvage something from a weak motor stick or give your climb a big shot in the arm.

ONE-MINUTE HLG FLIGHTS

by Dan Belleff

The following items will help you approach your first "One Minute" with an indoor glider.

Model Construction: Use a Sweepette to begin with, unless experience has proved this is not "your" glider. (Some people just don't "match up" with some designs.) Build it to about 19 grams with a good smooth finish. Use 10# fish line on the leading edge to minimize damage from hitting obstructions if you throw too hard. Use Tite-Bond white glue on the tail joints and finger grip, with Ambroid for wing joints. Build the fuselage from slightly lighter than medium hard balsa, but leave the tail boom thicker to reduce whip and flex. Any tail flexing or boom whip cuts down on altitude, so this is an important point.

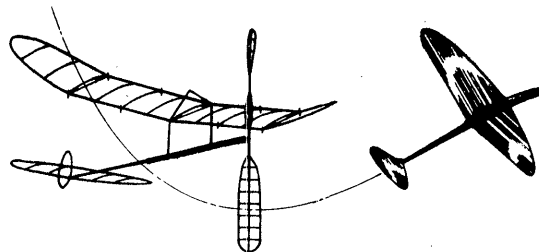
Basic adjustments: Use rudder only for turn if possible. Taper the rudder in cross section, but leave it just thick enough in the middle to cut down on flex. Using rudder instead of stab tilt for turn allows a gradually widening turn on the way down. With the wide turn, there will be little bank and more lift. All other adjustments should be the minimum needed for good recovery.

Warm up: Use an old, well-trimmed glider to locate the right spot on the floor to launch from, and mark the spot. Use this spot throughout the contest unless the drift pattern changes, since this will minimize collisions with obstacles. You can now use full launches with the new, almost-trimmed model without collecting so many "dinks" in its leading edge. There is no way to estimate how much time is lost from rough leading edges!

Training: The arm is important, but almost anyone who can get 50 seconds outdoors in dead air can get one minute indoors. In reality, you need to throw enough so you don't hurt your arm at a meet, and to retain control. Good control for indoor launches is essential - there aren't any thermals to make up for lost altitude!

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

JOHN ANDBERG, 18600 Montpere Way, Saratoga, Cal. 95070

Change Of Address

TIBOR GALL, 302 Springvale, San Antonio, Tex. 78227

Help Wanted!

New member John Andberg (address above) would like to contact clubs and fliers in his area. John calls himself a "beginning beginner", but he is enthusiastic and without doubt is a willing student for any who will help him.

'71 Nats

The following information appeared in the Mid-April Competition News:

Indoor Events

The International Amphitheatre (4300 S. Halstead St., Chicago) has been approved as the site for Indoor Events of the 1971 Nats -- Monday and Tuesday as per the schedule published in the March CN. The facility is a Cat. II site, 87' ceiling. The floor area is 283' x 123'.

Special arrangements have been made to permit advance entrants (those who postmarked Nats entry forms to AMA HQ no later than June 21) to register and have certain problems taken care of at the International Amphitheatre, as follows. Late entries may only be made at Glenview NAS and on Monday only.

Monday, July 26, 9am to noon

a. Nats Registration (officially check in, obtain Nats identification and contestant information kit). This is necessary before any official flying takes place.

b. Housing Priority. For those who have such priority, it may be claimed.

c. Navy Meals. Tickets for same may be purchased.

d. Add Events. These may be entered and paid for.

e. Entry Discrepancies. Any money or entry form problems, indicated by "report to desk F" notation on entry form.

Tuesday, July 27, 9 am to noon

a. Nats Registration only, as "a" above. No housing, meals or event additions can be taken care of at the Indoor site on Tuesday.

b. Event discrepancies, as "e" above.

Nats Event Schedule

Monday, July 26 - Indoor HLG, Indoor Scale, PennyPlane. Schedule for presenting scale models will be published as soon as it is known; it will be early due to the need for proper judging.

Tuesday, July 27 - All indoor rubber events.

Note: Nats Entry Blanks are available from AMA HQ; send a stamped, self-addressed envelope with your request.

FAI INDOOR REPORTFinals Site Chosen

The 1971 Indoor Team Selection Finals will be held at Santa Ana MCAS, August 28-29, 1971. Contest procedure, flying times and all details not specifically spelled out by the Team Selection Program Rules (Nov. '70 INAV, Nov. '70 CN, Feb. '71 AAM) will be announced as soon as these have been decided. In addition, copies of these rules and all other pertinent information will be sent to all qualifiers who make it through the Semi-Final Trials.

Qualification Credentials

Some initial delay in dispatching verification of their status to Local qualifiers has been noted. Anyone

who knows or thinks he is qualified and has not received notification of this from AMA HQ should call Bud Tenny at 214-235-4035 as soon as possible for emergency verification of your status. It is important to call, since time for mail deliveries to most parts of the country would be doubtful (except for Detroit, assuming their June 19-20 date holds) in the time before Semi flying begins.

Preliminary Program Report

62 Open fliers and 2 Juniors entered the program by the deadline of May 15, 1971. Of these, 60 have qualified to enter the Semi-Finals. The higher percentage of qualifiers is due mostly to the provision which permits either a high score or high standing to count.

Entry in the Finals can reach as high as 42, provided all Local qualifiers enter a Semi-Final, and all Semi qualifiers enter the Finals. This may pose some problems at the Finals, but this is the reason for a two-day meet at the Finals.

A final reminder: fliers who qualified via a Local Qual. Trials must notify the first runner-up immediately if you decide not to enter a Semi-Final. Those who qualified in a contest do not have to notify anyone, but it would be appreciated if any such flier could notify Bud Tenny, Box 545, Richardson, Texas 75080 if he resigns.

Qualification Trial ResultsCHICAGO LOCAL QUAL. TRIALS, May 2, 1971, 25' ceiling

Four entrants, three qualifiers			
Howard Haupt	8:43	10:48	19:31
Charlie Sotich	9:21	9:02	18:23
Dave Linstrum	5:36	3:51	9:27

DETROIT LOCAL QUAL. TRIALS, May 9, 1971, 65' ceiling

Five entrants, four qualifiers			
Dick Kowalski	23:59	24:33	48:32
Al Rohrbaugh	20:55	20:25	41:30
Ed Stoll	21:37	18:32	40:09
Ron Plotzke	17:30	15:27	33:05

Qualifiers Via Contests

	Time	Top Time	%
George Batiuk	8:25	8:25	100
Stan Chilton	5:14	5:14	100
Bob Cowley	14:33.1	18:18.1	79
Bill Gibbons	4:00+	4:00+	100
Erwin Rodemsky	27:56	27:56	100
Fudo Takagi	22:07	27:56	79

Qualifiers Via Waiver

Dan Belieff

Team Selection Trials Schedule

CALIFORNIA - Santa Ana. West Coast Semi-Finals, June 13, 1971, 9 am to 9 pm. Two hour rounds will be flown, with model weights checked before each flight. Nat Antonicelli, 3559 Chasewood Dr., San Diego, Cal. 92111.

COLORADO - Denver. Denver Semi-Finals, June 19, 1971, 8 am to 6 pm, Hinkley High School Gym, Aurora, Colo. Six 1½ hour rounds. 32' ceiling with 25' clear; floor 130' x 140'. Gym will open at 7 am on June 19 and will be open Friday evening June 18 for test flying. Ted Gonzoph, 12996 East 2nd Ave., Aurora, Colo. 80010.

MICHIGAN - Detroit. Northern Semi-Finals, June 19-20, 1971. Michigan State Fair Coliseum; one-half of site will be obstructed to 32' and will be available for testing, full 65' ceiling other side. Three 165 minute rounds beginning at 10 am, 1 pm and 4 pm on June 19; rounds begin at 9 am, 12 noon and 3 pm on June 20. Due to costs of removing and replacing valances from active end of site, all entrants will be asked to contribute \$2 above the normal entry fee. Paul Crowley, 32604 Tecla Dr., Warren, Mich. 48093 ph. 313-294-0266.

NEW JERSEY - Lakehurst. Eastern Semi-Finals, June 13, 1971. C. V. Russo, 143 Willow Way, Clark, N. J. 07066.

OKLAHOMA - Tulsa. Southern Semi-Finals, June 13, 1971, at John Mabee Gym, University of Tulsa. Due to a rental fee being charged, fliers will be asked to make a donation in addition to the entry fee. Details of rounds, flying time and ground rules will be furnished to Texas, Oklahoma, Kansas and Missouri qualifiers; others who plan to attend this Semi should contact Bud Tenny, Box 545, Richardson, Texas 75080 ph. 214-235-4035 to receive this info.

CONTEST CALENDAR

MARYLAND - College Park. Third Annual Eastern Indoor Championships, sponsored by the D. C. Maxcutors at the Cole Field House of the University of Maryland. HLG, Easy B, Paper Stick, Indoor Stick, Indoor Scale and Unorthodox Aircraft. Contact Tom Vallee, 444 Henryton So., Laurel, Md. 20810 for info and rules for Unorthodox Aircraft and Easy B.

NEW JERSEY - Lakehurst. Indoor contest at Hangar #5, July 3-4, 1971. C. V. Russo, 143 Willow Way, Clark, N. J.

NEW YORK - Hauppauge. Indoor sessions at Hauppauge Middle School Auditorium, 6:30 pm to 10 pm, June 10 and June 24, 1971. Bob Sylvia, 28 Holiday Park Dr., Hauppauge, N. Y.

INDOOR ELSEWHERE

Ove Pettersson and some friends have been pushing hard to get indoor going again in Sweden. Previous records dated back to 1953, with 5:03 being the top time. At a recent contest which was covered by television, fourteen fliers entered four events in the 33' ceiling site. The events were; FAI (65 cm), 35 cm microfilm, 25 Ores (PennyPlane rules except the 25 Ores coin weighs 2.2 g) and HLG. Partial results:

FAI			
Ove Pettersson	8:07	9:28	17:35
Peter Porho	5:39	5:40	11:09

35 cm			
Lennart Flodstrom	2:33	2:27	5:00

25 Ores			
F. Linden	2:10	2:34	4:44
S. O. Liden	1:55	1:58	3:53

HLG			
L. Wihd	:18	:20	:38
L. G. Olofsson	:18	:18	:36

New Swedish Records (set after contest)

FAI - 10:53, Ove Pettersson
 35 cm - 4:27, Lennart Flodstrom
 HLG - 0:20, Lennart Wihd

NIMAS POSTAL MEET

Entry in the Postal this year was slightly higher than last year, with all the increase in Easy B. Otherwise, the entry was almost identical in number to 1970. The two PennyPlane entries are included, even though five entries were requested to hold an event. The two Junior Easy B entries become the new Top Junior listing, and the top ten Open Easy B fliers become the new Top Ten Easy B.

JUNIOR EASY B	Time/ceiling	Fudge	Adj. Time
1. Danny Aggers	4:12.5/24'	1.22	5:07.8
2. Jimmy Clem	6:26/58'	.78	5:01.2

OPEN EASY B	Time/ceiling	Fudge	Adj. Time
1. Bob Platt	9:48.6/20'	1.33	13:06
2. Hal Crane	9:11.8/20'	1.33	12:13.8
3. Richard Hardcastle	11:23.6/31'	1.04	12:06
4. Clarence Mather	8:41.0/22.3'	1.26	10:56.4
5. Fudo Takagi	8:12.0/22.3'	1.26	10:19.8
6. Fred Harlow	6:42.0/20'	1.33	8:54.6
7. Chet Bukowski	7:08.0/25'	1.19	8:29.4
8. Richard Sherman	5:29.0/25'	1.19	6:31.8
9. Don Chancey	8:19.5/58'	.78	6:29.4
10. Jim Clem	8:15.0/58'	.78	6:26.4
11. Charles Learoyd	5:06.0/25'	1.19	6:04.2
12. Mike Fedor	7:45.0/58'	.78	6:03

JUNIOR HLG (25' ceiling)	Time/ceiling	Fudge	Adj. Time
1. Danny Aggers	52.0/24'	1.04	54.1

OPEN HLG	Time/ceiling	Fudge	Adj. Time
1. Richard Sherman	54.0/25'	1.0	54.0
2. Ed Winter	37.7/25'	1.0	37.7
3. Charles Learoyd	35.1/25'	1.0	35.1

OPEN PENNYPLANE*	Time/ceiling	Fudge	Adj. Time
1. Clarence Mather	4:40/22.3'	1.26	5:52.8
2. Bruce Cronhite	3:48/22.3'	1.26	4:47.4

*These PennyPlane flights were made with a "no touch" rule which was an original part of the Aeronut rules.

STATE OF THE ART

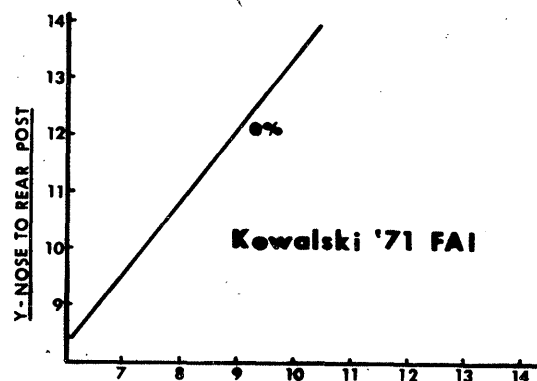
As will be seen elsewhere, Dick Kowalski topped other Detroit Local qualifiers and set two probable records in the May 9 Detroit Local Qual. Trials. The model he used is shown on the plan page and is interesting in that Dick departed from his recent design and construction practice and still achieved excellent performance.

These departures are: no stressed wing structure, no taut film, and low aspect ratio wings. As usual, the model is the result of considerable glide testing which revealed the following:

1. Slack covering gave no worse sinking speed than tight film, and in some cases gave improved sinking speed. This Dick is unable to explain yet, but he feels that wrinkles in the film may serve as turbulators which tend to reduce drag (and decrease sinking speed).
2. 7 1/2" chord seems to be optimum for the span and weight limitations involved, based on analysis of tests on chords ranging from 7" to 10", even though lighter wing loadings result from wider chords.
3. 40% tailplane area gives reduction in sinking speed over the 33-37% often used. Larger stabs would give more performance, but structural considerations dictated this limit.

Dick's decision for slack film reinforced the earlier decision to bypass the considerable design development time inherent in stressed structures. By combining these features, he saved considerable building time. In summary Dick said, "It seems almost ironic that the model's proportions and general configuration have evolved into what appears to be very much like my SLI-FAI design of 1961. It makes a guy wonder why he spent nearly 10 years learning about and investigating theory that tells him his best guess was pretty good?"

The two record flights were made under the altitude of 55', without touching anything. No particular effort was made to limit climb. The prop was a progressive flaring (so-called) type very similar to the Kalina design shown in Dec. '68 INAV. Currently the ship flies in about 16' diameter circles with extreme wing twist and tail tilt. Dick thinks the model has some way to go before it will be finely trimmed for maximum duration, since it has only been flown at two sessions. Basic trim on the model was set up equivalent to 0% margin as computed for the CMOS chart below.



X-NOSE TO C.G.

IHLG - NATS STRATEGY

by The Observer

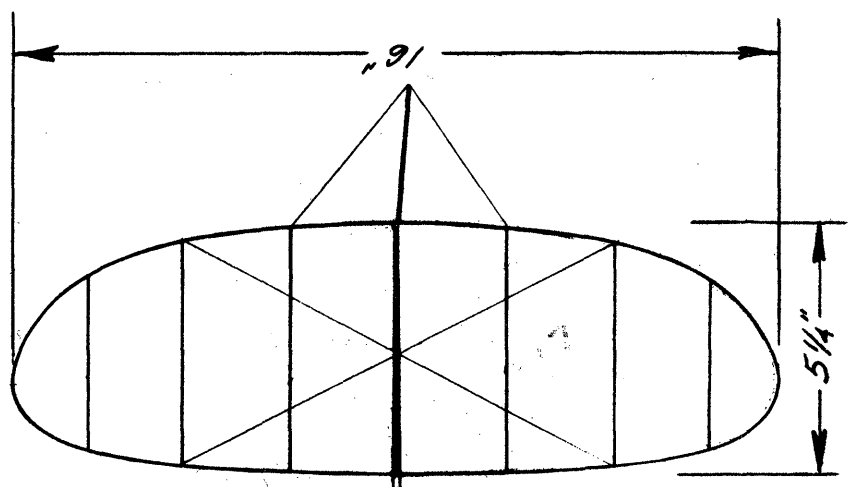
When talking about HLG flying, we must define what ceiling height is under discussion. There are really five different areas: 10-20', 20-35', 35-50', 50-90' and 90+'. Let's pass the first three which offer competition and enjoyment and go to the higher ceilings.

Take the Nats for example: If you are there, what do you want to do? Have fun or win? Better to have fun winning! Let's say you want to place in the Nats in open indoor hand launch glider - you can if you follow these simple instructions.

Forget the airplane for a moment - get in shape yourself. All the fliers who make top times at the Nats have had their arms in good shape regardless of what shape the rest of their is in.

Getting in shape can mean doing push-ups, tying your arm to a tree with a rubber band, or throwing rocks. The most logical idea is to throw outdoor gliders; make some heavy clunk and throw it every chance you get all winter.

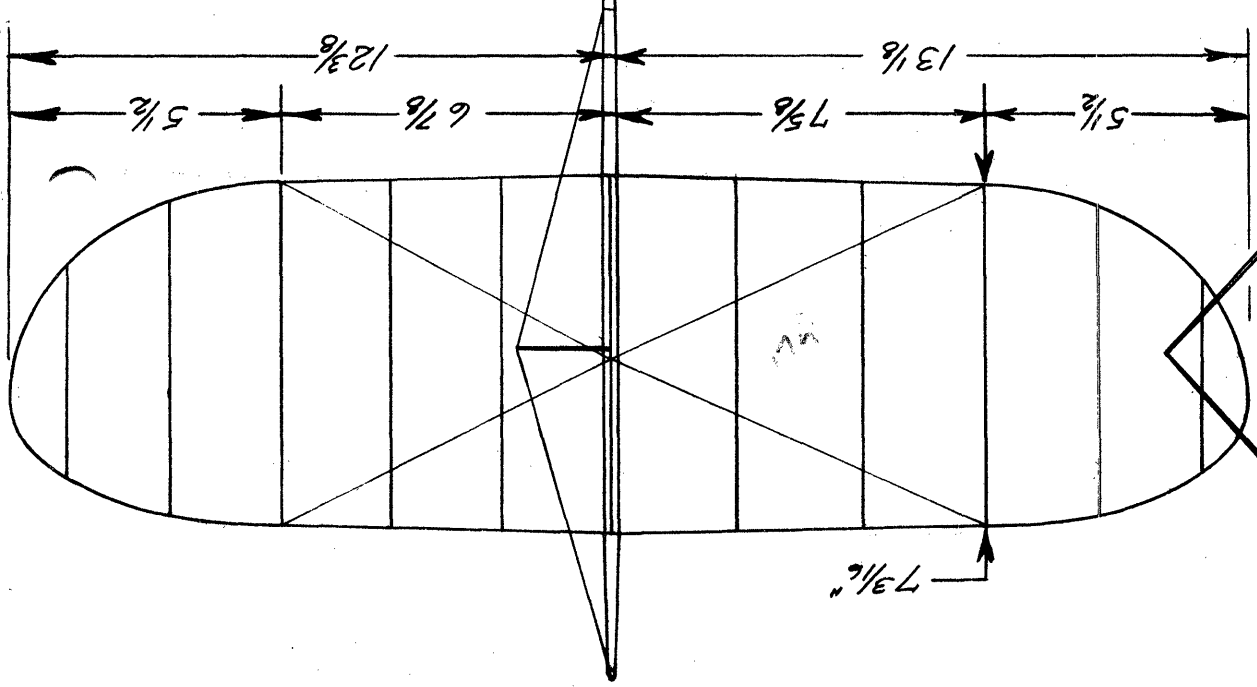
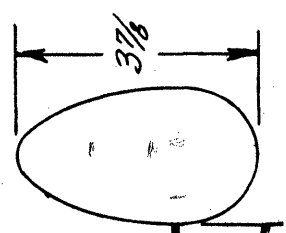
WING	.01150
STICK	.01110
STAB	.00340
BOOM	.00260
FIN	.00050
PROP	.00650
TOTAL	.03560



44%

1971 FAI INDOOR QUALIFICATIONS
 MAY 9 - DETROIT MICH - 65' CEILING
 23:59 & 24:33

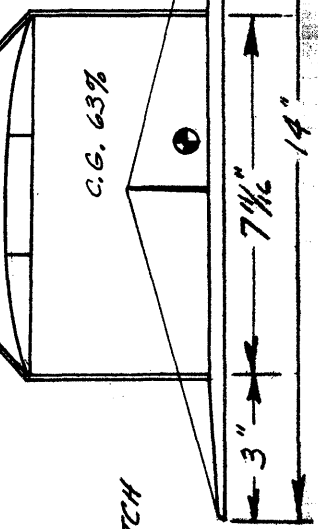
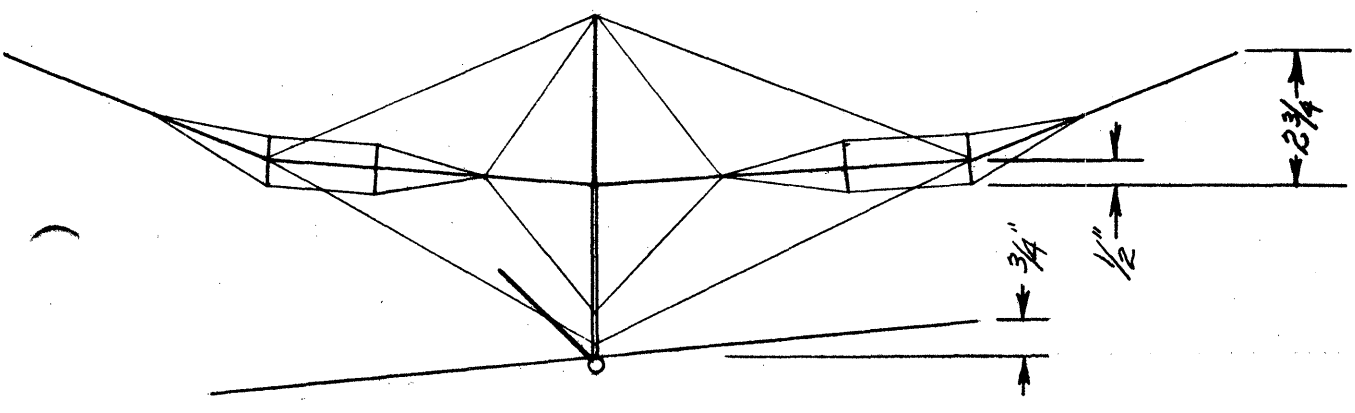
DESIGN BY DICK KOMALSKI



7 3/16"

C.G. 63%

PROP - 1 7/8 DIA X 35 PITCH
 RUBBER - 16 1/2" OF .055



12 1/4"

Now that you're in shape, let's assume you are at the Nats with six super-flams. In the morning when flying starts, 150 guys rush out and start taking official flights. Don't do it; the floor is pure bedlam. Even if your ship got up and locked in, its times would be torn up by the turbulent air that reaches as high as 20' above the floor. All you hear is the sound of smashing gliders and the call "Official!"

Sneak off into a corner and get the glide slow and smooth with a nice circle.

About two hours after official flying begins, all the outdoor gliders will be broken and the casual fliers have thrown out their arms. Now you can work on your pattern.

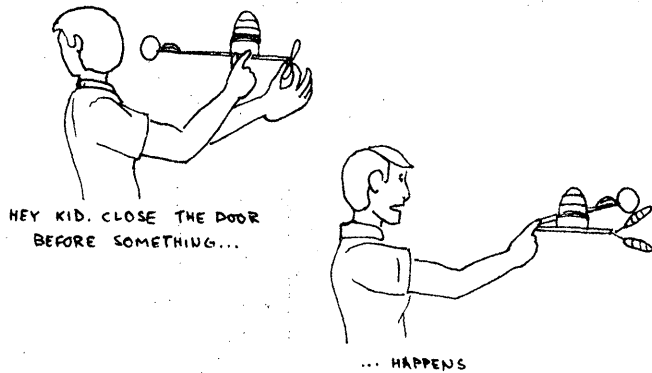
Take it easy to avoid throwing out your arm or breaking your models. Find a spot and launch direction that will get you up and recover without snaring any hanging junk. Also find a place where there is lift. Are there thermals indoors? You bet! If the site has windows where the afternoon sun hits the floor, get there. Otherwise stay near the center.

Now it should be near the end of the flying time and the air should be smooth and the floor free of bodies. Begin about an hour before the end of official flying and take official flights; get some friends to keep the clydes away from your ship as it nears the floor. The event is won or lost in the last 6' of glide, and people frown if you clobber anyone who gets in front of your ship.

Finally, consider the ship itself. If you have some objection to flying Sweepettes, get a Zaic Year Book and plagiarize. High ceiling gliders are creatures of evolution, so radical departures from the norm will likely be a waste of time and wood.

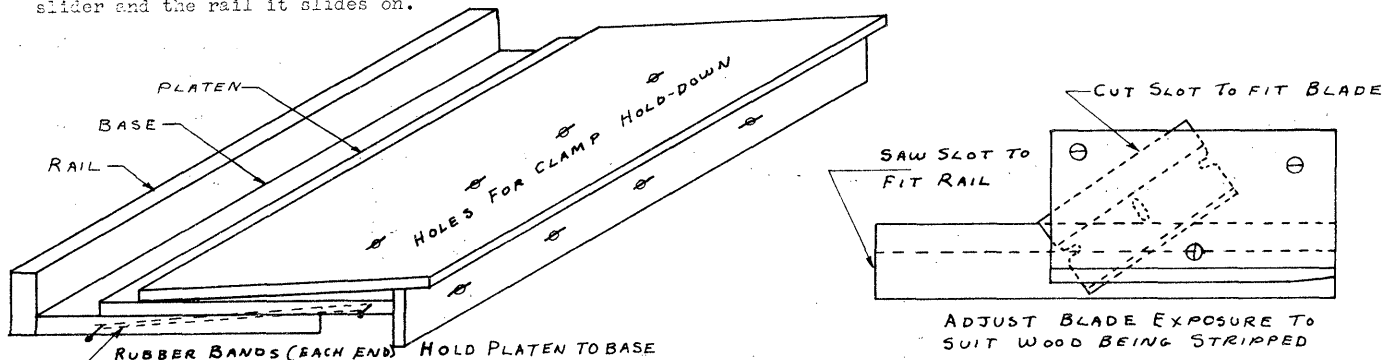
So there you are. If this all seems harsh, remember that you are there to win, not play.

(Ed. note: The above came in earlier this year, and was signed with the note "Information from six Nats". Who the author is is open to speculation, but we have our suspicions!)



BALSA STRIPPER

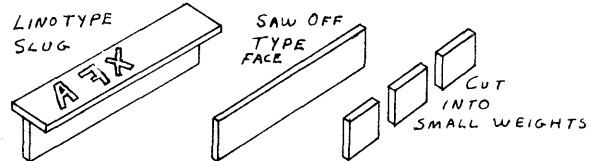
The May '64 INAV featured a balsa stripper by Bill Atwood which used micrometer heads to position the straight edge with excellent accuracy. The one shown below, designed by Hewitt Phillips, is also capable of good accuracy. It sacrifices the micrometer readout for the important feature of using materials likely to be on hand in most modeler's workshops. Bob Champine built one, and suggests that a metal insert be used as bearing surface for the adjustment screws. Use care in constructing this stripper and it will give excellent results; the most important item in the construction is the fit between the slider and the rail it slides on.



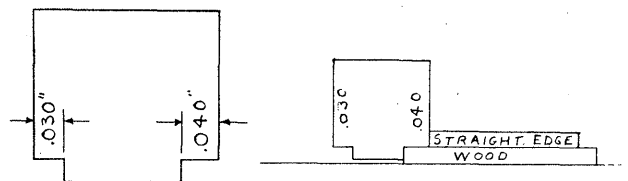
HINTS AND KINKS

Three Building Hints

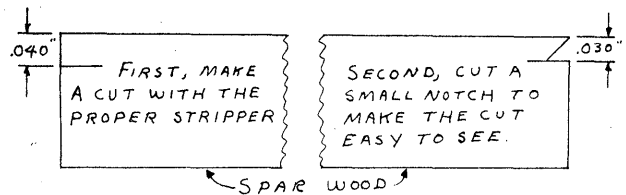
Dave Linstrum suggests a handy source for small building weights: Get some used linotype slugs, saw off the type face and saw the remaining slug into pieces about $3/16"$ x $1/2"$ x $3/4"$. Finally, glue small pieces of garnet paper to the weights to keep them from slipping around on the board (lead is slick when sawed).

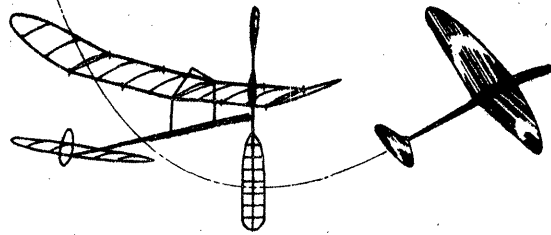


Paul Crowley suggests this method for making matched sets of tapered spars: If the spars are to be double tapered, first sand one taper into the sheet of balsa, then use a gage like that shown below to line up the straight edge to the proper distances from the edge of the balsa. The gage shown makes spars which taper from $.040"$ wide to $.030"$ wide.



If you happen to have some balsa strippers around, they can be used in place of the gage shown above to make tapered spars. Taper the balsa sheet just as outlined above, then make a short cut with strippers of the proper size at each end. In the example sketched below, the desired spar tapers from $.040"$ to $.030"$, so make a short cut with a $.040"$ stripper at the heavy end of the wood and a cut at the opposite end of the wood with a $.030"$ stripper. Now, notch from the edge of the spar down to the stripper slot so that spar dimensions are clearly defined, place the wood on a dark background, and align the straight edge with the bottom of the notch to cut the spar. This gives spars with a bevel on the end which helps you to orient the spars properly when splicing.



INDOOR**NEWS and VIEWS** Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080**SPECIAL NATS INFORMATION**

FURNISHED BY AMA HEADQUARTERS

LAST MINUTE CHANGE FOR NATS INDOOR SITE!

The Nats Indoor site has been changed from the Chicago Amphitheater to the Washington Park Armory (same site as used for last year's Nats.)

This is the solution to a panic situation which developed in mid-July -- we found out that the Amphitheater management had booked a closed-circuit TV show for Nats Monday. This would have prevented use of the site on both Indoor days, due to thousands of chairs being involved, covering the entire floor area.

Quick action, however, by Nats Free Flight Director Pete Sotich, of Chicago, saved the day. With the help of the Navy he was able to arrange a switch to the Armory used for last year's events. Thus, the original Nats Indoor schedule will be maintained as published -- only the location will be different.

******NATIONAL INDOOR MODEL AIRPLANE SOCIETY******New Members!

JAMES CUCCI, JR., 61 Blackstone Rd., Attleboro, MA. 02703
RICHARD DOIG, 2370 Hammond Lake Dr., Pontiac, Mich. 48053
EDDIE SAULTS, OCLA Box 3251, Chickasha, Okla. 73018

Honorary Members

MARTIN SHEPHERD, Southbourne Hilliers Close, Sutton,
Courtenay, Berkshire, England
DARRYL WHITE, 2 Ryan Street, Rutherford 2320, N.S.W.
Australia

Change of Address

BOB CLEMENS, 95 Shoreway Dr., Rochester, N. Y. 14612

An Apology

This issue is late, and is likely to be somewhat abbreviated, for reasons you can guess as you read of some few crises which have plagued us lately!

Further, the May issue had an error in the presentation of Clarence Mather's biplane. The stability margin was really +13%; anyone who wishes to have a revised CMOS diagram may have one by sending a stamped envelope with the request.

FAI FF Deadline Near

Dave Linstrum, FAI FF Chairman, has asked that this reminder be made: the deadline for FAI FF qualification is August 1, 1971.

PennyPlane Kits!

This is probably too late (see above) but: The Chicago Aeronuts, who will sponsor PennyPlane at the 1971 Nats, intend to produce a limited number of kits for Sotich's "DUFFER DIP" (see VTO, June '71 MAN). These kits are free to those who declare an intent to fly them at the Nats. When kits are exhausted, plans will be sent. Send your request for a kit along with a declaration of intent and 40¢ in stamps to: PennyPlane Kit, 672 Plum Grove Circle, Buffalo Grove, Ill. 60090.

More Nats Info

The Nats Entry Blank listed Indoor HLG and Scale as being held 9 am to 9 pm; the listing is identical to last year, including a typographical error in some outdoor events! Anyway, as last year, HLG will be from 9 am to 3 pm, with Scale from 3 pm to 9 pm. A special program of alternating test flying and official flying is under consideration; providing certain administrative problems can be worked out, it may be used. The reason for trying this approach is to completely clear the flight area of

TWO OTHER NOTES SHOULD BE MADE BY THOSE CONCERNED:

The name of the Washington Park Armory has been changed since last year -- it is now known as the Brig. Gen. Richard L. Jones Armory. But it is still in the same place! The address is 5200 S. Cottage Grove Ave., on the SE side of Chicago.

The ceiling is practically the same - about 90 feet.

Note further that there is a bad traffic situation in the Chicago area. Edens and Dan Ryan Expressways are under repair. Extra time (lots) should be allowed for driving to the Armory.

all fliers except those making official flights. Final details will appear in the contestant packets, if this plan is adopted.

International Postal Challenge

John Malkin, Upper Hutt, New Zealand, has issued a postal challenge to any other clubs who wish to accept his offer made in behalf of the Wellington Club. Their site is 26', and they wish to fly Easy B and HLG. Standard NIMAS fudge factor is acceptable for Easy B, and something may have to be worked out on HLG. They suggest three man teams for each event, with no limit on teams entered, "but contest to be determined by club with smallest number of teams." This is not clear, so those interested may want to inquire into the meaning. John mentioned dates (their sessions) of Aug. 29 and Oct. 31, 1971. John's address is 51 Clyma St., Upper Hutt, New Zealand. Use air mail, since seammil is very slow!

FAI INDOOR REPORTA Modern Fable

Once upon a time, long, long ago, some exceedingly wise Elders of AMA noted that Princes in charge of FAI Programs had a tendency to become embroiled in Controversy. In their Wisdom, they established several Wise and Proper Edicts to prevent the People from Uprising.

Unfortunately, the Scribe's paper supply was exhausted at a crucial time and the wisest Rule of all had to be transcribed on the back of a torn and tattered envelope. The Town Crier, upon receiving these commandments, failed to examine the envelope and used it as a taper to light his torch. Thus the Rule was lost to sight and no one ever heard of it; nor was it posted for those who would read it.

In their wisdom, the Elders had designed the Rule "to prevent the Princes of the Programs from becoming unpopular with their subjects." Alas! Without the envelope (long since turned to ashes), these same Princes knew not the Rule. Thus it came to pass that a Prince made some decisions based on honorable and historical Precedent, but not conforming to the Rule.

As could be predicted, when the decisions were hard and both sides had nearly equal merit, the people rose up in anger. Some were reasonable, and presented Fair and Reasoned Arguments; others raged and frothed at the Mouth, making Exceeding Foolish and Inflammatory Charges. All this took place at the 11th hour, mind you - and Something Had To Be Done.

Thus it came to pass, months after the appropriate time to apply the accumulated Wisdom of The Elders, one Elder finally remembered the Rule. A Royal Edict was sent forth, commanding the Prince to Cease And Desist. The Elder had no Helpful Suggestions to relieve the situation and Placate The People, for yea and verily the people were half for and half against the Prince's Decisions. And the Prince was sorely vexed and perplexed, for he had labored long and mightily against Great Odds that his Program should bear Good Fruit.

Anatomy of a Decision

1964 (apparently, no exact date is available) Several policies were set forth for operation of FAI Programs, probably by AMA's Executive Council. The best-known of these policies is a prohibition of program Chairmen from competing in their own programs. For the purpose of this report, the most important policy can be stated approximately thus: "FAI Finals sites shall be central in location, unless approved by a majority of the Finalists, or unless approved by the Executive Director, the President's FAI Program Delegate and the AMA-FAI Coordinator." Such an approximation must be made because the policy has never been published anywhere, and has never been given to any member of any Indoor Committee until July 3, 1971.

Dec. '70 England's offer to host '72 WCh at Cardington was accepted tentatively by CIAM. As a result, it was decided that a hangar would be the most appropriate site for the U. S. Finals. The reason is that every year since 1963 (the first unified Finals) the Finals site matched the expected WCh site as closely as possible. The sole exception was 1966, but the Team was chosen before the WCh site was shifted to Debrecen, Hungary.

Apr. '72 A request was made to contacts at both Santa Ana and Lakehurst to determine if either or both hangars would be available in August.

May 15, 1971 End of program registration and qualification. At this time it was determined that the geographical distribution of qualifiers was essentially equal with respect to the hangars. That is, 48.5% of the qualifiers lived within 1400 miles of Santa Ana, while 51.5% lived within 1400 miles of Lakehurst.

May 28, '71 (approx.) Available dates were received for both hangars. After careful consideration of all factors, Santa Ana was chosen on the basis it is the best site and most likely to have good conditions.

June 3, 1971 INAV sent to printer containing announcement of Finals site; mail distribution should have been complete by June 8, 1971.

Mid June '71 Choice of Santa Ana hotly debated at Detroit and Lakehurst Semi-Finals. Pressure brought to bear on Chairman and AMA Hq. A poll of the Indoor Committee at the request of Detroit area yielded narrow margin of support for Santa Ana decision.

July 3, 1971 Chairman receives "cease and desist" order based on previously unknown "established policy".

July 6, 1971 Chairman's answer received by Worth, Patton and Hill.

July 12, 1971 Worth, Patton and Hill propose use of three Finals sites; Santa Ana, Lakehurst and Nats.

July 14, 1971 Above proposal withdrawn due to impossibly short time to notify Finalists who might want to compete at Nats. Acceptance was gained for Chairman's proposal to take poll of Finalists in full compliance with 1964 policy.

July 16, 1971 Poll form sent to all Finalists regardless of whether they had resigned after Semi-Finals.

Aug. 6, 1971 Deadline for return of poll. Results of poll will be strictly followed; a 60% majority is necessary for adoption of any proposal to adopt a new site or new program philosophy for this year.

Results From Semi-Finals

West Coast Semi-Finals, June 13, 1971 Santa Ana Hangar
13 entrants, 10 qualifiers

1. Bud Romak	33:07	30:40	64:34	100%
2. Erwin Rodemsky	31:25	32:50	64:15	98%
3. Larry Cailliau	29:40	33:05	62:45	95%
4. Bob Gibbs	27:03	31:59	59:02	90%
5. Bob Randolph	27:45	29:41	57:26	88%
6. Clarence Mather	28:25	27:02	55:27	85%
7. Paul Allen	28:27	25:50	54:17	84%
8. Linda Randolph	27:16	26:49	54:05	84%
9. Carl Rambo	25:46	26:03	51:49	80%
10. Joe Bilgri	26:41	25:00	51:41	80%
11. Fudo Takagi	23:18	24:38	47:56	74%
12. Warren Williams	18:57	23:01	41:58	65%
13. Larry Parsons	no time			

Tulsa Semi-Finals, June 13, 1971 John MaBee Gym 30' 10"

Six entrants, five qualifiers				
1. Paul Tryon	12:19	12:38	24:57	100%
2. Dick Ganslen	12:41	11:59	24:40	98%
3. Bob Dunham	12:00	11:49	23:49	95%

4. John English	8:49	13:35	22:34	90%
5. Robert Dunham II	9:18	12:59	22:17	89%
6. Jim Clem	8:08	10:29	18:37	74%

East Coast Semi-Finals, June 13, 1971, Lakehurst #5

13 entrants, 9 qualifiers				
1. Bob Champine	30:56	33:32	64:28	100%
2. S. Cannizzo	30:20	31:52	62:12	96%
3. C. V. Russco	31:31	30:25	61:56	95%
4. Bob Platt	30:22	29:49	60:11	93%
5. Hal Crane	29:16	30:02	59:18	92%
6. Ron Ganser	25:25	29:06	54:31	85%
7. Emanuel Radoff	26:17	27:37	53:54	83%
8. John Triolo	26:06	26:50	52:56	81%
9. Tom Vallee	24:15	25:56	50:11	78%
10. Ernie Kopecky	24:20	24:32	48:52	76%
11. John Kukon	20:38	23:46	44:24	69%
12. Dan Belleff	14:38	13:53	28:35	44%
13. Fred Harlow	18:20		18:20	28%

Detroit Semi-Finals, June 19, 1971 State Fair Coliseum

Eight entrants, five qualifiers				
1. Bill Hulbert	22:52	24:23	47:15	100%
2. Dick Kowalski	20:34	23:50	45:24	96%
3. Ed Stoll	21:07	21:32	42:39	90%
4. Ron Plotzke	18:52	20:24	39:16	83%
5. Bob Cowley	22:12	17:03	39:15	83%
6. Tom Sova	18:36	18:20	36:56	78%
7. Howard Haupt	16:58	19:51	36:49	78%
8. Rol Anderson	15:55	12:23	28:18	60%

Denver Semi-Finals, June 19, 1971 Hinkley High School Gym

Six entrants, five qualifiers				
1. Ted Gonzoph	11:25	12:13	23:38	100%
2. George Batiuk, Jr.	10:07	11:23	21:30	91%
3. Hal Blubaugh	10:34	10:35	21:09	90%
4. Stan Chilton	8:19	11:27	19:46	84%
5. Ed Collins	9:13	10:29	19:42	84%
6. George Batiuk, Sr.	2:34	6:51	9:25	40%

RECORDS? MAYBE!

The June issue should have listed some of these marks, and some of them have already been approved.

Open Cat. III Cabin - 29:22, Bob Randolph 5/16/71

Sr. AMA Cat. III FAI - 27:16, Linda Randolph 6/13/71
Sr. Cat. III Indoor Stick - 27:16, Linda Randolph 6/13/71

Open AMA Cat. III FAI - 33:32, Bob Champine 6/13/71

Sr. AMA Cat. I FAI - 12:59, Robert Dunham II 6/13/71
Sr. Cat. I Indoor Stick - 12:59, Robert Dunham II, 6/13/61

Jr. AMA Cat. II FAI - 18:36, Tom Sova 6/19/71

Open FAI Cat. IV FAI - 33:57, Ron Plotzke 7/4/71

Almost Records:

Clarence Mather's D made a steered flight of 45:50 at the Santa Ana Semi-Finals; with steering, this did not qualify as an AMA record and a World Record sanction was not in effect. Also, a Cat. IV World Record needs to exceed 46:35 to satisfy the 2% requirement.

Ron Plotzke's "300" made a hit at the Lakehurst July 4 bash, as it turned 41:10 after landing on an obstruction. The mark Ron was after was Kopecky's 43:42, set at Santa Ana in 1963; this is a new absolute high time at any Lakehurst hangar.

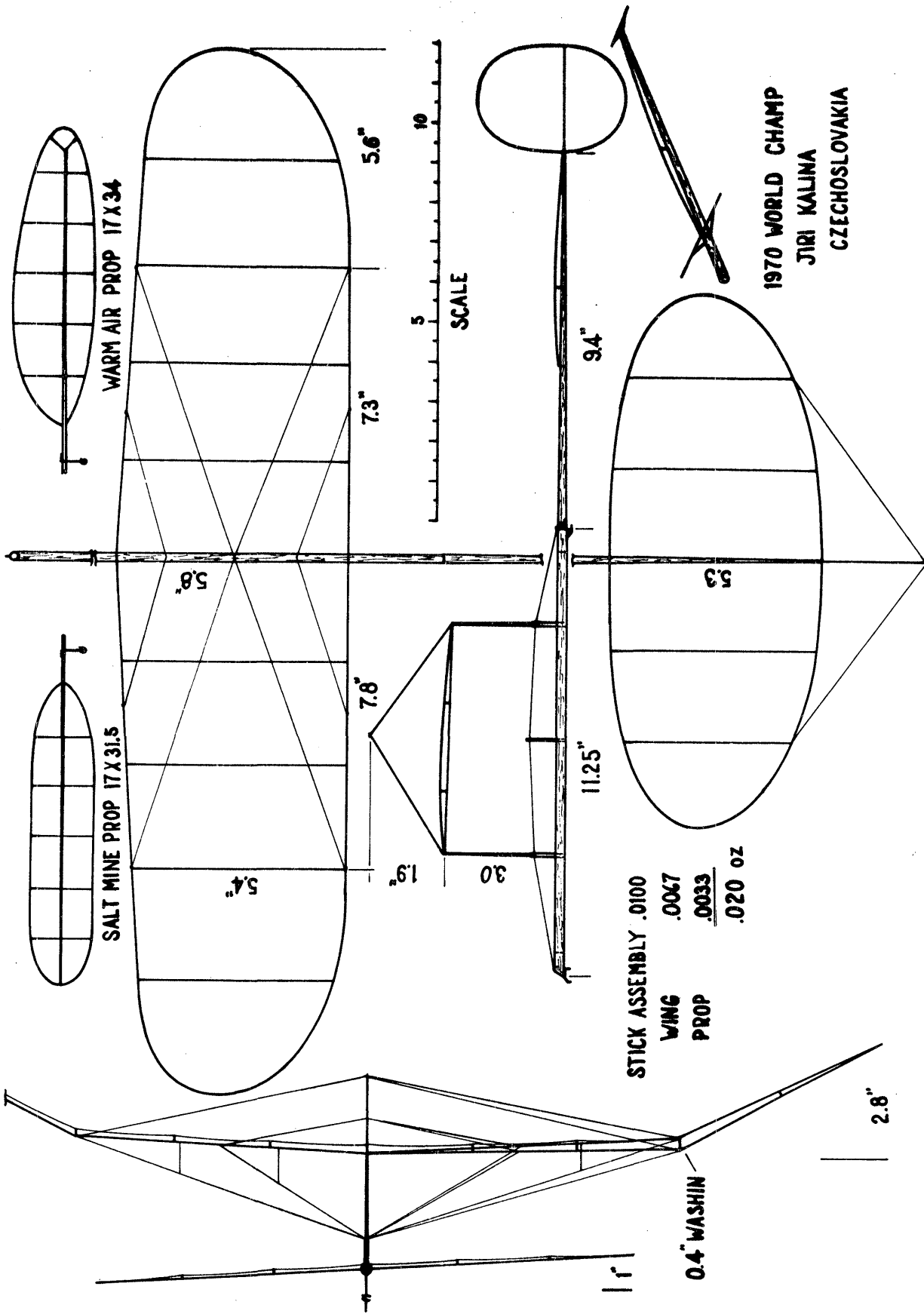
CONTEST CALENDAR

MARYLAND - College Park. Third Annual Eastern Indoor Championships, sponsored by the D.C. Maxcutors at the Cole Field House of the University of Maryland. HLG, Easy B, Paper Stick, Indoor Stick, Indoor Scale and Unorthodox Aircraft. Contact Tom Vallee, 444 Henryton So., Laurel, Md. 20810 301-498-0790 for more info and rules for Easy B and Unorthodox Aircraft.

STATE OF THE ART

Jiri Kalina's 1970 World Champion model was chosen as the NFFS Top Ten Indoor model, and full size plans are or will be available from NFFS for the model. Due to the press of time, only the plan as drawn by Clarence Mather will appear in this issue. Clarence has compiled a very comprehensive study on Jiri's model (he traded models with Jiri at the '70 WCh), which will be presented either in August or September.

*Richmond 169 FAI
June 9/1/75*

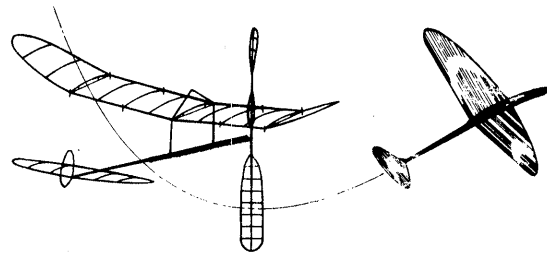


1970 WORLD CHAMP
 JIRI KALINA
 CZECHOSLOVAKIA

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



Indoor Stick

Junior	
1. Gerry Geraghty	15:43.0
2. Gregory Simon	13:12.4
3. Bryan Baetens	10:07.0
4. Patrick Wood	9:43.2
5. William Schlarb	8:54.2
6. Bruce Pallet	8:51.0
7. Barry Pallet	8:35.0

Senior

1. Ronny Ganser	24:19.0
2. Bobby Dunham	18:41.4
3. Tom Sova	18:31.8
4. Dale Hacker	14:41.6
5. William Shailor	14:11.3
6. Jim Haught	11:20.0
7. Jeff Annis	10:39.2
8. Steve Bandt	6:13.4
9. Richard Doig	0:12.2

Open

1. Jim Richmond	33:54.0
2. Ron Plotzke	29:43.4
3. Ed Stoll	27:25.0
4. Charlie Sotich	27:04.0
5. Dan Belieff	26:49.0
6. Bucky Servaites	26:30.6
7. Dick Hardcastle	25:36.8
8. Bob Randolph	23:33.0
9. Al Rohrbaugh	22:52.0
10. Dennis Jaecks	22:19.6

Paper Stick

Junior	
1. Gregory Simon	13:05.6
2. Gerry Geraghty	10:58.2
3. Bryan Baetens	9:55.4
4. Bruce Pallet	9:29.4
5. Barry Pallet	8:48.8
6. Chris Clemens	8:30.0
7. Scott Wisniewski	8:21.8
8. Fritz Curth	8:20.2
9. Patrick Wood	7:22.4
10. Andy Tomasch	6:30.2

Senior

1. Tom Sova	17:10.4
2. Bobby Dunham	13:23.6
3. Ronny Ganser	12:40.6
4. William Shailor	11:17.2
5. Jim Haught	10:47.6
6. Michael Kuehne	10:09.4
7. David Kummerow	5:32.0
8. Larry Reimer	2:12.0
9. Richard Doig	0:31.2
10. Jeff Annis	0:09.0

Open

1. Jim Richmond	21:37.0
2. Ed Stoll	19:32.0
3. Hardy Brodersen	19:18.0
4. Al Rohrbaugh	19:04.6
5. Larry Cailliau	18:04.0
6. Bob Randolph	17:26.8
7. Joseph Sova	16:43.8
8. Dick Hardcastle	16:43.8
9. Rolland Anderson	15:46.0
10. Dennis Jaecks	15:23.4

THE NATS STORY

The Indoor Nats was a mixture of new and old, with about the same entry, higher average performance, and a new look in a couple of areas. HLG, Scale and PennyPlane were all flown the first day this year, leaving rubber fliers an extra day to observe if they desired. Another innovation was in HLG - test flying and official flying were separated into half-hour periods, except that any contestant who wished to fly official flights during a test flying session was permitted to "at his own risk". The experiment worked well enough that those who were still around to be polled after HLG was over voted to retain the idea. It was established that only fliers who carried a blue streamer were permitted to be on the floor during an "official" session; most of the few violators weren't in a position to see the admittedly inadequate sign which proclaimed which session was in effect. It is expected that next time a flashing light or blinker will be used to denote official flying sessions, and this should minimize the communications problem.

It is difficult to keep track of who flies which model design, but it has been reported that Sweepettes and Sweepette derivatives won most of the HLG places. Except for 1st in Junior and Open, the average performance was higher across the board in HLG. Junior and Senior times were new records, while Rudy Kluber improved 10 seconds from last year to win 1st with a time still short of the 1970 winning time. An interesting sidelight - Scale judging was going on in a corner of the site. When asked if stray gliders were causing a problem, George Pharr (one of the Judges) said, "Oh no. We just catch them like this!" To demonstrate, he made a clapping motion as if to catch a mosquito!

Both days, traffic problems due to Chicago freeway repairs caused late arrivals; it seemed to be worse on the second day. Very few fliers were in evidence until later, but there never seemed to be much aerial congestion. Except for 1st in Open Stick and Paper Stick, the average performance was again higher. Since Jim Richmond did it again with the same models as last year, these two times were about the same. It took Jim a few more flights in

Indoor Cabin

Junior	
1. Gregory Simon	11:41.8
2. Barry Pallet	6:35.0
3. Patrick Wood	5:35.0
4. William Schlarb	4:33.8
5. Bruce Pallet	3:38.4
6. William Wood	3:01.2

Senior

1. Ronny Ganser	15:23.0
2. Tom Sova	14:57.0
3. Bobby Dunham	11:20.0
4. Michael Kuehne	9:26.4
5. Michael Wood	4:36.2
6. Jim Haught	0:06.6

Open

1. Ron Plotzke	23:03.6
2. Al Rohrbaugh	21:58.0
3. Jim Richmond	21:37.2
4. Bob Randolph	20:27.2
5. Wayne Zink	18:57.4
6. Bucky Servaites	18:04.8
7. Charlie Sotich	17:33.0
8. Ron Ganser	15:00.0
9. Joseph Sova	12:45.2

Indoor HLG

Junior	
1. Gerry Geraghty	109.8
2. Brian Pardue	99.2
3. Robert Hayes	97.8
4. Gregory Simon	95.4
5. William Schlarb	84.0
6. Ricky Myers	81.8
7. John Comerford	80.2
8. Keith Gordy	79.0
9. Bryan Baetens	77.6
10. Larry McFarland	74.8

Senior

1. Marty Thompson	127.2
2. Bobby Dunham	124.4
3. George Pharr IV	115.8
4. Peter Lewis	105.4
Lee Cleveland	105.4
5. Ronny Ganser	105.0
6. Charles Weise	93.0
7. William Shailor	91.0
8. Danry Bartley	90.2
9. Bobby Hanford	89.6

Open

1. Rudy Kluber	124.2
2. Bucky Servaites	121.2
3. Vic Cunyngham	119.6
4. Terry Kuehne	116.6
5. Bob Hanford	114.4
6. Donald Wright	114.0
7. Dan Belieff	111.6
8. Don Chancey	111.0
9. Robert Watson	109.6
10. Dick Mathis	107.0

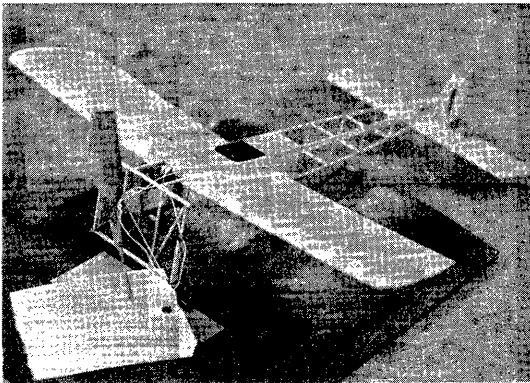
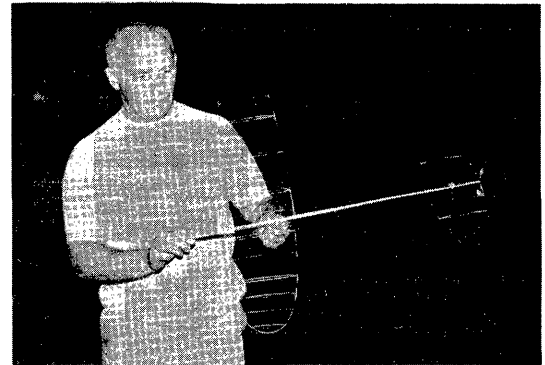
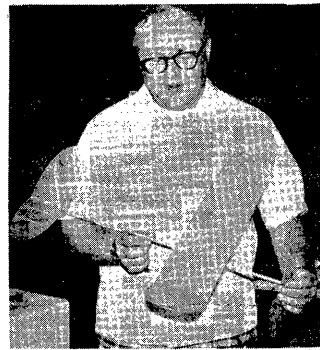
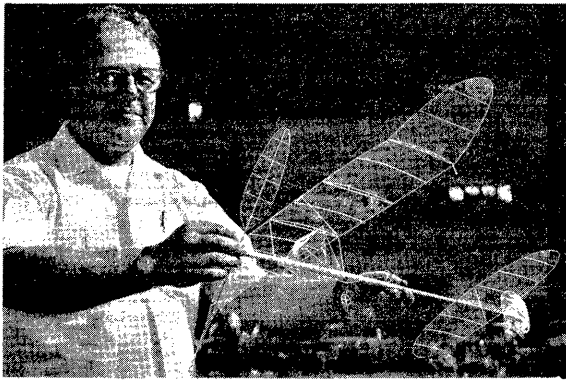
each event this year, which bears testimony that his new job in North Carolina is keeping him busy. Perhaps airline transportation rather than neglect was the problem, but Jim found the need for model repairs the hard way - in flight. He used up two Stick flights making official test flights on his new one gram model before winning Stick with the old standby FAI model. The "flying cardtable" (my name for it - Jim only smiles) one gram model shows very good Cat. II potential and looks like the more famous Richmond FAI in flight - if you ignore the wide wing.

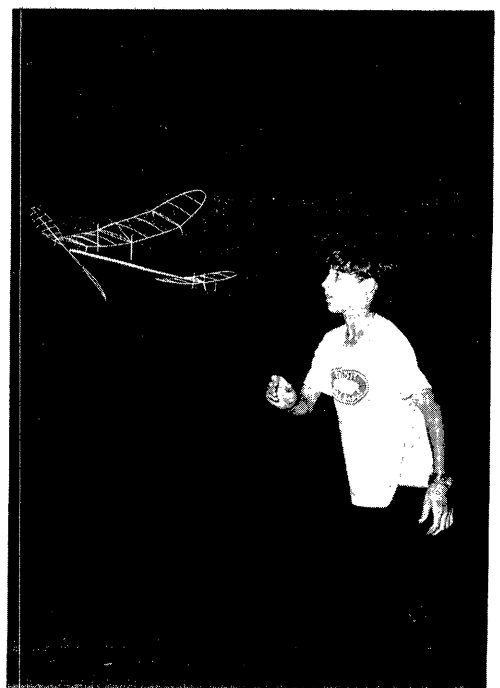
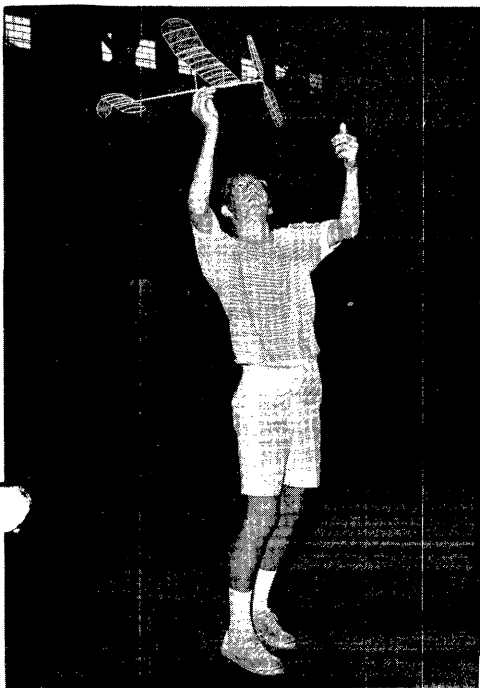
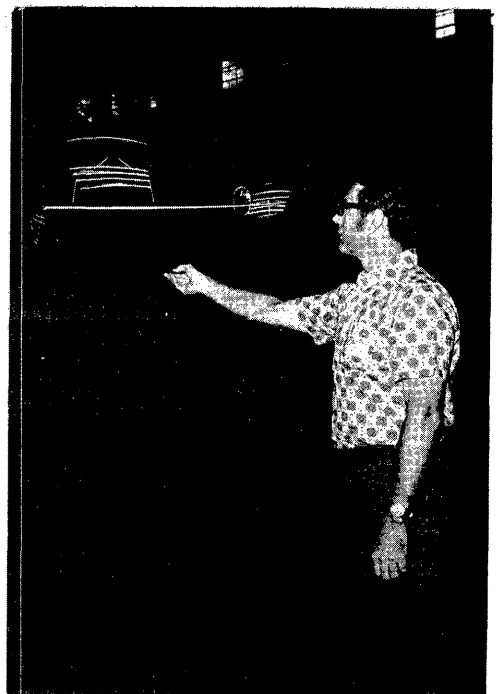
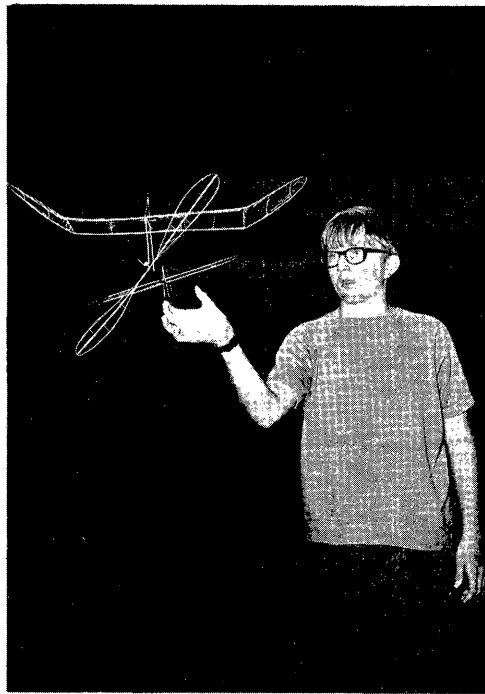
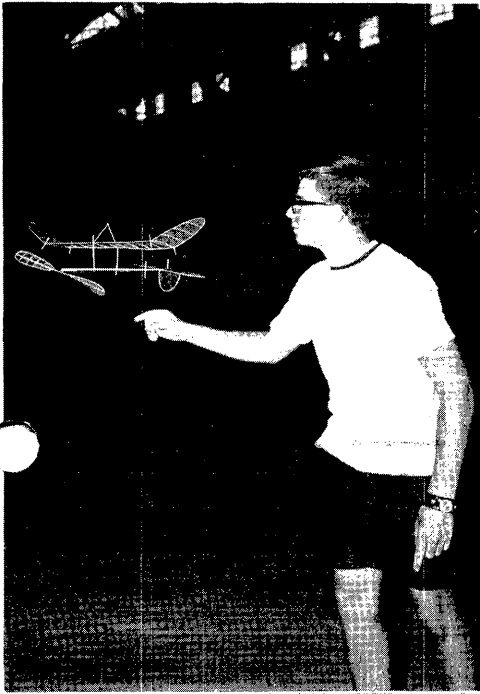
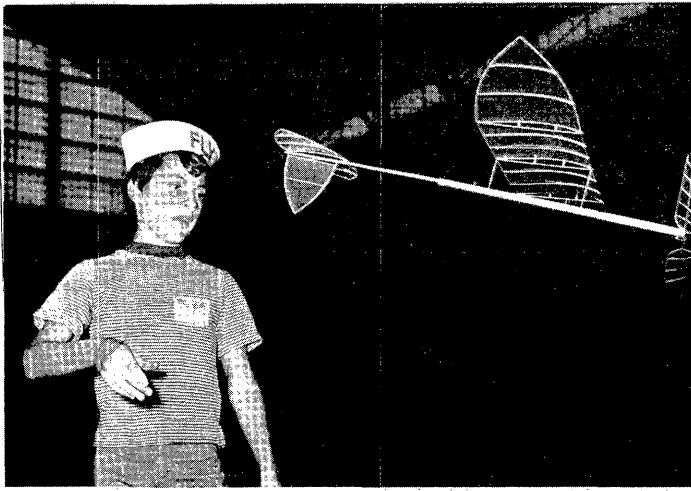
New records were the order of the day in Cabin, but the simple announcement of Ron Plotzke's record in the RECORDS? MAYBE! column fails to tell the story. At the beginning, Jim Richmond's '70 Nats flight of 20:25.2 was still standing. About 2 pm, Bob Randolph nudged this up to 20:27.2. Jim abandoned his planned 4:50 pm flight home and did 21:37.2. This still stood when he left, but Ron Plotzke soon logged 21:55, only to be squeezed out by Al Rohrbaugh's 7 pm flight of 21:58. Ron looked at the score and wandered off muttering something about "have to get it out again". His response was decisive - 23:03.6. Al had already left for home, but he (along with Randolph, Richmond and Plotzke) will get a record certificate to show that he did set the record.

In closing, it is important to mention the superb Navy crew work during both long, long days (12 hour sessions, not counting travel to and from Glenview NAS), and willing and capable assistance from Major Persons who was in charge of the Armory. Also, Jim Perdue served well and faithfully as second in command; Lee Cleveland and George Pickel "kept the books" during HLG, so that the results were mostly up to date as the event closed out.

Indoor Scale was ably and calmly run by Ralph Keunz, George Pharr and other members of the Cloudbusters club. Scale entry was lower than last year, but there really were more entries than appear in the results below. All Nats scores are figured only through fifth place, and I simply ran out of time before getting Scale results pulled below fifth.

(cont. on p. 4)





PennyPlane entry was increased by about 50% this year, and performance took a real jump. In fact, 7th place this year would have won it last year! Considering that the "no touch" rule was in effect, one could envision PennyPlane almost challenging Paper Stick, except that a 6" x 18" wing might be more than 100 sq. in. area and not eligible for Paper Stick. It was reported that one PennyPlane did over 13 minutes, but it touched at least once.

<u>PennyPlane</u>		<u>Indoor Scale</u>	
<u>Junior</u>		<u>Junior</u>	
1. Scott Wisniewski	6:09.0	1. Gregory Simon	121.5
2. Bryan Baetens	5:33.0	2. Scott Wisniewski	93.0
3. Tim Noonan	5:32.0	3. Barry Paillet	92.0
4. Chris Clemens	4:13.0	4. Bruce Paillet	88.0
5. Gregory Simon	4:13.0	5. Patrick Wood	80.0
6. Fritz Curth	2:56.0		
7. Jenny Linstrum	0:37.0		
8. Mindy Linstrum	0:05.0		
<u>Open</u>		<u>Senior</u>	
1. Dennis Jaecks	11:21.0	1. Mark Kummerow	138.5
2. Dick Hardcastle	10:09.0	2. Brian Webster	119.0
3. Larry Cailliau	9:55.0	3. William Shailor	118.5
4. Ron Plotzke	9:47.0	4. Michael Kuehne	118.0
5. Rolland Andreson	9:42.0	5. Paul Tobie	105.0
6. Mathew Turck	9:09.0		
7. Paul Crowley	9:07.0		
8. Hank De Kat	8:40.0		
9. Otto Curth	8:10.0		
10. Charlie Sotich	8:05.0		
11. Don Wright	7:41.0	1. Bucky Servaites	176.375
12. Jordan Wisniewski	7:26.0	2. Charles Markos	159.75
13. Rolfe Gregory	6:55.0	3. Charlie Sotich	159.375
Jim Noonan	6:55.0	4. Frederick Stark	153.0
Paul Shailor	6:53.0	5. Ron Martelet	148.5
15. Ken Kraemer	6:26.0		

THE NATS PICTURE STORY

This year's photos are from three sources; U. S. Navy (PH1 John Tharp), Ron Plotzke and Bob Clemens. All the photos on page 3 are official Navy photos, plus the one of Martelet's scale model on page 2. Other photos on page 2 as marked.

Page Two

Left Column (counting down)

- Bob Randolph poses his Cabin model with retracting gear. Model handles well, and gear retracts under pull from single strand of stretched monofilament. (Clemens)
- Jim Richmond inspects Randolph's V-tail, V-dihedral "D" Stick, while Al Rohrbaugh (background) watches his model in flight. (Clemens)
- Ron Martelet's 1911 Cessna, which won the Bill Hannan craftsmanship award for Peanut Scale. (Clemens)
- Plotzke photo of Plotzke's 1st place Cabin model.

Center Column

- Dale Hacker helps Al Rohrbaugh untangle Al's model from balloon string. (Clemens)
- Randolph and his V-tail Paper Stick model. (Plotzke)
- AMA Scale models awaiting judging. (Clemens)
- Al Rohrbaugh prepares to hook up motor to his Paper Stick model. (Plotzke)

Right Column

- Andy Tomasch (with model) prepares a flight in Junior Paper Stick. It is Andy's first model (Bandersnap) and his first contest. Andy's father and brother Greg watch in background. (Clemens)
- Ed Stoll and Indoor Stick entry. (Plotzke)
- A. R. Koehler checks over Ron Martelet's controversial Pilatus Porter. (Navy)
- Dennis Jaecks with winning PennyPlane model. 17 1/2" prop on 18" span works well for him! (Plotzke)

Page Three (All U. S. Navy Photos)

Top Row

Left - Patrick Wood with his Paper Stick model. Pat has flown several Nats before, placed in top 5 in two events this year.

Right - Ron Plotzke patches the wing on his 2nd place Indoor Stick model.

Center Row

Left - Jeff Annis with his Paper Stick model.

Center - Bill Shailor, age 15, flies his Indoor Stick in his sixth Nats.

Right - Jim Richmond's "flying cardtable" - one gram, 10" chord FAI with 20" diameter prop. Model showed about 30 minute potential in Cat. II and flew very smoothly.

Bottom Row

Left - Robert Dunham II with 3rd place Paper Stick model.

Center - Eric Dyer, age 7, fires away in HLG.

Right - Greg Simon with 2nd place Indoor Stick model.

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

ROIE R. BLACK, 89 Oak Forest Pk., Blacksburg, Va. 24060
MARSHALL S. ELLIS, MD, 1612 Anne Dr., Clarksdale, Miss. 38614

ROBERT LEISHMAN, 167 Goldenridge Dr., Levittown, Pa. 19054
ROGER W. TAYLOR, 3568 Fireway Dr., San Diego, Cal. 92111
ALLAN B. VOLLMER, 1608 South Ave., Stratford, Ct. 06497

Change Of Address

Dave Linstrum has moved again; his new address is 5840 Danforth Ct., Hanover Park, Ill. 60103. New phone number: 312-837-2295.

Corrections!

The July RECORDS? MAYBE! column contained at least two errors. First, Tom Sova was listed as setting Junior records - Tom is a Senior this year. Second, at least three readers wrote to point out that Plotzke's 41:10 is not a new high time for Lakehurst. Plotzke did 42:53 with a "300" at the '69 Nats, and Richmond did 41:45 at the '69 FAI Finals at Lakehurst. So much for a muddled memory!

New Publications

From a correspondence standpoint, John Malkin has been a slacker. One reason: "Airfoil Sections"; a compilation of useful airfoil sections for all model types. The book contains over 300 sections, plus a well-stated dissertation on airfoil plotting. The book is available in the U. S. for \$1.80, and agents will be given a special price on orders for 50 or more. John's address is 51 Clyma St., Upper Hutt, New Zealand.

FAI INDOOR REPORT

Program Questionnaire Results

Twenty-five questionnaires of the thirty-six sent to FAI Finalists (and '70 Team members) were returned and gave the following results:

- A unified Finals site should be used.
- The Finals site should be similar to the WCh site expected to be used.
- Questions 1 & 2 served to confirm that a single hangar site (WCh is expected to be in Cardington) will be used; the choice was Santa Ana by 14-10 margin. (One Finalist voted for both sites.)

As a result of the questionnaire results, Declaration of Intent forms were sent to all Finalists, specifying Santa Ana as a site on the expected date of Sept. 25-26, 1971. Return of these forms will enable alternates to be notified if primary Finalists resign.

Finals Site Confirmed

The expected date of Sept. 25-26, 1971 has been confirmed since the Declaration forms were sent out. Efforts to provide extra test flying at the site yielded permission for test flying from 4 pm to 10 pm on Sept. 24, in addition to test flying early on Sept. 25. Tentative planning suggests that two rounds will be flown on Sept. 25, and four on Sept. 26. Special plans for housing are being worked on, and plans are being made for a banquet Sept. 26 after flying ceases. Additionally, it is likely that a bull session get-together can be held Sept. 25.

Special Mailing!

It is quite possible that fliers other than Finalists will desire to attend the Finals to help and/or watch. All who would appreciate advance information on arrangements and possibilities should drop a line to Bud Tenny, Box 545, Richardson, Texas 75080. Those who make such requests will be included in any special mailings to the Finalists; the mailings will detail final arrangements as they are formulated.

RECORDS? MAYBE!

1971 Indoor Nats, Chicago, Ill.; July 26-27, 1971 Cat. II
Brig. Gen. Richard L. Jones Armory - 90' ceiling
Junior HLG - 1:49.8, Gerry Geraghty
Senior HLG - 2:07.2, Marty Thompson
Senior Indoor Stick - 24:19.0, Ronny Ganser
Senior Paper Stick - 17:10.4, Tom Sova
Junior Indoor Cabin - 11:41.3, Gregory Simon
Senior Indoor Cabin - 15:23.0, Ronny Ganser
Open Indoor Cabin - 23:03.6, Ron Plotzke

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

A TIME FOR REFLECTION

We are finishing the most turbulent FAI Team Selection Program in history. It is now time to consider matters which will affect AMA's participation in future World Championships, and even whether effective participation is possible. Precedents established in this program raise serious doubts whether anyone would agree to be Chairman until several matters of authority are settled. It has been clearly demonstrated that an appointed Chairman has no real authority over his program, regardless of official policy established by the Executive Council.

These policies were announced in the Oct. '64 Model Aviation, and have been updated in recent years. In stark contrast, there appears to be no public record of any FAI Executive Committee before 1967, when such a Committee with only advisory powers was created.

During the 1971 Indoor Program, a group calling itself the FAI Executive Committee and claiming to have been established in 1964 committed some almost incomprehensible actions which greatly disrupted the Program continuity.

There could be little complaint if actions of the FAI Executive Committee had been consistent with past policy, or had followed established guidelines. However, this group blundered twice so badly that their motives and collective common sense must be questioned. In July, rather than following their own policy which required a poll of Finalists, they decreed that the Finals would be split into three sections including a flyoff at the Nats. Since the Nats were then only 12 days away, the entire Program collapsed almost immediately. The Committee then backed down and allowed the questionnaire to be sent; they stipulated the content and format of this questionnaire and approved the final wording before releasing it. When this

questionnaire failed to satisfy a small minority, a second questionnaire was circulated. The second poll allowed choices of Finals dates which were only 16 days removed from the receipt of final results! At this point, the AMA President decided the arrangements announced below.

By virtue of the Committee's ready access to AMA HQ, and their total lack of accountability, FAI Programs are whatever the whim of the Committee dictates them to be. Thus, a Chairman is superfluous, and it is unlikely that anyone would undertake the job.

From the standpoint of future program participants, it would seem foolhardy to invest time and money in a program which can be changed on a whim, with little or no notice. With neither Chairman nor participants, future programs cannot exist.

All those who are interested in FAI Indoor Programs should write or call their District VP (see listing in Model Aviation) requesting the following actions:

1. Publication of all AMA policy regarding FAI Programs.
2. Publication of the duties and full definition of the authority of Program Chairmen.
3. Clarification of the status and authority of any FAI Executive Committee and any other group having authority over FAI Programs.
4. Change the make-up of the Committee from all-eastern R/C fliers to include membership of R/C, U/C and FF or Indoor fliers, plus membership for Program Chairmen during their tenure.

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

An Apology

This issue is late and abbreviated (again!), and from the looks of my briefcase, I owe the whole world a letter. It simply is not possible to wrap up a Team Selection Program twice in little over a month, plus organize another Finals with less than 15 days notice, and do much else. Future issues may be late, but I can guarantee the same reasons will not be the cause! The time is past when I will volunteer to chair the program; without considerable reform I shall not participate in future programs at all. The assorted stupidities which passed for official action during the latter part of the '71 program must never be allowed again, or the U. S. will never have an effective team selection program.

A Problem Solved

Several issues ago, a plea was made for someone to make available good spacers for the Bilgri-type strippers built by Bob Dunham. Ted Gonzoph has suggested that lead spacers used by print shops are a good solution. These are lead slabs cut flat, and come in sizes called "points" at about .015" per point. With 1,2,3,4,6 & 8 point sizes available, quite a range of accurate and repeatable cuts can be made. Ted has reported his method in detail, and this will be presented as soon as it can be worked up.

Covering Brush

Stephen Fauble has found that artist's pin striping brushes are superior for Bilgri style covering. The fine point is easily controlled, but the brush holds an extra amount of water. These brushes are scarce, but Steve has located a source and can furnish them for \$1.50 each. If you're interested, drop him a line at 741 N. Jefferson Ave., Dixon, Ill. 61021.

NFFS Symposium Report

Each year, inspection of the Symposium Report of the NFFS reveals a dedication to the Free Flight cause which is wide in scope and thorough in application. This is also true of the Fourth Annual Report, which is now available from Annie Gieskieng, 1333 S. Franklin St., Denver,

Colo. 80210 for \$3.50 if you are a member of both AMA and NFFS; for others the cost is \$4.50. This book is a must for all serious FF fliers!

FAI INDOOR REPORT

Team Selection Finals

Much has happened since the Sept. issue came out. On Aug. 28, the FAI Executive Committee issued another poll to Finalists, stating that the July poll had not been decisive. By Sept. 9, the new poll results were in, but again were not conclusive. To save the Program from further delay, the AMA President declared the following:

1. The Finals will be held jointly at Santa Ana and Lakehurst on Sept. 25-26, 1971.
2. Finalists may fly at either meet but not both.
3. Finalists (listed below) only and '70 Team members are eligible; no alternates will be qualified.
4. Team membership shall be the winning flier at each site, plus that flier whose score is the highest percentage of the winning time at that site.

Because of the radical departure from established procedures, President John Clemens also declared that these actions were not to be considered precedents.

CD's for the Finals:

Santa Ana	Lakehurst
Gene Bach	Bill Bigge
6612 Barnhurst Dr.	5131 Mass. Ave. NW
San Diego, Cal. 92117	Washington, D. C. 20005
714-278-3779	301-229-8696

Listing of Finalists

The following list represents the only fliers to be eligible to enter the Finals:

Romak	Rodemsky	Cailliau
Gibbs	Bob Randolph	Mather
Allen	Linda Randolph	Rambo

Bilgri	Tryon	Ganslen
Dunham	Dunham II	English
Champine	Cannizzo	Russo
Platt	Crane	Ganser
Radoff	Triolo	Vallee
Hulbert	Kowalski	Stoll
Plotzke	Cowley	Gonzoph
Batiuk, Jr.	Blubaugh	Chilton
Collins	Andrews	Richmond

RECORDS? MAYBE!

SANTA ANA RECORD TRIALS, Aug. 28-29, 1971, Cat. III
 Santa Ana MCAS
 Senior HL Stick - 28:31.8, Bill Gibbs
 Senior AMA Cat. III FAI - 28:31.8, Bill Gibbs
 Open FAI Cat. IV FAI - 35:42, Bud Romak
 Open AMA Cat. III FAI - 35:42, Bud Romak

STATE OF THE ART

The following remarks by Clarence Mather were promised as a supplement to the plan of Kalina's salt mine model in the July '71 issue. I asked Clarence to analyze the model (he traded with Jiri after the '70 WCh) and here is his response.

Kalina presents himself as a beginner in micro-models, and his experience dates back only a few years. He gives the U. S. teams credit for his knowledge, and he obviously has learned well. (Ed. note: Jiri's 4th place at Debrecen in 1966 showed such good promise that one might think Jiri is quite modest.)

The model I have is one of Jiri's salt mine specials, but it is very similar to his warm air models and has the same shape and dimensions as were revealed in the Dec. '68 issue of INAV. The basic design features (short stick and boom, large stab and rear fin) give the look of Bilgri designs - which are far from extinct and compete well.

Jiri's workmanship is of high order. Surface outlines are graceful curves and the wood is evenly cut. No excess glue is visible on the straight motor tube and boom, and the seams are almost invisible. The metallic blue wing film and gold to silver tail film is slack, but not floppy. Weight is .020 oz., but the model is fairly rigid. All wood is clear white and apparently high quality.

I must digress a bit. One reason given for one gram models was scarcity of indoor wood in Europe; which seemed to be belied by the many light and strong European models. Such good wood is obtained by searching through outdoor wood stocks for quality wood; it is then sanded to indoor sizes! Consequently, it takes many hours to get the wood to a usable thickness. Also, some wood was donated by Bud Romak, Joe Bilgri, Lew Gitlow and possibly others.

The model is balanced at 50% with the large salt mine "gumma" (rubber). Because of the short coupling, the stab carries a larger load than might be expected. Even so, Richmond's models load the stab even more than does this model.

The airfoils are thin - 3/16" for a 5.8" chord, with high point at about 40%. The 5.3" center stab rib has only 1/8" camber. In flight the film billows up a little to give a slightly thicker section. Jiri's warm air models have about 1/32" thicker airfoils than this model.

The left wing is half an inch longer than the right, with .4" washin; more than on the warm air models. This holds the model in a tight climbing turn under the power burst; no fin offset is necessary. The tips are unbraced, and the center panel has double bracing. At Rome ('68 WCh), Jiri used picket fence bracing, but not for the mine. Several thin balsa posts are placed between the wire and trailing edge to stiffen the spars.

Stab tilt is about 1", with no wire bracing and the stab has 0° incidence relative to the motor stick. The only bracing is small wood pieces to the boom from both leading and trailing edges. The stab has 1/8" washin, but this may be warps due to age.

The 1/4" diameter motor stick has a single wire brace supported by a center post and the wing sockets, which appear to be formed of thin wood. The double thrust bearing has some downthrust and left thrust; the stick brace wire wraps around the front of the bearing.

The 17 x 31.5 prop has symmetrical outlines with just over 1 1/2" width; the airfoil has 1/16" camber. The small spar is not overly flexible, indicating strong wood. Jiri uses this prop design only in the cold air of the salt mine. Under high torque the blades appear to flare to lower pitch, giving a rapid climb - 180' in about six minutes. The prop then reverts to normal pitch for slow RPM cruise and descent.

Due to drafty conditions, I have flown the model only a few times under low power. Extra wing incidence was needed, probably due to the stick brace wire lengthening in warm air. When Jiri flies the model, it climbs at a shallow angle, moving fairly fast. After one or two circles the climb angle seems to increase. Here, I'll speculate a bit. With the forward balance point the model needs considerable incidence, which should produce a down tendency. The downthrust helps to control this, I believe Jiri adjusts the stick brace wire to allow some bending under full power. At any rate, the model climbs rapidly and smoothly, yet retains a slow cruise and descent. Low model weight helps, and Jiri uses motors with weight 1.2 to 1.5 times the model weight to give a low total weight.

EUROPEAN CONTESTS

POLAND

Indoor contest at Halaludowa (site) in Wroclaw, May '71

1. Stefan Bombol	48:19
2. Edward Ciapala	47:48
3. Jreneusz Pucelko	45:15
4. Stan Zurad	40:36
5. Jerzy Kaczorek	37:31

ROMANIA

"Indoor 71", international meet at Slanic-Prahova, May 9-11, 1971, (salt mine), 65 cm. span, no weight limit.

1. J. Kalina	Czech	36:52	35:32	72:24
2. K. Rybecky	Czech	32:24	33:57	66:21
3. O. Hinta	Romania	33:50	31:58	65:48
4. A. Ree	Hungary	31:14	31:06	62:20
5. E. Chlubny	Czech	29:41	30:25	60:06
6. E. Holtier	Romania	28:29	30:51	59:20
7. A. Moraru	Romania	30:05	28:53	58:58
8. Z. Ocsody	Hungary	30:11	28:41	58:52
9. G. Buzady	Hungary	28:35	28:07	56:42
10. A. Egri	Hungary	28:19	27:15	55:34

Team Standings:	1. Czechoslovakia	198:51
	2. Romania #1	180:04
	3. Hungary	174:36
	4. Romania #2	154:01

It should be noted that the Hungarian team was 3 one gram models, and that their team total and Andras ree's total exceed their totals from the '70 WCh!

HUNGARY

Hungarian indoor meet, Politechnical University in Budapest, 14.9 m site, one gram models.

1. Z. Ocsody	22:40	25:19	47:59
2. A. Egri	22:44	22:46	45:30
3. R. Kreisz	20:14	21:13	41:27
4. G. Buzady	22:45	18:19	41:04
5. G. Varszegi	18:29	18:47	37:16

Budapest Championship, Politechnical University in Budapest, 14.9 m site, one gram models.

1. A. Ree	29:50	25:37	55:27
2. R. Kreisz	21:32	22:07	43:39
3. A. Egri	22:02	20:15	42:19
4. G. Varszegi	18:41	17:03	35:44

CZECHOSLOVAKIA

International Indoor Meet, Trade Hall in Brno, July 10-11, 1971. No word on rules, presumably 65 cm, no weight limit.

1. J. Kalina	Czech	34:11	33:14	67:25
2. E. Chlubny	Czech	29:37	29:07	58:44
3. J. Jirasky	Czech	29:17	28:50	58:07
4. R. Cerny	Czech	27:06	28:45	55:51
5. D. Chlubna	Czech	28:15	27:06	55:21
6. T. Weigert	Czech	27:00	26:12	53:12
7. R. Czechowski	Czech	24:00	26:00	50:00
8. K. Rybecky	Czech	22:16	26:45	49:01
9. G. Buzady	Hungary	23:22	22:13	45:35
10. L. Koutny	Czech	25:49	19:35	45:24

BASIC ADJUSTMENT TECHNIQUES FOR LOW CEILING GLIDERS

by Norm Ingersoll

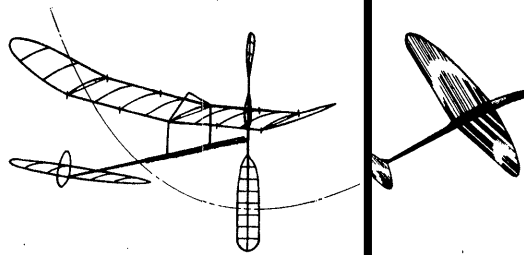
(Ed. Note: The following has been reprinted from the Feb. '62 issue of Chuck Borneman's newsletter, published by the Kokomo Knights of the Round Circle.)

It is assumed that you are flying a model of the correct size and weight for your particular site. The most important single factor that will be stressed will be the direction of your adjustments. There are many trims possible with a particular glider which will produce pleasing

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



SANTA ANA FINALS

1. Joe Bilgri	30:38	31:22	17:00	34:18	30:55	34:20	68:38
2. Bud Romak	15:07	32:35	21:39	18:30	34:05	34:18	68:23
3. Ron Plotzke	5:55	33:03	8:54	29:44	34:38	7:09	67:41
4. Paul Allen	19:21	27:21	27:16	32:33	12:33	32:36	65:09
5. Bob Randolph	0:02	30:09	7:54	32:33	32:01	31:18	64:34
6. Larry Cailliau	0:05	32:57	14:59	30:45	25:13	27:37	63:42
7. Clarence Mather	29:18	30:47	29:07	14:01	29:33	11:48	60:20
8. Carl Rambo	29:51	27:32	26:45	7:07	29:45	9:55	59:36
9. Bob Gibbs	26:47	24:47	27:53	13:15	31:19	27:40	59:22
10. Erwin Rodemsky	30:04	6:13	28:11	16:02	12:25	6:50	58:15
11. Ted Gonzoph	28:43	0	0:06	15:41	25:00	0	53:43

LAKEHURST FINALS

1. Pete Andrews	24:38	33:05	1:20	0	27:43	20:17	60:46
2. Sal Cannizzo	22:37	9:23	2:08	21:17	27:55	20:09	60:32
3. Ed Stoll	25:34	33:51	1:44	18:29	0:15	10:55	59:25
4. Bob Platt	31:33	9:22	2	14:30	22:17	27:30	59:04
5. Dick Kowalski	24:35	27:54	2:01	0	20:59	7:14	57:29
6. John Triolo	0:48	28:25		11:33	22:18	26:11	54:36
7. G. V. Russo	24:23	14:34	1:55	0	25:54	0:11	50:17
8. Jim Richmond	24:19	0:18	2:22	21:43	0:20	0:13	47:27
9. Bill Hulbert	0	24:04	1:11	13:31	21:39	5:39	45:41
10. Tom Vallee	20:16	18:52	1:18	0	0	0	38:06
11. Bob Cowley	0	11:46	1:44	0	0	0	23:30
12. Manny Radoff	15:31	0	0:09	0	0	0	16:40

FAI INDOOR REPORT

Qualifier Decals Available

This year, as in recent years past, the National Free Flight Society has furnished special decals for qualifiers in the indoor program. Three levels of decals are available—Qualifier, Semi-Finalist and Team. Those who were eligible to enter a Semi-Finals get Qualifier decals, and those who made it through the Semi-Finals get both Q and S decals. Team members get all three types of decals.

These decals will be sent out - eventually. If you want them sooner, send me a self-addressed envelope and I'll gladly send the decals sooner.

1972 Team Chosen

The results above, separated into two Finals, do not tell the whole story. According to John Clemens' decision, the winner of each Finals would win a Team berth, along with the flier whose time was the highest percentage of the winning time at his site. The computation is:

Bilgri	68:38	Andrews	60:48
Romak	68:23	Cannizzo	60:32
68:23/68:38 = .9963		60:32/60:48 = .9956	

Thus, the 1972 Team will consist of Bilgri, Romak and Andrews, subject to their confirmation on intent to compete in the 1972 World Championship.

THE SANTA ANA FINALS

The Santa Ana Finals began with test flying from 4 pm until dark on Friday, Sept. 24. Later flying was planned, but no one knew where the light switch was! Erv Rodemsky made the most of what was to prove the best conditions of the meet by posting a 38:21 test flight. So far as is known, this is the longest one gram flight ever made.

Local weather conditions had been good at Santa Ana through Sept. 24, with "highs" of 85° or more. During the meet, this changed to 70° with gusty winds. Small openings in the hangar sides at ground level also contributed to localized turbulence. Overall, the drift patterns were unstable and unpredictable and several models were lost on Saturday during the scheduled two rounds. Bilgri led the field with 62:00, followed by Mather (60:05) and Rambo (57:13). Ron Plotzke's 33:03 was the best single flight.

Conditions improved Sunday, but drift was still very unpredictable. Ron Plotzke again had high time of the day with a model similar to Rodemsky's, but another strong flight missed by settling onto a beam leaving him 57 seconds short of winning. At the end of Round 3, Rodemsky moved into third place, but no one else made significant gains. Bilgri's Round 4 flight advanced his score nearly

four minutes to a seemingly commanding lead over Cailliau and Plotzke.

Round 5 began the final shake-out, with Plotzke and Romak moving into 1st and 2nd. Randolph upped his total by two minutes and still dropped from 4th to 5th, and Mather deadsticked into 6th for his 5th place.

Long-standing advice to indoor fliers is "Don't count Joe out until he puts his model away." This held true in Round 6 - Joe duplicated his previous high time to come back to first place. Romak's close association with Joe seems to have given him the same trait - he also came up with another high time for a close second that was a real cliff-hanger. Fairly close to the floor, and only seconds behind Joe's total, Bud's model dropped one end of the motor and stalled to the floor 15 seconds short of a tie. This nosed out Plotzke at the last minute, in a photo-finish that excited everyone.

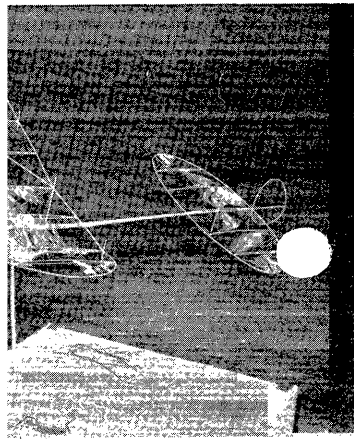
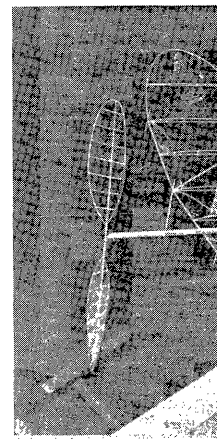
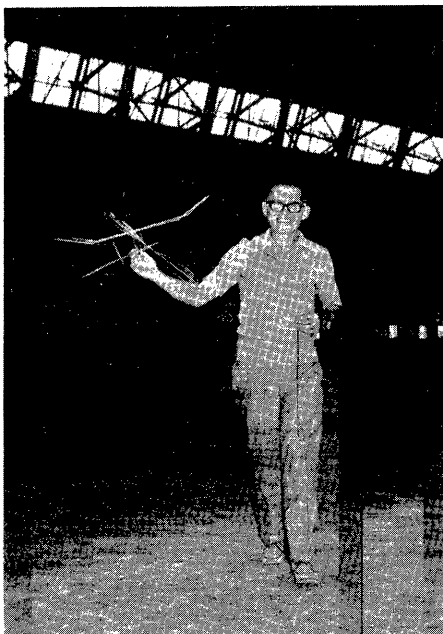
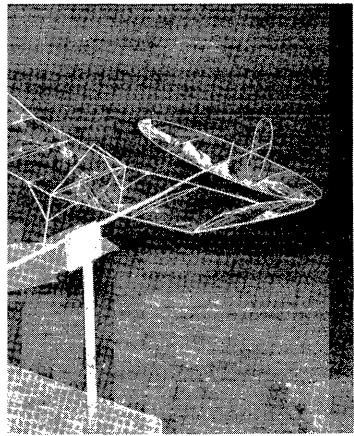
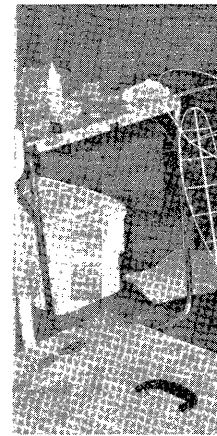
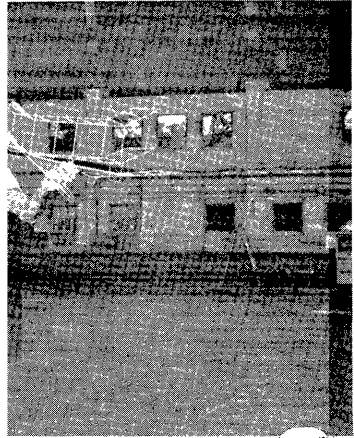
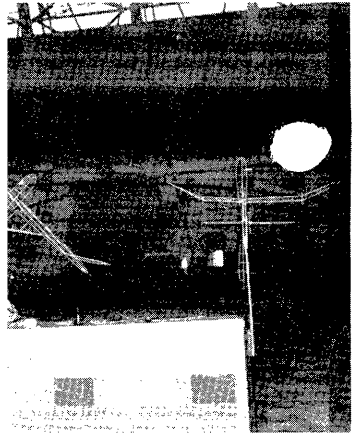
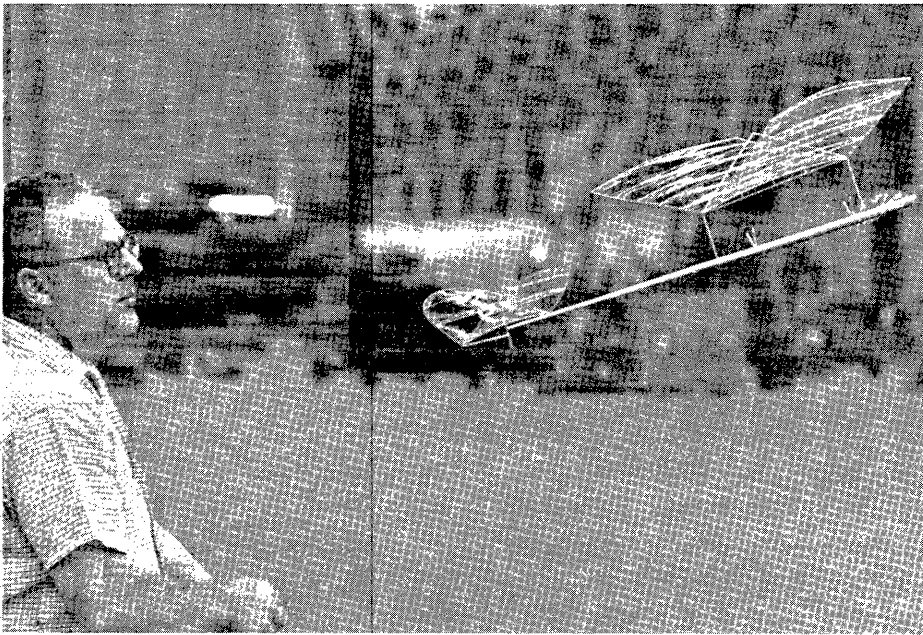
Gene Bach of the San Diego Orbiters CD'ed the meet, with able assistance from other Orbiters and members of the Thermal Thumbers. One other helper of note added an international flavor - the Sunday session was visited by Gordon Burford of Australia who "happened" to be passing by. Gordon was one of the indoor pioneers in Australia, and has been instrumental in helping indoor flying off to a recent revival there.

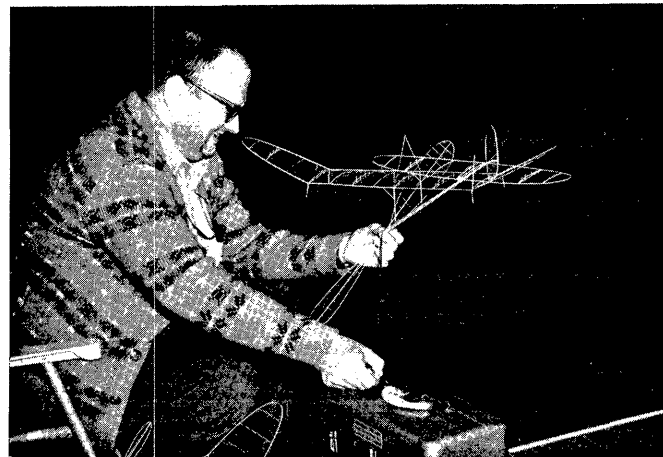
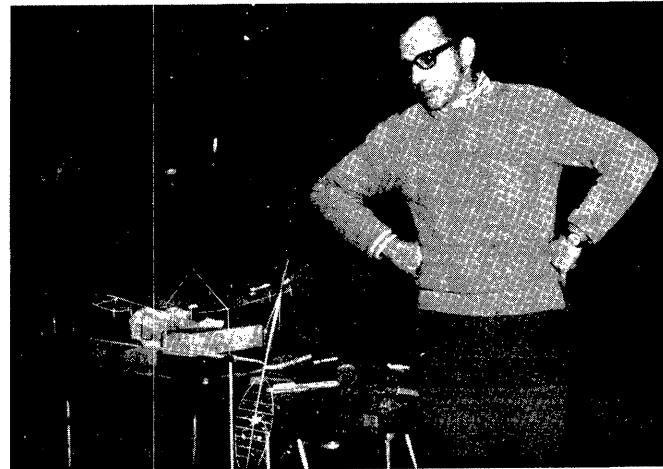
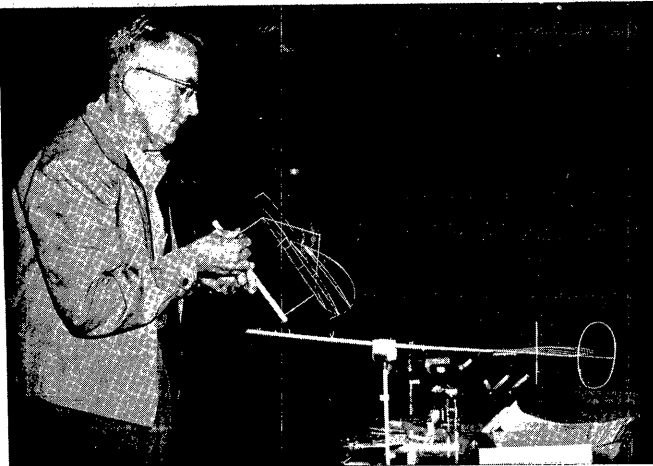
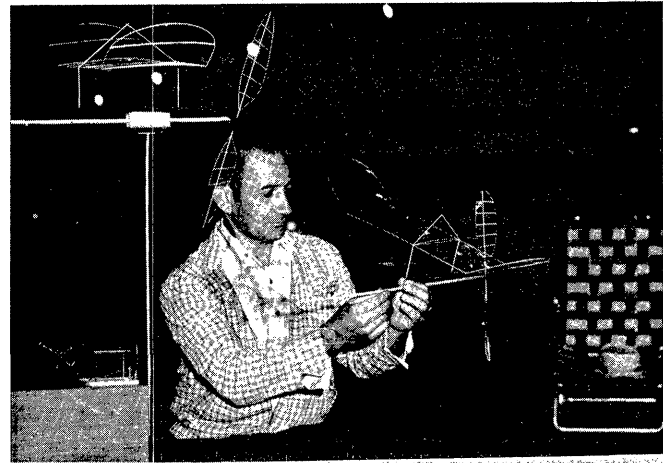
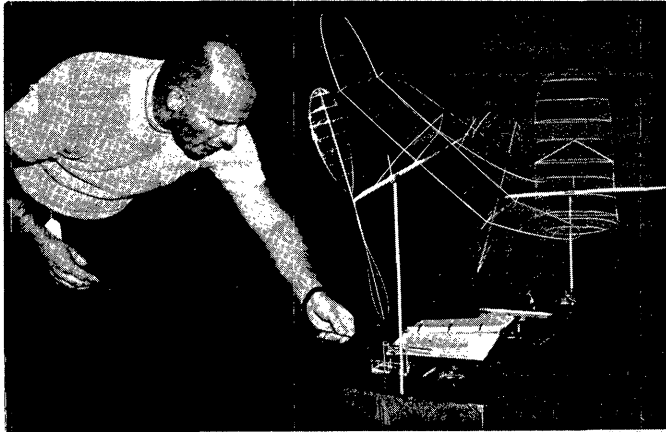
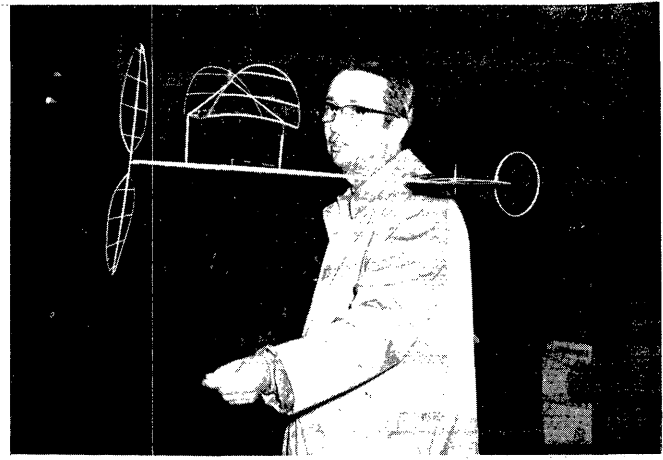
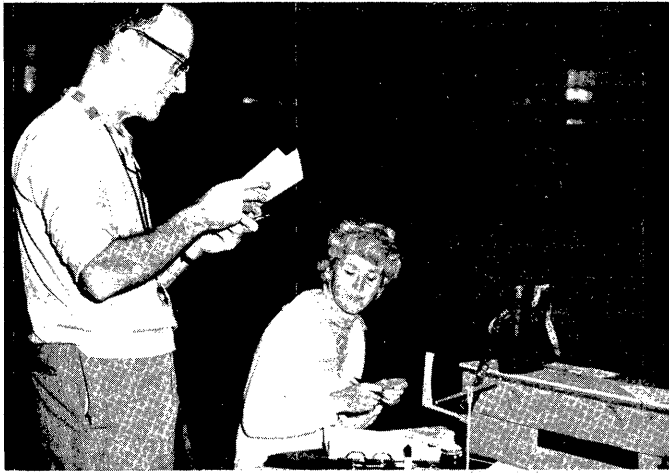
THE LAKEHURST FINALS

The Lakehurst session had weather problems compounded by unscheduled door openings. At least two fliers made comparison between the existing conditions and the salt mine conditions of the '70 WCH. In fact, with drizzling rain outside and lights along the walls, a similar down-draft in the center of the hangar gave credence to the comparison. The original schedule called for three rounds each day, but a 5:30 pm door closing on Saturday cancelled the third round until Sunday.

An analysis of the action shows that really only six fliers were ever in contention either day. At the end of Round 2, Ed Stoll was leading, and led until Round 5. The other Round 2 placings were (in order) Andrews, Kowalski, Cannizzo and Platt. In Round 3, Cannizzo moved into 2nd and remained there the rest of the day, and Richmond made 5th place. This order (Stoll, Cannizzo, Andrews, Kowalski, Richmond) held until Round 5 when Platt made it back to 5th and Andrews and Cannizzo both posted new times to reach 1st and 2nd. The only change in Round 6 was that Platt pushed into 4th, very close to the top three. In view of the conditions, it is safe to say that any of the top five could have wound up on top. This is not to take anything from Andrews, who had top equipment and flew "to the hilt" every flight and whose consistency was as good as anyone's.

(CONT. P. 4)





Jim Richmond's past record compared with the results at this meet raises the question of "What happened?" Jim analyzed it this way: "It was a combination of underdeveloped plane design, lack of testing, poor flying conditions and terrible luck."

Jim didn't lose from lack of trying. He had two 9" chord models, a 10" chord model (see Aug. '71 INAV for picture), the '71 Nats winner ballasted to one gram and his paper ship. Structural problems in the turbulence was a problem with the wide models, but the terrible luck came in Round 4 as he lost a rear hook (first ever) and then the model; followed in Round 5 by a broken motor which destroyed the Nats winning model.

Kowalski and Stoll flew models similar to Dick's Cat. II record holder (June '71 INAV), but with enlarged props (diameter and blade area). In fact, big props seem to be part of the answer for one gram models; Andrews flew small props until Round 5 when he found a 20" x 30" prop climbed the model better. Cannizzo's models were well constructed but entirely conventional with the usual thin airfoils usually deemed necessary. In contrast, Andrews used a 7% airfoil like Kowalski's.

Eastern fliers owe special thanks to Bill Bigge, who agreed to CD the Eastern Finals with about 15 days notice, and to John and Patti Jo Thornhill for their help. Many others helped to time, but we have not received word on who these were. Nonetheless, our thanks to them also!

****NATIONAL INDCOR MODEL AIRPLANE SOCIETY****

New Members:

ARTHUR BLAKE, 612 Sutton Dr., San Antonio, Tex. 76228

Family Memberships

EDWARD R. & ROBERT M. BLAKE, 612 Sutton Dr., San Antonio, Texas 76228

Combined Issue

This combined issue is a last resort to try to catch up to a more normal and useful production schedule. Once we got behind, things snowballed until something had to give. In recent weeks, an unexpected trip and an abscessed tooth added to the problems. So, it is hoped that the December issue will be back on schedule (approx. 10th of the month), with your deadline for material to make any particular issue to be the 5th of that month. The annual financial report will be in the December issue.

INAV Columns

Indoor News has a number of columns which depend upon the readers to furnish the contents. These columns are:

RECORDS? MAYBE! - This is a listing of records which have been applied for. Fliers (or CD's) who make application for AMA indoor records should send INAV the info about the record. Official AMA Records are listed periodically in COMPETITION NEWSLETTER, but INAV can offer an unofficial listing which helps us keep up with the records as they happen.

TOP TEN EASY B and TOP TEN CEILING DODGERS - These are monthly listings of a friendly rivalry between NIMAS members. Times are submitted along with ceiling heights of the site where the flight was made. NIMAS "Fudge Factors" are applied to equate the times to a 35' ceiling, and the times are then ranked according to the adjusted times. The EASY B listing begins anew each year with the winners from the NIMAS Annual Postal Contest, but the CEILING DODGERS listing runs continuously. Fliers submit times and "bump" their way onto the list or up the line in ratings as their times improve. Rules for TOP TEN events:

1. Flights must conform to AMA regulations, except that FAI type ceiling measure can be used.
2. Submit ceiling height with flight times.
3. No entry fee required, open to all fliers.
4. Easy B models shall conform to AMA Rules, plus paper covering, solid stick and boom, no bracing.
5. CEILING DODGER models can be any AMA indoor model. Object is to record the highest time without touching the ceiling. Estimate maximum altitude achieved and submit this with flight time and ceiling height.

POSTAL CONTESTS - Postal contests are arranged between clubs or individuals with pre-arranged events and rules. Contest results reported to INAV. Groups who wish to issue a challenge can do so in INAV or arrange event on their own.

NIMAS AWARDS - A system of awards for flights which may not exceed existing AMA Records, but exceed established goals for specified awards according to the following tables:

Indoor Stick (Any class indoor model, single flight)

OPEN AWARD	CAT. I	CAT. II	CAT. III
Silver	10:00	20:00	28:00
Gold	12:30	25:00	35:00
Diamond	15:00	30:00	42:00

JR. AWARD

Silver	7:30	15:00	21:00
Gold	9:30	18:45	26:50
Diamond	11:15	22:30	31:30

Indoor HLG (Best single flight of nine)

OPEN AWARD	CAT. I	CAT. II	CAT. III
Silver	0:24	0:45	0:55
Gold	0:30	0:55	1:05
Diamond	0:36	1:05	1:15

JR. AWARD

Silver	0:18	0:34	0:41
Gold	0:22.5	0:41	0:49
Diamond	0:27	0:49	0:56

NIMAS Awards are made to NIMAS members who request the awards and submit the application. In general, the flights must meet AMA Rules. Award flights can be made under the supervision of an AMA CD or can be regular flights in an AMA contest. Application can be made for flights made in the past (for example, '71 Nats flights), or application forms can be obtained in advance of attempts to win the awards.

CONTEST CALENDAR and CONTEST RESULTS - CD's can furnish advance information on planned contests or flying sessions for announcement in CALENDAR, and the meet results will be announced on a space-available basis if furnished.

A LOOK AT YESTERYEAR - This appears on an occasional basis and can be any item reminiscent of Indoor history or model design.

CHANGE OF PACE - This is an occasional item, reporting unusual or experimental models, usually "fun" type models or similar projects.

STATE OF THE ART - This is usually a monthly feature, a report of a record holding model in most cases. Some subjects have been specialized models such as Bob Larsh's "Bunker Hill" and Meredith Chamberlain's "Stompette 16", which were gliders especially for low Cat. II sites of about 45' height. Please give full size outlines on HLG, plus weights and construction information for unusual details. For rubber models, a three-view with dimensions, weights and full size airfoil and prop blade outlines are a minimum. Many readers also request spar sizes if possible.

SPECIAL NOTE: although it is possible for me to use full size plans of rubber models or crude sketches or low contrast pencil drawings, items which have to be traced or re-drawn (worse - full size drawings which have to be scaled down, then traced) take extra preparation time and are sometimes lost in the mail or delayed considerably by the extra preparation time. In other words, the information in any form is welcome, but camera-ready drawings are preferred.

CONTEST CALENDAR

MARYLAND - Silver Spring. Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring. Contact John Thornhill, Route 1, Mt. Airy, Md. 21771 for dates and times of sessions.

MASSACHUSETTS - M.I.T. Indoor sessions at MIT Armory, corner of Vassar St. and Mass. Ave, Cambridge, Mass. Nov. 13, Dec. 4, Jan. 8, Feb. 26, March 11, 3 pm to 6 pm. Contest April 8, 1972, 1 pm to 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass.. ph. 358-4013.

TOP TEN EASY B

OPEN	Time/Ceiling	Fudge (to 35')	Score
1. Bob Platt	598.6/20'	1.33	786
2. Hal Crane	551.8/20'	1.33	733.
3. Dick Hardcastle	683.6/31'	1.04	726
4. Clarence Mather	521.0/22.3'	1.26	656.4
5. Fudo Takagi	492.0/22.3'	1.26	619.8
6. Fred Harlow	402.0/20'	1.33	534.6

7. Chet Bukowski	428.0/25'	1.19	509.4
8. Richard Sherman	329.0/25'	1.19	391.8
9. Don Chancey	499.5/58'	.78	389.4
10. Jim Clem	495.0/58'	.78	386.0

Top Juniors

1. Danny Aggers	252.5/24'	1.22	307.8
2. Jimmy Clem	386.0/58'	.78	501.2

TOP TEN CEILING DODGERS

	Time/Ceiling	Fudge (to 35')	Est. Altitude	Score
1. Stan Chilton	1115/35'	1.00	33'	1115
2. Tom Vallee	810/20'	1.33	19'	1077.3
3. Hal Crane	682/20'	1.33	19'	907
4. Dick Hardcastle	602/23'	1.23	22.5'	743
5. Hewitt Phillips	528.2/20'	1.33	15'	712.5
6. Howard Haupt	456/22'	1.26	15'	575
7. Harry Cook	471/26'	1.16	24'	546.5
8. Jim Davidson	280/13'	1.64	9'	459
9. Richard Sironen	308/37'	.972	33'	396.6
10. Roger Schroeder	239.5/15'	1.53	13.5'	365.9

THE PICTURE STORY

Page 2 - Santa Ana Finals. Large pix by courtesy of USMC Base Public Relations; small photos by Joan Rodemsky.

First column:

Top - Bob Randolph's wide chord, V-Tail FAI goes off on official flight.

Center - Larry Cailliau repairs one of his models.

Bottom left - Paul Allen prepares to make an official.

Bottom right - Carl Rambo retrieves his model after flight.

Second column:

Top - Joe Bilgri prepares to hook up for flight.

Top center - Clarence Mather and The Bipe.

Bottom center - Ery Rodemsky's model

Bottom - Ron Plotzke's model.

Page 3 - Lakehurst Finals. All pix by Ernie Kopecky.

Top left - Bill Bigge (CD) and Chief Helper - Patti Jo Thornhill.

Top right - Pete Andrews and "windy weather" model flown on Sunday.

Row 2 left - Ed Stoll winding on torquemeter.

Row 2 right - Sal Cannizzo assembles a model.

Row 3 left - Bob Platt unpacking models.

Row 3 right - Dick Kowalski plans strategy.

Bottom left - Richmond with 9" chord model.

Bottom right - Tom Vallee, wound for bear, hooks up.

CONTEST RESULTS

D. C. MAXECUTERS EAST COAST INDOOR CHAMPIONSHIPS - Cole Fieldhouse, Maryland University - 98' ceiling

Indoor Stick		Paper Stick	
C. V. Russo	25:08.0	Joe Sova	18:59.4
John Triolo	24:54.6	Pete Andrews	18:36.2
Tom Sova	24:13.0	Tom Sova	17:47.7
Pete Andrews	24:08.0		
Hal Crane	23:51.5		

Junior Easy B		Sr.-Open Easy B	
Jerry Haynes	5:46.8	Rolf Gregory	11:36.2
John Roman	4:28.3	Hal Crane	11:36.2
Mike Parykaza	2:00.8	Joe Sova	11:04.5
		Tom Sova	10:12.8

Junior HLG		Sr.-Open HLG	
Rich Persh	73.5	Ron Ganser, Jr.	119.4
Dan Aggers	69.6	Dan Belleff	106.6
Jerry Haynes	60.0	George Rivers	99.0

Indoor Scale		Peanut Scale	
Don Garofalow		Don Garofalow	
Rolf Gregory		Dan Srull	
Dan Srull		George Rivers	

QUESTIONS AND ANSWERS

This column has been an occasional feature in INAV since very early in the life of NIMAS. In general, any question on indoor topics is eligible; the answers are solicited from one or more fliers or else your editor fields the question.

43. Is quarter grain wood structurally better for IHLG wings than straight grain wood?

Ron Wittman offers the following comments: "Generally quarter grain wood is stronger in that it has a better resistance to warps. It will hold its shape better and longer; thus the airfoil stays flatter and doesn't have the tendency to accrue undercamber as will straight grain wood.

Quarter grain is also stiffer and won't flex as much on hard launches (wing flex cuts altitude). It also does not require as much sealer as straight grain wood to give a drag-free finish. Straight grain wood absorbs more sealer, besides taking more to fill the long grain holes!

I use quarter grain wood exclusively in my gliders, even for the fuselage, which is hard C-to-quarter grain. It is usually the weight of the very flaky cut that makes it more desirable, but another important factor is that it can be sanded thinner and still have adequate strength, since the straight grain wood requires thickness for its strength. I never check wood for strength, since I've never thrown the wings off a glider. However, low ceiling gliders might require more concern."

44. What is usually done to increase duration of indoor gliders when the model weight is matched to the ceiling and to the contestant's arm. That is, on the hardest throw the model does not hit the ceiling but lighter wings have broken.

Ron Wittman comments: "I wish there was a stock answer to that one! However, I'll comment on things I've tried. Many combinations of things need to be tried, but first try trim, provided the finish cannot be improved.

1. Bring the glider to zero-zero incidence and balance for proper CG location.
2. Gently increase incidence as you make flights until the glider upsets easily or even stalls.
3. At this point it gets touchy or even monotonous, but increase nose weight to remove the stall. This will increase altitude gained also. If the airfoil wasn't working to its potential the time will increase. Note the weight of the glider and the time as each change is made and the airfoil works harder. Keep adding weight and incidence until times start to decrease, then go back to the best weight with the highest time.
4. Open up the turn as much as possible and start checking for warps, since warps cost a chunk of time!
5. In final trim (up to 100') there should be no appreciable loss of altitude in transition (3" to 12" max).

One evening Bill and Bob Gibbs and I were flying in a 20' ceiling gym; we started experimenting with my record Cat. I Tara 16. We kept adding nose weight and increasing incidence to find out how much we could work the airfoil. Bear in mind that this glider was flying well enough to set the record and seemed as if it didn't need any improvement! This glider could easily reach the 29'11" ceiling at Wilmington, so adding weight seemed contrary.

Times started improving to a consistent 30-32 seconds and there were a few 34 second flights timed by Bill. We never told anyone about these times, but 34 seconds under 20' isn't too bad, is it?

When we tried this on Bill's glider, the same results were achieved. If I remember right, his old glider got to 28 seconds, so trim is all-important. Finally, other things such as turbulators can be tried.

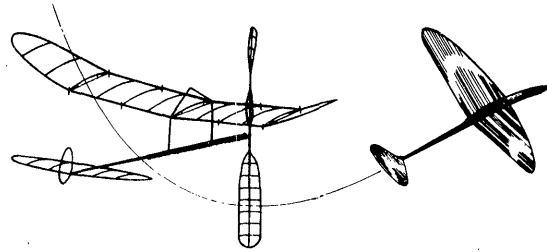
The next thing is to match the glider's components - stab to wing, airfoil and moment arm. Larger stabs give better recovery, but make a glider fly slower and possibly decrease airfoil efficiency.

Smaller stabs are harder to trim for recovery but will fly the glider faster and let the airfoil work. Don't hold the airfoil back; check it out. It's the jackpot!

It took years to design my glider and match the components. I'll bet most glider fliers can't tell you why the moment arm is so many inches or why the stab has a certain area. 'Because it looks good' won't get it! Keep the rudder as small as possible or eliminate it if possible."

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****New Members!

W. RALPH DODSWORTH, 437 Ave. U South, Saskatoon,
Sask., Canada
ANTHONY J. ITALIANO, 1655 Revere Dr., Brookfield, Wis.
53005

A Goof

Last month's photos included one of Patty Thornhill, but we called her Patti. That's not right - and we apologize. Patty is a hard worker and a nice person, however you spell the name, but now the record is straight.

Junior NIMAS Awards

Silver Cat. I HLG Award - 0:21.2, Bruce Pallet

Gold Cat. I HLG Award - 0:23.8, Bruce Pallet

Plans Wanted

Usually, our overseas correspondents keep us up to date on what is being flown in the various countries. We are quite low on model plans, probably because most fliers are still refining their one gram designs. So, any plans reflecting present one gram trends in the rest of the world would be most welcome!

Merry Christmas and Happy New Year!

Greeting cards are beginning to arrive from all over the world. I am very grateful for these good wishes and wish I could respond to all of them. Since I can't, I want to wish each of you the best for this season and for the coming year.

Financial Report

This issue simultaneously finishes the tenth year of publication of INAV and is the first issue of a new year. Our average circulation jumped from 289 per month to 322 per month, an increase of over 11%. This increase of circulation helped absorb the 10% increase of overall cost which came from a 25% increase in postal rates. However, total expenses of \$809.52 and total income of \$766.49 leave a 1971 deficit of \$43.03. Over the past ten years, this is the picture:

Year	Surplus	Deficit
1962		90.00 (est.)
1963		51.57
1964	23.95	
1965		13:56
1966	36.88	
1967	34.53	
1968	57.20	
1969	27.12	
1970	19.84	
1971		43.03
	199.52	198.16

The ten-year average comes out pretty well for a non-profit organization! However, the trend has been for lower and lower deficits as costs rise. At this point, we're at a decision point - raise prices, cut costs, or both. In times past, we had an advisory group; it has been several years since this group has been polled. So, guidance from the readers is in order to decide between these three alternatives:

1. Raise membership dues by 25% per year. For those who customarily pay with cash, this poses a difficulty of sending either stamps or coins for the extra.
2. Combine at least three issues, which saves approximately \$90 worth of postage. An extra page of coverage per combined issue (5 pages) would cost about \$18 per year, for a net saving of about \$70 per year.
3. Eliminate all photographs and publish six three-page issues and six normal issues (approx. \$70 saving.)

Please give your comments before Jan. 5, 1972. Those who renew can vote for #1 by including the extra amount.

Back to this year; the costs break down as follows:

Printing + office supplies	\$405.32
Newsletter postage	301.81
Correspondence postage	102.19
	<u>\$809.42</u>

Each issue requires about 50 hours of my time, and another 15 hours shared by the family and volunteer contributors and draftsmen. All correspondence and member services take extra time in addition to the 65 hours per month. Incoming mail totalled 747 pieces, while outgoing mail amounted to 1011 pieces.

SPECIAL INTERNATIONAL ISSUE

This issue is dedicated to all our friends outside the limits of the North American continent. Over the years, Indoor has become an international friendship, and these many friends are valued year 'round even when not specially mentioned.

FAI INDOOR REPORT1972 World Championship

Late word from the CIAM meeting confirms that England will host the 1972 Indoor World Champs, at Cardington on dates to be announced later. More details as available.

Team Confirmation

All three members of the '72 U. S. Team have confirmed their intent to compete. That makes it official - the Team will be Pete Andrews, Joe Bilgri and Bud Romak.

CONTEST CALENDARILLINOIS - Chicago.

Dec. 19, 1971 - Delta Dart doubleheader - stock models for Juniors, and "souped up for "Experts". Grove Jr. High School, Elk Grove Village, Ill. Dave Linstrum, 5840 Danforth Ct., Hanover Park, Ill. 60103
Jan. 30, 1971 - HLG & PennyPlane - Forest View High School Girl's Gym, Arlington Hts., Ill. Pete Sotich, 3851 West 62nd Pl., Chicago, Ill. 60629
Feb. 20, 1972 - HLG & PennyPlane - Forest View High School Girl's Gym, Arlington Hts., Ill. Pete Sotich, CD.
March '72 and April '72 - Cat. II contest - Brig, Gen. R. L. Jones Armory, Chicago, Ill. Pete Sotich, CD.

KANSAS - Olathe

Annual Winged Motors indoor meet, Feb. 19, 1972 at Millbrook Jr. High, Park & Waters Sts., Olathe, Kansas. Jr. Rubber, HLG, Easy B, Indoor Scale. Roger Schroder, 4111 W. 98th St., Overland Park, Kansas 66207. A special invitation is issued to Dick Hardcastle and other St. Louis fliers - "We do not plan to allow Dick to take all the trophies home again this year!!"

MARYLAND - Silver Spring.

Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring, Md. Contact John Thornhill, Route 1, Mt. Airy, Md. 21771 for dates and times of sessions.

MASSACHUSETTS - M.I.T.

Indoor sessions at MIT Armory, Vassar St. at Mass. Ave., Cambridge, Mass. Jan. 8, Feb. 26, Mar. 11, 3 pm to 6 pm. Contest April 8, 1972, 1 pm to 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. ph. 358-4013.

NEW YORK - Long Island

Cat. I Record Trials (tentative) in March, 1972; Annual LIAMAC Indoor Meet at Cantilage Park, Hicksville, L. I., N.Y., April 30, 1971. J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, N. Y. 11545.

TEXAS - Ft. Worth/Dallas

Dallas Aeromodellers indoor contest, Dec. 27, 1971 at Samuel Grand Recreation Center, Dallas, 7 pm to 10 pm. No-Touch indoor duration, HLG, Indoor Scale.

"PENNY PLANE"

11 MIN. 21 SEC. 1ST 1971 NATS

WING .22 P

BODY & TAIL .45 P & PROP

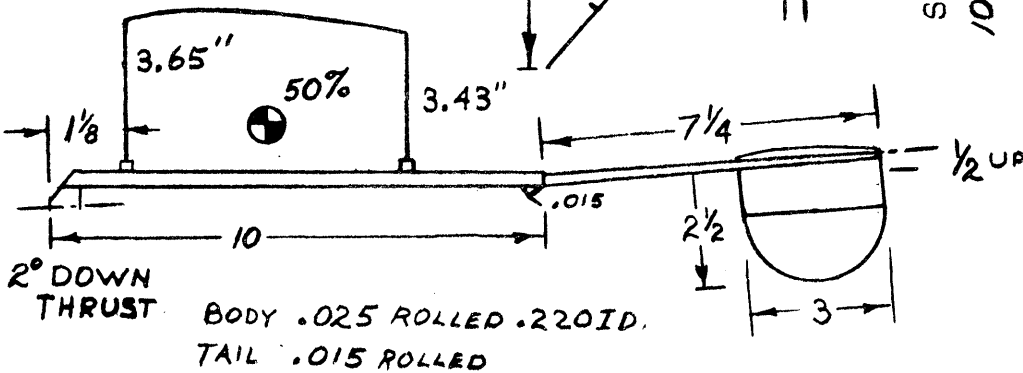
NOSE WT. .33 P

TOTAL 1.00 PENNY

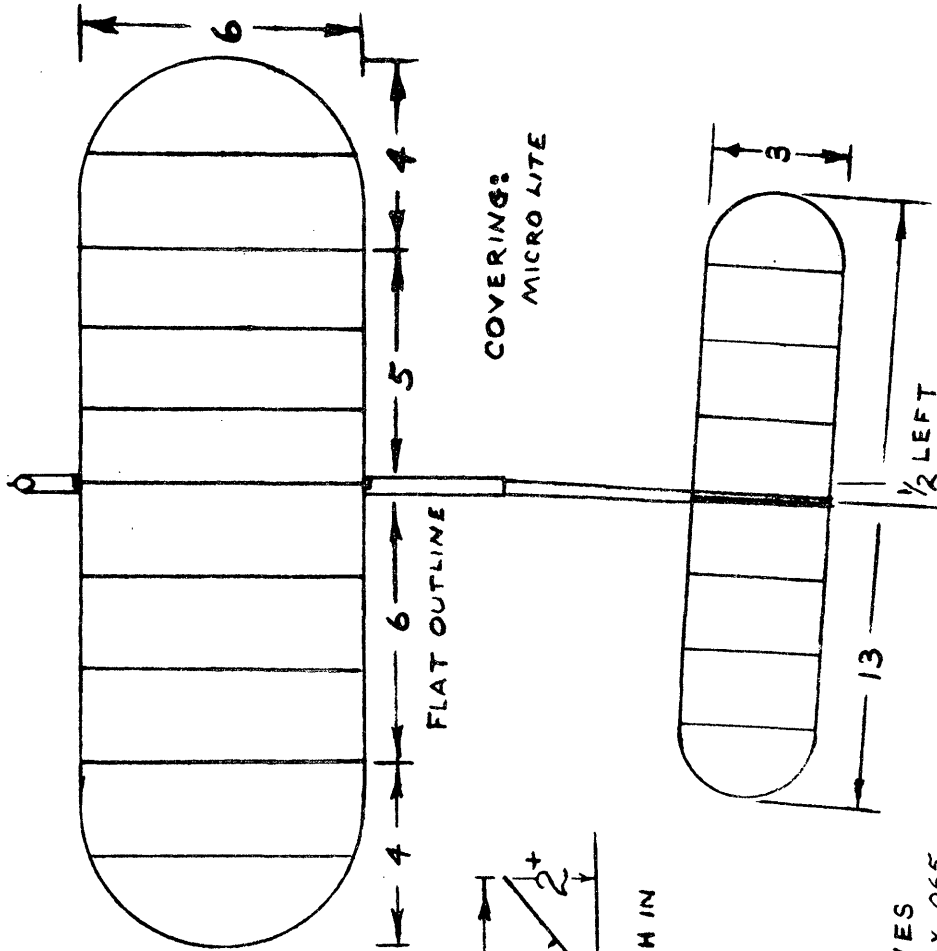
POWER .100 X 18 PERILLI

.80 P - 1350 TURNS

.7 INCH TORQUE



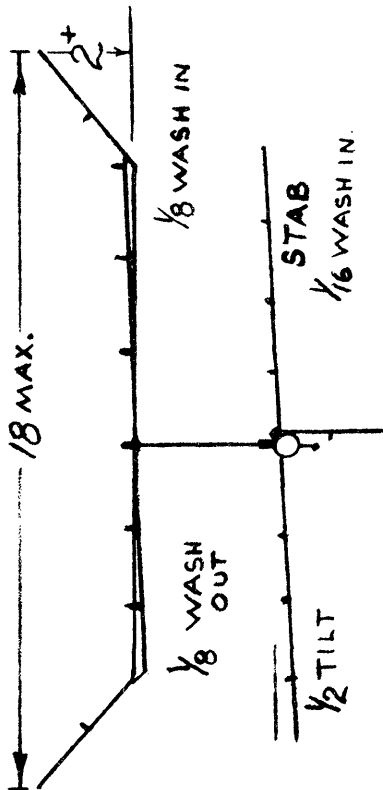
CG .085 X 18 LOOP PERILLI



COVERING:
MICRO LITE

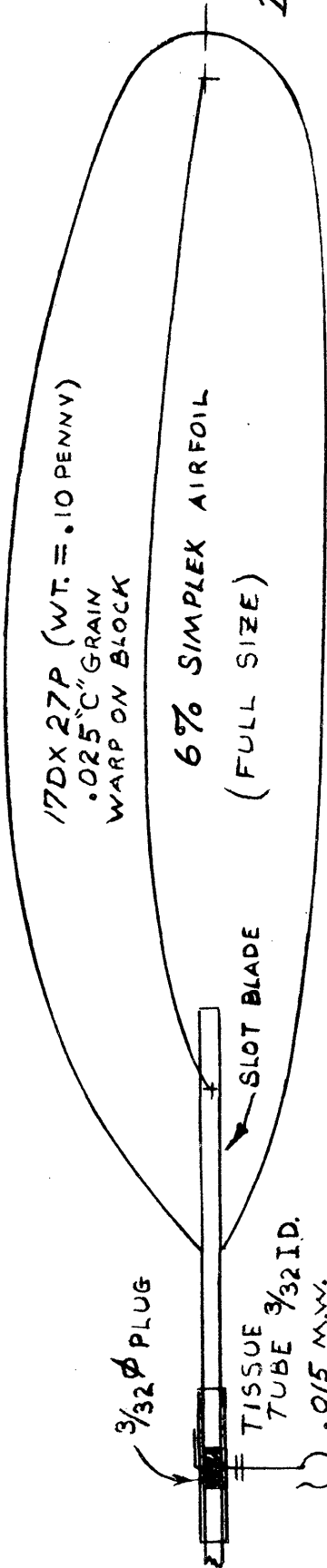
FLAT OUTLINE

OUTLINES
L.E. .040 X .065
T.E. .040 X .070
TIPS .040 X .060
STAB .040 X .050

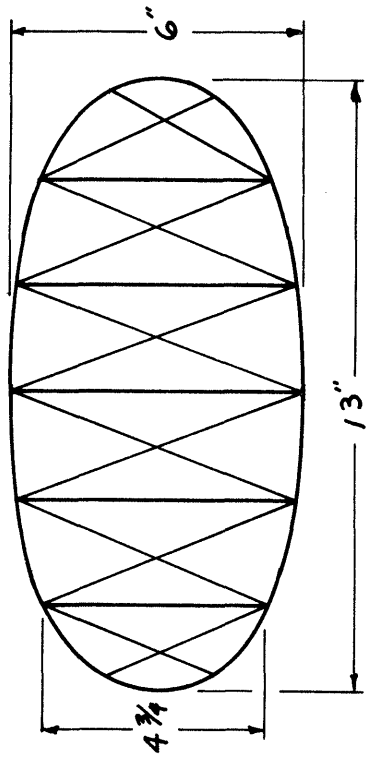
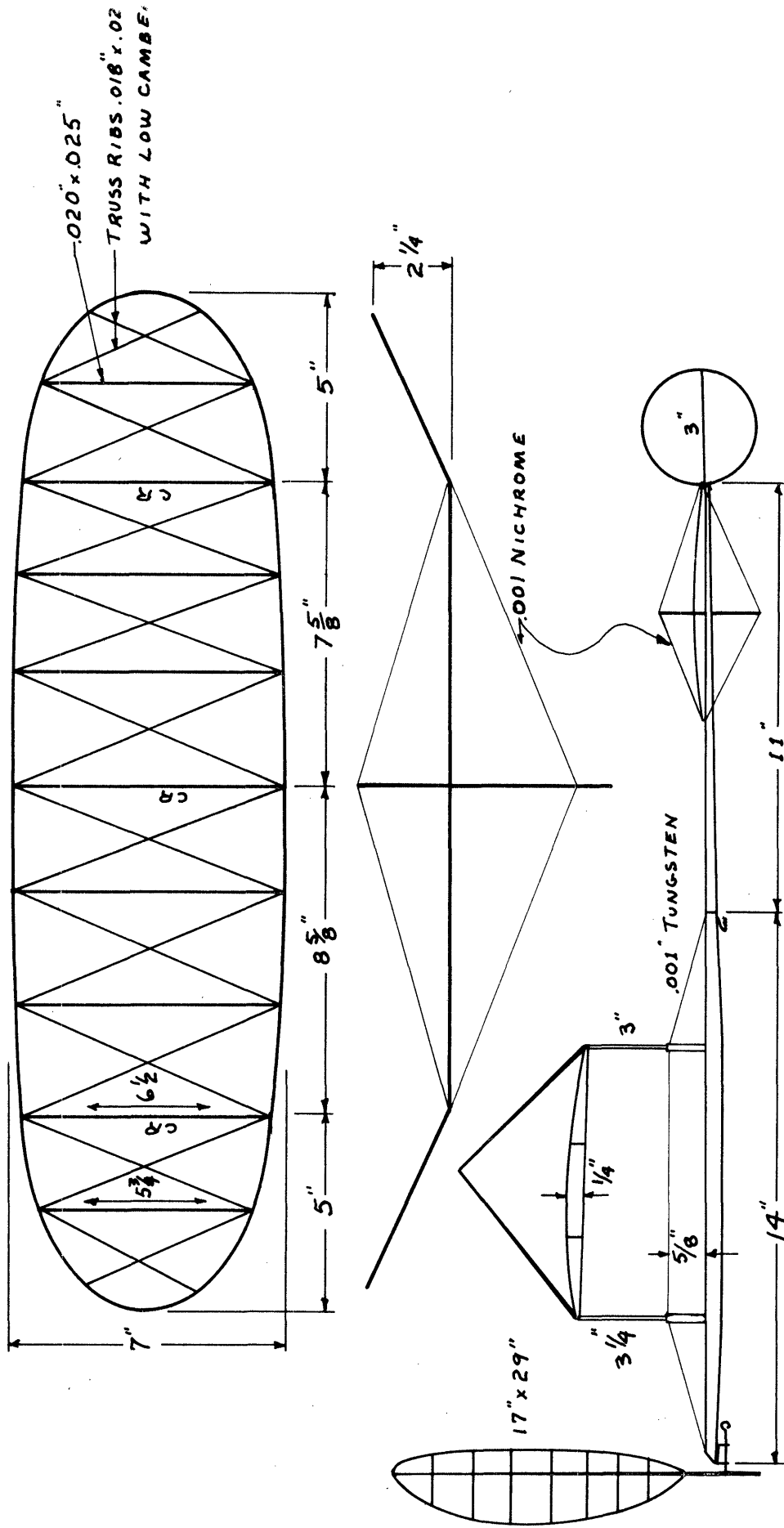


STAB & RUDDER
10" ARCH RIBS

BUILD LIGHT & ADD NOSE WEIGHT



D.M. JAECKS



AUSTRALIAN ONE GRAM
 by BOYD FELSTEAD

STATE OF THE ART

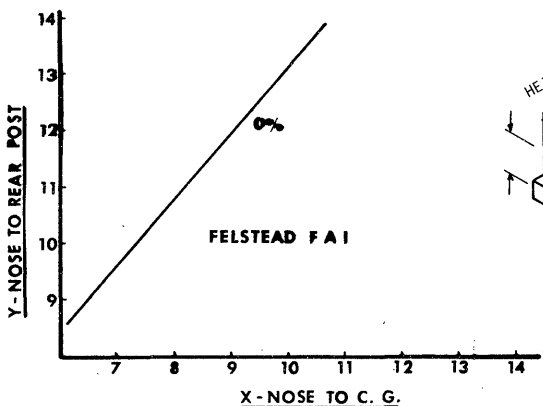
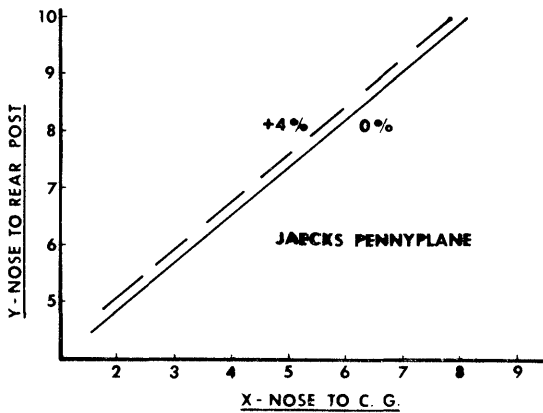
This month there is a dual offering - Boyd Felstead's one gram design represents the Australian continent for this International Issue, and Dennis Jaeck's PennyPlane is both a Nats winner and an outstanding design in this new model class.

The most outstanding aspect of Boyd's model is the geodetic-type wing and stab layout. The truss ribs have lower camber than the main ribs, and presumably are in tension. No flight information is available, unless Boyd sent this during the summer and it got misplaced.

Dennis Jaecks started with a good plan layout, added a unique trim/building philosophy, and created a very stable and capable winner. Of course, the wide wing is almost a must for the relatively heavy PennyPlane formula, to give a reasonable wing loading. Low wing loading permits a lower flight velocity for lower RPM; this low RPM tendency is then enhanced by the large prop. The model design formula also restricts model length, so the high aspect ratio stab effectively increases the tail moment arm. Dennis comments on the model:

"My design objectives are simple: build a light model to allow for nose weight ballast, which gives maximum wing and stab separation for good stability. The model is very stable which helps me space it between lamps, etc. The large prop permits using big motors - .100" rubber is the largest I have seen used at the Nats and this may only be a start to the right combination. The prop outline can be recognized as Jim Richmond's FAI pattern. I like the tissue tube prop hub as it allows easy blade alignment. I set up one blade and glue it, then test fly and adjust the second blade until the wobble is gone. Then I glue this second blade in place (thin glue at the edge of the socket is all it takes).

"Unfortunately, when I had the chance at the Nats to try other airfoils, I didn't. I had some 6% and 7% arc airfoils built up also. Using the no-touch rule would have made a fair test to see which is better. I don't know how much can be learned from PennyPlane, but it should show some benefits in FAI one gram design. Optimum PennyPlane chord has not been determined, but Charlie Sotich reported that 6" worked best for him."



A LOOK AT YESTERYEAR

A good many years ago (like 1941 and later), the popularity of indoor flying had declined until not much coverage was generated by regular model magazines. A labor of love by Walter Erbach and Curtis Janke resulted in the publication of the KOTDE Journal.

The Journal was to be the official publication of an organization proposed in the first issue - Knights of The Double Ellipse. Vol. 1, No. 1 was dated Dec. 1941, and contained an editorial proposing the KOTDE as a measure to help give indoor modeling a voice and a rallying point. Also presented were results from a Chicago contest, plans from Erbach's Fuselage model which had set a new record in the St. Louis Arena during the Mississippi Valley meet on Aug. 16, 1941, a humorous story, a "hints" column, a contest calendar, and an article on microfilm props.

It is fitting that, on this 30th anniversary of KOTDE founding, that we say a word of thanks to Walter and Curtis for their efforts to preserve Indoor. The Journal was whimsical, witty, informative, sometimes controversial, and doubtless welcome to indoor fliers of the day who had no other forum.

HINTS AND KINKS

Glider Sanding Jig

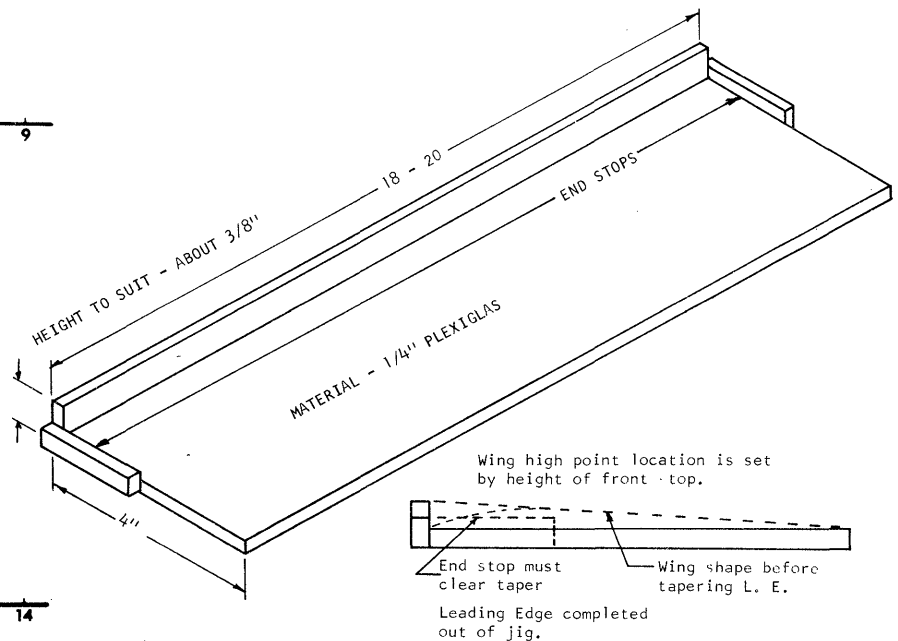
The sketch below details a sanding jig for HLG wings which was built by Bob Dunham from a design by fellow Glue Dobber John English. John's jig was made from wood, but Bob found plexiglas to be an improvement. The jig is for wings with straight trailing edge like the Sweepette, and makes it simple to produce an even airfoil by allowing the sanding block to ride on the edges of the jig.

The end stops keep the wing tight from end to end, and a shorter wing is wedged in place by removable fillers. Different wing thicknesses can be accommodated by shimming from the bottom, but care must be used to avoid sanding the trailing edge too thin. The wing leading edge can be finished easily and quickly after removing the blank from the jig.

An excellent sanding block for use anywhere is made by using contact cement to hold the sandpaper on 3" x 6" plexiglas. This makes a rigid and perfectly flat sanding block; two such blocks with a different grade of sandpaper on each face gives all grits needed to finish a wing.

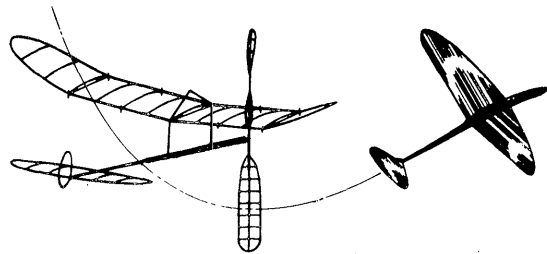
End Lube Mess!

Wayne Zink suggests that rubber lube can be kept in a 15 cc nasal mist spray bottle (Dristan). All you need to do is remove the siphon tube and wash the bottle, and you have a handy dispenser for rubber lube. Be sure to mark the contents on the outside - this is a must for any drug container used for another purpose!



INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

ROLFE GREGORY, 11603 Milbern Dr., Potomac, Md. 20854
 DAVID A. PISHNER, 1574 Lee Terrace Dr., Wickliffe,
 Ohio 44092
 BILL SHAILOR, 13596 Montrose, Detroit, Mich. 48227

Family Memberships

DAVID OICKLE, 119 Martha Rd., Glen Burnie, Md. 21061

Tenth Anniversary Gift

Right after Christmas, Jim Clem paid a surprise visit to the Tenny household. Tucked under his arm was a Pitney Bowes Model 701R Addresser Printer and a box of blank plates! In addition, there was a \$50 gift certificate for Jody, to be redeemed at Titcher-Goettinger - one of Dallas' best department stores!

On this tenth anniversary of INAV, many NIMAS members and other modeling friends across the nation arranged this "thank you" surprise - a top grade piece of office equipment which will save hours each month addressing the newsletter. We can now stamp addresses directly without typing labels and sticking them on.

Jody used her gift certificate on a small stereo to go in our bedroom. It's really nice to be able to listen to our own music in a house with three teen-agers!

Both gifts will be used and appreciated for many years. But most of all we will remember with gratitude this expression of your friendship. Thank you.

Renewal Notice

The new method of addressing newsletters permits inclusion of a date code in the address. Now, each member and subscriber can look at his label; those who have "01" in the upper left corner of the address are due to renew with this issue. The normal method of notification will be continued; those who are due to renew receive a note to that effect plus a return-addressed envelope. The new number simply gives advance notice. Those who renew in advance of expiration save me quite a bit of time, so if this can be done it will be appreciated.

New Dues Set

Last month's poll about what to do about spiralling INAV costs showed that almost everyone favored raising dues by at least 25% per year. Some suggested 50%, some even suggested \$1, and many included donations to clear up the deficit from last year. The new addressing scheme will save over \$10 in label costs, and projected income increase from the increase should be about \$75 for a full year from now. This increase should hold for two or three years, barring another massive postal increase or a big increase in printing costs. Therefore, the membership dues (including subscription) are now \$3.25 per year and subscription alone costs \$2.25.

NIMAS Decals

Some time ago we made a plea for someone to help make up new decals; the NIMAS decal box has been empty for almost 24 months and many new members have never seen our rather distinctive decal. At this point, we need information from somewhere about what decals should cost. In Dallas, decal houses are either reluctant to talk about water-slide decals at all, or they talk in terms of \$500 orders. Can anyone do better? Should the NIMAS decal die, or is there a way to revive it?

FAI INDOOR REPORTTeam Manager Named

A December memo from AMA HQ named Bud Tenny as manager of the 1972 Indoor Team, in accord with previously established Executive Council directives. The same memo announced the dates for the 1972 Indoor World Champion-

ships as Aug. 25-28, 1972. The site is as previously announced - Cardington hangar. Housing will be at Cranford Aerodrome, which is the home of Britain's Institute of Aeronautical Technology (similar to NASA). Transportation will be furnished to the hangar each day.

Two Year Indoor Program?

Whether we have a two year or one year indoor program will depend upon the outcome of a questionnaire circulated by AMA HQ in December, with a Jan. 14 return deadline. The problems faced with the 1971 program seem to indicate that future participants will expect to vote on critical aspects of the program as they arise. This will be logistically impossible unless a two year program is adopted, or unless the semi-finals are finished by June 1 and the Finals are in late August.

Besides the one year/two year question, the form also attempted to settle the matter of single site/multiple site Finals. The questions were heavily slanted toward an outcome in favor of multiple sites, which may or may not be the best way to pick a Team. However, multiple Finals sites, as a concept, has the following disadvantages: greatly increased work load on the Program Administrator, greater (and unrealistic) pressure on each finalist, and unequal chances to make the team for entrants in different Finals. Apparently, the questionnaire was devised without consulting anyone with indoor experience. In this writer's opinion, the poll raises more questions than it will answer, and is probably divisive at a time when we all need to pull together again.

STATE OF THE ART

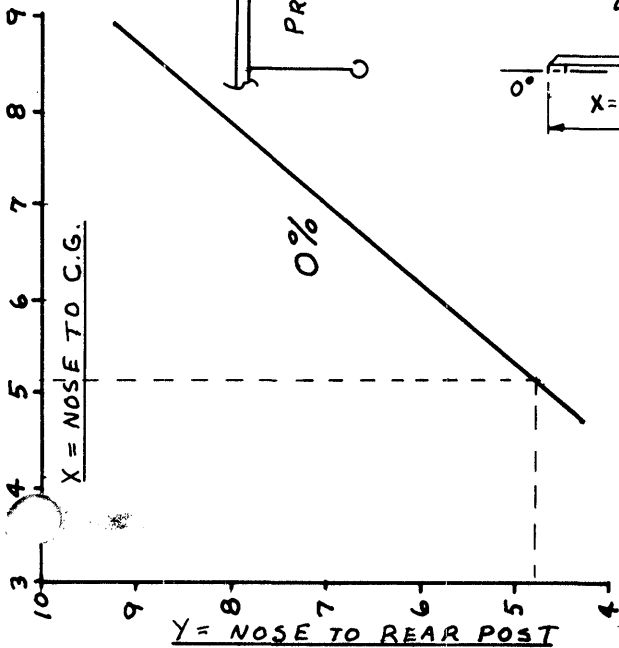
It has been a long time since a new Easy B design has made an impact on the competition scene. Perhaps the effort which would have gone into Easy B has been routed into PennyPlane; anyway, a couple of the best still around are the Easy B's by Al Rohrbaugh and Jim Richmond. So, these two have been reprinted from the Mar. '68 INAV, where we said the following:

Two of the top Easy B designs in the U. S. share the spotlight this month. The Kokomo Bomber by Jim Richmond and Al Rohrbaugh's Easy B are quite similar in design except for the rudder, and both models have rivalled times of Paper Stick models, even with all balsa props. Details are given on both built up and all balsa props, since the contests in the Midwest allow built up props on Easy B.

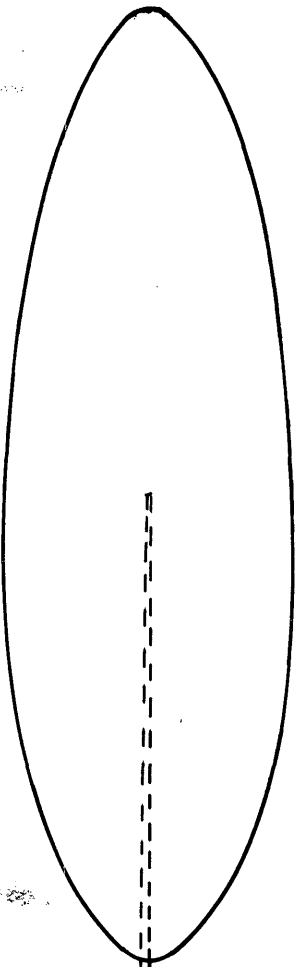
Jim explains certain design details of the Kokomo Bomber: "The stab is made without a center rib, but the paper is supported by means of a small balsa piece cemented to the boom. The wing rib layout adds strength to the wing by acting as a crooked spar. The fence on the stab trailing edge seems to reduce stall tendencies at the start. The extra wing offset was added for the same reason."

Al comments: "Although the light weight is an important factor for good duration, the prop is, as usual, somewhat critical. Due to the light wing, both tips will wash out under full power unless prop flare is enough to hold air speed low enough to prevent washout. The trick is to get maximum climb angle while keeping air speed just under stall. The wing is adjusted perfectly flat and the front wing post should flex sufficiently to permit the left wing leading edge to lift enough to give effective washin. When done properly, this method gives variable torque control while maintaining minimum washin. The rudder has approximately equal area above and below the boom to prevent rudder offset from twisting the boom. It might seem questionable to go to all this trouble, but it is a case of what the extra time is worth."

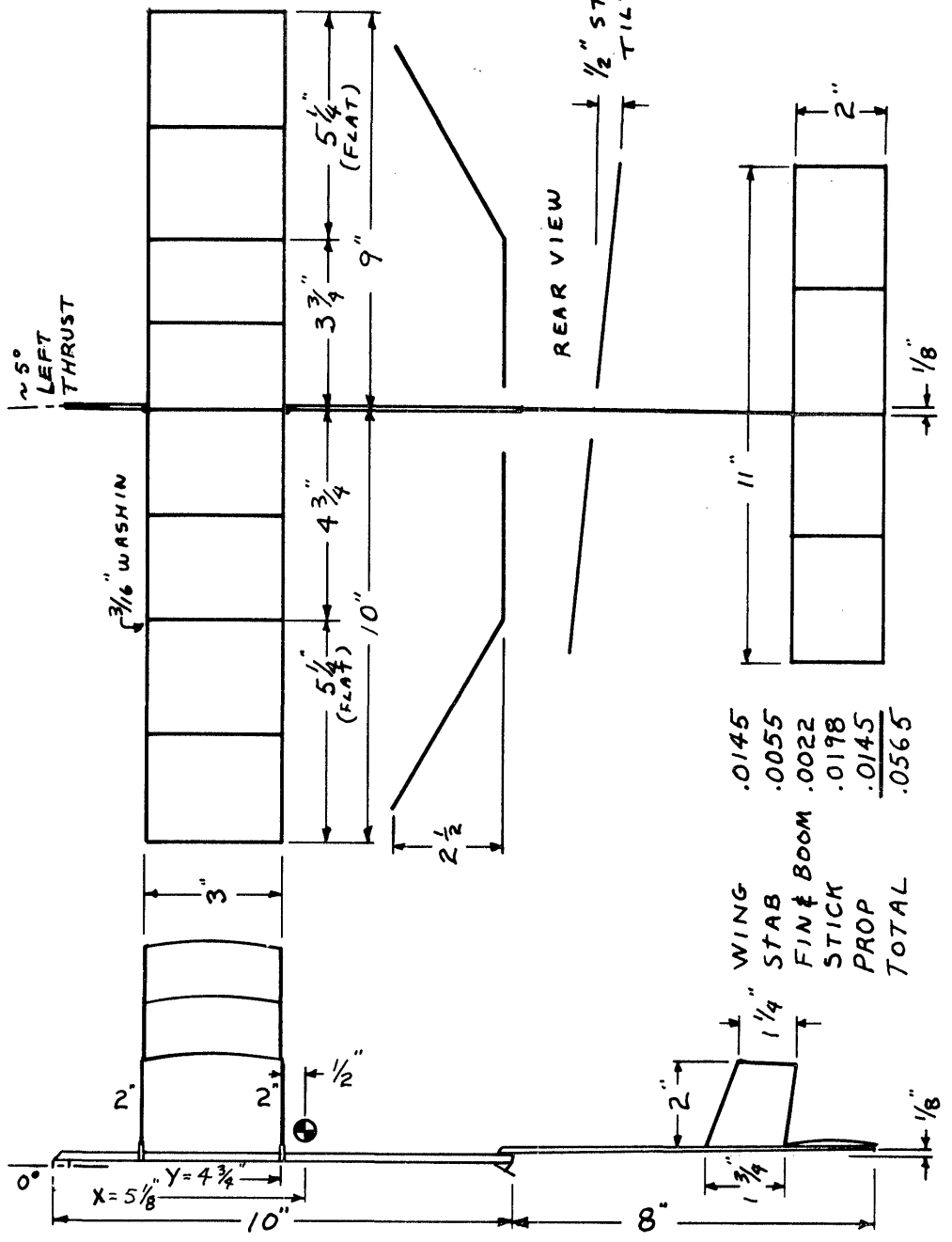
Editorial note: Since the above was printed, Jim set the Cat. I Paper Stick record with the Kokomo Bomber at a St. Louis contest in 1969 - 13:06! Also, at that time the CMOS diagrams were not being furnished for featured models. The diagram below combines the two models and shows the O% computation. Rohrbaugh's model (as shown) was flown with +19% margin, while Richmond's was in excess of +20%.
 (CMOS on P. 9)



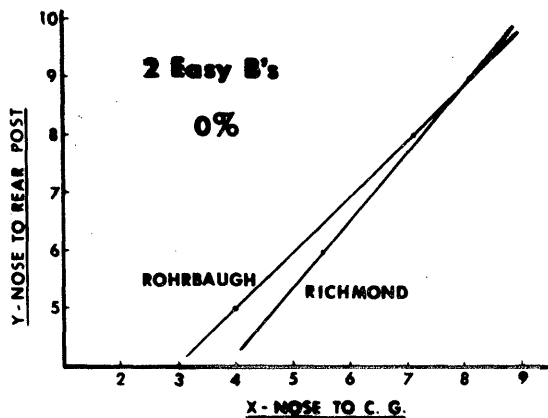
WING & STAB - 6" ARC



PROP - 13" x 28"



EASY '72
 EXPERIMENTAL EASY B
 BY BUD TENNY



CONTEST CALENDAR

COLORADO - Denver

Indoor meets on Feb. 20, Mar. 19, 1972; Stick (all classes combined), Easy B, HLG and scale. Contact Ted Gonzoph, 12996 E. 2nd. Ave., Aurora, Colo. 80010 for info on site and time.

ILLINOIS - Chicago

Indoor meet Jan. 30, Feb. 20, 1972 at Forest View High School Girl's Gym, Arlington Hts., Ill.; HLG & PennyPlane, Pete Sotich, 3851 W. 62nd Place, Chicago 60629.

ILLINOIS - Rock Island.

Ronald Tweet, Dept. of English, Augustana College, Rock Island, Ill. 61201 hopes to get regular indoor flying sessions started in the college's new physical education facility, which has 50' ceiling. Contact him if you are interested.

KANSAS - Olathe

Annual Winged Motors indoor meet, Feb. 19, 1972 at Millbrook Jr. High, Park & Waters Sts., Olathe, Kansas. Jr. Rubber, HLG, Easy B, Indoor Scale. Roger Schroeder, 4111 W. 98th St., Overland Park, Kansas 66207.

MARYLAND - Silver Spring

Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring, Md. Contact John Thornhill, Route 1, Mt. Airy, Md. 21771 for dates and times of session.

MASSACHUSETTS - Amherst

Indoor flying sessions at Student Union of University of Massachusetts in Amherst, Jan. 23, Feb. 20, Mar. 19, Apr. 16, 1972, 10 am to 5 pm. Charles Learoyd, 100 Mill Valley Rd., Hadley, Mass.

MASSACHUSETTS - M.I.T.

Indoor sessions at MIT Armory, Vassar St. at Mass. Ave., Cambridge, Mass., Feb. 26, Mar. 11, 3 pm to 6 pm. Contest Apr. 8, 1972, 1 pm to 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. ph. 358-4013.

MISSOURI - St. Louis

Indoor contests tentatively planned Feb. 6, Apr. 9 at Ft. Zumwalt High School, O'Fallon, Mo., 9 am to 5 pm. by Kirkwood Thermaleers. Mar. 5 at E. St. Louis Armory (34' ceiling), 2931 State St., E. St. Louis, Ill. 10 am to 5 pm, by McDonnell-Douglas FF Club. HLG, Delta Dart, PennyPlane, Easy B, Indoor Stick, Scale. Jim Bennett, 324 Helfenstein, St. Louis, Mo. 63119, ph. 314-962-5271.

NEW YORK - Long Island

Cat. I Record Trials (tentative) in March, 1972; Annual LIAMAC Indoor Meet at Cantiague Park, Hichsville, L.I., N.Y., April 30, 1972. J. G. Paillet, 30 Emerson Rd. Brookville, Glen Head, N. Y. 11545.

DESIGN FOOTNOTES

An Experimental Easy B

For about 18 months, it has been my intention to set up an Easy B with all the design advances inherent in the CMOS balance method, while making full use of big prop, high aspect ratio stab, and a couple of trim techniques learned from FAI flying.

The model was built during a brief vacation over the holidays, being finished about 20 minutes before we left for a contest it was to be flown in. It would be nice to claim a first place, but the contest event was a Ceiling Dodger event. Only about an hour was available for flying and the motor and prop broke on the first official flight.

Two last-minute attempts were made, both of which touched the ceiling at least three times. Best three-touch time in a 22' site was 5:15; even so, I was pleased. In spite of the "phantom CG" which caused me to call the model "Civvy Boy", the model literally "flew right off the board", as the saying goes. It rafter-banged perfectly and impressed everyone with its power handling ability.

The rearward CG caused a few qualms as I assembled the model, so I re-checked the CMOS calculations and decided that if I had so much faith in CMOS, I'd better live with the results! An analysis of the model served to increase my happiness with the results. I weighed it after flying, with the results shown on the plan. Only the wing is near the proper weight, and the heavy prop had too much weight in the blade and a terribly soft spar which showed up when the model was flown under high humidity. Obviously, a much lighter model can be built and should fly much better than #1. It already flies as well as any previous Easy B I've had, so the design seems to hold much promise. If anyone tries the design I'd welcome their comments.

Since I credit CMOS with much of the success of this model, here is a brief review how to use the CMOS diagram on the plan: Build the model as usual, and balance the entire model and motor (less wing) to locate the CG. On this model the CG was 5 1/8" from the nose (X). The vertical dotted line shows the graph intercept with the corresponding Y value of 4 3/4". Simply locate the rear post at the distance shown, and the front post where it has to be. Do not use a rearward CG unless the balance diagram works out that way! Most likely a more correct prop weight would have resulted in a more "normal" CG location, but the flight characteristics should have been identical.

Comments on trim: relatively large washin in the wing coupled with the stab tilt and 0% margin seem to be what yields the rafter-banging ability. If fact, the model has recovered from wall contact also. Matching the thrust line to the flight circle seems to measurably improve the power handling ability and smooth out the climb.

TORQUE ROD DESIGN DATA

Ray Harlan has computed the figures in the chart below, which represent safe design parameters for the torque rod in torqueometers. Column headings: d = diameter of the music wire; T = safe torque (fairly conservative) limit of the wire size; K = a proportionality factor determining proper length of the torque rod.

d	T (in.oz.)	K
.010	.31	6.20
.012	.54	2.97
.014	.86	1.60
.015	1.06	1.21
.016	1.28	.939
.018	1.83	.594
.020	2.51	.383

To use the chart for torque rod design, decide first what maximum torque you will need. For example, 1 inch ounce maximum includes rubber up through about .08" wide. Next, choose full scale torque for one revolution of the pointer (this value is t in the formula below). Finally, compute the wire length with this formula:

$$\text{length} = 6.28/tK$$

For example, assume .6 in.oz. per revolution on .015" diameter wire. t = .6; K = 1.21 and:

$$\text{length} = 6.28/(\.6 \times 1.21) = 6.28/.726$$

$$\text{length} = 8.64"$$

This length will be approximately correct for .6 in. oz. per revolution, due to small variations in wire. If an exact calibration (.6 in. oz. = exactly one revolution) is required, begin with a torque rod slightly longer and make trial calibrations. Cut off small lengths of wire until the calibration is as close as you desire. If you would like to see Ray's derivation or require information for different scale lengths, send a self-addressed envelope with your request to Box 545, Richardson, Tex. 75080 and I'll send a copy of his letter.

ADVANCE WARNING!

The Annual NIMAS Postal almost got left out last year, with FAI problems, etc. This annual event has been a lot of fun, and deserves better treatment than last time. So, be forewarned that it is coming up. Usually, events include Easy B, HLG, and Indoor Stick. In 1971 PennyPlane and Ceiling Dodger were added, but no entries were made in Indoor Stick and only two in PennyPlane. We are open to suggestions about which events should be held!

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members:

CHARLES H. BACCUS, 900 Boynton, San Jose, Cal. 95117
 BRIAN BROWNING, Peru State College, Peru, Neb. 64821
 J. F. CARTER, Rt. #1, Drewry, Ala. 35468
 BILL LANGLEY, 6229 N. Robinhood Ln., Kansas City, Mo. 64151

MICHAEL NARIGON, 1334 9th Ave. N, Ft. Dodge, Ia. 50501
 PHIL RENNAKER, 6714 Lawson Ln., Kansas City, Mo. 64152
 ROBERT ROVICK, 12404 Marine View Dr., Edmonds, Wash. 98020

DICK STARKS, 7906 NW Potomac, Kansas City, Mo. 64152
 DONALD WRIGHT, 559 Evanswood Pl., Cincinnati, O. 45220

The NIMAS Spirit

A long time ago, I received a lot of help from many indoor fliers as I began the struggle to learn indoor flying techniques while reasonably well isolated from the mainstream of activity. As NIMAS was founded and grew, this same spirit of helpfulness aided me to continue growing in experience.

Not long ago, a young man joined NIMAS. This same NIMAS spirit has again "turned on" full force, and this Junior has received willing help from several fliers all over the country. As I heard of this willing help, I was reminded again of the help I received, and I'm thankful that this willing spirit continues unabated. Thanks again to all of you!

Recent Publications

"East Coast FAI Indoor Finals" is the title of a very good report on that event by Tom Vallee, in the Feb. '72 MODEL AIRPLANE NEWS. We owe a vote of thanks to Tom for this effort, and an especially kind word for MAN as they devote this much space to reporting one of our major events.

The following paragraph appeared in NAA NEWS, the news sheet of the National Aeronautic Association:

How long can a fixed wing aircraft (VTOL'S excluded) fly at less than one mph, without the benefit of wind? The world record is almost an hour and is held by Czechoslovakia. Next August teams from about ten countries will gather in a dirigible hangar at Cardington, England to try to beat that record. The occasion will be the 1972 Indoor Aeromodeling World Championships of the Federation Aeronautique Internationale, and the competing prop-driven aircraft will weigh only a fraction of an ounce and be powered by rubber bands. NAA's Academy of Model Aeronautics has already selected the U. S. Team, through flyoffs held last September at the airship hangars in Santa Ana, California and Lakehurst, New Jersey.

Let's Have A Party

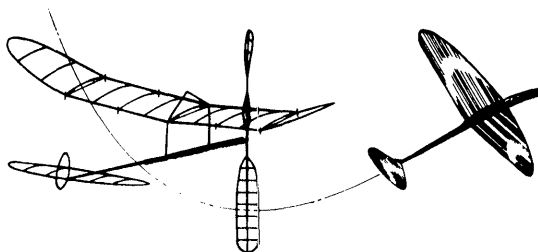
As much as various members would like to have a NIMAS party (general meeting), we never seem to find a time for this and haven't since 1962 (a NIMAS meeting was held at the '62 Nats). However, the Detroit Balsa Bugs are having a party - their 20th Annual Federation Aeronautique Internationale Awards Dinner on March 11, 1972 at the Polish Legion of American Veterans Hall Walter Paluch Post #12. The hall is located at 5186 E. Davison in Detroit.

In 1971 the attendance was 106, and 125 tickets at \$7 each are available this year. Cutoff date for getting tickets (pay in advance) is March 4, 1972. Phone or write Paul Crowley, 32604 Tecla Dr., Warren, Mich. 48093, ph. 294-0266, to get info and tickets.

The Detroit Balsa Bugs is an excellent club of long standing, and it is filled with many nice people who just happen to fly models very well. In fact, members of the club have made many contributions to both the theoretical and practical aspects of free flight modeling, and this program will be well worth attending. As part of the program, perpetual trophies will be awarded to the following fliers in their specialties:

FAI Power

George Versaw


 Nordic
 Wakefield
 Indoor

 Bernard Green
 Paul Crowley
 Ed Stoll and
 Ron Plotzke

NIMAS Postal Meet

The 7th Annual NIMAS Postal meet will be open for entry through April 17, 1972. All flights made as part of a sanctioned indoor meet from Jan. 1 through Apr. 17 are eligible, as are flights made in informal sessions between now and Apr. 17, provided these sessions are run in accord with AMA rules.

Events: Easy B, paper covered only, solid motor stick and boom, with unbraced surfaces.

HLG - AMA Rules except two ceiling classes -
 Class I - 18' to 25'; Class II - 25' 1" to 35'

Indoor Stick - AMA Rules except FAI ceiling measure to compute fudge factor.

General Rules: Entry fee 15¢ per event, stamps preferred. Separate events may be flown at different sessions, but all flights for a given event must be flown on one day. Please note ceiling height for each entry, as it will be used to compute fudge factors to equalize ceiling heights. Separate class for Juniors in each event, with awards for high placing Seniors. Separate class for sub-junior (age 12 and under) in HLG. Anyone can enter; send entries to NIMAS, Box 545, Richardson, Texas 75080.

Special events: PennyPlane and Ceiling Dodger will be held if five entries are made in these events. Use any model for Ceiling Dodger; count highest time attained on flights which do not touch ceiling. Use Chicago Aeronuts PennyPlane rules - send for copy if necessary.

Postal Fudge Factors

For some time, NIMAS Fudge Factors have been used to equalize ceiling height differences between postal meet sites. The rubber factors apparently have been satisfactory, and HLG factors have proved out pretty well so long as ceiling heights did not vary more than 1.4:1. The chart below summarizes these fudge factors as they will be used in the Annual Postal. Postal entrants can compare their time against existing results and decide whether to try harder before submitting times.

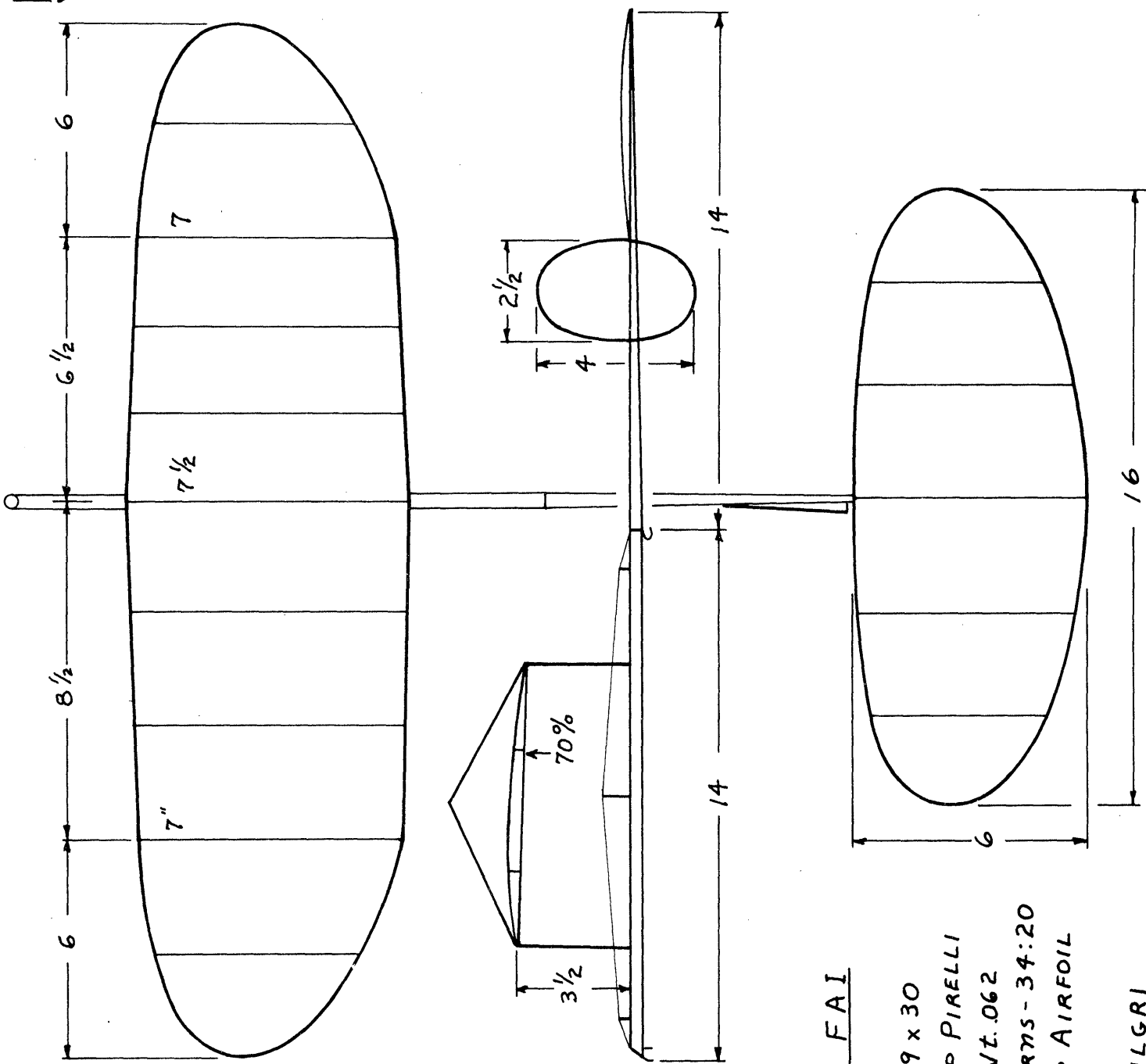
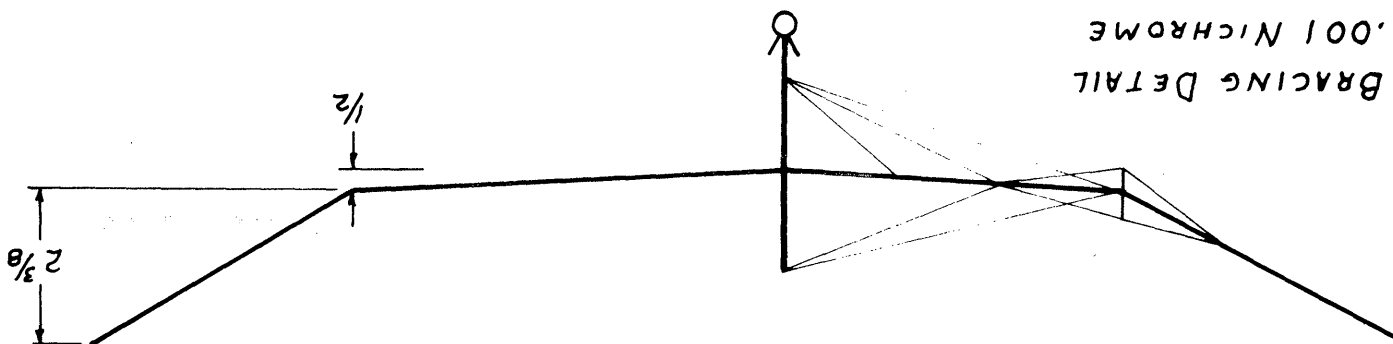
Ceiling (Feet)	Class I HLG (Fudge to 25')	Class II HLG (Fudge to 35')	Rubber (Fudge to 35')
18	1.39		1.394
19	1.316		1.357
20	1.25		1.323
21	1.19		1.29
22	1.136		1.261
23	1.087		1.234
24	1.042		1.207
25	1.0	1.4	1.183
26		1.346	1.16
27		1.296	1.139
28		1.25	1.118
29		1.207	1.098
30		1.167	1.08
31		1.129	1.063
32		1.094	1.046
33		1.061	1.03
34		1.029	1.014
35		1.0	1.0

To use the chart, select the model class and ceiling height to get the fudge factor, then multiply the fudge factor times the time. In case of ceiling heights not in even feet, use straight line interpolation. For example: 27 second flight in Class II HLG (25' site) would score $1.4 \times 27 = 37.8$ seconds. If entered in Class I, the same flight would score 27 seconds (fudge = 1.0).

Flu, Anyone?

Three of the INAV staff have been ill, or are still ill. This mostly accounts for the lateness of this issue, and the feeling of frustration enjoyed (?) by the editor!

(cont. p. 4)



1 GRAM FAI

PROP - 19 x 30

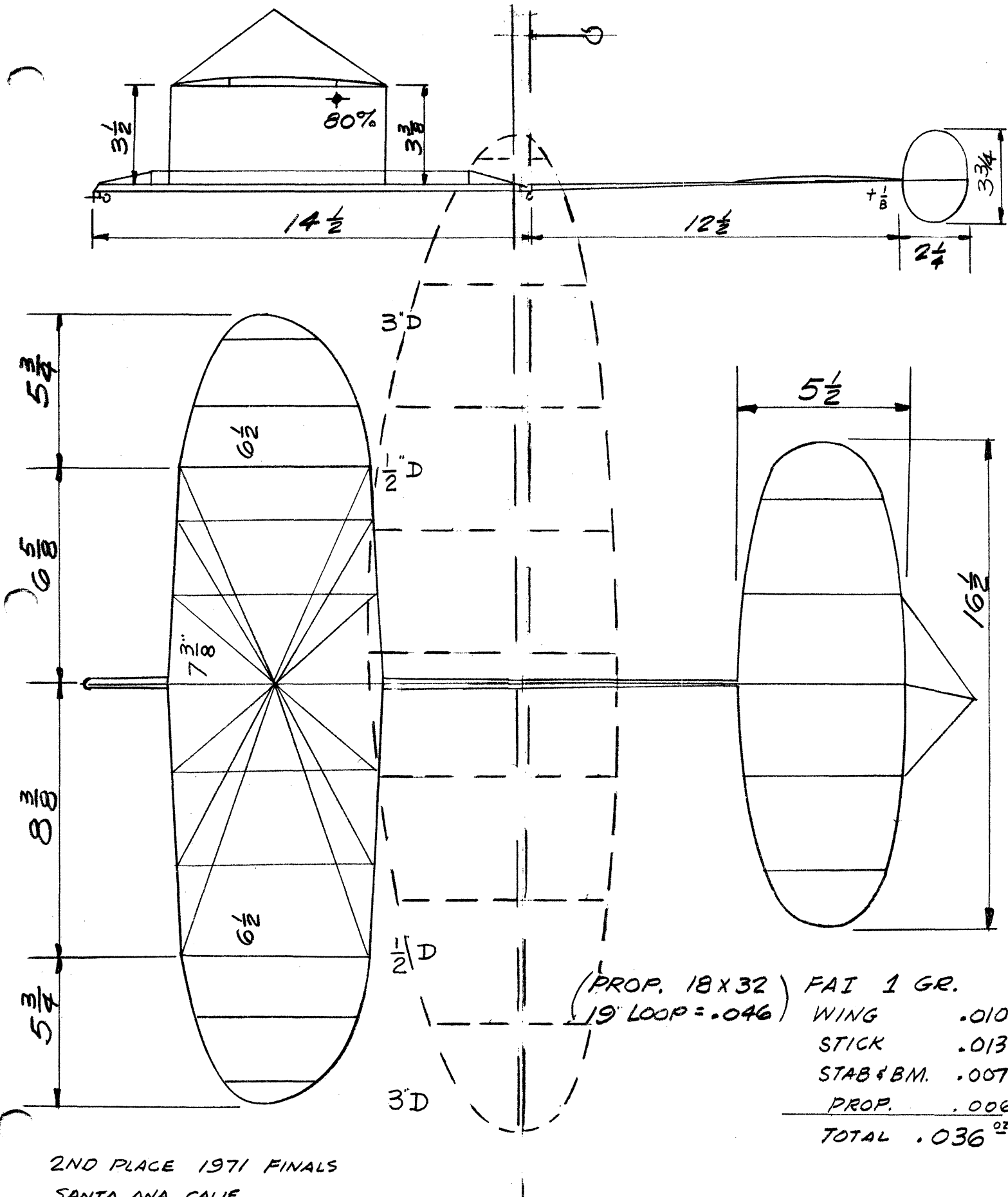
20" LOOP PIRELLI

LUBED WT. .062

2100 TURNS - 34:20

4% ZIP AIRFOIL

JOE BILGRI



(PROP. 18x32) FAI 1 GR.
 (19 LOOP = .046) WING .010
 STICK .013
 STAB & BM. .007
 PROP. .006
 TOTAL .036^{oz}

2ND PLACE 1971 FINALS
 SANTA ANA CALIF.
 RECORD FLT. 35:42 SANTA ANA.

Top Ten Easy B

This listing is from the results of the '71 NIMAS Postal meet, and will be scratched upon completion of the '72 Postal. The new Top Ten will be the top 10 places in the '72 Postal. However, an individual may "bump" into the listing with a flight made since the last Postal, and the list will be updated. (Note: Slight changes in these times are due to re-calculation on a calculator; slide rule errors apparently accumulated in previous listings.)

	Time/ceiling	Fudge	Score
1. Bob Platt	9:48.6/20'	1.323	12:58.8
2. Hal Crane	9:11.8/20'	1.323	12:10.2
3. Dick Hardcastle	11:23.6/31'	1.063	12:06.7
4. Clarence Mather	8:41.0/22.3'	1.254	10:53.3
5. Fudo Takagi	8:12.0/22.3'	1.254	10:16.9
6. Fred Harlow	6:42.0/20'	1.323	8:51.8
7. Chet Bukowski	7:08.0/25'	1.183	8:26.3
8. Bud Tenny	5:46.0/22'	1.261	7:16.3
9. Richard Sherman	5:29.0/25'	1.183	6:29.2
10. Don Chancey	8:15.0/58'	.776	6:27.8

CONTEST CALENDAR

COLORADO - Denver

Indoor meets on Feb. 20, Mar. 19, 1972; Stick (all classes combined), Easy B, HLG and scale. Contact Ted Gonzoph, 12996 E. 2nd. Ave., Aurora, Colo. 80010 for info on site and time.

ILLINOIS - Chicago

Indoor meet Jan. 30, Feb. 20, 1972 at Forest View High School Girl's Gym, Arlington Hts., Ill.; HLG & PennyPlane, Pete Sotich, 3851 W. 62nd Place, Chicago 60629.

MARYLAND - Frederick

The Frederick Model Airplane Club flies weekly in a high school gym. Contact Bill Weaver, P. O. Box 1387, Frederick, Md. for info.

MARYLAND - Silver Spring

Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring, Md. Contact John Thornhill, Route 1, Mt. Airy, Md. 21771 for dates and times of session.

MASSACHUSETTS - Amherst

Indoor flying sessions at Student Union of University of Massachusetts in Amherst, Jan. 23, Feb. 20, Mar. 19, Apr. 16, 1972, 10 am to 5 pm. Charles Learoyd, 100 Mill Valley Rd., Hadley, Mass.

MASSACHUSETTS - M.I.T.

Indoor sessions at MIT Armory, Vassar St. at Mass. Ave., Cambridge, Mass., Feb. 26, Mar. 11, 3 pm to 6 pm. Contest Apr. 8, 1972, 1 pm to 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. ph. 358-4013.

MISSOURI - Kansas City

Twice-monthly sessions are held in Kansas City in a 20' gym with smooth ceiling. Interested fliers may call Bill Langley at 741-0113 for details.

MISSOURI - St. Louis

Indoor contests tentatively planned Feb. 6, Apr. 9 at Ft. Zumwalt High School, O'Fallon, Mo., 9 am to 5 pm. by Kirkwood Thermaleers. Mar. 5 at E. St. Louis Armory (34' ceiling), 2931 State St., E. St. Louis, Ill. 10 am to 5 pm, by McDonnell-Douglas FF Club. HLG, Delta Dart, PennyPlane, Easy B, Indoor Stick, Scale. Jim Bennett, 324 Helfenstein, St. Louis, Mo. 63119, ph. 314-962-5271.

NEW YORK - Long Island

Cat. I Record Trials (tentative) in March, 1972; Annual LIAMAC Indoor Meet at Cantiague Park, Hichsville, L.I., N.Y., April 30, 1972. J. G. Pailet, 30 Emerson Rd. Brookville, Glen Head, N. Y. 11545.

TEXAS - Dallas/Ft. Worth

The State Fair of Texas, a private non-profit corporation, will hold a multi-activity Spring Jubilee April 8 through April 16, 1972. Part of the activity will be an indoor contest with Indoor Stick, HLG, Scale, PennyPlane and Easy B. Bud Tenny, Box 545, Richardson, Tex. 75080, ph. 214-235-4035. Site details March issue.

FAI INDOOR REPORT

Indoor Survey Flop?

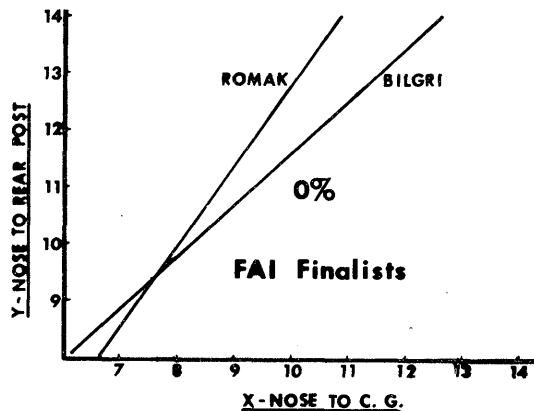
At the time of this writing, the survey mentioned in Jan. '72 INAV has been complete 34 days, and not one word of the outcome has leaked out of HQ. It seems likely that the outcome was not definitive, since there was considerable effort to steer the survey outcome by means of contrived and elaborate wording of the questions. In the last issue we dwelt upon disadvantages of multiple site Finals. It is interesting to note that FAI FF Finalist

opinions boiled down to an overwhelming 74% in favor of a single site, regardless of where it had to be held.

Just a few days ago, the AMA Executive Council finished their midwinter meeting. Discussion of a memo requesting full investigation of the Team Selection situation was neatly sidetracked by an assertion that a new document completely defining the situation was being prepared. The content was not revealed, so let's hope that it is more realistic than the last memo (p. 7, Mid-Dec. '71 Competition Newsletter). This memo dealt in generalities for the most part; other places specific suggestions were either highly impractical or logistically impossible. The overall implication was that two year programs would be necessary, yet we are seven weeks past the time when a two-year Indoor program should have begun. If a Program Administrator were to be appointed today, it would be wildly unrealistic to expect that a program could be designed, approved and announced before late May.

STATE OF THE ART

The "dynamic duo" for the month represents first and second place at the West Coast Finals, flown at Santa Ana. Bud Romak's design remained mostly unchanged during the program, but Bilgri started from scratch between the Semi and the Finals. He credits Bud Romak with inspiration for the design, and for considerable encouragement to finish up in time! A certain "family resemblance" is there, and the performances were quite close under similar conditions in the hangar. The CMOS chart shows 0% margin as usual; if the drawings were exact scale, Bilgri used an actual stability margin of +1.4% and Romak used -7%.

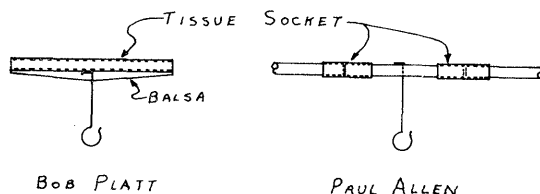


HINTS AND KINKS

Variable Pitch Prop Hubs

Bob Platt and Paul Allen have noted that better prop/model match is mandatory with one gram models. Each have suggested similar approaches to the problem - variable pitch hubs. Platt makes a balsa hub which mounts the hook, and adds a tissue socket rolled with white glue. Prop blades are then plugged into the socket and held by a little regular glue. To change either the pitch or a blade, he uses regular solvent which releases the blade without softening the white glue on the socket. Paul reports that "tack" cementing with regular glue and releasing with acetone works OK - the acetone evaporates before it has time to soften the hub.

Ed. Note: Neither Bob nor Paul mentioned two other advantages of socket-mounted blades. First, construction of the blades is much safer - has anyone dropped a block during the construction of the second blade? I have! Also, by using two sockets as Paul does, hub segments can be of different length to afford small changes in diameter as well as changes in pitch. It goes without saying that you should have a pitch checking jig to set up the blade angles!



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

RICHARD F. DOUGLAS, 5303 Calderwood Ln., San Jose, Cal. 95118
 BILLIE E. LANDRUM, 1166A Maple St., Ft. Dix., N.J. 08640
 DONALD G. MURRAY, 2205 West 6th Ave. #1, Vancouver, B. C. Canada
 LILBURN S. WATERS, Route 7, Box 263, Frederick, Md. 21701

Family Memberships

CURTIS L. LANDRUM, 1166A Maple St., Ft. Dix., N.J. 08640

Honorary Members

ANIANC MIRO, 4785 Castello, Venezia, Italy

NIMAS Postal Meet

One question has arisen with regard to rules for the Postal meet - the PennyPlane no-touch rule. Because it is likely that a no-touch rule would not be uniformly interpreted, the Postal will dispense with the no-touch rule. In case of contests using this rule, a second watch can be started and allowed to run to completion of the flight to get the time for Postal entry. Flights eligible through April 17 - get the entries in!

Recent Publications

Again we owe a vote of thanks to Walt Schroder for his April '72 Model Airplane News. This issue has a reprint of the article from Esquire - Ken Johnson's "Flip, Flop, the Ornithop." It is an entertaining article, and its appearance last year in Esquire brought out many enquiries, both to INAV and to indoor suppliers.

'72 Nats

Although final approval (by the Navy) has not been received, AMA planning for the '72 Nats continues on the assumption that approval will be granted momentarily.

Tentative Indoor site is the Brig. Gen. Richard L. Jones Armory; 5200 S. Cottage Grove Ave., Chicago, this is the same site as for 1970 and 1971. HLG will be 9 am to 3 pm, Monday, July 24; Indoor Scale will follow, 3 pm to 9 pm. On Tuesday, July 25, all Indoor Rubber events will be held from 9 am to 9 pm. Three unofficial events, PennyPlane, Peanut Scale and Navy Scale will be held from 3 pm to 9 pm, July 24, sharing air space with Indoor Scale models as in previous years.

All indoor HLG fliers should note that the time-sharing approach will be used again this year. This means that alternate periods of test flying and official flying will be enforced. The goal is to allow only those launching official flights on the floor during the official flying periods; this minimizes turbulence for the gliders in the crucial touchdown phase of the flight. Note that official flights may be made during test flying sessions at the contestant's option - but no testing during the official sessions.

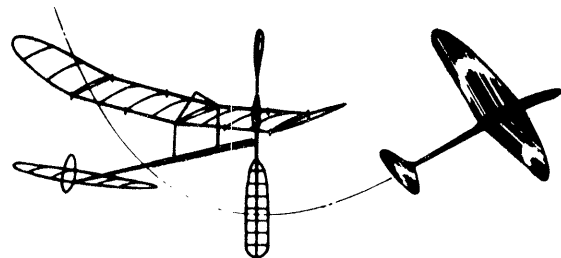
Thanks Again

Both Jody and I had plenty of time last month to enjoy the new stereo purchased in part with our "10th NIMAS Anniversary" present - we spent most of the past month in bed! That's mostly why this issue is late, and lots of letters, etc. are overdue also. Illness sure slows one down!

FAI INDOOR REPORT

Cranfield Charter

In order to encourage U. S. participation in the 1972 RC Pylon Internationals (held concurrently with the 1972 Indoor WCh), AMA is organizing a charter flight for both Indoor and RC participants (U. S. Teams will travel under other arrangements), including families of participants. Two possible periods are being considered: Aug. 19 or 20 through Aug. 28 or 29; and Aug. 23 or 24 through Labor



Day weekend. Those interested should register immediately with AMA HQ to obtain the latest information as it becomes available. The goal is about 40 people, with about 25 registered as of March 22, 1972. A special registration form appeared in the Mid-March Competition News; it is recommended that this form be used (copy OK) to register.

FAI Survey Results

The Mid-February Competition News contained a detailed report of the Indoor Survey recently taken. In summary, this is what happened: 46 of 62 possible surveys were returned. The program to select the 1974 Team will be a one-year program, beginning Jan. 1973. Planning for this program will be done during 1972.

Other "decisions" based on the survey: A single suitable site within 600 miles of Kansas City will be the first object when deciding upon a Finals site. In the event that no suitable site is available, regional Finals will be held. A specific example cited is the possibility of Santa Ana/Lakehurst split as in 1971, assuming it is decided that a hangar should be used.

Comments: Considerable commentary has been directed to the utter unsuitability of having only two sites, due to the inequality of choosing the third team member. More comments reaching here indicate considerable dissatisfaction with the arbitrary and inflexible nature of the survey itself, which essentially steered the outcome. It may be a good idea for participants in the next program to demand another survey dealing with some of these questions where inadequate choices were given.

Executive Council "Bombs Out"

In response to our editorial in Sept. '71 INAV, many FAI Indoor fliers contacted their Dist. VP's, requesting reform of the FAI situation and investigation of the situations leading up to the 1971 fiasco. In addition, we made direct appeal to the Executive Council with similar requests. The matter was an agenda item at the February Council meeting, but no discussion of grievances, problems or future direction was made. Instead, announcement was made of a document, almost ready, which would wrap up the whole problem. Apparently the document will be published without benefit of review by the Council, and the entire mess of 1971 will have been swept under the rug. We must anxiously await publication of this document!

One can only wonder why the Council abdicated its responsibility as outlined under Art. XI of the By-Laws. Since there is no procedure clearly spelled out for those who have grievances against HQ level administration, the Executive Council must be our court of last resort. Where now can we go?

CONTEST CALENDAR

CALIFORNIA - Santa Ana
 Record Trials at Santa Ana hangar, Apr. 16, May 14;
 also PennyPlane contest May 14, 1972. Contact Bob Gibbs,
 5005 Halifax Circle, Cypress, Cal. 90630 for details.

FLORIDA - Miami
 Indoor contest at the Youth Fair Exhibit Hall, 107th
 Ave. & Coral Way, Miami, Apr. 16, 1972. Peanut Scale,
 PennyPlane, Easy B, HLG. Tom Cooney, 4245 Braganza,
 Miami, Fla. 33133.

ILLINOIS - Chicago
 Indoor contests at Brig. Gen. Jones Armory, 5200 South
 Cottage Grove Ave., Chicago, Mar. 26, Apr. 22-23, 1972.
 Events Mar. 26 - HLG, PennyPlane, Paper Stick. Apr. 22 -
 PennyPlane, Paper Stick, Indoor Stick. Apr. 23 - HLG,
 Plastic Prop Jr. Event, Scale. CD - Pete Sotich, 3351 W.
 62nd Place, Chicago, Ill. 6-629, ph. 312-RE 5-1353.

MARYLAND - Frederick
 The Frederick Model Airplane Club flies weekly in a
 high school gym. Contact Bill Weaver, P. C. Box 1387,
 Frederick, Md. for info.

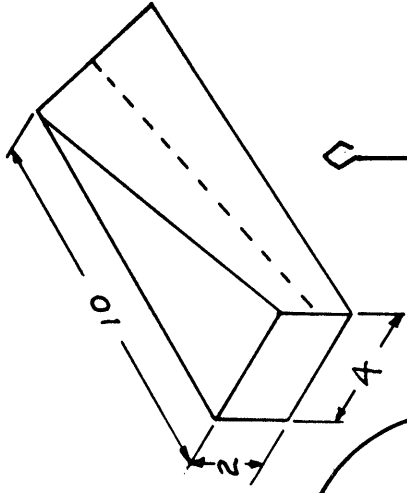
MARYLAND - Silver Spring
 Indoor sessions at JFK High School, 1901 Randolph Rd.,
 Silver Spring, Apr. 7, Apr. 14, Apr. 21, May 12, May 26.
 John Thornhill, Route 1, Mt. Airy, Md. 21771.

BILGRI 1971 FAI PROP

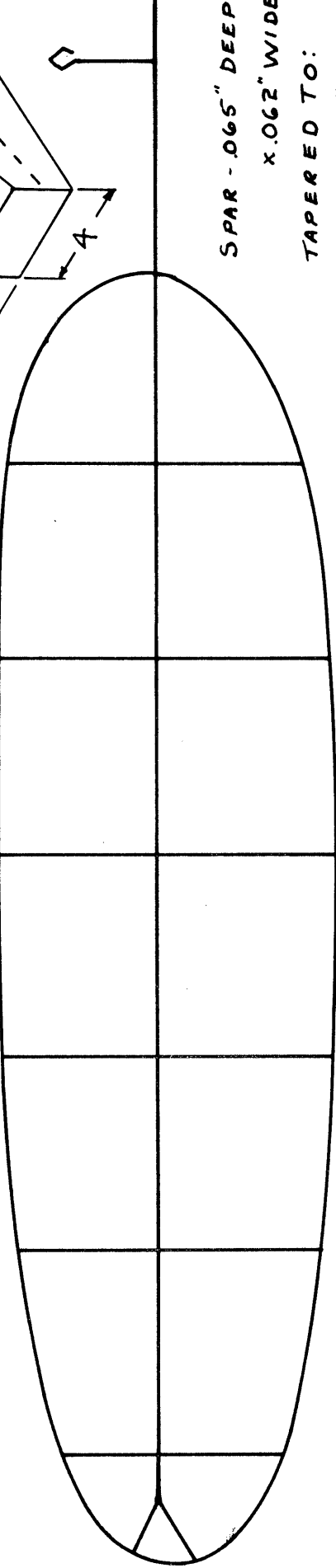
PROP WT. - .006 Z. W/BEARINGS

19 x 31

L.E.
PROP RIB



SPAR - .065" DEEP
x .062" WIDE
TAPERED TO:
.040" x .032" AT TIP

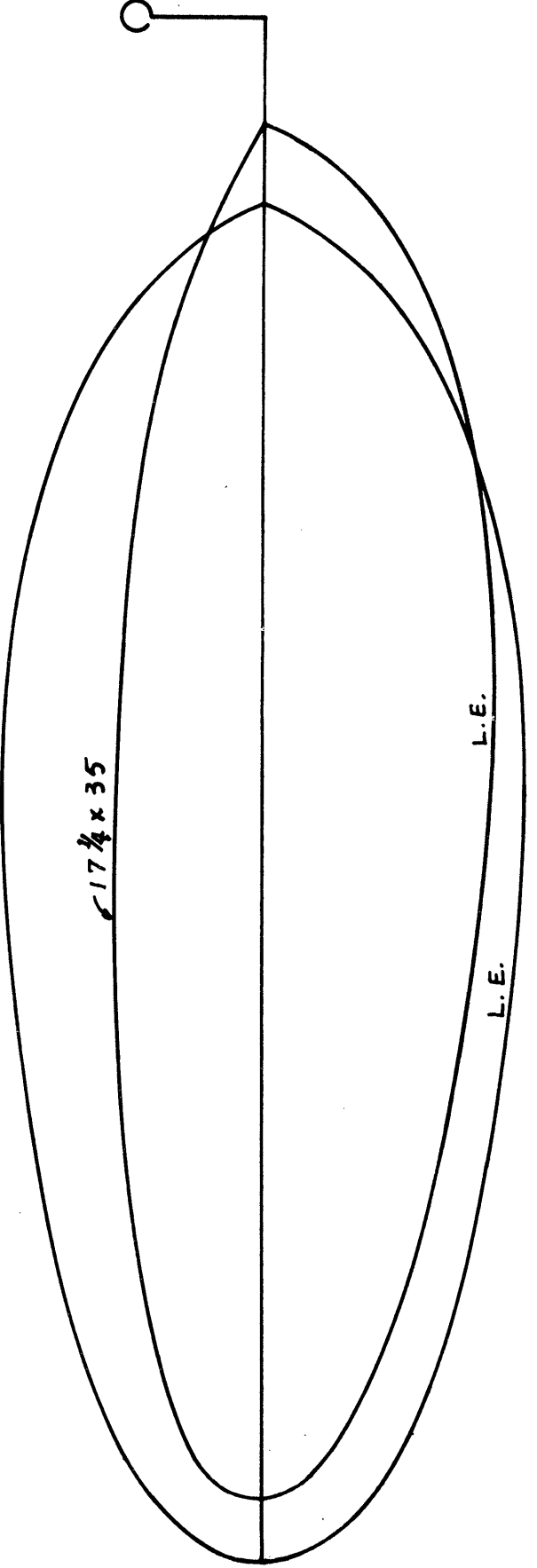


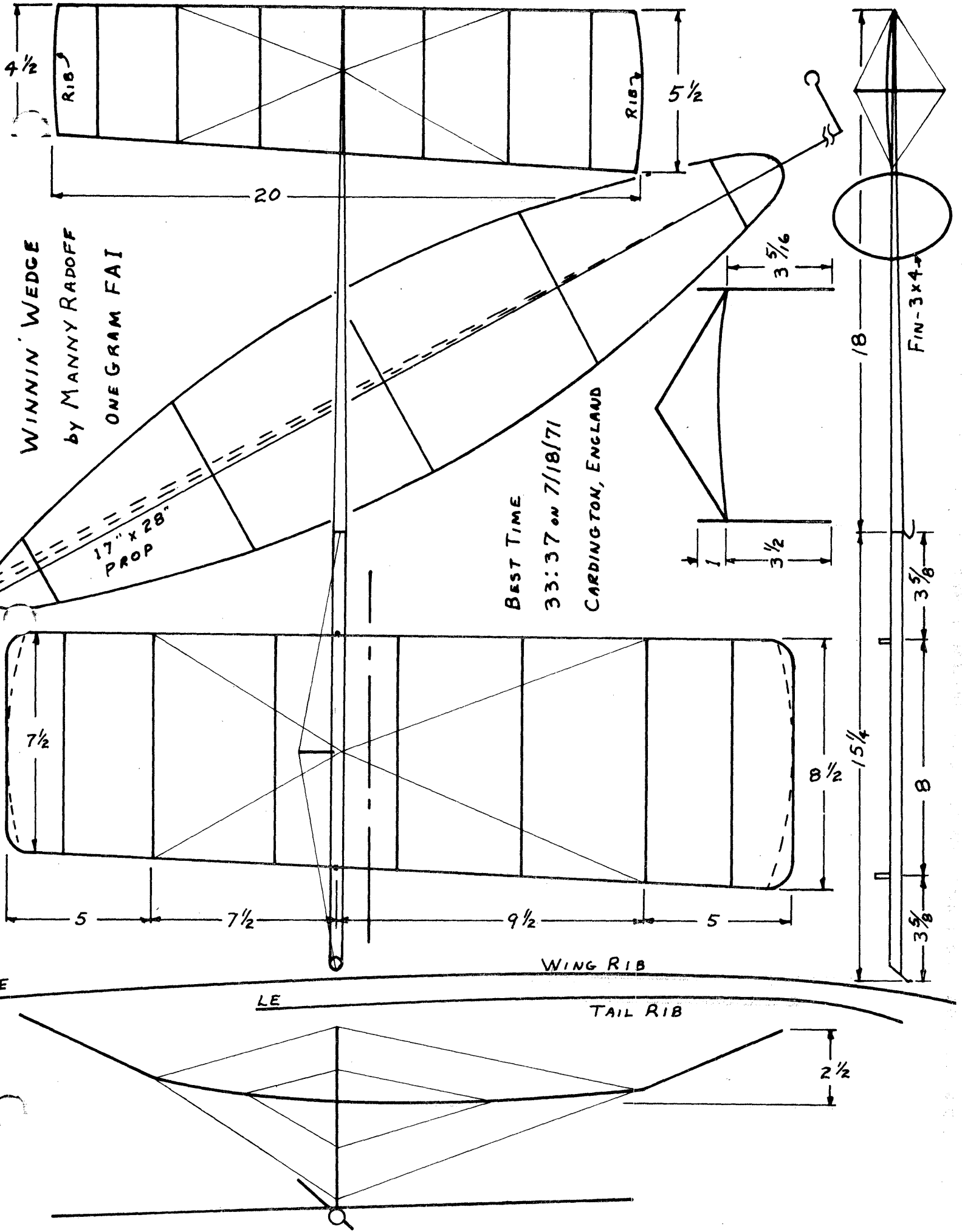
KOWALSKI PROPS

£ 18 1/4 x 33

£ 17 1/4 x 35

L.E. L.E.





MASSACHUSETTS - Amherst

Indoor session at Student Union of the University of Massachusetts in Amherst on Apr. 16, 1972. Charles Learroyd 100 Mill Valley Rd., Hadley, Mass.

MASSACHUSETTS - M.I.T.

Indoor contest at M.I.T. Armory, Vassar St. at Mass. Ave., Cambridge, Mass., Apr. 8, 1972, 1 pm to 8 pm. HLG, Indoor Stick, Delta Dart, Indoor Scale. Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. ph. 358-4013.

MISSOURI - Kansas City

Twice-monthly sessions are held in Kansas City in a 20' gym with smooth ceiling. Interested fliers may call Bill Langley at 741-0113 for details.

MISSOURI - St. Louis

Indoor contest Apr. 9 at Ft. Zumwalt High School in O'Fallon, Mo., 9 am to 5 pm, sponsored by Kirkwood Thermaleers. HLG, Delta Dart, PennyPlane, Easy B, Indoor Stick, Scale. Jim Bennett, 324 Helfenstein, St. Louis, Mo., 63119, ph. 314-962-5271.

NEW YORK - Long Island

Annual LIAMAC Indoor Meet, Apr. 30, 1972 at Cantiague Park, Hicksville, L. I., NY. Cat. II site; HLG, Easy B, Peanut Scale, Indoor Stick, Indoor Scale. CD Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L.I., NY.

OHIO - Cincinnati

Indoor contest sponsored by Southwestern Ohio Free-fighters at Univ. of Cincinnati fieldhouse, April 16, 1972. Paper Stick, PennyPlane, HLG, Peanut Scale. For info: Donald Wright, 559 Evanswood, Cincinnati, O. 45220.

TEXAS - Dallas/Ft. Worth

The State Fair of Texas, a private non-profit corporation, will hold a multi-activity Spring Jubilee April 8 through April 16, 1972. Part of the activity will be an indoor contest with PennyPlane and HLG on Saturday, Apr. 8, and Easy B and Indoor Stick on Apr. 9. Hours 10 am to 5 pm; site is Automobile Building in Fair Park, with 24' ceiling. Bud Tenny, Box 545, Richardson, Tex. 75080, ph. 214-235-4035.

WASHINGTON - Kent

The Third Annual Boeing Management Association Model Aeronautics Scholarship Contest will be held June 24-25, 1972 at the Boeing Space Center, Kent, Washington. Indoor HLG and Easy B events will be held along with outdoor FF and Control Line events. Contact George Brownfield, 8330 12th NW, Seattle, Wash. 98107, ph. 206-655-8606.

STATE OF THE ART

Manny Radoff's "Winnin' Wedge" is a very interesting airplane which hasn't really been flown to top potential yet. Even so, it holds the current one gram record for Cardington, while flying at a weight of .040 oz. with a motor weighing .040 oz. Due to the 50% stab area set up in a relatively high aspect ratio, and an extra long tail boom, the 66% CG location left the model with a +18% stability margin. The relatively small prop and 1:1 rubber ratio used in Cardington left no reserve power for poor conditions at Lakehurst, so Manny plans to increase rubber weight and go up to 20" x 33" for prop size, while setting up for a lower stability margin. It is my prediction that these changes will make this design fly better; more important, there will be more "margin for error" under poor flying conditions. In its present form the model is an excellent ship for ideal to excellent conditions.

Some comments about the drawing: the wing offset as shown does not match the dimensions; the centerline drawn on the wing plan shows the proper location of the cabane and fuselage. The original square tip is shown, but this was ruled out as being over span limits at Lakehurst. So, a dotted line shows a 32.5 cm radius creating a tip which has to meet specs! This ruling is somewhat controversial and should be ruled on - at Santa Ana a similar planform was allowed to fly.

Manny has these comments: All ribs are inserted backwards; one day the thought occurred to me that the sharper curve in the rear would act like the flap on a commercial airliner or the turned down trailing edge used on some outdoor models. Compression ribs are used only at the dihedral break and are the solid tapered variety instead of built up. The model flies well with the wing centered, but turns better under power burst with the offset shown.

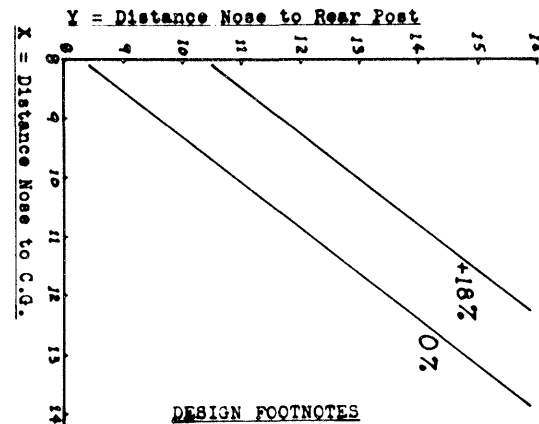
It was flown with about 1/8" washin. The wedge idea was intended to control torque, but I played it safe as I don't have much building time. Note that the front spars angle forward to the wide tips and the rear spars are perpendicular to the stick and boom.

Rubber size was .045" x 19" loop; the small size was possible because Sal Cannizzo supplied a piece of great quality rubber. Also, the small prop size with relatively low pitch reduced rubber requirements.

The center section of the wing has 1/2" of stressed dihedral to permit an expansion of the spars in an arc. Last year's trip to Cardington with a straight center section resulted in a warped rear spar. Finally, the boom had a slight warp which gave the stab about 2° negative incidence.

Note that the prop spar location is skewed (dotted lines) on the plan; make three props with #2 having the spar offset 1/16" at the tip and #3 having 1/8" offset at the tip.

Note: The CMOS diagram is turned 90° (space limits).



On page 3 there appear prop drawings from Joe Bilgri and Dick Kowalski. The Bilgri information is supplemental to the model plans contained in the Feb. '72 INAV. Dick's prop drawings were furnished in answer to a query about design changes made for the Finals last Fall. Essentially speaking, the basic design remains unchanged from that shown in the June '71 issue, except as noted in the comments below.

Dick made these remarks about his model changes: All changes were detail changes rather than configuration changes except for increased wing offset and prop changes to adapt the ship to hangar flying. Wing offset was increased to 2" semi span difference; the 7 5/8" center panel dimension became 8 1/4" and the 6 7/8" became 6 1/4" with no change in the tips. This was done to control higher torque levels needed in the hangar, while minimizing wing twist. With the original 3/4" wing offset, nearly 1/2" of spanwise twist was needed. The 2" offset wing handles full torque with less than half as much twist. The excessive twist destroyed optimum span-wise elliptical loading, and the new setup has restored proper loading.

The original 17 1/2" x 35" props were helical pitch progressive flare types with maximum blade width of 2.3". These were changed to 18 1/2" x 33.8" average pitch; non-helical pitch distribution with blades symmetrical about the spar and just under 3" wide. Prop pitch increases toward the hub, with changes set by mathematical analysis similar to velocity focusing. Both the pitch and blade area changes were based on flight measurements made over 4th of July at Lakehurst.

The wing changes give better control over the climb pattern under full torque, with no thrashing around as was experienced over 4th of July. The nose goes up steeply now and the climb is slow, smooth and steep.

The prop changes improved performance from launch RPM about 100 and cruise about 60 RPM, to about 72 RPM launch and below 50 RPM in cruise. This was with no change in rubber cross-section even though the loop was shortened 1" at the Finals.

THE LAB

Any Ideas?

In the process of operating the automatic rubber test apparatus (Sept. '71 INAV), some S-hooks were made from copper wire. A rash of motor failures - all at the hook - followed. Similar results followed with motors hooked to brass brazing rod. Has anyone an explanation why motors break under relatively low stress on copper or brass and not on S-hooks made from plated steel wire (paper clips)?

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

SAL CANNIZZO, 20 Cooterbridge Ave., Staten Is. NY 10309
 TOM COONEY, 4245 Bugarca, Miami, Fla. 33133
 JACK E. COWART, 119 Florida Title Bldg., Jacksonville, Fla. 32202
 RUSSELL D. FULLER, RR#2, Box 85, Lake Canyada, Davenport, Iowa 52804
 MICHAEL FULMER, 1600 W. Walnut, Apt. 8, Visalia, CA 93277
 R. K. GERLITZ, 2225 Forest Dr., Waynesboro, Va. 22980
 FREDERICK R. HAMLEN, Whiting Rd., Dover Mass.

'72 Nats

It is almost certain that the 1972 Nats will not be held. Shortly after the March issue, word was received that the hoped-for approval by the U. S. Navy would not be granted, and the Navy bowed out of their 25 year sponsorship of the Nats. Since that time AMA HQ and AMA President John Clemens have explored several possible alternatives to no avail. Planning had been going on to pick up on this situation, but the cancellation came too late to implement these plans this year. It is certain that there will be a '73 Nats, probably sponsored totally by AMA at one of two or three places already in planning.

At this time we must relax and remember with humble gratitude 25 years of Navy sponsorship of the Nats. In that time (and I remember with pleasure the first two "Navy" Nats, and most of them since), the Nats has grown to the wonderful competitive spectacle and fellowship we have come to take for granted. As a member of the AMA Nats staff nine years, I have been in an excellent position to understand the tremendous upheaval and expense a Nats meet causes on a Navy base. It is no exaggeration that the Navy did for us what we could never have done for ourselves over the past 25 years. At this time, it would be a very nice thing if thank-you letters be sent to the Navy, expressing our gratitude for their help in past years. Address any such letters to: W. Thompson, Rear Admiral, U. S. Navy, Chief of Information, Dept. of the Navy, Washington, D. C. 20350.

NIMAS Postal

This is to remind you that postal flights made through April 17, 1972 are eligible for entry in the '72 Postal. Entries have passed the 40 mark, which probably will make this our largest postal ever. Please mail in your entry promptly!

Rubber Stripper Offered

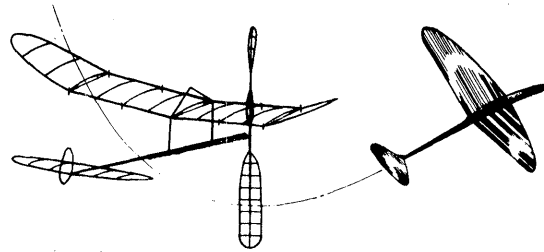
Tom Vallee has worked with a machinist to design and produce an excellent Roto-Shear type rubber splitter. Such a machine slices rubber with a uniform shearing action, producing excellent cuts of good uniformity. The price of these strippers will depend upon the number of orders received for each production run. If three strippers are ordered (three separate orders, you don't have to buy all three!), the price will be \$50 each. For six orders, the price drops to \$45; at nine orders the price drops to \$40.

If I understand Tom's memo correctly, the standard cutter assembly will cut .052, .058, .062 and .068 pirelli with one pass through 6 mm rubber. Other "standard" cutters make .065, .075, .030 and .070 or .050, .055, .040, .045 and .050 cuts. These two cutters are \$15 each when ordered with the basic stripper or \$16 ordered separately. Six other cutter head designs for "normal" 6 mm pirelli and six for "wide" 6 mm pirelli (over .255" wide) are listed. Tom says "Please note that these are extremely useful to the serious modeler for making accurate, repeatable cuts for critical applications, but that such a gadget is not necessary for successful contest flying."

Tom's address is 444 Henryton So., Laurel, Md. 20810. Drop him a line if you are interested; no production run can be made unless a minimum of three orders are received.

Dick Black Memorials

A long time ago INAV members began a memorial to Dick Black, in the form of tape-slide lectures on indoor topics



of all kinds. Two of these lectures were completed and have been enjoyed by many clubs, but we need many more to complete the job we started. The reason there aren't any more topics available is simply a lack of time. Each individual slide has to be photographed in color, which calls for either a special setup to stage the shot, or an eager photographer standing by while someone else is building a model or doing something else we need to demonstrate. Several individuals and clubs have offered to cover a particular topic such as indoor HLG, Easy B props, and other topics, but none have yet arrived in my mailbox.

So, let's try again! We need color slides on any part or aspect of any of the following suggested topics for Dick Black Memorials:

- | | |
|-----------------------------------|---|
| 1. Covering with microfilm. | 10. Patching microfilm. |
| 2. Rolling sticks and booms. | 11. Flight trim (movie might be best here.) |
| 3. Making built-up surfaces. | 12. Winding models. |
| 4. Covering with condenser paper. | 13. Balloon steering. |
| 5. Rolling and mounting sockets. | 14. Rubber stripping. |
| 6. Making all-balsa props. | 15. Packing indoor models for travel. |
| 7. Making built-up props. | |
| 8. Bending wire fittings. | |
| 9. Indoor bracing. | |

So, as you guys build new models, patch or repair, or make your flights in the NIMAS Postal, take some slides and we can begin to assemble more of these very effective training aids.

FAI INDOOR REPORTCranfield Charter

Insufficient interest was shown by potential users of AMA's charter flight to Cranfield Aerodrome in support of the '72 Indoor WCh and an international RC Pylon meet. In making the announcement cancelling their involvement, AMA HQ noted that the current "best buy" in charters to London is offered by International Travel Companions, Inc. P. O. Box 107, Cochranville, Pa. 19330, ph. 215-869-3500. Their offer is for a minimum of 15 persons, \$304 round trip airfare, Philadelphia to London and return. They can also arrange low cost lodging and travel assistance if this is desired.

AMA will make arrangements for food and lodging at Cranfield for Aug. 25-28, at \$75 per person. Final details of this will be made available soon.

RECORDS? MAYBE!

CAT. I RECORD TRIALS, Locust Valley, NY, Mar. 24, 1972
 33' ceiling
 Junior HLG - 0:49.2, Dan Aggers
 Senior RCG Stick - 3:00.4, Ron Stransky
 *Junior Helicopter - 0:59.0, Richard Whitten
 *Junior Helicopter - 2:22.6, Dan Aggers

*Both flights were made the same evening, and applications were filed on both. The usual practice is to award both fliers certificates, with the higher time standing as the new record.

CONTEST CALENDAR

CALIFORNIA - Santa Ana
 Record Trials at Santa Ana hangar, Apr. 30 (changed from Apr. 14) and May 14, 1972, PennyPlane and HLG contest May 14, 1972. Bob Gibbs, 5005 Halifax, Cypress, Cal. 90630, 714-527-0251.

ILLINOIS - Chicago
 Indoor contest at Brig. Gen. Jones Armory, 5200 South Cottage Grove Ave., Chicago, April 22-23, 1972. Events Apr. 22 PennyPlane, Paper Stick. Apr. 23, HLG, Plastic Prop Jr. event, Scale. Pete Sotlich, 3851 W. 62nd Place, Chicago, Ill. 60629, ph. 312-RE 5-1353.

MARYLAND - Frederick

The Frederick Model Airplane Club flies weekly in a high school gym. Contact Bill Weaver, P. O. Box 1387, Frederick, Md. for info.

MARYLAND - Silver Spring

Indoor sessions at JFK High School, 1901 Randolph Rd., Silver Spring, Apr. 21, May 12, May 26. John Thornhill, Route 1, Mt. Airy, Md. 21771.

MISSOURI - Kansas City

Twice-monthly sessions are held in Kansas City in a 20' gym with smooth ceiling. Interested fliers may call Bill Langley at 741-0113 for details.

NEW JERSEY - Lakehurst

Flying sessions at Lakehurst Hangar #5, April 23, May 7, May 21, June 4, June 18, Aug. 6, 1972. Possible dates in Hangar #1 in June and July, probably night sessions. C. V. Russo. 143 Willow Way, Clark, N. J. 07066.

NEW YORK - Long Island

Annual LIAMAC Indoor Meet, Apr. 30, 1972 at Cantiague Park, Hicksville, L.I., NY. Cat. II site, HLG, Easy B, Peanut Scale, Indoor Stick, Indoor Scale. CD Bill Dunwoody, 985 Ft. Salonga Rd., Northport, L.I., NY.

WASHINGTON - Kent

The Third Annual Boeing Management Association Model Aeronautics Scholarship Contest will be held June 24-25, 1972 at the Boeing Space Center, Kent, Washington. Indoor HLG and Easy B events will be held along with outdoor FF and Control Line events. Contact George Brownfield. 8330 12th NW, Seattle, Wash. 98107, ph. 206-655-8606.

CONTEST RESULTS

THERMALEERS FLY IN, Feb. 6, 1972, Ft. Zumwalt High School, Fallon, Mo. Cat. I.

ROG Stick (JSO)		AMA Scale (JSO)	
1. Jeff Hardcastle	3:51	1. F. T. Stark	71 pts.
2. Rosey Tryon	3:02	2. Art Biehl	57
		3. Cecil Cook	38

Junior Easy B		Sr.-Op. Easy B	
1. Jeff Hardcastle	4:15	1. Tony Schott	5:20
2. Doug DePaul	3:00	2. Jim Pears	4:53
3. Kevin Porter	2:23	3. R. E. Peters	2:34

Junior HLG		Sr.-Op. HLG	
1. Brent Frost	0:42	1. Dick Hardcastle	0:54
2. Jeff Hardcastle	0:41	2. Dale Frost	0:50
3. Rosy Tryon	0:30	3. Paul Tryon	0:49.8

Indoor Stick (JSO)		Simple Stick (Jr. only)	
1. Dick Hardcastle	4:10	1. Danny Biehl	0:59
2. Marion DePaul	3:54	2. Tim Potts	0:58
3. Pat Wood	3:30	3. Doug DePaul	0:55

Category High Time		Age Group High Time	
Tony Schott - Rubber		Tony Schott - Open	
Dick Hardcastle - HLG		Pat Wood - Senior	
Tom Stark - AMA Scale		Jeff Hardcastle - Junior	

MILWAUKEE AEROMODELERS' Chicago Indoor Contest, 4/20/72 Forest View High School Girl's Gym Cat. I

Junior PennyPlane (3 best)		Open PennyPlane (3 best)	
1. Eric Miller	11:14.8	1. Chuck Markos	16:07.8
2. Al Stone	11:03.1	2. Howard Haupt	12:42
3. Steve Bandt	8:32.5	3. Ken Kraemer	11:37.3
4. Keith Gordy	8:14.9	4. Leonard Danber	10:03
5. Scott Wisniewski	7:08.2	5. Jim Noonan	9:54

Jr. Class A HLG		Open Class A HLG	
1. Keith Gordy	0:54.2	1. Mark Kummerow	1:02.8
2. Scott Wisniewski	0:52.9	2. Gordon Wisniewski	1:00.5
3. Fritz Curth	0:49.5	3. Chuck Markos	0:59.2
4. Rich Jaros	0:45.8	4. Charlie Sotich	0:57.2
5. Bill Schuh	0:39.5	5. Ken Krempetz	0:52.7

THE LAB

For Want of a Knot

The torque tester (Sept. '71 INAV) has been busy with some wind-to-break tests on pirelli. A major problem has been failure at the knot; early tests failed at lower than expected stress. Careful observation showed that the knot was slipping to one side on the hook, so that all the stress was concentrated in one strand. A special clip was used to hold the knot straight, and failure stress went up quite a bit. However, 33 motors out of 50 (66%) still failed at the knot; both strands failed simultaneously, amputating the knot. As an example of the stress involved, a piece of .067" pirelli failed at .988 inch ounces torque level!

So, is there some method of making a loop besides a knot? The other end of the motor is under the same stress where it goes around the hook, but there has never been a failure there even though this is in the form of a single strand. Any ideas?

FOLLOW-UP

The March '72 issue related how Radoff's Winnin' Wedge had wingspan problems at the Team Selection Finals. That is, it was claimed that the wing tips should have a radius of either 65 cm or 32.5 cm. It is my personal opinion that this interpretation is in error, and the following remarks by Ray Harlan state the case for the legality of absolutely square tips:

"Wingspan is the lateral extent of the aircraft, lateral being normal to the fuselage reference line. Hence, any diagonal measurements are not within the meaning of wingspan. The shape of the tips is irrelevant. Note, of course, "extent" refers to the projected planform, as the wingspan is a single, rectilinear measurement."

And Again

The March '72 issue related sad experiences with copper and brass hooks used with pirelli in torque tests. Fudo Takagi relates this experience which sheds some light on the problem:

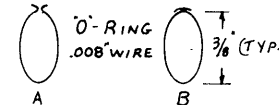
"After a flying session I stuck some wing rubber bands in my sweater pocket which happened to have some pennies in it. Several days later I used the sweater and found the pennies and rubber bands stuck together. The rubber bands were sticky and the pennies had turned black where the rubber had touched them. Also, the bands were weak and had lost their elasticity. Apparently the sulphur in the rubber had combined with the copper, turning it black to copper sulphate. This unvulcanized the rubber a bit to weaken it." Since then, I have never used anything having copper in it in contact with rubber motors."

It would seem the same precautions would apply on cold days - don't warm your motors in the same pocket where you carry your change!

HINTS AND KINKS

Wire O-Rings

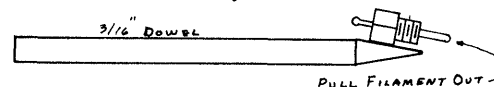
The Mar. '67 INAV hinted that a rubber O-ring slipped onto the motor before tying the knot would simplify hooking and unhooking the motor, besides permitting hook-up without losing turns. Fred Weitzel suggests that small wire can be formed into similar fixtures. The sketch below shows how: form an oval with small hooks, then hook the hooks and squeeze them shut. Relative weights: rubber O-ring - .002 oz., wire (010" wire) - .00045 oz., (.008" wire) - .00035 oz. Very small plastic sleeving 1/4" long slipped on the ring adds .0002 oz; I doubt it helps much, but it makes me feel better!



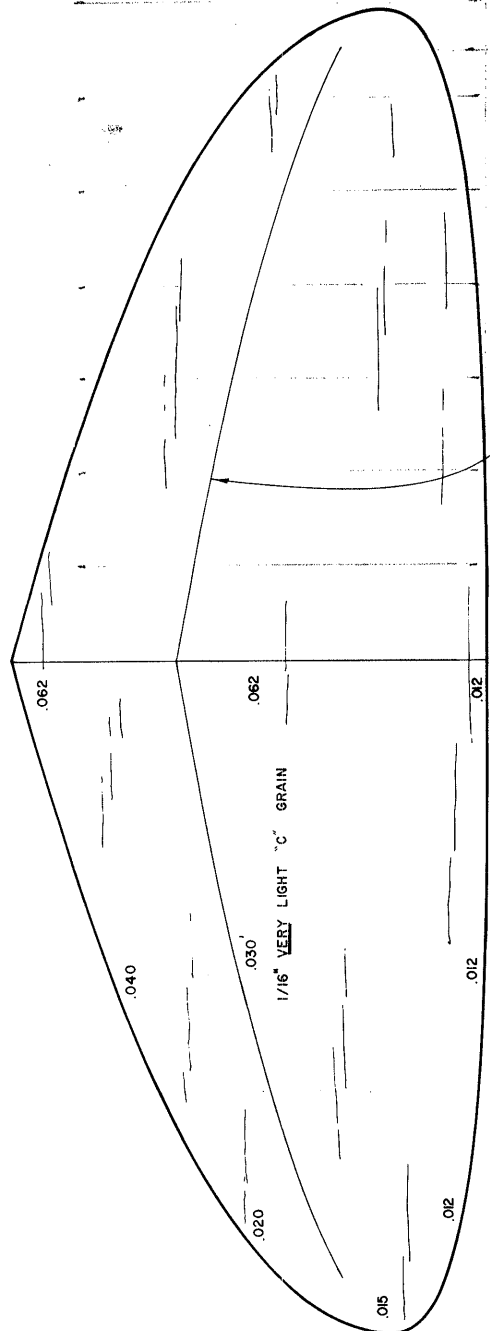
The above was reprinted from an early INAV. Since that time, several seasons of flying have confirmed the practicality of using such "O" rings. A good source of wire for these hooks is #00 stainless steel insect mounting pins (cat. #14 W 0145), from Ward's Natural Science Establishment, Inc., P. O. Box 1749, Monterey, Cal. 93942. These pins are also ideal for helping with emergency field repairs, since they are .008" in diameter with a very fine tapered point which will pin through even rib wood without splitting.

Hot Wire Microfilm Trimmer

In the Sept. '66 INAV, there appeared a sketch of a hand-held hot wire microfilm trimmer designed by Bill Bigge. It used a "C" size flashlight battery for power and wire between .001" and .006" in diameter as heater. This type of device is very portable, but slightly fragile at the cutting tip due to the fine wire. Bob Dunham has suggested that a glow plug filament would do well, and made a device like that shown below. The glow plug was mounted on a sharpened dowel with the filament pulled out to a point as shown. He found that a weak 1 1/2 volt battery (telephone battery or equivalent) gave the proper heat for efficient cutting, while a new battery got the filament so hot that the wire made a wide cut. Perhaps a single cell Ni-Cad battery would be ideal?

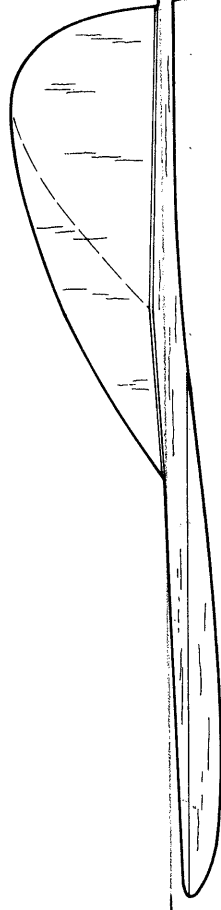


April 72

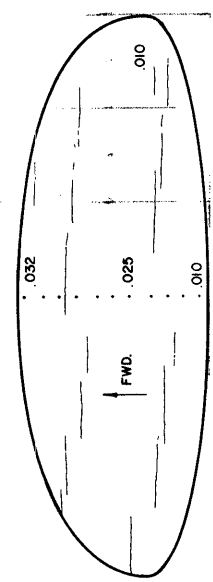


CUT HALF THROUGH WING AND
BREAK IN 3/32\" UNDERCAMBER.
USE WHITE GLUE IN THE BREAK
AND UNDERNEATH.

NOTE: WING HALVES ARE NOT IDENTICAL



WEIGHT 3.83 gm. OR .135oz.



STAB. ULTRA-LIGHT 'C' GRAIN



BOXY 3

INDOOR HANDLAUNCH
DESIGNED BY LARRY RENGER
11-13-70

Handwritten notes on the right margin, including a date "7.20.72" and other illegible text.

STATE OF THE ART

This month's plan is of Larry Renger's "Boxy 3". The Original "Boxy" appeared several years ago, after winning a local meet within hours of its conception. Boxy 3 was built after Larry moved to the Denver area, and won two meets there.

QUESTIONS AND ANSWERS

44. I would like to see some "rule of thumb" for variations in rubber weight and/or length as a function of air temperature, humidity, prop pitch and ceiling height.

Hal Crane offers the following comments:

High humidity hurts performance by increasing model weight; it also usually softens the motor stick so that less rubber can be carried safely.

Rubber puts out more power or will take more turns without breaking in warmer weather.

Rubber may be hard or soft (high torque/turn or low torque/turn), and may vary in quality. (Ed. note: The apparent maximum variations in pirelli are: energy storage - ±15%; hardness - ±25%.) These are unpredictable variables which call for advance testing before a flying session. I guess that a medium rubber (rated for both number of turns and torque output) is best for indoor. Rubber selection is most important and easy to goof on, especially without advance preparation.

The easy way to long Cat. I flights is to have the loop short - equal to the hook span before break-in. (If the loop is shorter than the hook span, it will overstress the stick.) Use a prop and wing loading combination such that a 15" loop of rubber which will take over 1600 turns will land with about 300 turns in a 20' ceiling. With a strong wing, launch torque can be 0.3 inch oz. Wind to 1600 turns, back off to 1500 turns. With a 60 rpm average, a ceiling scrubbing model would then have 20 minutes worth of turns. The 60 rpm average should be easily achieved with a large diameter, moderate pitch prop such as an 18" x 30".

That same model should make a no-touch flight of about 10 minutes by launching with 500 turns instead of 100 turns backed off. (Ed. note: For a precision method of altitude control, see "Slithery Dee" in the July '71 Model Airplane News, or "Choice of Rubber Motor For Low Ceiling Indoor", First NFFS Symposium Report.)

Again, that same model should fly about 30 minutes in Cat. III using a longer (18") loop of rubber wound to 0.5 inch oz. or more torque (launched at 0.4 to 0.5 inch oz.) and at least 1800 turns. Use a slightly lower pitch prop if needed to get 'way up. It would be desirable to have a stronger and perhaps longer motor stick for Cat. III. The wing can be lighter if no scrubbing or girder bumping is intended.

The flier should realize that launch torque may be as low as half the last meter reading if he winds on a fixed torque meter and has to release turns on both ends to attach the motor to the model. By using wire "o" rings at each end of the motor, a wound motor can be transferred to the model without loss of turns. If one "o" ring is used at the rear hook, the motor can be wound on the torque meter, turns let out to hook to the prop, then a torque reading taken just before hooking the rear "o" ring to the rear hook.

Wing loading of the model is the total weight divided by the wing area. Try to keep the model light without being too weak. Once the model is built you can vary the wing loading quite a bit by changing rubber. With a very good model the ultimate flight will come with rubber rubber weighing 1.5 times the airframe weight, which gets harder to adjust. It is more dangerous to the motor stick and to the wing during scrubbing, and much harder on the nerves! If the rubber weight equals the model weight, this provides good, and sometimes record results.

To summarize prop/rubber changes:

1. With inadequate climb, or if the model lands with too many turns, try reduced prop pitch or a shorter loop to get lower total model weight. If the rubber weight equals the model weight, change to shorter loop of wider rubber, since much lighter rubber will probably hurt performance more than the reduced weight will improve performance.
2. If the model seems overpowered, increase prop pitch, lengthen the loop, or use same length loop of smaller rubber (remember to keep rubber weight at least equal to model weight).

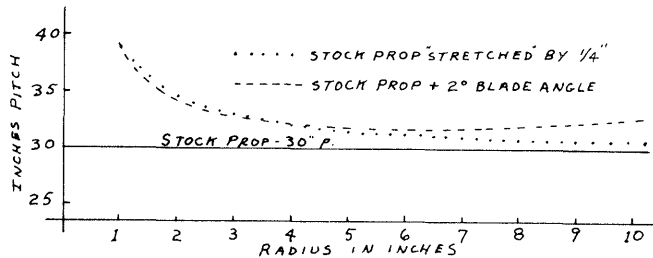
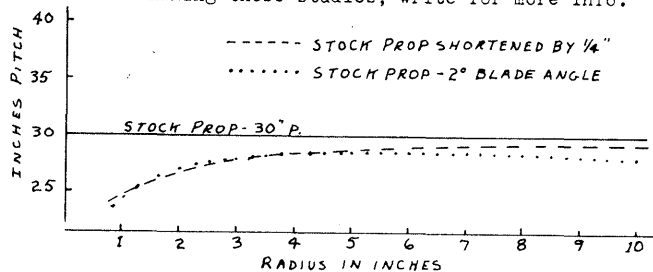
PROP FORUM

It is not uncommon for adjustable pitch props to be used on indoor models; it is even more common to tweak the blades to lower or different angles during changing flying conditions. What is not often appreciated is how drastically the pitch changes for just a small change of blade angle. Two graphs below illustrate those changes which results from change of blade angle via tweaking and also what happens if the spar is shortened or lengthened while holding the blade elements at the same angle.

The top graph illustrates the change in pitch distribution resulting from twisting the blade to a lower angle by 2° (dotted line), and the change resulting from shortening the spar on each blade by 1/4" to give 1/2" less diameter (dashed line). The solid line represents the stock prop with standard or helical pitch distribution which results from building the prop on a standard carved block.

In similar fashion, the lower graph shows the changes due to twisting in 2° more blade angle and the changes due to lengthening each blade 1/4" while keeping the blades at the same angle. Note that the dotted line and dashed line represent the opposite condition from the graph above - sorry about that!

It is easy to see that drastic changes in pitch will result from very small changes. This study is not intended to discourage tweaking, but to call attention to the need for small changes or to alert fliers to just what is happening when they tweak pitch. It is a valid and valuable technique and probably needs systematic study. It is possible to make these studies graphically, and it only takes about ten minutes per condition. If anyone is interested in making these studies, write for more info.



AIRFOILS

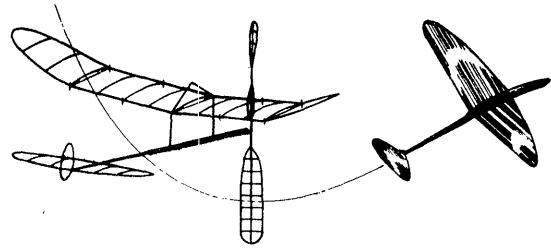
Ted Gonzoph offers the following information for those who use arc airfoils. The chart displays airfoil thickness and a corresponding multiplication factor to be used as follows: Wing chord x Factor = airfoil radius. As an example, 6" chord of 5.5% thickness would require 2.299 x 6 = 13.8" radius.

% Thick.	Factor	% Thick.	Factor
4.0	3.145	7.0	1.821
4.5	2.800	7.5	1.704
5.0	2.525	8.0	1.602
5.5	2.299	9.0	1.434
6.0	2.113	10.0	1.300
6.5	1.955		

Ted included the 9% and 10% figures "for the phone booth crowd" - those who fly in either very small or very low sites. He has noted (in common with others including Stan Chilton) that the thicker sections give a fantastic cruise in low ceilings, but often give difficulty in high ceilings. For another side to thick vs. thin airfoil for high ceiling flying, see DESIGN FOOTNOTES in May '71 INAV.

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

Dr. JOHN B. MARTIN, 3227 Darwin St., Miami, Fla. 33133
 ALAN RICHES, 1568 Celeste Crescent, Port Coquitlam,
 B. C., Canada
 JOSE M. TELLEZ, P. O. Box 733, Laguna Beach, Cal. 92652

Ernie Kopecky Ill

Manny Radoff has asked that friends of Ernie Kopecky drop him a line at home, as he has been sick. Ernie lives at 38 Pawn Lane, Watchung, NJ 07060, and enjoys hearing from his friends during his enforced idleness.

'72 NATS

The 1972 Nats is back on, on the dates and schedules announced in the March '72 INAV. This information, and other pertinent info, will be repeated in the June issue. Briefly, the Indoor Nats will be on Monday, July 24 and Tuesday, July 25, 1972 at the Brig. Gen. Richard L. Jones Armory in Chicago; this was the '70 and '71 Nats site.

Indoor Weighing Scale

Stan Chilton passes on the following: "For indoor flyers who want a professional weighing scale, I suggest an Ohaus triple beam balance Centogram scale, model CG-311. It is available through lab suppliers, school supply distributors, etc., and costs around \$30. It will weigh to within .00015 oz. accurately with repeatable readings over long periods of time, and is fast to use."

Last Call!

Tom Vallee has announced that at least one production run of his rotary rubber shear. If anyone would like to order one (details in April '72 INAV), contact Tom very soon at 444 Henryton So., Laurel, Md. 20810.

PennyPlane No-Touch Rule

In response to a question about background of the no-touch rule for PennyPlane, Charlie Sotich made the following remarks: "This was originally intended to make up for the differences in types of ceilings, so a building with a smooth ceiling would not give an advantage to models being flown against those in a place with a lot of girders (in postal competitions). It seems to have stuck for our Cat. I flying and got carried over to the Nats last year. At the April 21 Aeronuts meeting we voted to drop the no-touch rule for our Cat. II meets in the future."

NIMAS/NFFS Meeting

A large number of both NIMAS and NFFS members will be near Dallas during the FAI FF Team Selection Finals over 4th of July weekend. Would it be possible that an informal "bull session" type combination meeting could be held? How about all you NIMAS types dropping a card to Box 545 and telling us you are coming and what you think of this idea???

FAI Span - Once Again

Two recent issues have noted some difficulty with the span measurement on Radoff's "Winnin' Wedge" model, due to the square tips. Subsequent remarks indirectly implied criticism of Bill Bigge, who was CD of the Eastern Finals. One of the major reasons Bill was asked to assume the job was the knowledge that he was a careful and thorough CD, with the ingrained habit of being fully cognizant of all applicable regulations. This is a habit all CD's should cultivate, along with the habit of never making a decision without consulting the current Rule Book. So, even though it came out that way, no criticism of Bill was intended and I apologize for the way it all sounded.

Now: Bill points out that Sec. 1.4.5 in the FAI Sporting Code defines wingspan as "the maximum distance between two points terminating the wing." Quite clearly, this is ambiguous enough to give rise to more than one interpretation. This weekend, during a Dist. VIII FF meeting, the matter was discussed with Murray Frank (Dist. VIII

VP) and some FAI types. Murray related having heard an interpretation of this rule to the effect that the mid-points of square tips would be the location of the points in question.

The moral of this question/mini-tempest is to not use square tips on an indoor model which will be checked to FAI specs. Ordinarily, the matter would not arise on indoor models due to the poor structural efficiency of square tips. On models with specified high wing loadings such as PennyPlane, weight penalty would be inconsequential. However, current theory indicates that a square tip is aerodynamically more efficient and may be beneficial on PennyPlane. For one gram models, it is doubtful that aerodynamic gains of a square tip would outweigh poor structural efficiency of the square tip.

CONTEST CALENDARCANADA

Record Trials on June 4 and indoor contest July 1 in 90' AgroDome, Port Coquitlam, British Columbia. Contact Alan Riches, 1568 Celeste Crescent, Port Coquitlam, B.C., Canada for details.

FLORIDA - Miami

Indoor contests at 107th Ave. & Coral Way, Miami, Fla. on May 28, 1972, beginning 10 am. Paper Stick, Indoor Scale and HLG. For more details, and info on future planned meets, contact Dr. J. B. Martin, 3227 Darwin St., Miami, Fla. 33133.

NEW JERSEY - Lakehurst

Flying sessions at Lakehurst June 4, June 13, Aug. 6, 1972. Three day meet July 1-3, 1972 with entry fee, cash prizes. Sanctions in force for AMA, FAI Record Trials, Hangar #1. C. V. Russo, 143 Willow Way, Clark, NJ 07066.

OKLAHOMA - Tulsa

Indoor session (may develop into contest) in 34'11" John Mabee Gym, University of Tulsa, June 18, 1972. Contact Bob Dunham, Box 7151, Tulsa, Okla. 74105 for info.

NIMAS POSTAL

Entry in the 1972 NIMAS Postal cannot be said to be small, as can be seen below. In fact, the 1972 entry can be equated to the entry of all previous postals combined! Many thanks for your support!

Junior PennyPlane

	Time	Ceiling	Fudge	Score
1. John Magnus	169 sec.	22.3'	1.253	211.7
2. Leonard Garrick	156.4	20'	1.323	156.4
3. Richard Whitten	50.2	20'	1.323	66.4

Senior PennyPlane

1. Doug Fronius	244	22.3'	1.253	305.7
2. Jim Haught	258.5	32'	1.046	268.3

Open PennyPlane

1. Hewitt Phillips	530	20'	1.323	701.2
2. Clarence Mather	391	22.3'	1.253	489.8
3. Fudo Takagi	284	22.3'	1.253	355.8
4. Howard Haupt	307	28'	1.118	343.2
5. Mike Fedor	312.4	32'	1.046	326.8
6. Frank Perkins	296.6	32'	1.046	310.2

Senior Indoor Stick

1. Jim Haught	335.2	32'	1.046	350.6
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Open Indoor Stick

1. Hal Crane	840	20'	1.323	1111.3
2. Howard Haupt	556	20'	1.323	735.6
3. Mike Fedor	490	32'	1.046	512.6
4. Mark Valerius	472	32'	1.046	493.7
5. Don Chancey	314.4	32'	1.046	328.9

Junior Class I HLG

1. Nigel Tarvin	45.2	20'2"	1.24	49.5
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Senior Class I HLG

1. Bruce Matthews	42.0	20'2"	1.24	52.0
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Open Class I HLG

1. Don Murray	42.2	20'2"	1.24	52.3
2. Kevin Barrett	51.0	25'	1.0	51.0
3. Bob Leishman	37.6	19'	1.316	49.5
4. Leon Friedman	46.5	25'	1.0	46.5
5. Gerry Donahue	42.0	25'	1.0	42.0
6. Dick Sherman	40.0	25'	1.0	40.0

Junior Class II HLG

1. Jimmy Clem	48.1	32'	1.094	52.6
2. Ian Yanagisawa	32.6	32'	1.094	35.7
3. Leonard Garrick	31.4	33'	1.061	33.3

Senior Class II HLG

1. Jim Haught	48.3	32'	1.094	52.8
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Open Class II HLG

1. Mike Fedor	74.0	32'	1.094	80.9
2. Harry Cook	55.7	27.5'	1.273	70.9
3. Don Chancey	63.0	32'	1.094	68.9
4. Tom Earle	61.4	32'	1.094	67.2
5. Dick Mathis	59.4	32'	1.094	65.0
6. Bill Langley	45.4	27.5'	1.273	57.8
7. Jim Clem	45.5	32'	1.094	49.8
8. Roger Schroeder	38.5	27.5'	1.273	48.0

Ceiling Dodger

1. Hal Crane	630	20'	1.323	833.5
2. Stan Chilton	680.8	31'	1.063	723.7
3. Bill Langley	421	27.5'	1.128	474.8
4. Roger Schroeder	323	27.5'	1.128	364.3
5. Kevin Wehner	294	27.5'	1.128	331.6
6. Walter Lounsbury	271	27.5'	1.128	305.7

Junior Easy B

1. Jimmy Clem	329	32'	1.046	344.1
2. Peter Sandburn	265	26'	1.16	331.0
3. Mark Killgo	160	32'	1.046	167.4
4. Leonard Garrick	110.2	20'	1.323	145.9
5. Richard Whitten	103.4	20'	1.323	136.8
6. Allen Crane	16.0	20'	1.323	21.2

Senior Easy B

1. Kevin Wehner	323.5	20.5'	1.306	422.5
2. Jim Haught	327.9	32'	1.046	343.0

Open Easy B

1. Clarence Mather	636	22.3'	1.253	796.9
2. Dick Hardcastle	707	31'	1.063	751.5
3. Ted Gonzoph	626	26'	1.16	726.6
4. Stan Chilton	540	20'	1.323	714.4
5. Bob Platt	529	20'	1.323	699.8
6. Bill Langley	491	20.5'	1.306	641.7
7. Dick Starks	451	20.5'	1.306	599.0
8. Gordon Wisniewski	480.2	20'	1.323	555.9
9. Hal Crane	411	20'	1.323	543.7
10. Phil Rennaker	407	20.5'	1.306	531.5
11. Fudo Takagi	393	22.3'	1.253	492.4
12. Mark Valerius	453.3	32'	1.046	474.2
13. Harry Cook	354	20.5'	1.306	462.0
14. Alan Riches	342	20'2"	1.315	449.7
15. Mike Fedor	415.2	32'	1.046	434.3
16. Walt Winberg	325.2	20'2"	1.315	427.6
17. Bob Leishman	306	19'	1.353	414.0
18. Bud Tenny	385.4	32'	1.046	403.1
19. Don Chancey	384.6	32'	1.046	402.3
20. Charles Learoyd	327.5	25'	1.183	387.4
21. Dick Sherman	301	25'	1.183	356.1
22. Howard Haupt	266	20'	1.323	351.9
23. Jim Clem	338.4	32'	1.046	342.9
24. Leon Friedman	260	25'	1.183	307.6
25. Gerry Donahue	229.4	25'	1.183	271.4
26. Kevin Barrett	160	25'	1.183	189.3

STATE OF THE ART

This month's model was chosen not so much for its performance as for the concept and its performance vs. weight and future potential. Who else has done nearly 24 minutes with a 65 cm model weighing nearly 3 grams? John Kukon and Doug McLean collaborated on the design of a tandem FAI model, the prototype of which is shown here.

John says the following about the design: "Much of the theory of this design was worked out by a friend, Doug McLean. I've built 14 of these models and together we've flown them during the winter in a local gym. I've done the equivalent of 34 minutes on many occasions during simulated high ceiling flights. The simulation consists of using 1/8 of a normal loop of rubber along with a spacer weighing 7/8 of the loop, keeping the hook spacing exactly 1/8 of the total spacing. This gives the model full flying weight for all tests, and the stick can be given full load tests. The lightest model yielding 34 minute simulated flights weighed .049 oz. My .037 oz. version needs a different prop setup to get a higher climb, but the cruise is fantastic!

My biggest problem to date is to get the weight down to .035 oz. and still have a reasonably sturdy machine. Second, the long motor stick seems to show some torsional flex which changes the relative tilt between the lifting surfaces. The circle is large at launch and tightens as torque goes down.

Doug and I also built PennyPlane versions of this design for the November '71 contest in Philadelphia. We built identical models to the Chicago Aeronauts rules and entered the contest. Our times were 12:02 and 11:57 for 1st and 2nd under the 80' ceiling, without touching."

The usual CMOS diagram has not been included with the three-view, due to an unresolved question on the manner of applying CMOS to a tandem configuration. If the CMOS method is applied with the assumption that it is directly applicable to this model, John's trim of this model computes to +62% static margin. This would indicate that the model would have adequate stability with the front wing even further forward in relation to the CG, or that the model as shown is super-stable.

NEWS FROM AROUND THE WORLD

CZECHOSLOVAKIA

The last two national Czech meets were not reported (see Sept. '71 INAV for results of July 10-11 meet; the Czech '72 Team selection was made on the basis of performance of these three meets. The finals scores below are the total of the two best times of three for each flier.)

National Meet in Z Hall, Brno, July 17-18, 1972

1. Rudolf Cerny	27:15	23:43	50:58
2. Dagmar Chlubna	22:59	26:40	49:39
3. Eduard Chlubny	22:47	22:53	45:40
4. Jan Hrdlicka	22:50	18:26	41:16
5. Jaroslav Jirasky	19:12	20:50	40:02
6. Tom Weigert	17:35	18:37	36:12
7. Jiri Kalina	21:30	13:53	35:23

National Meet in Z Hall, Brno, October 30-31, 1972

1. Jiri Kalina	29:40	30:50	60:30
2. Dagmar Chlubna	28:50	29:51	58:41
3. Eduard Chlubny	28:38	25:15	53:53
4. Karol Rybecky	29:56	22:53	52:49
5. Rudolf Cerny	23:36	25:17	48:53
6. Jaroslav Jirasky	22:05	20:45	42:50

Final Results, Czechoslovakia Championship for 1971

(First three placings constitute Czech Team for 1972)

1. Jiri Kalina	67:25	60:30	127:55
2. Dagmar Chlubna	55:21	58:41	114:02
3. Eduard Chlubny	58:44	53:53	112:37
4. Rudolf Cerny	55:51	50:58	106:49
5. Karol Rybecky	49:01	52:49	101:50
6. Jaroslav Jirasky	58:07	42:50	100:57

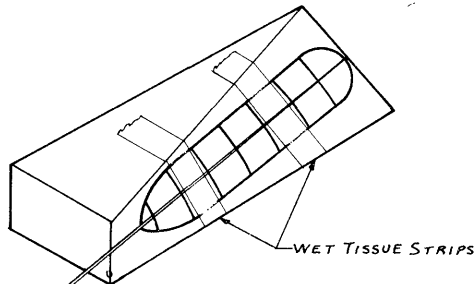
ENGLAND

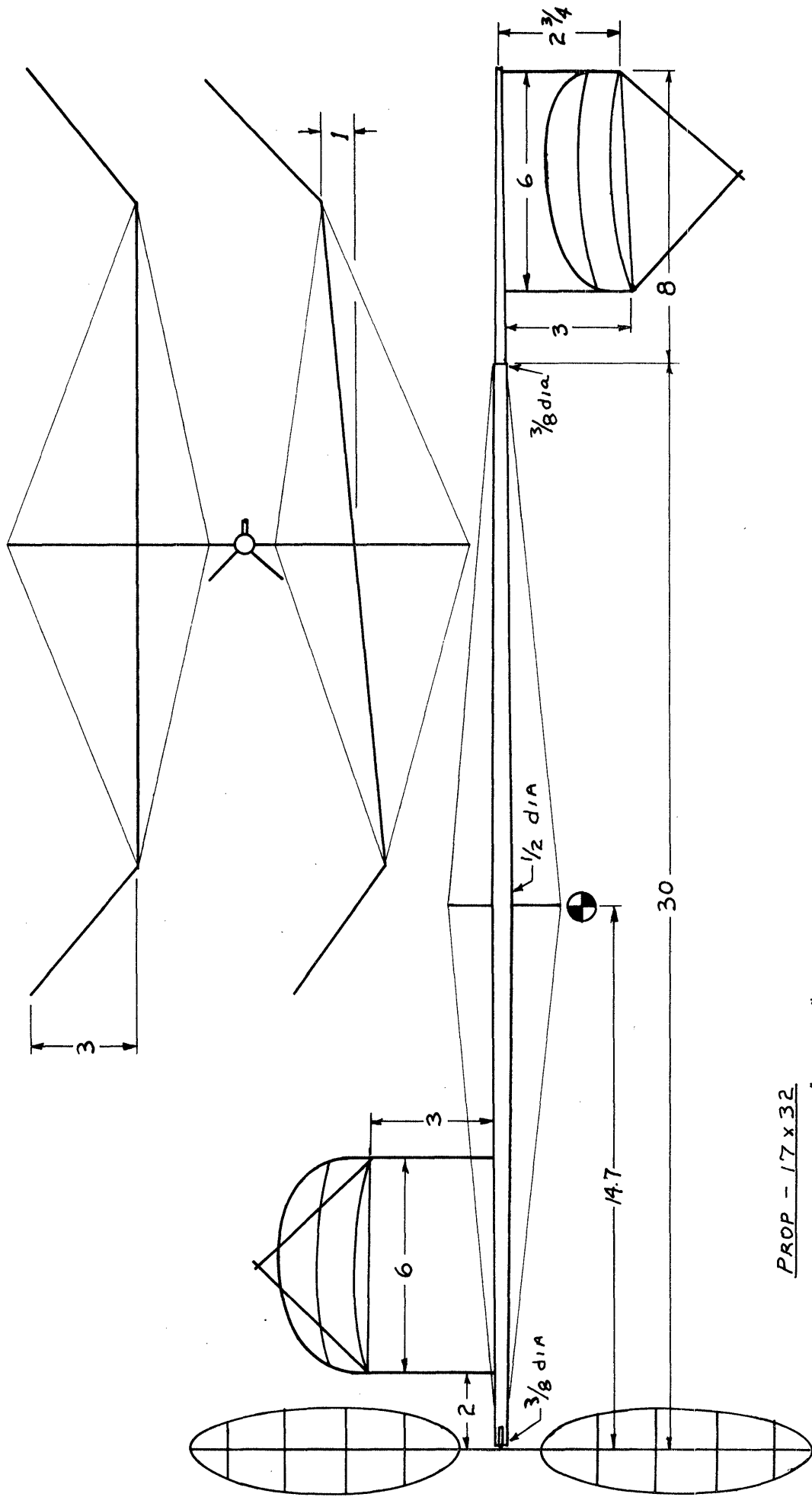
Eight Cardington meetings were held in 1971, with about 12 regular fliers and not many of the formerly well known English indoor fliers having built one gram models. Four of these fliers have topped 30 minutes with one gram models: John Blount - 32:57, Martin Shepherd - 32:28, Bruce Edwards - 31:38 and Laurie Barr - 30:10. Winter flying has been done in a 300' x 190' x 17' RAF hangar, with over 10 minute FAI flights being made in poor conditions. A 36' hangar is also expected to be available.

HINTS AND KINKS

Prop Blade Holder

When reworking old prop blades or while building new ones, it is sometimes beneficial to wet the blade and then, bake it in the oven while holding it flat against the prop block. However, the blade is fragile and hard to hold down safely. Dick Ganslen suggests that strips of Jap tissue be stuck to the block and then water-shrunk before the block is baked. The blade will be held firmly in place without damage.





PROP - 17 x 32

RUBBER - .125" x 35" LOOP PIRELLI

MODEL WEIGHT - .1015 oz

BEST TIME: 23:46; 150 FT CEILING

EXPERIMENTAL

TANDEM FAI

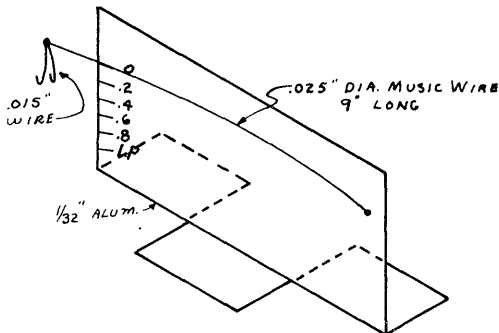
JOHN P. KUKON

D. MCLEAN

HINTS AND KINKS

PennyPlane Scale

Dennis Jaecks quoted his PennyPlane model weights in fractions of a "penny" weight (see Dec. '71 INAV). The sketch below shows how these weights were measured - on a scale calibrated in one penny full scale, of course! The scale was formed from 1/32" aluminum sheet with feet bent at right angles to the main body - which is a neat way to make a scale regardless of which units it works with.



PENNY PLANE SCALE

THE LAB

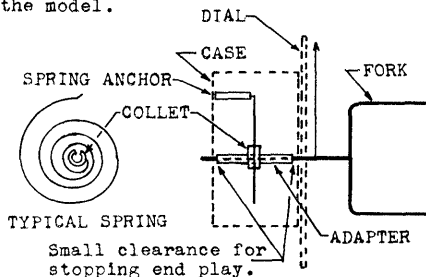
Launch Torque Meter

The Dec. '68 INAV presented a torque meter to be used as a winding stooage and for checking torque curves of rubber motors under test or evaluation. If you use an "0" ring at the torque meter end, that type can be used as a rough check of torque that you launch with. For low ceiling flying, the launch torque determines very closely how high the model will climb. (See "THE LAB", May '68 INAV and "CHOICE OF RUBBER MOTOR FOR LOW CEILING INDOOR", p. 78 of the 1968 NFFS SYMPOSIUM REPORT.)

If you lose any turns hooking up after winding, or wait very long to launch, the torque level will change. Also, it is very difficult to hit a desired launch torque exactly while winding on a torque stooage. The answer to all these objections and problems is to measure the torque just before launch. If you have this capability, it is a simple matter to hook up with a higher torque than needed and let the prop run in short bursts until the torque has dropped to the exact value needed.

A hairspring of suitable strength can be used to make a torque meter to make torque measurements on the model, as shown schematically below. The particular spring used in this torque meter cost \$1 postpaid at Addison Aero Parts & Sales, P. O. Box 216, Addison, Texas 75001; order part number 671-73 Hairspring. This spring has a split collet which will need an adapter. Make the adapter to fit the collet, and drill #67 thru the center of the adapter. Press a polished piece of 1/32" music wire thru the adapter to complete the main assembly. The case was made from 1/8" x 1/2" pine strips set on edge and covered with .020" aluminum to form a box. The only bearing necessary is to drill the case sides to fit the 1/32" music wire. Anchor the free end of the spring to the case, and assemble the case to the frame with small screws. Calibrate the unit in the same manner as for the meter in Dec. '68 INAV.

How do you use this device safely? Hold the model by the front wing socket (thumb and index finger of right hand) with the prop spinning free. Engage the fork with the prop spar, which stops the prop. Read the torque and launch the model.



(Reprinted from April '69 INAV)

CONTEST RESULTS

McDONNELL-DOUGLAS MID-AMERICA INDOOR FLYING CIRCUS

East St. Louis Armory, March 5, 1972, 34' AMA, 31' FAI

ROG Stick - (JSO)

1. Tony Schott	5:18
2. Jeff Hardcastle	5:04
3. Charlie Sotich	4:32

Indoor Scale - (JSO)

1. F. T. Stark	139 pts.
2. Charlie Sotich	138
3. Art Biehl	111.5
4. C. A. Cook	106.2

Open Easy B

1. Dick Hardcastle	11:47
2. Stan Chilton	11:20
3. Jim Bennett	9:05
4. Tony Schott	7:10
5. Paul Tryon	6:55

Jr.-Sr. Easy B

1. Jeff Hardcastle	7:03
2. Doug DePaul	4:06
3. Karl Crosby	3:07

Indoor Stick - (JSO)

1. Paul Tryon	11:07
2. John English	11:02
3. Dick Hardcastle	10:53
4. Tony Schott	10:19
5. M. DePaul	4:44

Peanut Scale - (JSO)

1. Charlie Sotich	6:24
2. F. T. Stark	3:26
3. C. A. Cook	1:49
4. A. D. Coe	1:02

Open HLG

1. Bob Klipp	1:02
2. Paul Tryon	1:01
3. Charlie Sotich	1:00
4. Tony Schott	0:52

Ornithopter - (JSO)

1. Doug DePaul	0:51
2. Bob Rother	0:50

Junior HLG

1. Jeff Hardcastle	0:51
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Category High Time

Rubber - Dick Hardcastle

HLG - Bob Klipp

Indoor Scale - c. Sotich

CHICAGO AERONAUTS INDOOR CONTEST, Mar. 26, 1972 Cat. II
Brig. Gen. Armory, Chicago; 87' ceiling.

Jr. Class A HLG

1. Fritz Kurth	1:27.6
2. Keith Gordey	1:12.6
3. Rich Jaros	1:00.0
4. Tim Parker	0:49.3
5. Scott Wisniewski	0:36.0

Open Class A HLG

1. Bob Watson	1:33.9
2. Mark Kummerow	1:21.2
3. Gordon Wisniewski	1:12.4
4. Jeff Annis	1:09.8
5. Dick Swenson	1:08.8

Jr. AMA HLG

1. Keith Gordey	1:21.0
2. Steve Rak	1:15.8
3. Rich Jaros	0:54.3
4. James Loribecki	0:41.5
5. Bruce Bandt	0:38.8

Open AMA HLG

1. Richard Hixon	2:01.6
2. Bob Watson	1:48.5
3. Chuck Markos	1:47.9
4. Dick Swenson	1:43.0
5. Bob Johnson	1:30.0

Junior PennyPlane

1. Keith Gordey	6:51.2
2. Tim Parker	5:57.8
3. Scott Wisniewski	3:54.5
4. Rich Jaros	0:08.2

Open PennyPlane

1. Dennis Jaecks	9:55.6
2. Robert Hayes, Sr.	8:51.2
3. Chuck Markos	8:22.5
4. Mark Kummerow	7:03.0
5. Otto Curth	6:30.0

Junior Paper Stick

1. Scott Wisniewski	10:03.8
2. Fritz Curth	6:57.8
3. Kieith Gordey	5:04.0
4. Rich Jaros	1:20.2

Open Paper Stick

1. Dennis Jaecks	15:07.2
2. Gordon Wisniewski	14:07.0
3. Howard Haupt	12:32.8
4. Charlie Sotich	11:44.8
5. George Bucic, Jr.	10:43.5

TECH MODEL AIRCRAFTERS INDOOR MEET, Apr. 8, 1972, Cat. II
M.I.T. Armory - 42' ceiling (AMA)

Indoor Scale - (JSO)

1. Chet Bokowski	137.5
2. J. G. Paillet	
3. Barry Paillet	
4. Bruce Paillet	
5. Fred Hall	

Delta Dart - Junior

1. Mike Roby	1:21.0
2. Dan Aggers	1:12.0
3. Susan Nichols	0:43.5
4. Juli Hall	0:42.6
5. Barry Paillet	0:35.9

Jr.-Sr. HLG

1. Bruce Paillet	1:05.3
2. Barry Paillet	1:00.8
3. Ron Stransky	0:58.6
4. Dan Aggers	0:51.6
5. Graham Eacock	0:13.2

Open HLG

1. Dick Sherman	1:05.5
2. J. G. Paillet	1:01.4
3. Ed Cattey	0:58.3
4. Gerald Donahue	0:56.4
5. Robert Nichols	0:55.3

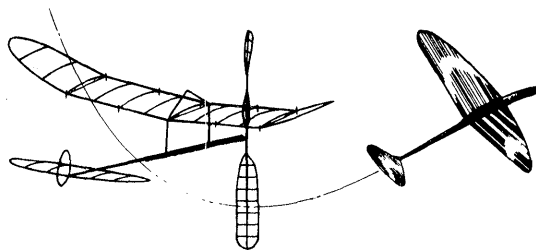
Indoor Stick - (JSO)

1. Ron Stransky	8:31.2
2. Chet Bukowsky	8:04.8
3. Dick Sherman	7:46.8
4. Dan Aggers	6:10.2
5. Don Jeter	5:12.0

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

OTTO CURTH, 2107 Center, Northbrook, Ill. 60062
 JAMES P. SULLIVAN, P. O. Box 91781, Los Angeles, CA 90009

Family Memberships

FRITZ CURTH, 2107 Center, Northbrook, Ill. 60062

'72 Nats

As announced in the May '72 INAV, the U.S. Navy has agreed to host the Nats one more time. AMA President John Clemens has set the theme as "Thanks, Navy!", and this is truly an historic event. Without the Navy, the character of the Nats will of necessity change somewhat, but there will be more Nats. If you haven't written a letter of thanks to the Navy (see Apr. '72 INAV), now is not too late. We owe the Navy more than most fliers realize.

The Nats Indoor site is the Brig. Gen. Richard L. Jones Armory; 5200 S. Cottage Grove Ave., Chicago. This is the same site as for 1970 and 1971. HLG will be 9 am to 3 pm, Monday, July 24; Indoor Scale will follow, 3 pm to 9 pm. On Tuesday, July 25, all Indoor Rubber events will be held from 9 am to 9 pm. Three unofficial events, PennyPlane, Peanut Scale and Navy Scale will be held from 3 pm to 9 pm, July 24, sharing air space with Indoor Scale models as in previous years.

All indoor HLG fliers should note that the time-sharing approach will be used again this year. This means that alternate periods of test flying and official flying will be enforced. The goal is to allow only those launching official flights on the floor during official flying periods to minimize turbulence for the gliders during the crucial touchdown phase of the flight. Note that official flights may be made during test flying sessions at the option of the contestant - but no testing during official flight sessions.

Nats - Help!

Nats Free Flight Category Director Pete Sotich recently circulated a memo indicating manpower requirements for free flight events at the Nats. The Navy will furnish no manpower, so timing and officiating will have to be 100% AMA effort. For example, the list totals 85 bodies, exclusive of directors of individual events, for both indoor and outdoor events. That does not include indoor scale, since this category is staffed totally by the Detroit Cloud Busters, Inc.

Indoor events customarily have only two co-directors who handle all four "standard" indoor events (PennyPlane and Scale events handled separately), and outdoor FF event direction is often handled by the same few men who work the whole meet. Recorders and processors are usually the same crew all week. The major manpower squeeze will be on flight timers, and it is expected that everyone except perhaps Juniors will have to participate in a strict time-a-flight-fly-a-flight procedure on a one-for-one basis. That is, no individual will be permitted to time an excess of flights and "coast" the rest of the day.

All the above leads to this: if your flying schedule will permit, please volunteer to help where you can. Send your name and open schedule to Pete Sotich, 3851 West 62nd Place, Chicago, Ill. 60629 immediately!

NFFS Top Ten Model Winners

The National Free Flight Society announces the recipients of its ten FF Model of the Year awards for 1972:

<u>Event</u>	<u>Flier</u>	<u>Model Name</u>
1/4 A Gas	Vic Cunyningham, Jr.	Geodetic Galaxie
ABC Gas	George Fuller (England)	Dixielander
FAI Power	Thomas Koster (Denmark)	Andromeda
Wakefield	C. Schwartzbach (Denmark)	Little Big Horn
A/2 Nordic	Hugh Langevin	Osprey
Indoor	Joe Bilgri	(See Feb.'72 INAV)
HLG	Dick Mathis & M & P	Flash

Special Classes

PennyPlane- Erwin Rodemsky
 Outdoor Scale, Gas - Leoning M-8

Recent Publications

Indoor fliers continue to owe a word of thanks to MAN magazine for giving Indoor topics more coverage than any other magazine: a report of the East Coast Team Finals (Feb. '72), Tom Vallee's "Forum" in June '72 and "For Two Cents" (July '72). "For Two Cents" is an excellent bit on PennyPlane by Clarence Mather and Dave Linstrum with full-size plans of two models made available. Tom's Forum topic is an analysis of the aftermath of weight rules for FAI Indoor. Not everyone will agree with his conclusions, but the arguments are well organized and presented.

NIMAS/NFFS Meeting

Only a few responses (all favorable) were received to last month's query about a possible joint meeting of NIMAS and NFFS members attending the FAI Team Selection Finals in Caddo Mills, Texas. Due to the less-than-overwhelming response, we'll have to play it by ear. I'll look forward to seeing all who come, as I will be helping time July 1 and July 2 (have to work July 3). Y'all come!

FAI INDOOR REPORT

Joe Bilgri Resigns

Citing only personal reasons, Joe Bilgri has resigned his position on the U. S. Indoor Team. Joe is an experienced flier who will be missed, both by the Team and by his many friends overseas. We wish him the best of luck and a speedy return to his normal activity.

Sal Cannizzo will be the new member of the Team, following his photo-finish in the East Coast Finals last year (Sal missed the Team then by .07 percentage points). He is a relative newcomer to FAI Indoor, but never placed lower than 2nd place and never lower than 91% of the winning score during the Team Selection Program.

FAI Document Appears

Beginning on p. 105 of the July '72 AAM, the long-awaited "FAI Document" has been published. Thousands of words detail past history and present practice in general terms, plus explaining much about FAI procedures. It can be regarded as an excellent document to acquaint newcomers with the general "facts of life" about FAI programs.

However, it has been noted that a desperate need exists for detailed listing of program administrator duties and authority. No mention is made of who can override bad decisions by administrators, what channel of appeal can be used by program participants, etc. In short, nothing whatsoever appears in this document to answer the appeal made by numerous fliers for a definitive document. It might be noted that this document has been made up and published without either guidance or review by the AMA Executive Council (see Executive Council "Bombs Out", Mar. '72 INAV). Now that the "document" has appeared, it is inescapable that it contains nothing which would have served as guidance to either side during the controversy which almost scuttled the 1971 Team Selection Program.

Time has slipped by so fast that we are in danger of not having a 1974 Indoor Team. The deficiencies of "the document" make it impossible for any program administrator to function; he will have no assurance of freedom from capricious and bungling interference by "authorities" with undefined responsibility and authority. Even if deficiencies in the document were addressed immediately, the work of Nats preparation and other pressing AMA business would prevent an early solution. In view of recently-decided requirements for program details to be settled by polling expected participants, it is already too late to make any effective program preparation to complete team selection before late in 1973. The matter should have been settled and an administrator appointed no later than May 1, 1972.

CONTEST CALENDAR

CALIFORNIA - Santa Ana

Record Trials at Santa Ana MCAF on July 23, 1972 and Aug. 12-13, 1972. Bob Gibbs, 5005 Halifax Circle, Cypress CA 90630.

CANADA

Indoor contest in 90' Agrodome in Port Coquitlam, B.C. Contact Alan Riches, 1568 Celeste Crescent, Port Coquitlam, B. C., Canada for details.

FLORIDA - Miami

Indoor contests planned during summer in Miami - contact Dr. J. B. Martin, 3227 Darwin St., Miami, Fla. 33133.

GEORGIA - Albany

Easy B, HLG, Indoor Scale, Paper Stick contest as part of Georgia State Championships, held at NAS Albany on July 1-2, 1972. Indoor to be 7:30 pm to 11 pm in a navy hangar with 28' 6" to first obstruction. Contact Bob Stevenson, 209 Sourwood Dr., Marietta, Ga. 30060 for info.

NEW JERSEY - Lakehurst

Indoor meet July 1-2, 1972 (not including July 3 as originally announced) in Hangar #1. Entry fee will be charged and cash prizes awarded for events chosen. Sanctioned for AMA and FAI Record Trials. C. V. Russo, 143 Willow Way, Clark, NJ 07066.

TOP TEN EASY B

The Top Ten Easy B listing begins anew each year with the winners of that year's NIMAS Postal (see May '72 INAV for that listing). From that time until the next Postal, additional flights can be submitted which will "bump" into the Top Ten listing. This has happened early this year - the listing below represents the latest standings as Dick Hardcastle bumped into first place and Jim Bennett bumped into the Top Ten.

	Time	Ceiling	Fudge	Score
1. Dick Hardcastle	585	18'	1.394	815.5
2. Clarence Mather	636	22.3'	1.253	796.9
3. Ted Gonzoph	626	26'	1.16	726.6
4. Stan Chilton	540	20'	1.323	714.4
5. Bob Platt	529	20'	1.323	699.8
6. Bill Langley	491	20.5'	1.306	641.7
7. Dick Starks	451	20.5'	1.306	599.0
8. Jim Bennett	545	31'	1.063	578.3
9. Gordon Wisniewski	480.2	20'	1.323	555.9
10. Hal Crane	411	20'	1.323	543.7

TOP TEN CEILING DODGERS

The Top Ten Ceiling Dodgers listing has been continued uninterrupted, rather than being renewed after each Postal meet. This is due to the lower participation in this fascinating but technically more difficult event. The listing below has been updated to include results from the '72 NIMAS Postal.

	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Hal Crane	682	20'	1.323	902.3
4. Dick Hardcastle	602	23'	1.234	742.9
5. Hewitt Phillips	528.2	20'	1.323	698.8
6. Howard Haupt	456	22'	1.261	574.5
7. Harry Cook	471	26'	1.16	546.4
8. Bill Langley	421	27.5'	1.128	474.8
9. Jim Davidson	280	13'	1.64	459.2
10. Roger Schroeder	239.5	15'	1.527	365.7

RECORDS? MAYBE!

SANTA ANA RECORD TRIALS - May 14, 1972, Cat. III Santa Ana Hangars, Santa Ana MCAF, Calif.

Jr. Cat. III HLG - 1:39.2, Dennis Cunningham Sr. Cat. III HLG - 2:13.5, Marty Thompson

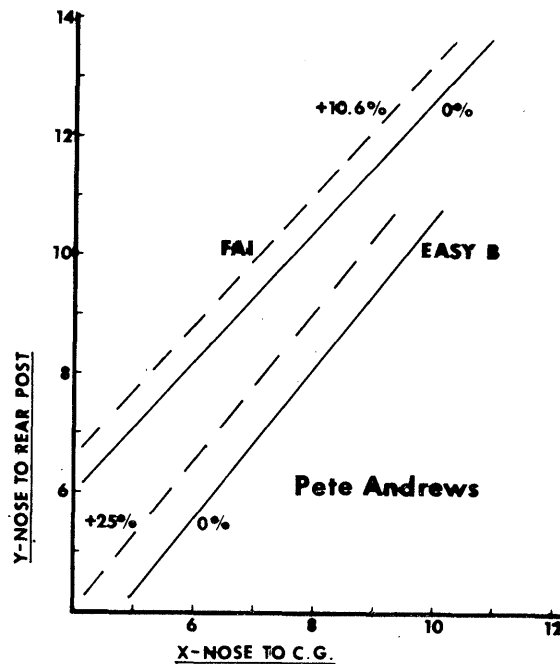
SANTA ANA RECORD TRIALS - June 11, 1972, Cat. III Santa Ana Hangars, Santa Ana MCAF, Calif.

Open Cat. III Cabin - 29:46, Bob Randolph
BRAINBUSTER'S RECORD TRIALS - May 20, 1972, Cat. I Willis School, Hampton, Va. 20' ceiling
Open AMA Cat. I FAI - 20:19, Bob Platt

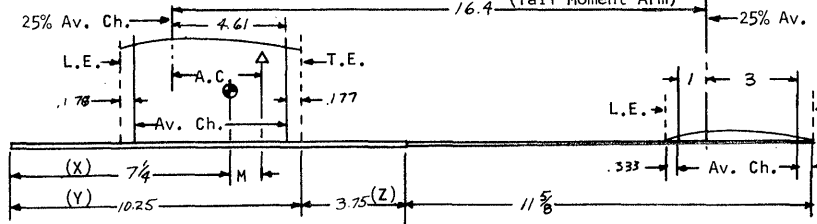
STATE OF THE ART

This issue must be a Pete Andrews "special" - with a three view of Pete's Easy B and info below on one of the FAI's he flew last year. Pete's model designs are worked out on his programmable desk calculator, using CMOS design methods. The Easy B reached what may be an all-time high time for Easy B - 17:10 (flight in Lakehurst). It also won 1st at the only indoor meet it was entered in - the LIAMAC meet at Cantiague Park on April 30, 1972.

The diagram below, with dimensions from Pete's FAI, is the top of the standard CMOS computation form. Forms are available on request (self-addressed envelope), and an instruction packet on CMOS is also available. Beside the diagram is a compilation of pertinent dimensions of the model. The CMOS diagram below has balance info on both models, with the dashed line showing Pete's balance point and the solid line being the 0% balance line which is the most sensitive balance setup recommended for all-purpose models. More sensitive setups are possible, and probably well worth using for record trial/ideal weather flying.



MODEL SPECS: Wing Span 25.6 Wing Area 157.33 Av. Chord 6.145 Aspect Ratio 4.165:1
Stab span 14 Stab area 56 Av. chord 4 Aspect ratio 3.5:1
C_f (from chart) .417



ANDREWS 1971 FAI

Wing span	25.6"	Stab span	14"
Wing chord	6.5"	Stab chord	5"
(straight wing with round wing tips)		(stab is 1/3-2/3 double parabola)	
Wing area	157.33 sq. in.	Stab area	56 sq. in.
Average chord	6.145"	Average chord	4"
Aspect ratio	4.165:1	Aspect ratio	3.5:1
Airfoil - Kowalski 7%		Airfoil - 540	
Dihedral 3" each tip		Prop 17 x 30, 2" wide at maximum width	
Rubber .051 x .043 x 17			
Rudder 2 1/2 x 4 1/2			

By Erv Rodemsky

Since I am one of the "bad guys" who pushed for a weight rule in FAI Indoor, I would like to rebut Tom Vallee's criticism published in MAN Forum.

I do agree with his comment that the rule was hastily and poorly written. The reason was for simplicity. All rule changes are unpopular with "experts" who are winning under the old rules; invariably these changes bring out creative thinking and new participants. (The reduction of wingspan from 90 cm to 65 cm gave us World Champion Jim Richmond.) Ed note: don't forget Jiri Kalina!

So, in attempting to keep it simple (an excellent principle), the rules writers did not go far enough. The intent of the one gram rule was to increase the strength of indoor models. That goal could have been better accomplished by limiting wing and tail area along with requiring one gram weight. Cutting performance can be accomplished by limiting the weight of rubber (perhaps one-half gram). "It puts too much premium on good rubber," they scream. If a competitor doesn't know how important good rubber is now, he's not paying attention!

Tom blames the lack of balloons for problems in Romania. This is a half truth. Balloons would have been invaluable in retrieving, but can you imagine "steering" a 26" span, transparent model, 180' high in a dark, drafty salt mine? If you want to reduce hang-ups, stop the time as soon as the model touches anything. This will eliminate rafter-banging. I think steering should be limited to sites of less than 50' ceiling.

Tom's observations on design trends are accurate*, but it wasn't the 10" chords, 20" props and 18" motor sticks that made the Team! All three members** used relatively conventional well-trimmed models that were capable of handling large motors. No one ever said a weight rule would make a poor builder into a champion, but it sure opens the way for some original thinking as evidenced by the proliferation of new designs seen at contests. If for no other reason than encouraging some new builders to give Indoor a try, the weight rule is worth it.

Analyzing the results of contests under both sets of rules brings out one very obvious advantage of the weight rule - an equalizer. Contrary to Tom's allegations, top time was lowered; more importantly, the spread from first through fifth was much smaller. Isn't that where it's at - close competition?

In closing on a positive note (as did Tom), rule changes should be provisional before becoming final, and perhaps tried in other events such as PennyPlane.

*Tom's article was written before the Finals; perhaps after "Salt Mine II", he might have noted a requirement for reliability under adverse conditions!

**Since Bilgri's resignation (see p. 1) and his replacement by Sal Cannizzo, this statement is still true. Sal's models were even more "conventional" than the other three winners.

HINTS AND KINKS

Slick Tissue Sockets

Dick Ganslen suggests that teflon tubing can be used as a no-stick form to roll wing sockets on. Just slip the tubing over a thin wire to hold it stiff, and roll the sockets as usual. However, it is not necessary to remove the sockets before the glue dries, as the teflon is slick enough to permit the dry socket to slide off.

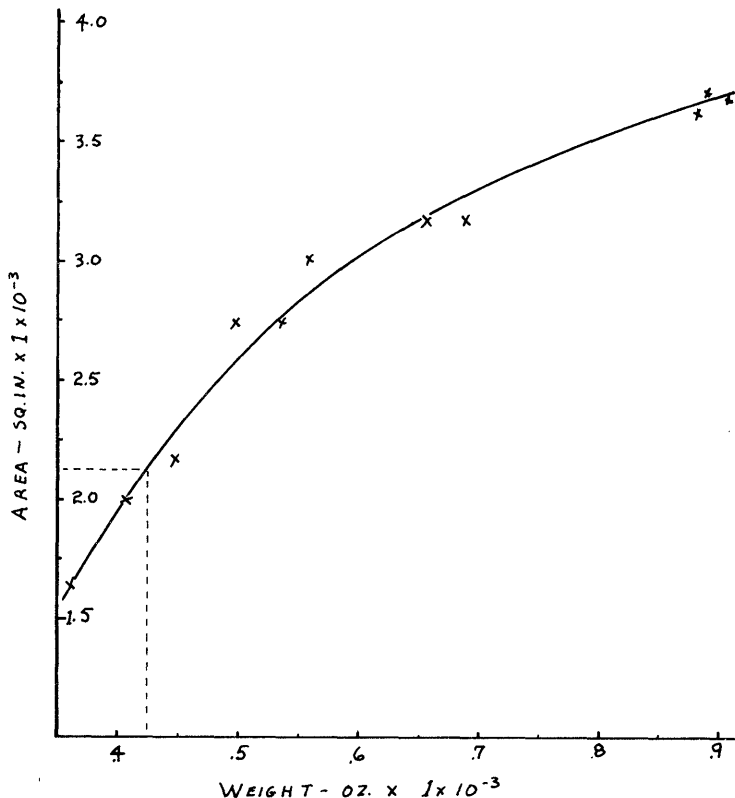
Wing Reinforcement

Bob Platt has been reinforcing his FAI wings with a length of dacron bracing glued to the leading edge and trailing edge where he makes contact with the steering pole. This is intended to hold the wing together if it breaks, thus preventing the film from tearing. In similar fashion, Bob Randolph puts dacron across the top of the spar at the dihedral break in case the spar breaks completely while he is installing the dihedral. In either case, you get two chances to fix the wing before the film gets torn; just be sure you don't have sticky film which will fold over and tear anyway!

Knot Correction Chart

In the process of making extensive torque tests on pirelli, some method of correcting for the weight of the knot was needed. The solution to the problem was to tie many standard knots in rubber, cut them loose, then weigh the knots and average the results. The graph below gives the correction at a glance. Each point on the graph is an average of at least three knots, and the accuracy of correction factors from the chart should be about 1%.

Use the graph this way: measure the rubber cross-section with standard (not spring-loaded) micrometers, and compute the area. Locate this area along the left side of the graph, move across to the graph, then down to the bottom line and read the weight of the knot. For example, .042 x .051" rubber has an area of .00213 sq.in. Following the dashed line, this equates to .000425 oz.



CONTEST RESULTS

ST. LOUIS INDOOR CHAMPIONSHIPS, Apr. 9, 1972 Cat. I
Ft. Zumwalt High School, O'Fallon, Mo. 24' ceiling

Open Easy B		Junior Easy B	
1. Jim Bennett	7:46	1. Jeff Hardcastle	6:19
2. Tony Schott	7:29	2. Rosy Tryon	5:30
3. Stan Snyder	7:22	3. Doug DePaul	2:15
4. Jim Pears	7:03	4. Jason Tryon	1:10
5. Paul Tryon	6:25		

Open HLG		Junior HLG	
1. Dick Hardcastle	1:04	1. Rosy Tryon	0:26
2. Bob Klipp	0:56	2. Jason Tryon	0:19
3. Tony Schott	0:44		

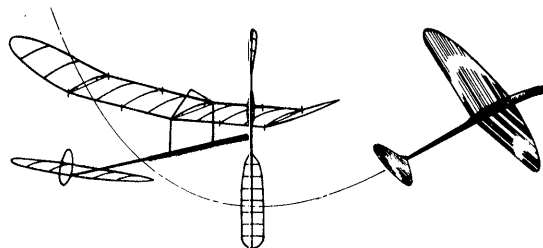
Indoor Stick		Ornithopter	
1. Dick Hardcastle	9:44	1. Bob Rother	1:00.2
2. Paul Tryon	6:46	2. Jeff Pears	0:36.6
3. Tony Schott	6:45		
4. Marion DePaul	3:47	Indoor Scale	
5. Jim Bennett	0:44	1. Art Beihl	0:43
		2. Lloyd Wood	0:27

Helicopter	
1. Jeff Pears	0:48

High Point Champion - Dick Hardcastle

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****New Members!

RICHARD A. McCLELLAND, 42 Maple Place, Nutley, NJ 07110

Help - Nats Report!

Much of the success of this newsletter has been due to willing help from many people. If there is any sort of Nats report beyond the "bare bones" listing of results, Nats entrants will have to help out. Due to my upcoming trip to the WCh in August, vacation time must be saved for that instead of the Nats. Therefore, any help which is available (pictures and description of what happened) will be welcome. Due to my need to mail the Aug. issue as early as possible, please try to mail text by Aug. 1, 1972, and pix as soon as possible after that. If you have a contribution that will be a little later, please drop a card saying it is coming so I can plan for it.

Free PennyPlane Kits

The Chicago Aeronuts will again furnish free PennyPlane kits for the convenience of P/P newcomers. These kits will be available at the HLG/Scale session at the Nats (Monday, July 24, 1972).

Caddo Mills Report

After the wind went away (July 6, it was calm enough to fly PennyPlane outdoors!) and the dust settled, the FAI Team Finals produced the following FF Team members:

<u>Wakefield</u>	<u>Nordic</u>	<u>Power</u>
Frank Parmenter	Hugh Langevin	Hank Spence
Bob White	Paul Crowley	Frank Wolf
Jon Davis	Vince Croghan	Tom McLaughlin

The possibility of a NFFS/NIMAS confab went by default because of repairs, searching for lost models, and general fatigue caused by long chases. Several very welcome bull sessions were had with old friends, but it was impossible to get more than a few together at any one time.

FAI INDOOR REPORTInternational Record Application

Considerable skepticism has greeted a tentative record received by FAI. C. W. Hennecart, Director General sent out copies of the application for Class F1d (Indoor Model) record, with a claimed Cat. I time of 1:58:28. No other details were available at publication time, except that the flight was claimed by Russia and the date of application was June 30, 1972.

Record WCh Entry?

A note included with AMA's request to NAA for transportation for the U. S. Indoor Team stated that thirteen (13) countries had entered the 1972 Indoor World Championships. Information available here indicates that these countries have entered: Australia (proxy entry by Boyd Felstead) to be flown by Manny Radoff with Erv Rodemsky as team manager; Czechoslovakia, England, France, Italy and Romania. In addition, Poland and Hungary are known to have teams, even though word from Hungary indicated that Hungary would not attend. Finally, Germany and Finland have never missed an Indoor WCh, and Yugoslavia has attended all since Debrecen, Hungary (1966). The other countries reported to have indoor activity at some level are: Argentina, Austria, Canada, Holland, New Zealand, Russia and Sweden.

Hopefully, information will come in regarding teams from the other countries that have entered. Meanwhile, the following fliers are members of teams from their respective countries:

<u>Czechoslovakia</u>	<u>Italy</u>
Jiri Kalina	Carlo Cotugno
Eduard Chlubny	Mascuillo Germano
Dagmar Chlubna	Frioli Adalberto

Hungary
Andras Ree
Buzady Gyorgy
Antal Egri

Poland
Ryszard Czechowsky
Edward Ciapala
Stefan Bombol

Romania
Nicu Bezman
Otto Hints
Vasile Nicocara

CONTEST CALENDAR

CALIFORNIA - Santa Ana
Record Trials at Santa Ana MCAF on July 23 and Aug. 12-13, 1972. July RT - Bob Randolph, 25145 Lawton Ave., Loma Linda, CA 92354. Aug. RT - Bud Romak, 85 Sullivan Dr., Moraga, CA 94556.

NEW JERSEY -Lakehurst
Flying sessions at Lakehurst on Aug. 6, 1972. C. V. Russo, 143 Willow Way, Clark, NJ 07066.

RECORDS? MAYBE!

TULSA GLUE DOBBERS RECORD TRIALS, June 18, 1972 Cat. I
John Mabee Gym, Univ. of Tulsa 34' 11" ceiling.

Open FAI Cat. II FAI - 16:45, John English
Sr. Cat. I HLG - 1:07.1, Robert Dunham II
Sr. Cat. I Cabin - 7:10, Robert Dunham II

NIMAS AWARDS

Gold Cat. III HLG Award - 1:06.2, Dan Domina

TOP TEN CEILING DODGERS

	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Hal Crane	682	20'	1.323	902.3
4. Dick Hardcastle	602	23'	1.234	742.9
5. Hewitt Phillips	528.2	20'	1.323	698.8
6. Howard Haupt	456	22'	1.261	574.5
7. Harry Cook	471	26'	1.16	546.4
8. Bill Langley	421	27.5'	1.128	474.8
9. Jim Davidson	280	13'	1.64	459.2
10. Kevin Wehner	263	18'	1.394	366.6

CONTEST RESULTS

CHICAGO AERONUTS INDOOR CONTEST, Apr. 22-23, 1972 Cat. II
Brig. Gen. R. L. Jones Armory, Chicago 90' ceiling

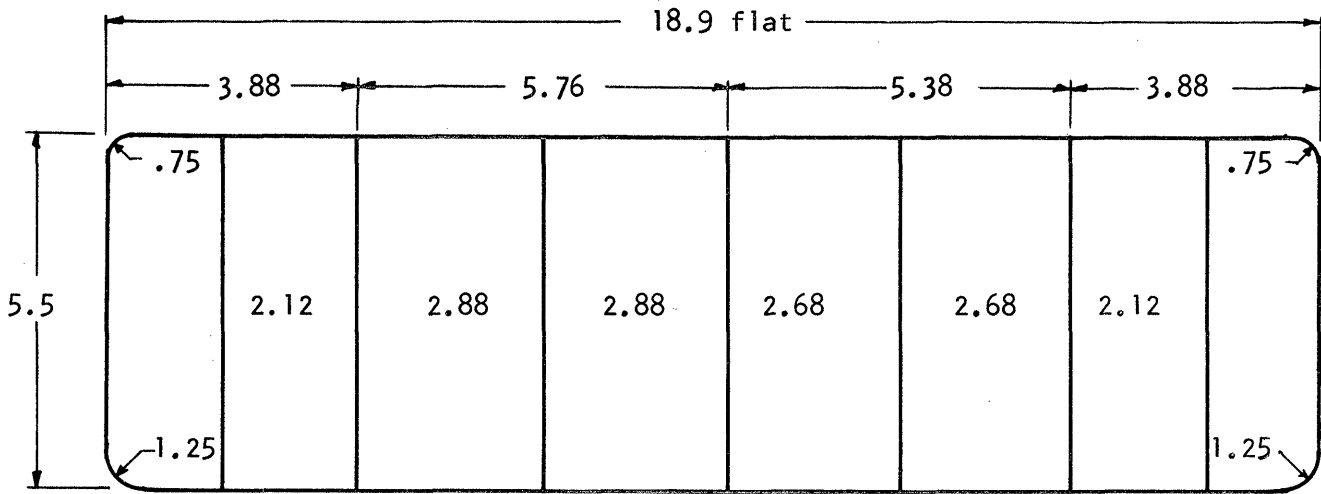
<u>Jr. PennyPlane</u>	<u>Open PennyPlane</u>		
1. Steve Oravec	5:02.0	1. Dennis Jaecks	10:05.0
2. Scott Wisniewski	4:31.5	2. Rol Anderson	9:37.6
3. Keith Gordey	3:49.8	3. Hank deKat	8:17.8
4. Eric Miller	2:54.0	4. Gordon Wisniewski	8:12.1
5. Rich Jaros	1:38.8	5. Robert Hays, Sr.	7:09.0

<u>Jr. Paper Stick</u>	<u>Open Paper Stick</u>		
1. Scott Wisniewski	9:30.8	1. Dennis Jaecks	15:33.7
2. Fritz Curth	9:03.1	2. Chuck Markos	15:07.9
3. Eric Miller	4:51.2	3. Charlie Sotich	14:40.3
4. Rich Jaros	1:58.2	4. Ed Stoll	13:13.4
		5. Gordon Wisniewski	12:09.4

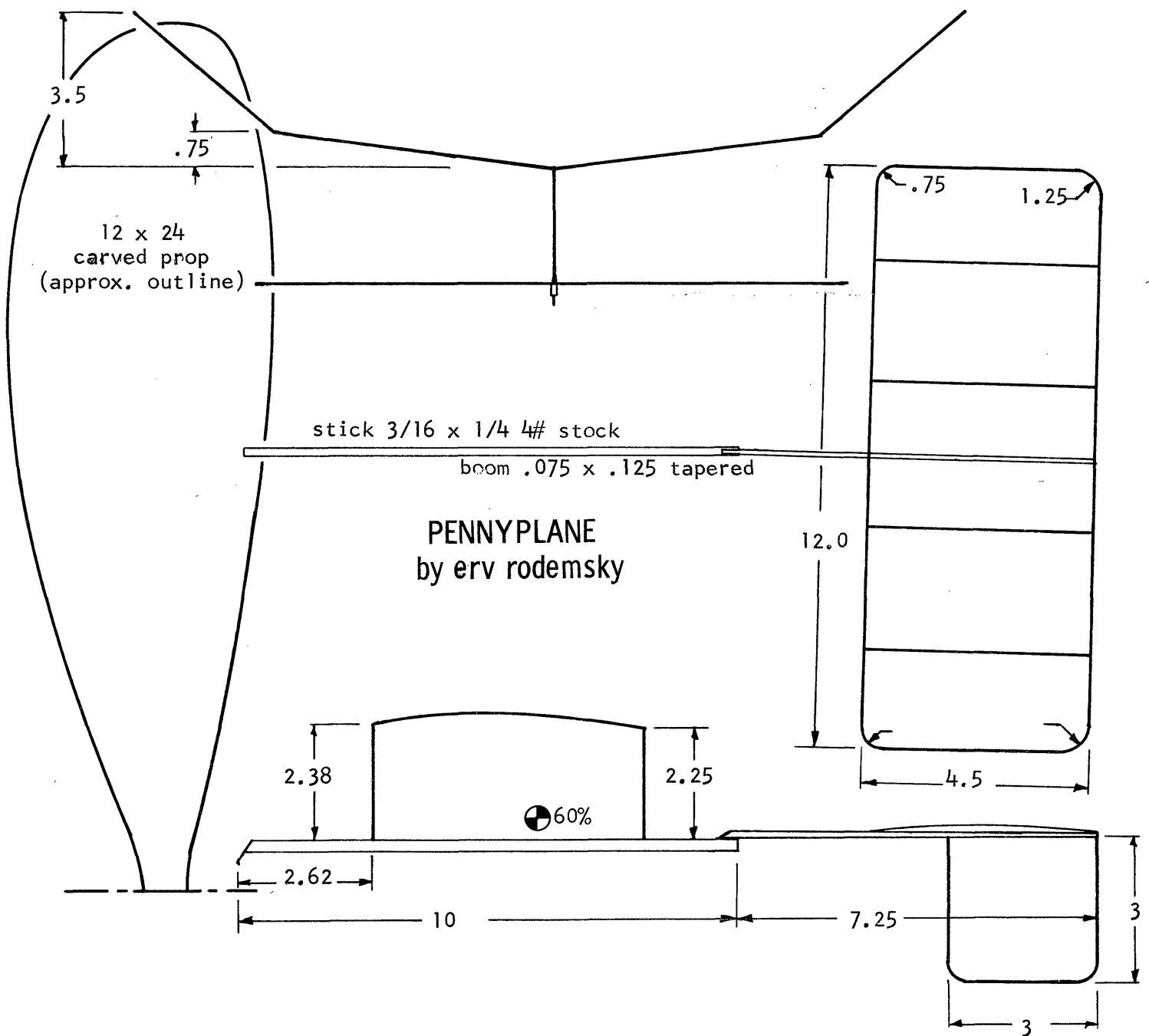
<u>Jr. Indoor Stick</u>	<u>Open Indoor Stick</u>		
1. Scott Wisniewski	8:45.8	1. Dennis Jaecks	20:29.2
2. Fritz Curth	6:32.5	2. Howard Haupt	17:04.0
3. Eric Miller	3:40.7	3. Ed Stoll	15:01.1
4. Rich Jaros	1:35.4	4. Charlie Sotich	14:14.0
5. Steve Rak	0:13.9	5. Rol Anderson	14:11.0

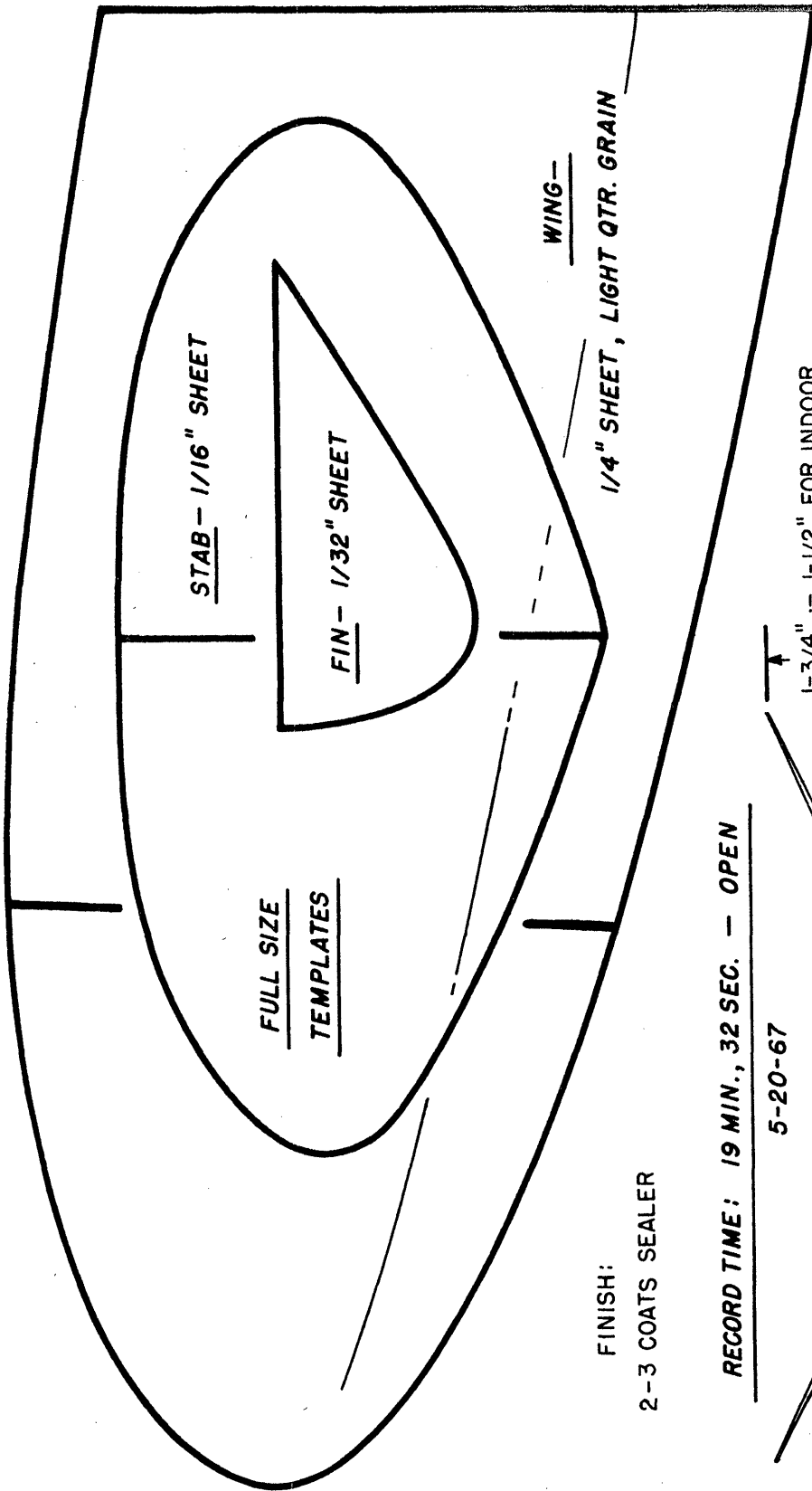
<u>Jr. HLG</u>	<u>Open HLG</u>		
1. Keith Gordey	110.0	1. Rick Hixon	112.8
2. Steve Rak	88.7	2. John Loribecki	111.0
3. Scott Wisniewski	81.8	3. Dick Swenson	96.0
4. Rich Jaros	72.9	4. Chuck Markos	93.4
5. Fritz Curth	33.2	5. Louie Bromley	89.0

(CONT. P. 4)



wing spars 1/16 sq. tapered to .04 sq. at tip

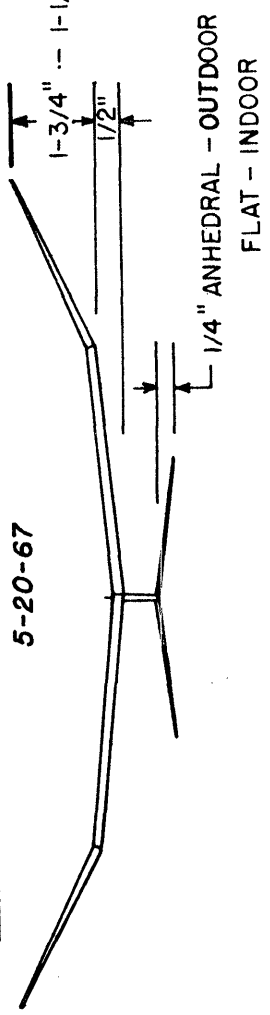




FINISH:
2-3 COATS SEALER

RECORD TIME: 19 MIN., 32 SEC. - OPEN

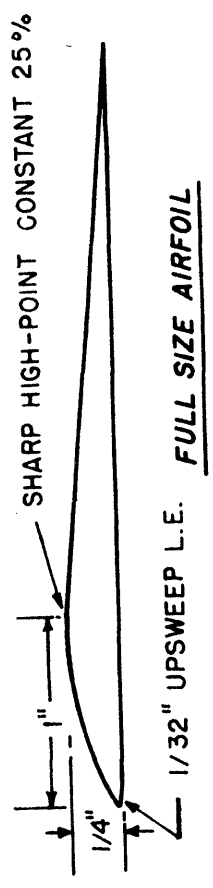
5-20-67



TARA 18

BY

Ron Wittman 12-3-67
 TRUE SPAN - 17-3/8"
 LENGTH - 19-3/4"
 WING AREA - 64 SQ. INS.
 STAB AREA - 12 SQ. INS.
 WEIGHT - 19 GRAMS



1/32" UPSWEEP L.E. FULL SIZE AIRFOIL

STATE OF THE ART

Indoor Scale

1. Jack Neiderhauser	Douglas M2	155.0
2. Mark Kummerow	1911 Cessna	149.0
3. Keith Ward	Piper Cub	147.1
4. Ron Martelet	Pilatus Porter	137.0
5. Chuck Markos	Westland Widgeon	121.0

Plastic Prop Jr. Rubber

1. Gregg Miller	27.9
2. Jenny Linstrum	27.3
3. Mindy Linstrum	27.2
4. Chuck Fort	25.4
5. Jim Jamrose	25.3

ST. LOUIS GATEWAY CHAMPIONSHIPS (Indoor section) 6/3/72
Missouri Baptist College, St. Louis 18' ceiling

Indoor Stick		Indoor HLG	
1. Dick Hardcastle	9:45	1. Dick Hardcastle	48.0
2. Tony Schott	7:48	2. Bob Klipp	44.0
3. Jim Bennett	6:54	3. Lloyd Wood	05.0
4. Pat Wood	4:04		
5. Lloyd Wood	2:10		

Indoor Scale

1. Dick Hardcastle	78
2. Tom Stark	62
3. Lloyd Wood	32
4. Pat Wood	15

NEWS FROM AROUND THE WORLD

ARGENTINA

The Argentina Nats were held simultaneously with the South American Contest, which drew entries from Chile, Brazil, Uruguay, Bolivia and Peru. The scheduling of indoor for the Argentina Nats gave unprecedented opportunity for modelers from all these countries to see and admire a relatively rare type of model. Interest was very high, and the fliers from Argentina were very busy answering questions. It is possible that Indoor will become a regular event at future South American Championships; this is only one step away from the possibility of International Indoor Contests in this hemisphere. The next step may be a World Championships in this hemisphere!

The contest itself was made more difficult by uncontrollable drafts near the top of the theatre site, which caused most flights to terminate in an upper balcony.

1. Eduardo Grippo	13:12	8:52	22:04
2. Alberto Barilari	7:27	9:40	17:07
3. Nereo Begglatto	6:50	8:52	15:42
4. Luis M. Coronel	7:34	6:47	14:21
5. Miguel A. Leone	6:44	6:55	13:39
6. Julio C. Martinez	3:46	4:37	8:23
7. Domingo Sassone	0:13*	7:47*	8:00

*Both models destroyed on only flight.

ROMANIA

An International Indoor Contest was held in the salt mine at Slanic-Frahova, Romania, May 5-7, 1972.

Individual results

1. Zoltan Oscodi	Hungary*	30:56	30:15	61:11
2. Jiri Kalina	Czechoslovakia	31:03	29:40	60:43
3. Karol Rybecky	Czechoslovakia*	29:38	29:45	59:23
4. Andras Ree	Hungary	28:38	30:42	59:20
5. Ryszard Czechowsky	Poland	28:21	30:17	58:38
6. Gyorgy Buzady	Hungary	28:31	29:58	58:29
7. Nicu Bezman	Romania A	27:06	29:05	56:11
8. Otto Hints	Romania A	27:50	28:15	56:05
9. Eduard Chlubny	Czechoslovakia	27:00	28:19	55:19
10. Vasile Nicoara	Romania A	27:07	27:06	54:13
11. Tudorel Lungu	Romania*	24:16	29:48	54:04
12. Antal Egri	Hungary	26:37	27:18	53:55
13. Dagmar Chlubna	Czechoslovakia	25:00	27:54	52:54
14. Aurel Popa	Romania B	23:25	26:11	51:36
15. Gheorghe Chinga	Romania*	26:20	24:13	50:33
16. Edward Ciapala	Poland	22:08	27:57	50:05
17. Eugen Holtier	Romania*	24:41	24:32	49:13
18. Aurel Moraru	Romania B	19:57	27:02	46:49
19. Stefan Bombol	Poland	20:41	25:09	45:50
20. Eugen Cures	Romania*	26:11	19:37	45:47
21. Karoly Biro	Hungary*	22:31	19:59	42:30
22. Stefan Botos	Romania B	16:19	22:09	38:28

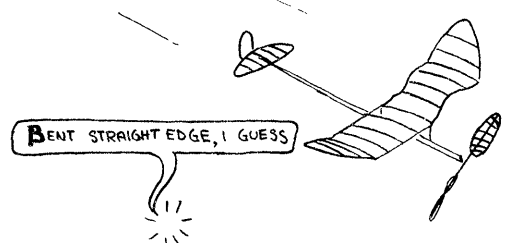
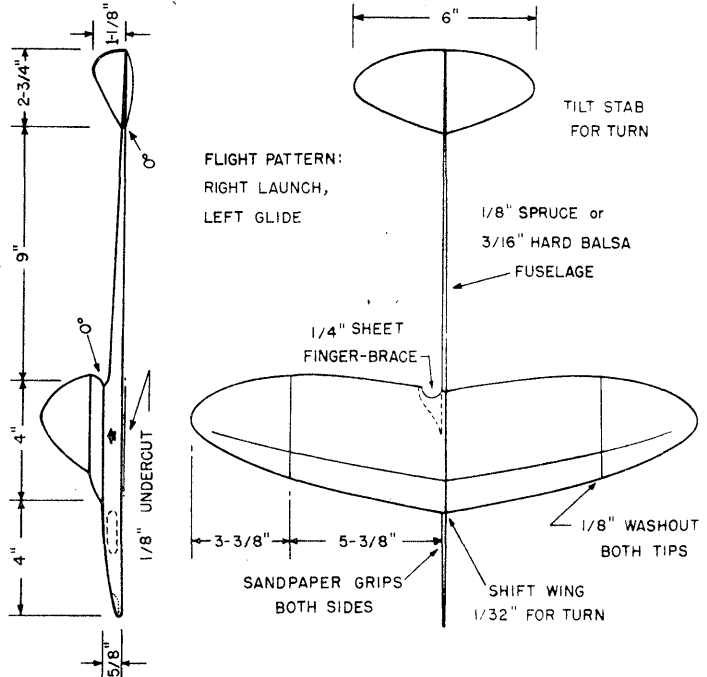
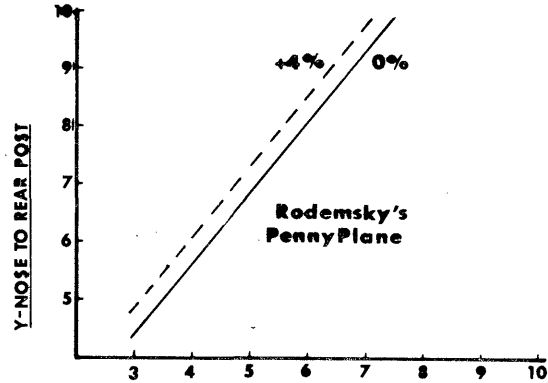
***Individual entrants**

Team Results

1. Hungary	171:44
2. Czechoslovakia	168:56
3. Romania A	166:29
4. Poland	154:33

Erv Rodemsky was honored by NFFS this year for his "invention" of the PennyPlane, along with the Chicago Aeronauts for their promotion of the model. NFFS features four PennyPlanes as examples, including Dennis'Jaecks' Nats winner (Dec. '71 INAV), models by Dave Linstrum and Clarence Mather (July '72 M.A.N.) and Rodemsky's 1/8 Plane as shown on page 2.

A second offering for the month is Ron Wittman's Tara 18, a glider which took several places at the 1967 Indoor Nats, and has set outdoor records as well. Full size outlines appear on page 3, with top and side views below.

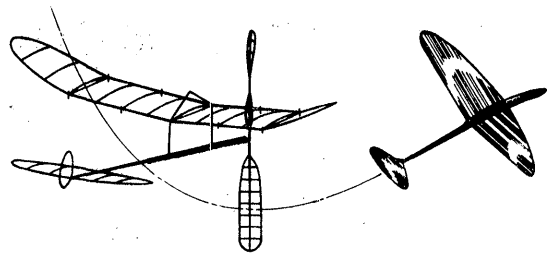


PAT PERCIVAL - INDEPENDENCE, O.

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



<u>Indoor Stick</u>		<u>Paper Stick</u>		<u>Indoor Cabin</u>		<u>Indoor HLG</u>	
<u>Junior</u>		<u>Junior</u>		<u>Junior</u>		<u>Junior</u>	
1. Gordon Clark	13:01.2	1. Scott Wisniewski	11:41.0	1. Richard Whitten	4:49.4	1. Jeffery Tillou	96.6
2. Scott Wisniewski	12:13.2	2. Bruce Pallet	10:47.0	2. William Wood, Jr.	3:46.2	2. William Schlarb	93.3
3. Jeff Hardcastle	10:43.6	3. Jimmy Clem	10:10.0	3. William Schlarb	2:59.2	3. Scott Wisniewski	86.2
4. Jimmy Clem	10:14.4	4. Jeff Hardcastle	9:56.6			4. Barry Pallet	85.8
5. William Schlarb	9:33.2	5. Barry Pallet	9:55.0			5. Kenneth Bauer	82.9
<u>Senior</u>		<u>Senior</u>		<u>Senior</u>		<u>Senior</u>	
1. William Shailor	23:04.0	1. Tom Sova	19:34.2	1. Tom Sova	14:41.0	1. Charles Wiese	115.3
2. Tom Sova	22:15.2	2. Robert Dunham II	17:03.8	2. Gregory Simon	13:19.4	2. Ronald Ganser	110.8
3. Richard Doig	18:32.0	3. Ronald Ganser	16:13.2	3. Michael Kuehne	11:13.0	3. Robert Dunham II	109.6
4. Ronald Ganser	17:03.8	4. William Shailor	12:25.0	4. Ronald Ganser	9:01.2	4. Peter Lewis	109.2
5. Robert Dunham II	16:35.0	5. Gregory Simon	11:38.2	5. Robert Dunham II	9:00.6	5. Brian Pardue	106.0
<u>Open</u>		<u>Open</u>		<u>Open</u>		<u>Open</u>	
1. Clarence Mather	30:00.0	1. Larry Cailliau	23:19.0	1. Bucky Servaites	22:18.8	1. Rudy Kluber	127.0
2. Jim Richmond	28:50.6	2. Dennis Jaecks	21:06.0	2. Jim Richmond	21:48.6	2. Larry Cailliau	121.0
3. Al Rohrbaugh	27:28.6	3. Jim Richmond	20:34.8	3. Al Rohrbaugh	19:40.6	3. Don Chancey	117.5
4. Dennis Jaecks	26:23.4	4. Clarence Mather	19:11.6	4. Wayne Zink	14:31.4	4. Bucky Servaites	116.0
5. Gilbert Graunke	23:56.2	5. Charlie Sotich	18:30.6	5. Charlie Sotich	12:11.0	5. Robert Watson	115.0
<u>Indoor Scale</u>		<u>PennyPlane Event</u>		<u>PennyPlane Event</u>			
<u>Junior</u>		<u>Junior</u>		<u>Open</u>			
1. William Wood	100	1. Tim Stone	5:55	1. Dennis Jaecks	12:25		
2. Barry Pallet	92	2. Tim Noonan	5:25	2. Larry Cailliau	11:36		
3. Scott Wisniewski	82	3. Kurt Berg	5:16	3. Martin Richardson	11:31		
4. Bruce Pallet	80	4. John Gvrtlik	4:59.3	4. Clarence Mather	10:40.1		
		5. Bob Perkins	4:29	5. Joseph Sova	10:39		
		6. Gregg Miller	4:01.7	6. Rol Anderson	10:03		
		7. Mindi Linstrum	3:35	7. Charlie Sotich	9:54		
		8. Dan Hinich	3:26	8. Warren Williams	9:50		
		9. Scott Wisniewski	3:26	9. Bucky Servaites	9:34		
		10. Jenny Linstrum	3:19	10. Richard Hardcastle	9:32		
		11. Gordon Clark	1:42	11. Rolfe Gregory	9:22.4		
				12. Hank DeKat	8:54		
				13. Robert Hayes	8:01		
				14. Ken Kraemer	7:57		
				15. Jack Tisnal	7:24		
				16. Al Kirchoff	7:19		
				17. Jim Pulley	7:10		
				18. Howard Haupt	7:07		
				19. Otto Curth	7:00		
				20. Hardy Brodersen	6:22		
				21. Gordon Wisniewski	6:19		
				22. Bob Johnson	5:56		
				23. Dave Linstrum	2:39		
<u>Senior</u>		<u>Senior</u>					
1. Mark Kummerow	130	1. Tom Sova	10:23				
2. Brian Webster	105.83	2. Kim Mather	7:19				
3. Michael Kuehne	103.67	3. Mark Kummerow	7:15				
4. Patrick Wood	54.0	4. Bill Shailor	6:53				
5. Michael Joerms	51.33	5. Greg Simon	4:29				
		6. Rich Jaros	3:40				
<u>Open</u>							
1. Frederick Stark	146.67						
2. Charles Markos	130						
3. Clarence Mather	124.33						
4. Don Garofalo	124.33						
5. Bucky Servaites	118.0						
6. Charlie Sotich	112.67						

'72 Indoor Nats

by Curtis Janke

The most inspiring feature this year was the presence of the two little girls, daughters of Dave Linstrum, who flew in the PennyPlane event and did surprisingly well. Did their own winding, with Pop holding.

I didn't fly in the glider event, of course, and was pressed into sitting at the table and counting gliders so that no one tried to fly more than three. From what cards I saw, the times seemed to be mediocre. (Ed. Note: all times were lower than '71, except for the top two times in Open HLG, which were up by a fair margin.)

Tuesday, very early in the day, there was noticeable lift, but the sun went behind clouds soon after that for the rest of the day and this seemed to affect the times. I think that Mather was first with about 30 minutes, Richmond next with close to that and Rohrbaugh next with about 28 minutes.

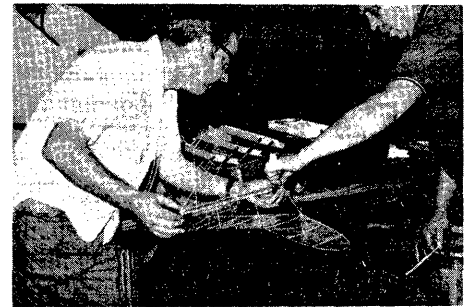
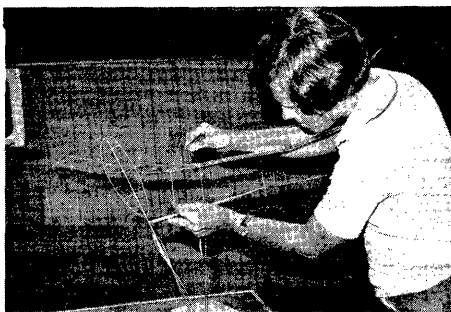
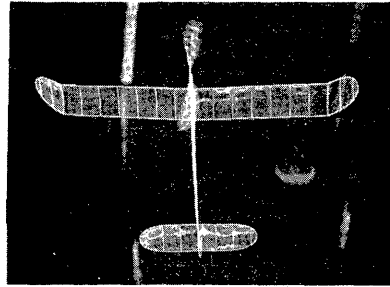
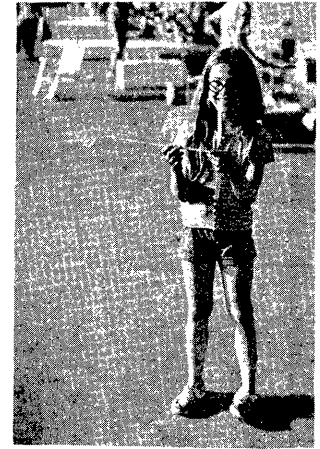
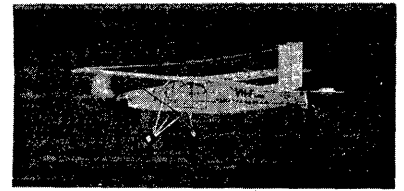
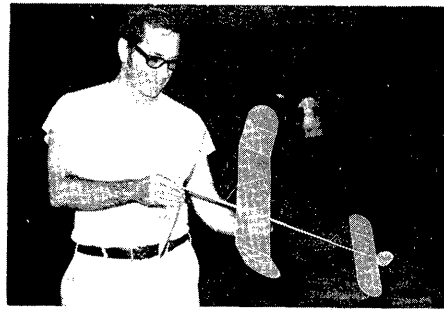
Richmond's best flight got up quite high but didn't do the rafter-banging that featured his wins of other years. He placed high in paper, and the ship seemed to be flying well. (Ed. Note: Jim's 20:34.8 third place would have won in '71.) Jim also took second in Cabin, with almost 22 minutes. He spent more time on this than on the others combined, but took only two flights. First he damaged the model during processing (token processing was in effect for Paper and Cabin, but not Stick.) He repaired it, then ran into difficulties several times while winding, requir-

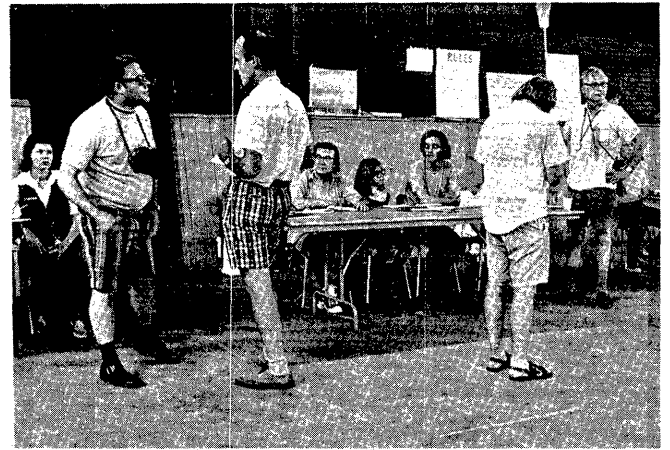
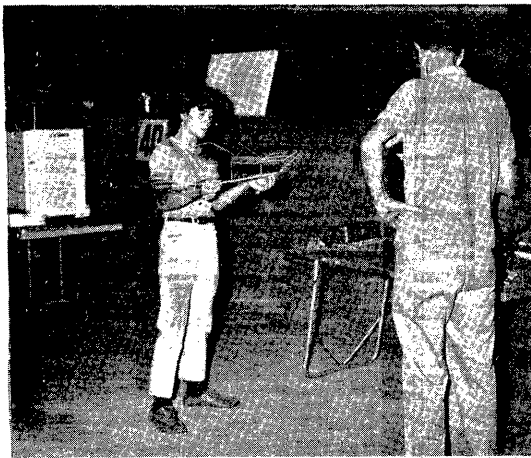
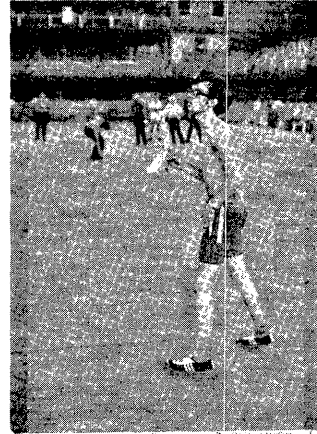
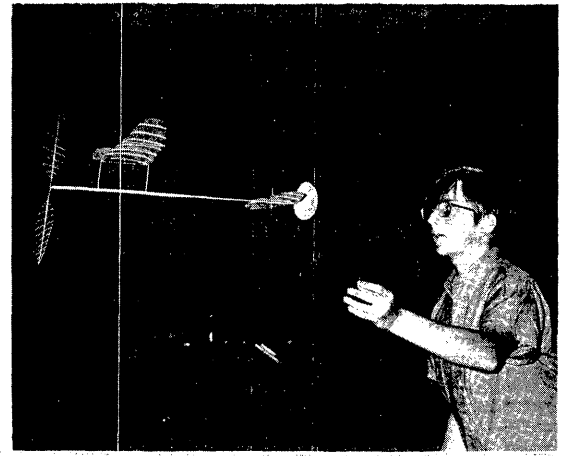
ing further repairs. He eventually did get off a flight after repairing some damage incurred during wind-up, but the ship climbed too fast and hung. He bumped it down, but completely smashed the rudder and stab. I advised him to transfer tail surfaces from one of his Stick models, (this would have been relatively simple, requiring only cutting both booms at the right spot and splicing) but instead he pulled off one of his miracles and repaired it. This called for an almost 100% recovering job (from a sheet of patch film I was able to supply, and which I would have sworn didn't have that much film on it!) as well as the gluing of broken ribs and outlines.

He got it off about 8:30. It struck another model head-on during the flight but both bounced away unscathed. It may have struck lights once or twice during all this as well, but it was hard to follow against the glare of the lighted bulbs.

The most remarkable ship there was Rohrbaugh's large ship which he took out fairly late in the day. It had a span of around 48" (very high aspect ratio) with a 27" prop that turned over at an incredible 35 RPM in the climb. He didn't get it high enough to really show its potential, but it was a slow airplane and turned in remarkably high time at low peaks. The dihedral he used looked like a tow-line format; in fact I called it a mike-covered Nordic.

What few official flights I had didn't amount to much, and were made under difficult conditions. My paper job of





some vintage seemed to be in trim, but it hung and was destroyed after one fairly good flight. However, a new "C" that I built for the meet got up into the peak on an unofficial flight (launched by Richmond, who picked the perfect spot for a classic pattern) but it was the first time in the air for the airplane. It landed deadstick and did only 24 minutes. Perhaps it would have done better with the longer loop I tried next, but the wing was just too weak and folded on the next (official) attempt.

-30-

From other correspondents we gleaned a few more items about the "largest Nats ever" (at least in total entry). Everyone gave high praise for Bob Champine's work as Indoor Category Director, and for Ron Evans, who ran HLG. Somewhat cool air was mentioned as hampering HLG times, and drift was high during the Rubber events. To someone it seemed as if there were more hung models, and there was a narrow escape when a light came loose as it was lowered for model retrieval.

One other item stood out in everyone's mind: the timer situation. Navy timers were not available, so volunteers supplemented a time-a-flight-fly-a-flight system. All who commented mentioned the high degree of cooperation evidenced in this operation - both indoors and out - and we can all be proud of the universally good response. It would be well to note that this type of operation will probably be typical for all future Nats, so we are off to a good start that can become a tradition.

INDOOR SCALE REPORT

By Dr. John Martin

Total entry in the Indoor Scale, Peanut Scale and Navy Scale events was 61, with 29 in Indoor Scale and nearly as many in Peanut Scale. New rules for Indoor Scale stated that flight points could not exceed workmanship points. Therefore, judging became crucial and the judging this year was very tough. Static scores (top five) were:

1. Tom Stark	DeHaviland 29	78 2/3
2. Bob Clemens	Longster	78
3. Andy MacIsaac	PT-19	71 1/2
4. Don Garofalow	Corbin Super Ace	71 1/3
5. Fulton Hungerford	Boeing 80A-1 Trimotor	70 1/3

As can be seen from above, the best possible total score would be 157 1/3. Of those who flew, 10 equalled or bettered their static score, 15 did not. The average score for workmanship was 57 out of 100 possible; pretty strict! The flying was over early for the 10 who equalled their static score, and the rest posted their four official flights in quest of their best times.

A different type of ship will emerge as a result of these new rules - which were well received by most of the modelers. Just after the contest, it was possible to send the winning model to the Smithsonian for display! Bid goodby to the flimsy three-minute flier! (Final results elsewhere in this issue).

The winning model (DH-29 Doncaster) was large (about 28" span), blue tissue covered, strictly scale model of 1 1/2 oz. weight. It was loaded with scale details: shocks, external control horns and wires, realistic scale engine, windows, padded cockpit, outlined surfaces and no deviation in number of ribs, spars and amount of dihedral. The prototype was an early passenger monoplane; DeHaviland's first monoplane with cantilever wing.

Due to the scale dihedral, Tom had plenty of problems with trim despite the fact that this was his third year with the model. At one time he had 45" of 1/4" pirelli stuffed inside. It survived several hard crashes before making 1:08 to win on the last flight. A beautiful model!

The winning Senior model was a 1911 Cessna, modified from a Henry Struck plan and incorporating all the details of the original. The first flight (1:08) exceeded the static score of 65, giving Mark Kummerow a score of 130, a tie for overall 2nd place.

Navy Scale, an unofficial event, was offered as a tribute to the Navy by the Michigan Cloudbusters and as a farewell to the Nats sponsor of so many years. The severe judging of Indoor Scale was continued in Navy Scale, where any Navy aircraft was eligible. Tom Stark repeated his winning ways to take this event also. The top five:

1. Tom Stark	Brewster XSB-1	118
2. Dr. John Martin	Martin MO-1	104
3. Ed Fort	Lewis & Vought VE-7	99
4. Ralph Kuenz	F4F3 Wildcat	82
5. Pat Wood (Sr.)	Douglas A-1	75

The winning model, a Brewster XSB-1, an obscure and unlikely flyer, is a barrel-shaped, mid-winged and stubby airplane which performed beautifully for Tom Stark; and his flight of 59 seconds just equalled his static score of 59 points. The model had 20" span, weighed 1 oz. and was covered with clear-doped colored jap tissue. Power was four strands of 1/16" pirelli in a loop three times the distance from nose to rear hook. The winning flight carried 1760 turns.

To this writer's thinking, Peanut Scale has got to be the most interesting and exciting indoor event. Consistency is a factor since the score is a total of three official flights. A ten point bonus for rise-off-ground tempts one to risk "blowing" the whole deal by letting the 13" rascal struggle off the boards into the air. This event properly balances the scale emphasis of Indoor Scale by stressing flying and consistency. I feel that Indoor Scale should always be accompanied by Peanut Scale to balance out the program! At the Nats, Peanut is another unofficial event sponsored by the Cloudbusters. The event is still growing in popularity, with the models resembling the 1935 Megow 10 1/2 kits. It drew almost as many entries as Indoor Scale including such "pros" as Sotich, Hardcastle, Warner, Mather, Stark, Martlet and Hungerford.

Bill Warner won the Hannan Best Antique award with a wierd canard Sopwith SE-1 that fortunately never hit anyone during its aerial escapades. It was a mass of horizontal and vertical fore and aft planes, and it was fast! Getting these little one-foot beasts to trim out is not as easy as it looks. The top ten Peanuts:

1. Clarence Mather	Nesmith Cougar	359
2. Al Kiechoff	Nesmith Cougar	232
3. Dr. John Martin	Martin MO-1	227
4. Mike Kuehne (Sr.)	Beardmore Wee Bee	215
5. Tom Stark	Damlier L-15	214
6. Jim Pulley	Waterman Racer	174
7. Don Garofalow	Nesmith Cougar	146
8. Charlie Sotich	Volksplane	141
9. Steve Ovavec	Piper Vagabond	137
10. Chris Clemens (Jr.)	Farman Mosquito	133

As a warmup to his win in Indoor Stick the following day, Clarence Mather won Peanut Scale with a "bare bones" Cougar. The span was 13", single covered with microlite. Power was a 15" loop of .043" pirelli; 1200 turns gave consistent flights of 2 minutes. The model weighed under 3 grams and was constructed of 1/32" sq. C grain 4 lb. wood throughout. "Such a model is capable of a lot more time," observed Mather. It is interesting to note that Clarence ignored penalties for single-covered flying surfaces and for using microlite covering. In fact, his model had the lowest static score of the 25 models entered - a minus 13. He also disadined another 10 points by not choosing to R.O.G. on any flight. The proof that he knew what he was doing was that he won the event, on flying time alone, by a healthy 127 point margin! Some post-event muttering produced a most helpful suggestion: All Peanuts should be double-covered with Jap tissue, period. To this correspondent, an excellent suggestion! Any Peanut structure supporting two layers of Jap tissue would end up in the 4 to 5 gram class without the need for a weight rule.

Charlie Sotich's super-light Volksplane met disaster when his pirelli hung up on the internal tungsten bracing on flight #2. The fuselage of the .076 oz. (2.2 g) model was demolished while extricating the rubber.

The Farman Mosquito by Chris Clemens won Junior Peanut while powered with an 18" loop of .070 pirelli. The model was double-covered with condenser paper and was scaled down from the Lew Gitlow design.

Some concluding observations: The atmosphere of this scale contest was electric! At the conclusion of HLG (which can be described as hectic) an appreciative core of spectators remained. As I recall, Mr. Neiderhauser put up a flight with his Douglas M-2 "Globe Girder" biplane that was as esthetic an experience as watching Pavlova do a ballet pas-de-deaux. When the craft landed and appreciative gallery applauded the flight in salute! This was a stirring moment. Succeeding flights were greeted with applause from those who knew what was transpiring. This sincere appreciation for effort touched this reporter's sensibilities! Come and spectate next year!

Also, the new rules (flying time cannot exceed workmanship points) have accomplished something. Pilatus Porters and Cessna 1911's did not dominate the event as in past years. Of the 12 models on top in overall score (including two ties) only two Cessnas and one Porter were placed. Next year's scale model will be a lot more like a real aircraft - ribs, rigging, etc. (and probably heavier). Hopefully, Peanut Scale will remain the joyous giggle that balances the serious efforts of the Indoor Scale modeler.

New Members!

JIM RICE, 632 NW 57 Ct., Miami, Fla. 33126

Nats Report - Thanks!

The July issue carried a plea for help in reporting the '72 Indoor Nats. The response was terrific - lacking only details of HLG - and came out so well that this may well become a regular thing. Five people sent photos - a total of over 30 to choose from - with excellent choice of subject and good captions. Your editor has always had a "conflict of interest" in reporting the Nats - either he was flying or CD'ing - neither calculated to make for an efficient and complete report. Not only did those who sent reports and pix make this issue possible, they did so well that a group effort is obviously much preferred!

Nats Indoor Champion

One item of interest was omitted from the many reports received - who was Indoor Champ? It is possible to piece together an interesting picture of very close performance, without actually discovering who the winner was.

To understand the above, we need background. First, Championship rules require that aspiring Champs submit an entry naming which events they wish to be scored in, and this entry can comprise no more than half the number of events in the category (fractions rounded to next larger integer). For Indoor Champ, five events (Stick, Paper, HLG, Cabin and Scale) are official, making 5/2 events (round to three) to be counted. Points are awarded as % of the winning score. The performance of four possible contenders are summarized below:

	Stick	Cabin	Paper	HLG	Scale
Richmond	96	97.7	88	0	0
Mather	100	0	82	0	85
Cailliau	0?	0	100	95	0
Servaites	0	100	0	91.3	80

The question mark by Cailliau's name in Stick reflects that Larry might have entered Stick and placed below the information available. The other three fliers are shown with scores in just three events apiece. If they each entered for Champ and declared the events shown, Champs scores are: Richmond - 281.7; Servaites - 271.3; Mather - 267. Cailliau would have needed 86.7 points in Stick, but 5th (Graunke, flying a Slithery-Dee) was 80 points. So, depending upon who entered what, and what was declared for Champs points, the Indoor Champion was either Richmond (again), Servaites or Mather. (After computing all the above, curiosity overwhelmed me enough to prompt a phone call to pin down the Champion - it was Jim Richmond - but by a very narrow margin as shown above. That makes three times - congratulations, Jim!

FAI INDOOR REPORT

Team Departure

Shortly after you receive this issue, the U.S. Indoor Team (Bud Romak, Pete Andrews and Sal Cannizzo; with Bud Tenny as manager) will be enroute to the 1972 Indoor World Championships at Cardington, England. Thirteen countries are reported to have entered the contest, which will be flown Aug. 26-27, 1972. The U.S. Team will leave Aug. 20, expecting to be set up for possible needed repairs by Aug. 22. Official test flying will begin Aug. 25, with the contest beginning early the next day. Wish us luck!

Other European Teams

The July '72 INAV listed team members for Czechoslovakia, Italy, Hungary, Poland and Romania. Of these, only Hungary will not be attending the WCh; it was not then and still is not possible for me to tell which other countries make up the 13 entries reported. Since that issue, both England and France have reported on their team members:

England	France
Laurie Barr	Guy Cognet
John Blount	Jean-Claude Souveton
Martin Shepherd	
*Reg Farham	*Mrs. Souveton

*Managers (France had a third member, a Mr. Meritte, who had to resign. A report is available of the British Finals, which will be presented in a later issue. Top times were over 33 minutes in Cardington. French times were around 30 minutes in a 38 m hall near Paris.

Besides the records listed below, I received a photo of an A ROG model which "set a Junior record during the Nats." No other mention was made, either of who the flier was or the time involved. Also, a hand-written note on my copy of the official results indicated that Mather's 30 minute flight was a record. If he had been flying an FAI model (Janke's comments seem to preclude this) it could have been a AMA Cat. II FAI record.

TULSA GLUE DOBBERS RECORD TRIALS, July 16, 1972, Cat. I
John Mabee Gym, Univ. of Tulsa, 34' 11" ceiling.
Open FAI Cat. II FAI - 17:53, John English
Senior Cat. I Paper Stick - 11:58, Robert Dunham II

1972 INDOOR NATS - July 25, 1972 - Cat. II (90' ceiling)
Brig. Gen. R. L. Jones Armory, Chicago.
Senior Paper Stick - 19:34.2, Tom Sovo

THE PICTURE STORY

The captions below are for the pix on pages 2 & 3; numbers in parentheses after the caption key the source of the pictures according to this code:

(1) U.S. Navy; (2) Ron Plotzke; (3) Dave Linstrum; (4) Bob Clemens processed photos by Chris Clemens; (5) Gilbert Graunke.

Page 2 (vertical columns)

Left top: Overview of the indoor site during HLG (1)

#2 left: Bob Champine measures span of Charlie Sotich's Paper Stick (1)

#3 left: Richard Doig, member Detroit Balsa Bugs (2)

Bottom left: Fulton Hungerford, Curtis Pusher Peanut (3)

Top center: Jim Richmond & Paper Tiger (2)

#2 center: Al Rohrbaugh's high A/R "300" (4)

#3 center: Ralh Kuenz (1) and George Lewis examine "Golden Peanut" trophy (3)

#4 center: Paul Simon (1) helps son Greg prepare to fly Greg's cabin model (2)

Bottom center: Clarence Mather and Bipe (1)

Top right: Charlie Sotich's Volksplane (4)

#2 right: Jenny Linstrum and PennyPlane (3)

#3 right: Unidentified flier with variable-camber HLG (3)

#4 right: Rohrbaugh (1) and Wayne Zink wind Rohrbaugh's cabin model (2)

Bottom right: Dennis Jaecks and top Penny Plane; 8" wing chord! (2)

Page 3 (horizontal rows)

Row 1 left: Members of Bong Eagles on HLG day (5)

Row 1 right: Bill Shailor and Paper Stick (1)

Row 2 left: Jim Richmond (1) and Curtis Janke (5)

Row 2 center: Grady Turner, Longview, Texas (3)

Row 2 right: Mike Thompson, Lorain, Ohio (3)

Row 3 left: Kim Mather and Dad Clarence with Kim's first microfilm model (1)

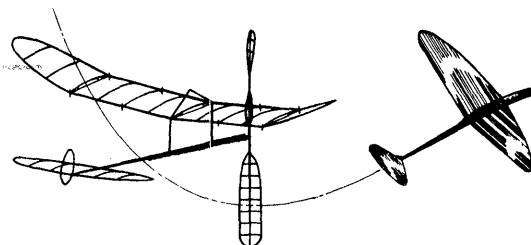
Row 3 right: Dennis Jaecks and Bill Bigge (r) in left foreground, Curtis Janke (1) and Ron Evans beside unidentified young lady (5)

Row 4 left: Wayne Zink holds cabin model for winding (3)

Row 4 center: Dick Hardcastle catches Indoor Stick (2)

Row 4 right: Indoor Scale judges at work (3)

INDOOR



NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

1972 INDOOR WORLD CHAMPIONSHIPS

1. Pete Andrews	U. S. A.	32:20	36:12	10:14	27:45	30:38	34:57	71:09
2. Karol Rybecky	Czechoslovakia	32:37	33:29	-	35:41	15:53	33:54	69:35
3. J. Jirasky	Czechoslovakia	29:30	32:37	36:12	0:13	31:39	29:56	68:49
4. Jiri Kalina	Czechoslovakia	29:48	22:35	14:32	13:00	30:24	38:18	68:42
5. Sal Cannizzo	U. S. A.	29:06	34:02	30:50	30:21	34:08	32:58	68:10
6. Aurel Popa	Romania	33:31	4:20	9:28	32:02	24:45	6:12	65:33
7. Bud Romak	U. S. A.	26:57	25:22	11:51	9:27	29:05	36:06	65:09
8. John Blount	England	31:18	14:18	25:16	29:51	28:00	32:52	64:10
9. Stefan Bombol	Poland	25:50	26:43	32:02	30:15	29:11	13:02	62:17
10. Adalberto Frioli	Italy	22:41	30:25	31:29	6:51	0:06	27:02	61:54
11. Teodor Strasberger	Yugoslavia	26:22	32:23	14:40	23:58	28:52	29:28	61:51
12. Otto Hints	Romania	27:48	8:36	27:22	4:20	29:47	31:33	61:20
13. Vilim Kmoch	Yugoslavia	26:05	30:09	0:23	24:44	23:06	29:53	60:02
14. Pentti Nore	Finland	26:33	27:55	22:56	29:04	30:01	28:25	59:05
15. Vasile Nicocara	Romania	28:56	4:56	12:09	17:01	29:42	19:19	58:38
16. Leopold Gabriel	Yugoslavia	28:52	29:23	28:13	23:05	27:47	0:25	58:15
17. Carlo Cotugno	Italy	24:51	27:53	27:02	19:40	26:31	30:18	58:11
18. Boyd Felstead	Australia	28:48	28:52	0:07	27:07	23:24	0:06	57:40
19. Martin Shepherd	England	23:31	28:03	8:54	28:49	21:38	0:06	56:52
20. Kurt Vogler	Germany	26:50	0:26	25:10	29:22	26:25	7:51	56:12
21. J. C. Souveton	France	23:16	29:13	26:28	13:53	24:04	23:09	55:41
22. Sylwester Kujawa	Poland	26:46	26:36	14:54	24:44	27:33	9:12	54:07
23. Ryszard Czechowski	Poland	24:35	25:17	26:15	0:17	17:46	25:16	51:32
24. Harro Erofejeff	Finland	20:43	23:56	25:53	24:59	10:28	-	50:52
25. Guy Cognet	France	19:30	24:42	24:41	26:52	17:38	0:21	49:34
26. Harri Raulio	Finland	23:05	23:08	20:56	24:24	23:58	17:08	48:22
27. Germano Masciullo	Italy	23:54	23:55	20:45	23:03	18:09	16:28	47:49
28. Laurie Barr	England	0:09	25:51	17:11	15:55	18:23	20:10	46:01
29. Horst Tiemann	Germany	20:54	20:35	19:02	20:10	21:39	23:26	45:05
30. Mike Thomas	Canada	17:19	18:12	16:11	18:14	19:27	19:34	38:01
31. Herbert Langner	Germany	15:20	19:03	17:28	18:15	0:12	17:15	37:18
32. S. Nonaka	Japan	0:12	13:42	19:00	9:55	0:15	10:16	32:42
33. W. H. Beekmeyer	Holland	6:53	9:46	7:15	3:30	13:23	19:02	32:25
34. Cornelis Wolthoorn	Holland	6:55	5:36	8:13	6:03	13:25	18:49	32:14

TEAM PLACINGS

1. Czechoslovakia	207:06	8. Finland	158:19
2. U. S. A.	204:28	9. Germany	138:35
3. Romania	185:31	10. France (2 men)	105:15
4. Yugoslavia	180:08	11. Holland (2 men)	64:39
5. Poland	167:56	12. Australia (1 man)	57:40
6. Italy	167:54	13. Canada (1 man)	38:01
7. England	167:03	14. Japan (1 man)	32:42

1972 INDOOR WORLD CHAMPS

Although the trip to a WCh really begins when a man wins the Finals, the proof of all the planning comes as the actual journey begins. Our team achieved a first - models completely undamaged during the trip across. Special boxes and handling precautions helped prevent the damage which usually happens, as all air carriers allowed us to carry the models to the plane and sometimes to load the boxes ourselves.

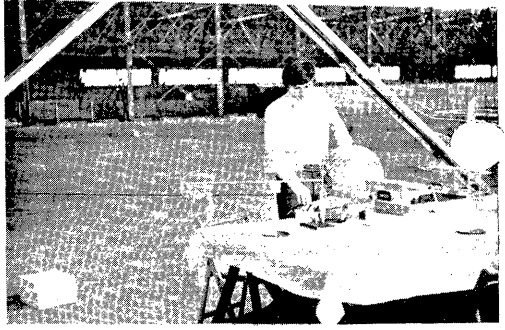
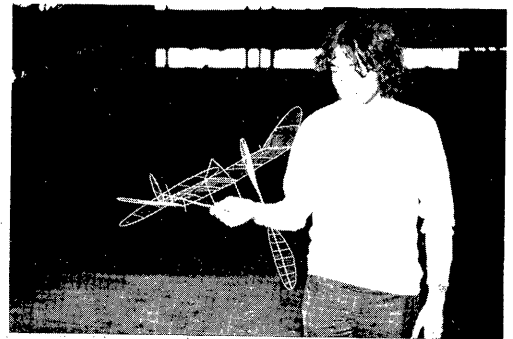
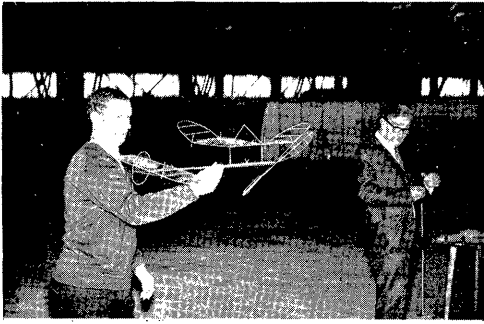
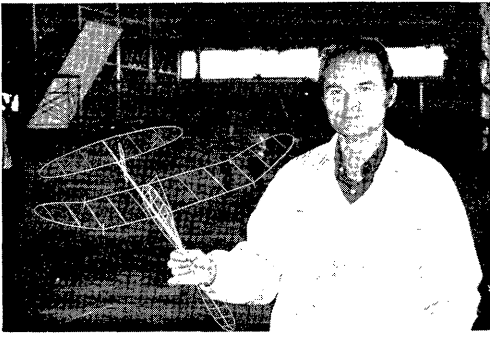
Pete Andrews and Sal Cannizzo had boxes patterned on the one used by Eduard Chlubny in 1970. These boxes had three sections hinged together at the back, with wings in both side sections and fuselages in the center. This allows access to any single model without disturbing others. Bud Romak's boxes were renovated 90 cm boxes, with plexiglas replacing one side panel. This feature allowed both Customs and airline officials to see why we needed special handling, and eased our way tremendously. In addition, all the boxes were covered with foam rubber for a cushion effect (Romak's foam was removable over the plexiglas).

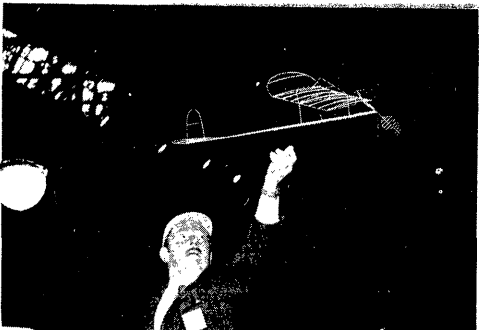
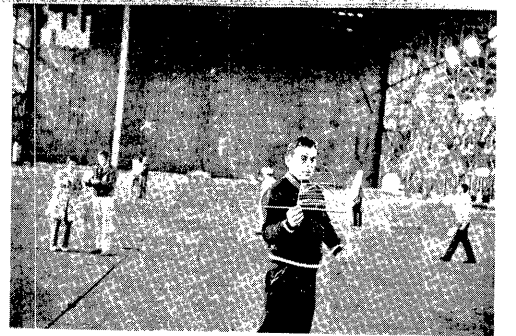
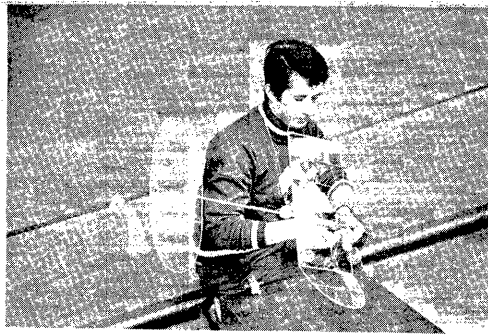
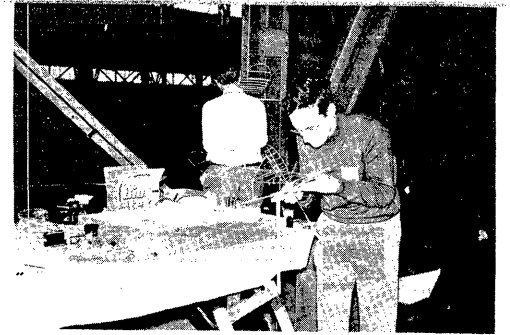
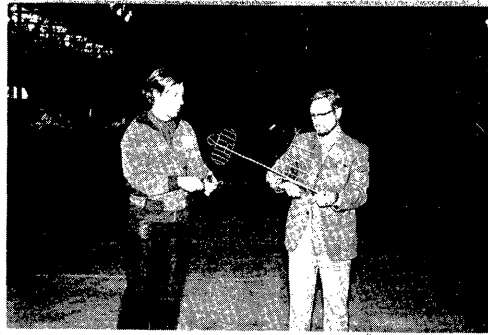
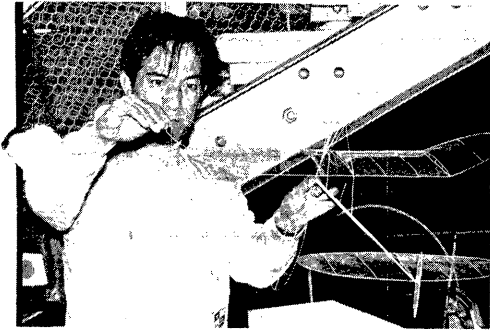
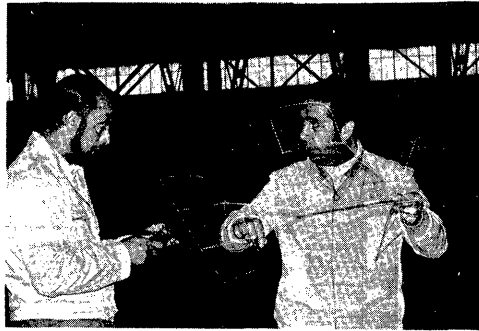
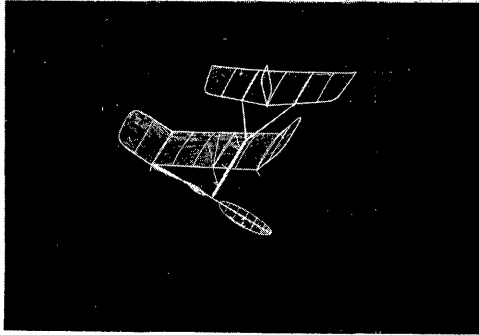
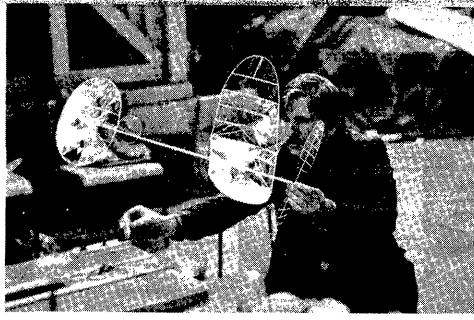
With no repairing needed, we had plenty of time to snap and sight-see. We had planned to arrive early so we could "change over" to European time, so we all were well rested by the time the contest started. Meanwhile, we visited London via train and subway (no way would we drive back into London traffic until we had to!) for shopping and sightseeing. We drove to nearby Bedford to catch the train, and found Bedford to be a nice place to visit also. Three trips into Bedford served to acclimatize us to the unnerving sensation of driving on the wrong side of the

road while shifting gears with the left hand instead of the right! Narrow country roads added (or subtracted) a dimension to the experience - meeting a bus or truck seemed to leave no room for us! After numerous trips between Cranfield and Bedford, and Cranfield and Cardington, Sal Cannizzo was declared the champion driver and he won the privilege (?) of making the return trip to London's Heathrow Airport.

Thanks to the arrangements by Laurie Barr and Ron Moulton, we were allowed to settle in at Cranfield Institute as soon as we arrived. The extra charge for room and board was less expensive than a London hotel would have been, while the staff and accommodations at Cranfield made us feel right at home. It hardly seems possible for any accommodations for wandering modelers to be better than these, and the bountiful supply of food was graciously served. The evening we arrived, we knew we were entering an aviation environment when we saw student glider pilots being towed and released on practice flights, even in the twilight hours. A beautiful sight!

Fourteen countries entered the 1972 WCh, with Czechoslovakia, England, Finland, Germany, Italy, Poland, Romania, U. S. A. and Yugoslavia fielding full teams. France and Holland entered two-man teams, while one flier came from Canada, another from Japan and Boyd Felstead sent a proxy entry from Australia. This made 34 entrants, ranging from seasoned teams to relatively inexperienced fliers who had never flown in a hangar and in some cases had not built models larger than Easy B before preparing for this event.





One fact stands out regarding the results: extensive experience in international competition is important training. The placings through 7th place directly reflect each team's experience in international competition, with the exception of the U. S. The Americans have extensive competition experience, including WCh experience for Romak and Andrews (Gannizzo has flown Wakefield in two WCh's) and all survived tough competition in the Finals. It has long been axiomatic that constant practice, preferably in competition, is essential to prove the combination of man plus indoor model, and this certainly held true in this contest. I am not so naive as to assert that practice is a cure-all; the point is that practice as a team or as an individual in hard competition is an absolute must for the finely-honed performance now required to win an Indoor Championship.

Test flying sessions were relaxed get-togethers which gave advance warning of what the competition might be, and generally had better flying conditions than the contest itself. Not too many notes were made about test results, except that no one missed hearing about the 41:05 test by Pete Andrews. No one knows how many people timed Pete's first official flight, but there were many!

The contest was organized to minimize the number of models airborne at one time. Each flier had to post three flights each day, and no team was permitted to have more than one model up at once. The 10 am to 6 pm official flying schedule tended to cramp three-man teams somewhat; simple arithmetic showed us that the first flight must be up by 11:15 if we were to have time for all the flights. In fact, once we began taking official flights, we had a timing crew assigned to our team almost all the time. The time crunch figured this way: five minutes minimum to take the model from the team's area to processing and out onto the floor; five minutes to wind and launch, 30 minutes or more (hopefully) to fly, and about three minutes to clear the watches, record the time and get a new timing crew. With nearly seven hours out of eight taken with active team flying, only spectators had time to study the scoreboard in detail to keep track of the team standings from hour to hour. This differed from a strict rounds system, where it is possible to review standing at the end of each round and adjust strategy if needed.

The results listed above show final team standings. At the end of the first day, the three-man teams were in this order: Czechoslovakia, U.S.A., Yugoslavia, Italy, Poland, England, Finland, Romania and Germany. From the results and from having watched the flying, it seems likely that any one of the U. S. or Czech fliers could have won the whole thing, and the other five might have filled in the next five places in any order. Cool air and drift kept the inversion layer so high that anyone who made it through the inversion almost certainly hit the top. Luck in rafterbanging had a large part in determining the final scores, and only one flier seemed to have an edge. Pete Andrews seemed to have slightly better altitude control so that his models hit later and easier. It was a formidable task to hit that narrow layer, and Pete seemed to have the key.

Three of the four newcomers to international competition - Holland, Canada and Japan (Australia was a new entrant, but the models were flown by highly experienced fliers) did very well considering their lack of experience and lack of places to fly. Mike Thomas of Canada was a volunteer who worked hard to improve his models, with some helpful hints from the nearby Czech team. Indoor has been sporadic in Canada, and hopefully Mike's efforts will be rewarded by support and encouragement from his countrymen.

Cornelis Wolthoorn and W. H. Beekmeyer represented Holland. Beginning four weeks before the WCh, they built the first 65 cm models ever built in Holland. All through the contest they were learning and improving their models, even building new motor sticks and wings. Their reward was a final score double that of their first day's time - a fine achievement! They also vowed to return to Cardington whenever possible to continue learning.

S. Nonaka, of Japan, had other problems. Part of his journey to the WCh was on a Russian airline with severe luggage restrictions. So, his models arrived in a box about 9" x 9" x 23". Inside were two complete motor sticks with tail surfaces removed, two props and one braced wing. He built at least one more wing at the meet and braced it with silk. Except for the auditoriums built for the Japan Olympics (which have not been available for Indoor), sites are almost non-existent in Japan. It will be interesting to watch this nation of craftsmen build on what Mr. Nonaka has learned!

Germany's low showing was disheartening to them, but it was a triumph of hard work and good leadership. Only Kurt Vogler had much previous indoor experience, and he had recently recovered from severe illness. Tiemann and Langner were absolute beginners, flying the first indoor models they had ever built. All the German models were small (narrow chords) and Tiemann and Langner had models weighing 1.3 and 1.4 grams respectively. However, these models climbed high, flying cleanly, and were very well

adjusted. Gunter Maibaum had done his coaching well, and can be proud of the results.

Germany is another country without adequate sites - Westfallenhalle in Dortmund is drafty and available only at odd times on short notice. It is heavily booked by both industry and entertainment users, and permission for a flying session may be forthcoming with only a day's warning. Gunter remarked "It is ironic that the Land of the Zeppelin has no hangars left!"

The most exciting part of the contest (predictably) came in the afternoon of the second day. The Czech's lead was not insurmountable, and Romak and Kalina had almost exactly parallel troubles. Both had only average times on flights 1 & 2, hangups on 3 & 4, and the need to safely increase their standing before going all out on #6. It is to their credit that their strategy thus included team standings instead of personal glory. It became a very close battle, and very exciting for everyone.

The pressure on the Czech team really built up during Sal's last flight. He had boomed it up - to the top in just over three minutes. It should have hung up any number of times, as it spent about three minutes above part of the ironwork. As soon as it was clearly out of danger, most people counted it as a 38 minute flight. A patch of bad air just below the inversion layer cost a loss of over 40 feet of altitude - a rapid sink - before good air was available again. The damage was done in spite of a very slow-settling cruise, and it landed at 32:58. Kalina and Romak had the last of the good air for their flights, and Pete put up a beautiful flight that got all there was to be had. He gently rafterbanged for a long time, then came down slowly with the third highest single flight of the contest.

Only Rybecky's flight was left as Pete's flight came down - he had launched about 10 minutes after Pete. It went high enough, and slightly to the side, banging a few times. He had a balloon up, and while talking to Josef Gabris (Czech team manager), the model ran into the string. He almost aborted the flight trying to move clear, and the model lost altitude. He landed to applause, but short of the time needed to win. It was all over then, and all the competitors converged on Pete Andrews to congratulate the new World Champion.

Boyd Felstead's four models, which survived the air freight trip from Australia undamaged, were well made and quite flyable. In fact, these models were a marvelous job for someone whose last serious indoor work was 20 years ago! Boyd has been a regular INAV subscriber, and has avidly corresponded with many fliers over the years. As he determined to enter models in this WCh, he sought advice from everyone until he almost had no time left to build. Erv Rodemsky (appointed Aussie team manager) and Manny Radoff, who cooperated in flying Boyd's models, finally had to write Boyd "Shut up and build!" He did, and Erv and Manny obviously enjoyed themselves in flying these models to the limit. On the final two flights, they had worked up to nearly two grams of rubber, and a full windup on the 6th flight was too much. The model moved out fast for about six feet, then the wings collapsed and wrapped around the fuselage. The model then dropped to the floor, shed the tail boom, and tried to fly like a helicopter!

Just as at any other contest, the after-hours activity included bull sessions and more serious discussions. In many cases, the discussions went on - with or without an interpreter - and sometimes struggling along on pieces of two languages. A lot of the discussion dealt with where the next WCh might be held, and what known sites might be both suitable and available. Even those qualifications are not enough - the country owning the suitable, available site must be willing to host the meet! With that qualification in the picture, the outlook is gloomy. The Indoor Championship activity has grown enough that very few countries can afford to host an event which would take several days to run off in sites smaller than a blimp hangar.

Another topic which was discussed was future performance of the one gram model, and the related topic of flight tactics. Gunter Maibaum predicted that the next major advance in model performance would come from prop design improvements, perhaps aided by small refinements in airframe design. He agreed with a prediction that 5 years of experience with one gram models would probably result in a 50 minute flight, given good conditions in a hangar. An important future strategy will be understanding hall meteorology, coupled with balloon-carried instruments to determine conditions aloft. Conditions to be monitored include altitude of the inversion layer, drift conditions, location and strength of possible thermals, and location of downdrafts. It is possible that future issues of INAV will have reports on such instrumentation and how it can be used to plan flight strategy.

In spite of the wide diversity of designs at the U. S. Finals, King Monoplane reigned supreme at the WCh. Also, very few models exceeded 8" chord, and only a few squarish wing tips were in evidence. Even though the latest theory dictates a rectangular planform like those used in the

Finals by Richmond, Randolph and Radoff, apparently the structural efficiency considerations encouraged non-rectangular planforms. Dihedral ribs equal in length to root ribs must be very strong when wings are wide! Sal Cannizzo's parallel-chord-circular-tip planform, popularized by Richmond ('67 - '70) performed excellently and may be the best wing area/structure compromise. The major consideration on wing shape appears to be gaining maximum wing area while holding wing distortion to a minimum under high loading and poor conditions. Sal's last flight is a case in point - the wing held flat even though the model was fully wound. In fact, the braced stab assumed an "S" shape - left tip down, right tip up - and Sal's only comment was, "That's really wound!"

Motor sticks up to 15 $\frac{1}{2}$ " long were noticed, while props varied between 17" and 20". Dihedral patterns were almost evenly spaced between polyhedral and tip dihedral. Mike Thomas, of Canada, had "v" dihedral and extra long wing posts - the lone dissenter. Stab area ranged from about 35% to about 50%, but it would take sophisticated measurements to reveal if there was a difference in performance.

Some very nice flight accessories were noticed - such as scales, torquemeters and rubber strippers. In particular, the Finns had a hand-held torquemeter with the scale on concentric drums, and the Poles had torquemeters which were gimbaled in two axes so the torquemeter would align itself properly during the winding. Another torquemeter setup used by several fliers had provisions to mount the winder opposite the torquemeter so the distance between hooks was the same as on the model. After winding the motor, the winder would be locked into its holder and the torque could be checked. If "S" hooks or "O" rings are used on both ends of the motor, it is then possible to hook the motor directly to the model with a known torque level wound into it.

The Jury, Sandy Pimenoff of Finland, Jean Ganier of France, and Ron Moulton of England, did an excellent job. One of their hardest decisions involved Romak's third flight. The model had been cruising very close to a main longitudinal stringer of the hangar, when it appeared briefly tangled with a model seemingly out of nowhere. The models separated, and Bud's model flew about 15 feet into a dangling sandbag in the top center of the hangar where it hung. Was this a collision - eligible for another flight - or equivalent to contact with any other obstruction? The final decision, after careful deliberation, was that the flight must stand with the time accumulated at the time it hit the sandbag.

A final word of thanks: The Society of Model Aeronautical Engineers created a superb contest which was a memorable experience. All arrangements and planning were well executed, and the facilities were excellent. Well done!

THE PICTURE STORY

All the photos on p. 2 & p. 3 were taken by Bud Tenny and Erv Rodemsky (Rodemsky photos identified by (R)). The pictures are identified below in horizontal rows:

Page 2 - Row 1 The U. S. Team

1. Bud Romak with 36:06 model. (R)
2. Sal Cannizzo preparing for test hop.
3. Pete Andrews with 36:12 model. (R)

Row 2 England

1. John Blount with Reg Parham in background.
2. Keith Bullock assists Laurie Barr; Laurie's son Arthur in background.
3. Martin Shepherd (England), youngest WCh entrant and youngest flier to make 30+ with one gram model.

Row 3

1. Manny Radoff displays Felstead's geodetic indoor model - very strong, slightly heavier.
2. Erv Rodemsky (Aussie Team Manager) and his bag of cameras - rumored to contain 15 cameras and 100 rolls of film!
3. The German Team - (1. to r.) Herbert Langner, Kurt Vogler and Horst Tiemann. (R)

Row 4 The Czech Team

1. Karol Rybecky, second place individual. (R)
2. Jiri Kalina with model like the one used for 38:18.
3. J. Jirasky, third place individual. (R)

Row 5 The Romanian Team

1. Otto Hints unpacking models during test session.
2. Nicora Vasile with Otto Hints in background.
3. Aurel Popa, second youngest flier and highest placing flier from Romania.

Page 3 - Row 1

1. J. Moseley winds for Mike Thomas of Canada. (R)

2. J. C. Souveton of France.
3. Guy Cognet of France.

Row 2 The Italian Team

1. Very unusual model by Carlo Cutugno of Italy. (R)
2. Germano Masciullo winds Cotugno's model. (R)
3. Italian Team; (1. to r.) Cotugno, A. Frioli and Masciullo, with Fernando Migani, alos of Italy. (R)

Row 3

1. S. Nonaka of Japan. (R)
2. Harro Erofejeff winds for team mate Harri Raulio.
3. Cornelis Wolthoorn prepares model for test flight; one of first 65 cm models built in Holland.

Row 4 The Polish Team

1. Sylvester Kujawa returns from test flight.
2. Ryszard Czechowski, master machinist.
3. Stefan Bombol making a flight.

Row 5

1. Vilim Kmoch (Yusoslovia). (R)
2. Teodor Strasberger of Yugoslavia.
3. Peter Freebrey, Technical Secretary of S.M.A.E., calibrates the processing scales. (R)

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

RICHARD FOX*, 372 Oxford Ave., Akron, OH 44310

*Richard is contact man for the CYO Model Plane Group, of the same address.

Honorary Members

PIOTR S. BOMBOL, Wroclaw 12, ul Spotalzeiczol 44m4, Poland

CARLO COTUGNO, Via Eduardo Arbib n. 22, 00159 Roma, Italy
RYSZARD CZECHOWSKI, Krakow, str. Pradnicka 68a/60, Poland
SYLWESTER KUJAWA, Poznom, ul Swierczewskiego 114Em15, Poland

HERBERT LANGNER, 48 Bielefeld, Alfred-Bozistr 14, Germany
GUNTER MAIBAUM, 5 Koeln 60, Garthestr 3, Germany
PENTTI NORR, Korsholmantie 6A1, 00700 Helsinki 7C, Finland
HARRI RAULIO, Ulvilantie 15 A 10, Helsinki, Finland
KAROL RYBECKY, Bratislavia, Durgalova 4, Czechoslovakia
HORST TIEMANN, 48 Bielefeld, Mierfeld 45A, Germany
KURT VOGLER, 42 Oberhausen, Schmiedstr 62, Germany

Change of Address

STEPHEN J. FAUBLE, RR#3, Macomb, IL 61455
BOB GIBBS, P. O. Box 273, San Ramon, CA 94583

RECORDS? MAYBE!

INDOOR RECORD TRIALS, July 23, 1972, Cat. III
Santa Ana MCAF, Los Angeles, Cal.
Open Paper Stick - 27:30, Bob Randolph
INDOOR RECORD TRIALS, Aug. 13, 1972, Cat. III
Santa Ana MCAF, Los Angeles, Cal.
Open Indoor Cabin - 30:00, Bob Randolph
TULSA GLUE DCBBERS RECORD TRIALS, Aug. 26, 1972 Cat. I
John Mabee Gym, Univ. of Tulsa, Okla. 34' 11" ceiling
Open Paper Stick - 15:23, Stan Chilton

CONTEST CALENDAR

CALIFORNIA - Santa Ana
Record Trials on Oct. 15 and Nov. 12, 1972. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda, CA 92354.

TEXAS - Ft. Worth/Dallas

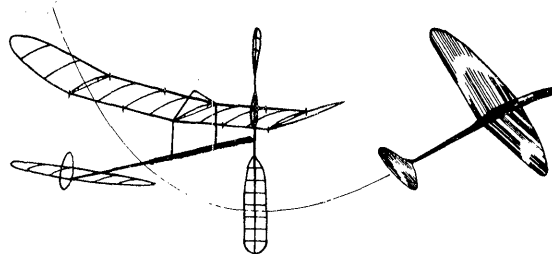
Indoor contest at American Airlines Hangar, GSW Airport, Ft. Worth, Oct. 1, 1972, 1 pm to 6 pm. HLG, Penny-Plane, Easy B, Indoor Stick challenge. Contact Bud Tenny, Box 545, Richardson, TX 75080 about two days in advance to be sure of site availability. Dual award system in HLG.

FAI INDOOR REPORT

Erv Rodemsky has been appointed as Program Chairman (not Team Selection Chairman) and has circulated a letter to his nominees for Indoor Program Committee members. His appointment was late and time is short, so he is faced by the need to develop a program immediately so it can be approved and announced to begin on Jan. 1, 1972. He is seeking nominations for Team Selection Chairman, and is trying to locate a "suitable" site within 600 miles of Kansas City, Mo. as spelled out in the AMA poll taken last fall after the Finals. Failure to locate such a site will automatically "decide" that a split Finals (Santa Ana and Lakehurst) will again be used. The fallacy of such a poll is that neither site may be available (at least availability cannot be guaranteed far in advance without renting the intended sites).

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

JEFF ANNIS, MTU, Wadsworth Hall, Rm. 309E, Houghton MI 49931
 VICTOR LARSEN, Rt. #3, Roanoke, TX 76262
 B. H. PETTIT, c/o CDC, 23815 NW Highway, Southfield, MI 48075
 DAVID A. ROSENZWEIG, 73 Griffin Rd., Framingham, MA 01701
 GREGORY SIMON, 24917 Cubberness, St. Clair Shores, MI 48080

Change Of Address

Last month it was announced that Bob Gibbs' new address was Box 273, San Ramon, CA 94583. He will still receive mail at that address, but also at his new home at 161 Larkwood (same zip, etc.)

Any NIMAS member who moves can notify his friends of the new address via INAV, provided he requests this listing. It will not be done unless requested when you let us know of the new address. Of course, if you don't let us know, and they are returned here, future issues are stacked up waiting for word where to send them. Therefore, it is important to check to see if this has happened when you are more than three weeks behind on an issue.

Renewal Notice

Most of the NIMAS members are now carried on addressograph plates (only those who have moved recently or have joined in the last few months are not). In the upper left hand corner of the address block there is a two-digit number denoting the month that subscription expires. For example, "02" would mean February, while those which expire this month will have "10" in the corner.

It is extremely helpful, from both a time standpoint and from an operational standpoint if members renew automatically before the last issue on that subscription. This is especially helpful during the winter months, when large numbers of subscriptions expire. For example, in January, over 50 subscriptions expire. It takes over an hour to prepare notices for that many - which means a later bedtime for me! So, if those who have 11 in their address block will renew shortly after receiving this issue, it will be a great help!

Indoor Construction Techniques - Help!

About 18 months ago a column was started on specialized indoor construction techniques; this was as a result of several reader requests for such a topic. Several topics were volunteered for the series, but not all those who agreed to write for the series managed to do so and the effort sort of died. So, this is a request for more inputs; if you have a different or possibly unique way to solve any of the construction problems of indoor models, why don't you share them? A simple sketch of whatever apparatus or technique you use, coupled with a word description, is all it takes. It would be helpful if the sketch can be ink or high-contrast pencil, but I can usually manage to redraw the sketches sooner or later. The important thing is that the information gets out - we have too many talented and inventive people to let the hobby stagnate for lack of communication!

This Issue

This issue was indirectly delayed by six successive Saturdays of overtime, and directly by a recent 16 hour work day. Besides that, I decided that a new HLG would be flown last weekend regardless of the state of INAV; it was, and I had fun. Model output from the Tenny shop has been at a low ebb; counting that HLG, Easy '72 and a new PennyPlane, four models have happened around here since the '69 Team Selection Program. One editor of the excellent newsletter "Splatter" once decreed that no issue would be started without some building between issues. It certainly would be more fun that way - but I still hope to restore the publication date to about the 10th to 15th of each month.

FAI INDOOR REPORTNo World Record

The July '72 INAV announced a Russian Cat. I record application for a flight of 1:58:28, noting that "considerable skepticism" was directed toward the application. According to Ron Moulton, the dossier supporting the claim was not filed within the time limit; further, his conversations with Russian fliers at the C/L WCh revealed that it was probably a practical joke!

FAI Rebuttal

The June '72 INAV contained a defense of one gram FAI models by Erv Rodemsky. Shortly thereafter, Manny Radoff offered a rebuttal which never made it into INAV because of its length. The same thing was printed in full on page 8 of the July Competition News. Anyone wishing to read his remarks who has no access to CN may request a copy and furnish a stamped, self-addressed envelope.

Much of the rhetoric associated with the one gram rule has been emotional in nature, and the concept is much less popular now than before its adoption. One may conclude that at least two of the original objectives of the one gram rule have been fully successful: FAI Indoor has been made more popular, and the models are easier to transport. In fact, it is ironical that the event is now so popular that it may be difficult to find host countries willing and able to sponsor the next WCh!

US Team to Romania?

Erv Rodemsky and Bud Romak hope to enter the international meet in the salt mine at Slanic, Romania next May. They would like to have another flier to go with them, so there can be a full team from the United States. Contact Erv at 1624 Saint David Dr., Danville, CA 94526, ph. 415-837-3314; or Bud Romak, 85 Sullivan Dr., Moraga, CA 94556 ph. 415-376-4624.

CONTEST CALENDAR

CALIFORNIA - Santa Ana
 Record Trials on Nov. 12, 1972. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda, CA 92354.

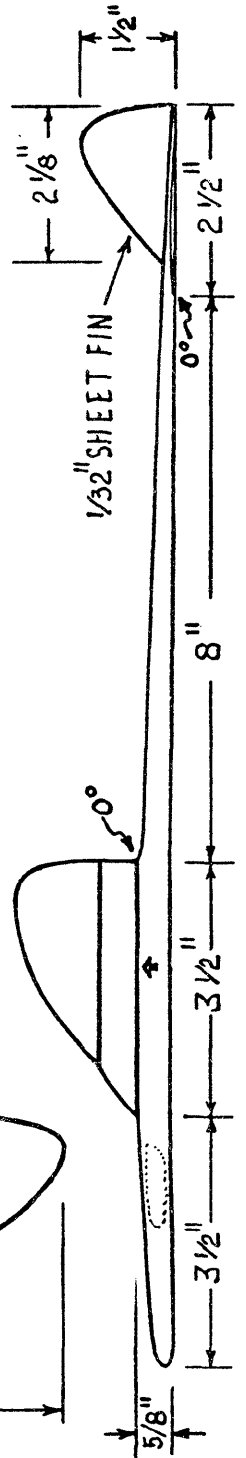
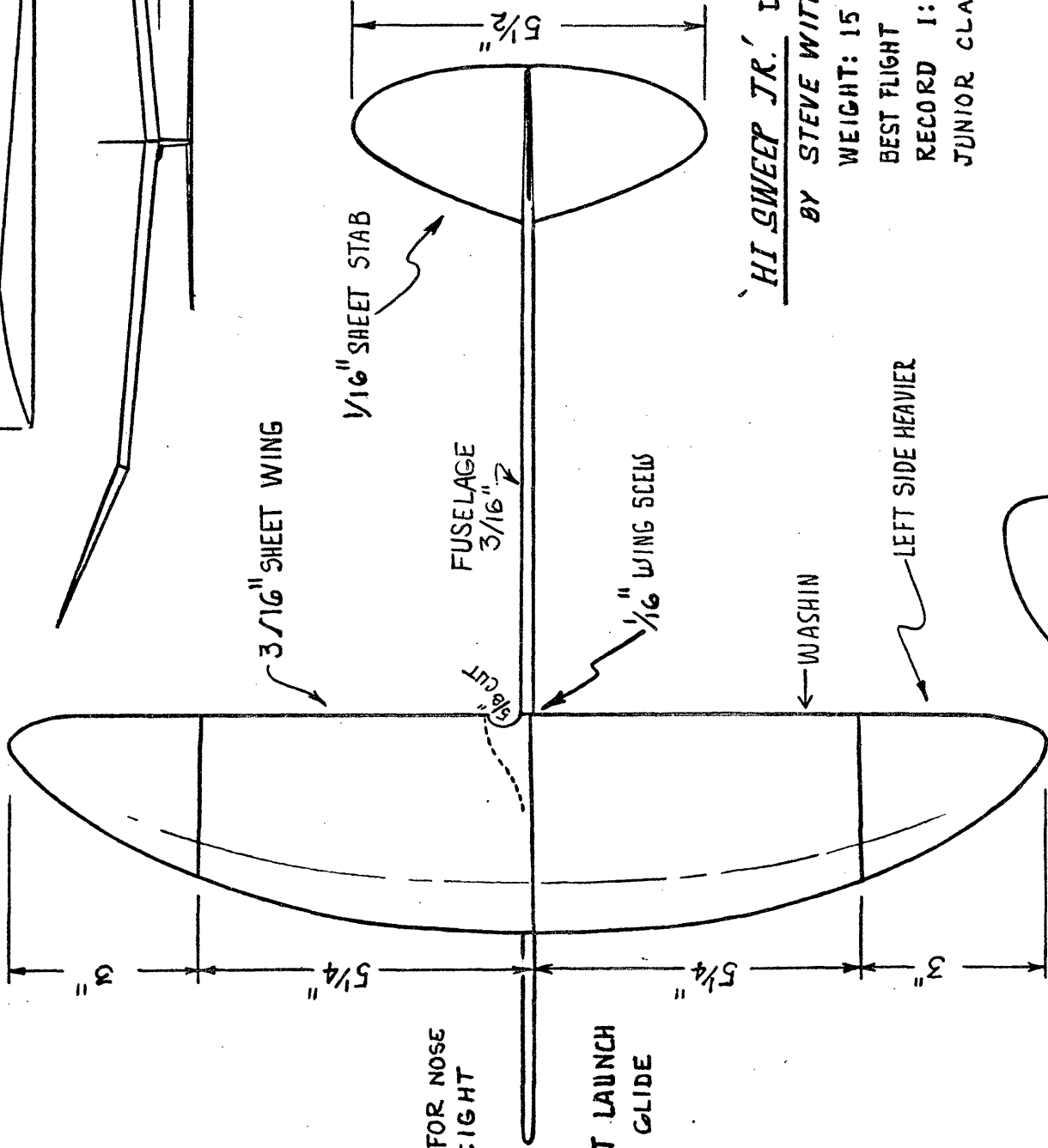
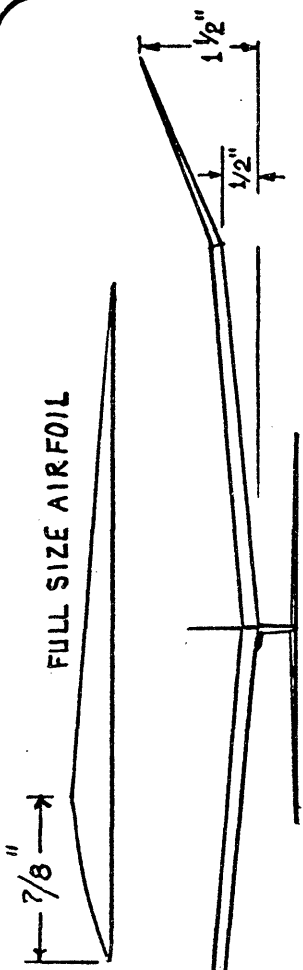
FLORIDA - Miami
 Indoor contests jointly sponsored by Miami Indoor Aircraft Model Association and the Dade County Park and Recreation Department on Nov. 12, Dec. 10, 1972 and Jan. 14, Feb. 11, Mar. 18, Apr. 15 and May 20, 1973. The site is the Youth Fair Exhibit Building, 25' ceiling with floor 120' x 235', located at SW 107 Ave. & Coral Way, Miami. Contact Dr. John Martin, 3327 Darwin St., Miami, FL 33133 for more details.

NEW JERSEY - Union
 Indoor flying sessions Nov. 9, Dec. 14, 1972 and Jan. 11, Feb. 8 and Mar. 8, 1973, at Livingston School, Union, NJ, 7 pm to 10 pm. Contact Dan Domina, 1229 S. Long Ave., Hillside, NJ 07208.

NEW YORK - Locust Valley
 LIAMAC Cat. I Record Trials Dec. 30, 1972 and Mar. 31, 1973 at Friends Academy, Locust Valley, NY. Write J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, NY 11545, for details and a map.

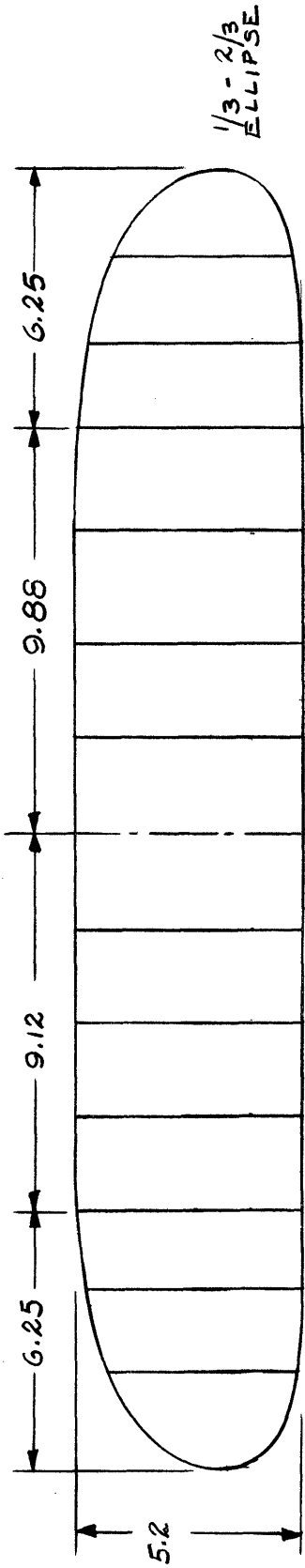
OREGON - Eugene
 Indoor contest at Sheldon High School, Eugene, Oregon, Dec. 3, 1972, Noon to 4 pm. HLG, Easy B, Ready to Fly Gliders, Ready to Fly Rubber, Indoor Scale, plus special events. Contact Bob Staley, 4315 Pearl, Eugene, OR, ph. 686-1491.

TEXAS - Ft. Worth/Dallas
 Indoor contest at American Airlines Hangar, JSW Airport, Ft. Worth, Nov. 12, 1972, 1 pm to 6 pm. HLG, PennyPlane, Easy B, Indoor Stick challenge, Peanut Scale. Contact Bud Tenny (214-235-4035) or Bob Wilder (214-BL3-8404) Nov. 10 or Nov. 11 pm as final check on site availability, since it is an operational hangar.



HI SWEEP JR. IHLG. CAT. III
 BY STEVE WITTMAN
 WEIGHT: 15 GRAMS
 BEST FLIGHT 52 SEC.
 RECORD 1:35.8 7-23-72
 JUNIOR CLASS

← WASHIN
 ← LEFT SIDE HEAVIER

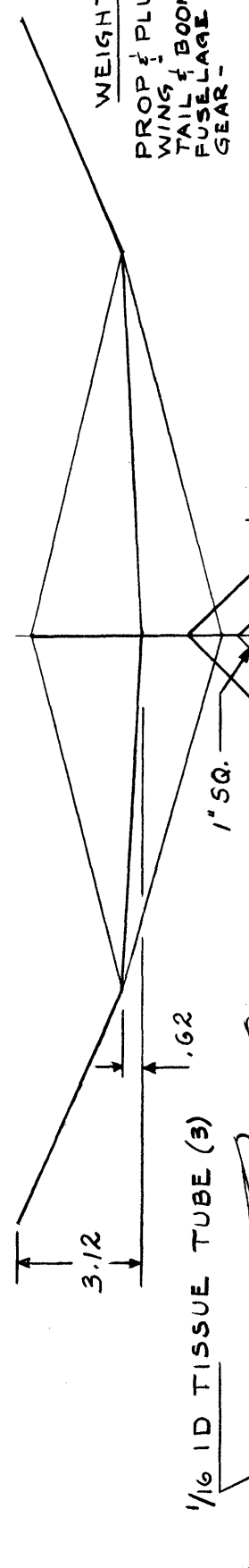
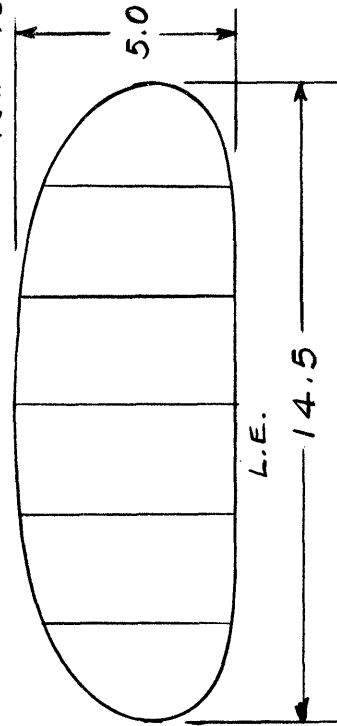


1/3 - 2/3
ELLIPSE

L.E.

WEIGHTS:

- PROP & PLUG - :008
- WING - :012
- TAIL & BOOM - :009
- FUSELAGE - :012
- GEAR - :002
- TOT. - :042



PROP - 17 1/2 D - 35 P
- 1.88 WIDE SYM.
MONOSPAR

NOTE - LOCATE C.G.
& GEAR BEFORE
BUILDING CABIN

MOTOR STICK
11/32 ID
.014 1/4 GRAIN
4 3/4 #

1ST - CABIN - NATS

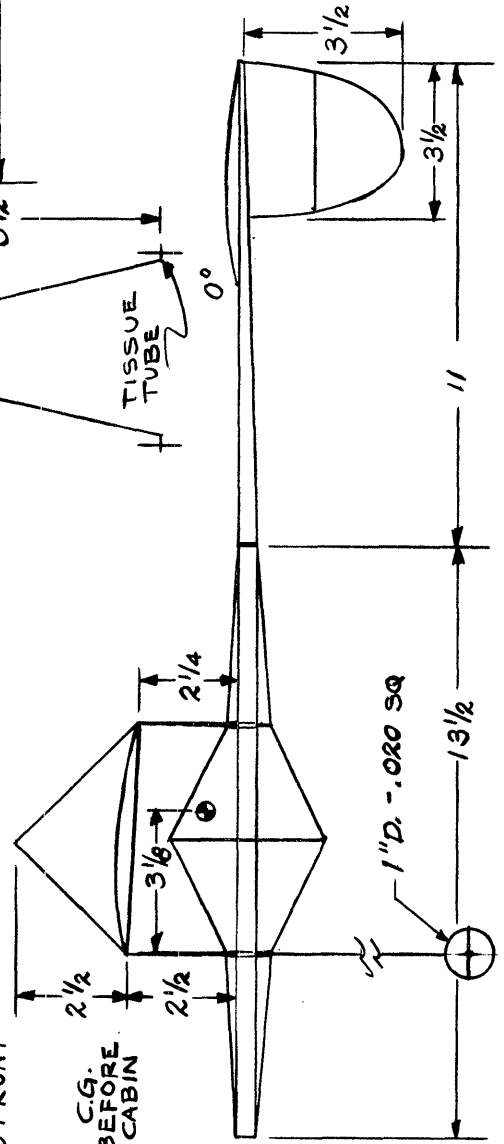
JULY 27 1971

RON PLOTZKE

23 min. 3 sec.

POWER - .061 x 17 3/4 PIRELLI
TOTAL TURNS - 1320
1230 TURNS USED

DRAWN BY GEO. BATIUK SR.



CONTEST RESULTS

THERMAL THUMBERS INDOOR MEET, May 14, 1972 Cat. III
Santa Ana MCAF, Los Angeles, Cal. 150'+ ceiling

<u>Jr. HLG</u>		<u>Sr.-Open HLG</u>	
1. Dennis Cunyngnam	1:39.2	1. Lee Hines	2:41.7
2. John Magnus	1:02.3	2. Bill Blanchard	2:25.2
3. Mike Regan	1:00.1	3. Marty Thompson	2:13.5
4. Jamie Howard	0:58.5	4. Bob Isaacson	2:12.0
5. Brad Hardiman	0:30.0	5. Ron Wittman	2:11.3
<u>PennyPlane</u>		<u>Open Peanut Scale</u>	
1. Clarence Mather	13:35.3	1. Don Edson	62.7
2. Warren Williams	12:16.8	2. Frank Haynes	61.8
3. Larry Cailliau	10:47.0	3. Ed Franklin	58.7
4. Bob Gibbs	8:30.0	4. Ray Harlan	57.2
5. Kim Mather	8:00.0	5. Sal Cannizzo	55.0

LIAMAC INDOOR CHAMPIONSHIP, April 30, 1972 Cat. II
Cantiague Park, Hickville, NY 50' ceiling

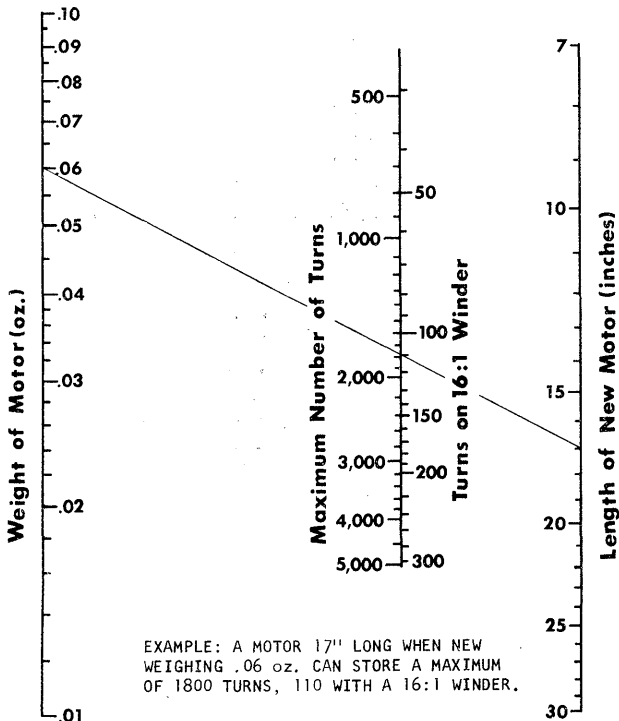
<u>Jr.-Sr. Peanut Scale</u>		<u>Open Peanut Scale</u>	
1. Chris Clemens	67.6	1. Don Edson	62.7
2. Dan Aggers	47.8	2. Frank Haynes	61.8
3. Bruce Paillet	46.8	3. Ed Franklin	58.7
4. Barry Paillet	46.7	4. Ray Harlan	57.2
5. Billy O'Connor	36.0	5. Sal Cannizzo	55.0
<u>Indoor Scale</u>		<u>Indoor Stick</u>	
1. Don Garofalov	143.8	1. Sal Cannizzo	11:31.4
2. Dan Domina	138.8	2. Dan Domina	10:59.8
3. Dave Stott	134.2	3. Pete Andrews	9:25.4
4. Joe Nuszer	134.0	4. Bob Leishman	8:53.4
5. Don Edson	134.0	5. Bill Landrum	8:51.8

<u>Jr.-Sr. Easy B</u>		<u>Open Easy B</u>	
1. Dan Aggers	6:31.0	1. Pete Andrews	9:46.4
2. Adam Menassian	6:30.8	2. Sal Cannizzo	7:50.4
3. Jerry Haynes	5:59.2	3. Don Jeter	7:30.4
4. Ron Stransky	5:49.8	4. Ray Harlan	7:28.0
5. Curtis Landrum	5:16.8	5. Jack Menassian	7:21.4

<u>Jr.-Sr. HLG</u>		<u>Open HLG</u>	
1. Ron Stransky	78.3	1. John Kaufman	82.2
2. Adam Menassian	70.6	2. Dan Domina	77.2
3. Bruce Paillet	67.0	3. Ray Harlan	76.6
4. Dan Aggers	66.2	4. Art Slater	76.4
5. Barry Paillet	65.8	5. Rich Kovaks	71.4

PIRELLI NOMOGRAM

The nomogram below has appeared in INAV before; it was designed by Charlie Sotich in 1962. It is intended to be used this way: make the motor to the desired length and weigh it. A straightedge between the weight (left margin) and length (right margin) will cross the number of turns on the middle scale. This method, using weight/length, is much more accurate than measuring strip width. Pirelli varies somewhat in thickness, and any stripping method has some variation, so weight/length is well worth the extra trouble to use.



STATE OF THE ART

Another dual offering this month - Steve Wittman's record HLG and Ron Plotzke's '71 Nats winning Cabin model. Readers may remember the cliff-hanging see-saw battle in Cabin (Aug. '71 INAV), with Richmond, Rohrbaugh and Ron snatching the honors from each other.

An interesting story backs up the glider: Steve Wittman is Ron Wittman's 9 year old son who recently decided build a glider patterned after his Dad's H1-Sweep 20. He built the glider largely unsupervised, and had trim help. One early session for practice, then a try for the record which turned up a time of 1:35.8. Very good flying for a youngster!

RUBBER STRIPPING METHOD

by Ted Gonzoph

It is possible to get very consistent cuts of pirelli with the proper equipment, preparation and a little practice in using the equipment. This is my way of stripping:

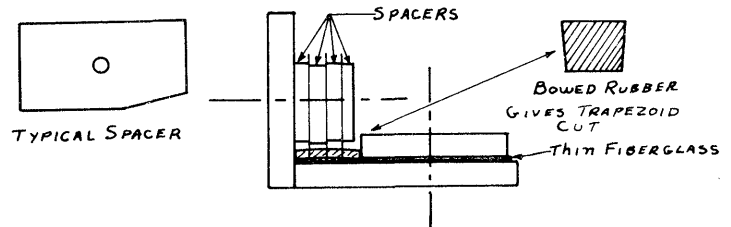
I use the Bilgri style stripper made of plexiglas, and generally take two strips from the center of 5 or 8 mm rubber, and discard the outer edges. This takes three razor blades and the blades give a smoother cut than the factory cut on the edges.

Much of the success of the method is due to using full width spacers like those shown in the sketch. They are made from special lead spacers available from print shops that do flat bed printing, or from steel rule die making shops. The spacers are available in sizes called "points" with one "point" being equal to about .015" in thickness. Intermediate rubber sizes are cut by adding similar spacers cut from .003" vinyl sheet, or other plastic which does not absorb water. Remember that the width of the cut will equal the spacer plus the thickness of one blade.

The blades are single edge steel (not stainless steel) razor blades with the doubler back removed. Each blade is typically .010" thick, so the thickness of a strip to be cut would be figured this way: assume a 4 point spacer; 4 x .015" = .060, then add .005" for half of the thickness of the blade on each side - a total of .070". To cut a .050" strip, use a 2 point spacer and three .003" vinyl spacers (total of .049", which is within the accuracy of the equipment). Important: do not use any spacer made from absorbent material. Stick to vinyl, celluloid or other plastic materials!

The gang-strip system is basically a matter of getting the spacers set for the cut needed. However, there is more - experiments since the mid-'50s show:

1. The guide side of the stripper should have two holes for locking.
2. The plexiglas base will wear ragged after several cuts due to razor impressions. I use a thin plastic or fiberglass base piece beneath the guide plate to sink the blades into, then replace it when it gets ragged.
3. The balsa wedge is important. If the guide spacing is set just right, then if the rubber gets slightly wider (pirelli can vary as much as .020" in width), the rubber will buckle and give a trapezoidal cut as shown in the sketch.
4. Use a vertical back piece with several bolt holes (I have six on 1/2" centers), then you can mount the blades in several locations without marring the base too much.
5. This I found most helpful: I wash the rubber while it is still in the skein and cut it into 50' lengths. Just before I begin to strip I place the rubber into a bucket which contains one gallon of water, a handful of Ivory Snow and about 5 ounces of glycerin. The rubber is fed into the stripper directly from the pail. The whole thing gets really sudsy, but the cut is so smooth that it's worth the mess.



INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

MICHAEL R. THOMAS, 141 Spenvally Dr., Downsview, Ont.
Canada

MICHAEL THOMPSON, 2917 Lincoln St., Lorain, OH 44052

Change of Address

GEORGE BATIUK, 2020 Club View Dr., Huntsville, AL 35810

NIMAS Awards

Silver Cat. II Rubber Award - 23:04.0, Bill Shailor

Jr. Gold Cat. I HLG Award - 0:24.0, Kevin Wehner

Who Dunnit?

Recently I received an international money order - these are converted by the U. S. Postal Service to another form and sent on to me in a window envelope. It arrived the day after a 16-hour work day, and I cashed it without noting who sent it. Will the person who sent it please notify me, stating the approximate date and amount?

Renewal Reminder

As noted last month, it saves me large amounts of time when members renew before their membership expires. Those whose mailing labels have "12" in the upper left-hand corner will find their membership expires in December, and if they send \$3.25 before time for the December issue, I can save the time of sending an expiration notice. Thanks to the many who responded last month!

Indoor Scale

The May '72 issue mentioned a very nice beam balance by Ohaus for \$30. The model mentioned has "inflated" to \$49 - not so good! Ted Katsanis has found that the beam balance his son used in school is good "as is", and can be improved. He says: "It is a model 99161-2 Equal Arm balance, available from Prentice-Hall, Inc., P. O. Box 900, Ed. Books Div., Englewood Cliffs, NJ, 07632. I gave \$3 for a set of centogram weights from Ohaus (set #218), which will weigh over one gram to the nearest .001 g. The sensitivity of the scale is just barely .001 g as it comes with a plastic pointer. The pointer lowers the CG of the arm, so if a balsa pointer is substituted the sensitivity would increase considerably. The scale has hardened steel knife edges for the center pivot and weighing pans, with an agate bearing for the center pivot. The originally mentioned Ohaus balance has magnetic damping, which could be easily added to this scale also."

New Indoor Dealer

Carl Jaeger, 2809 Casden Circle, Colorado Springs, CO 80909, has put in a complete line of Micro-X supplies. Address queries to: Duration, 2809 Casden Circle, Colorado Springs, CO 80909.

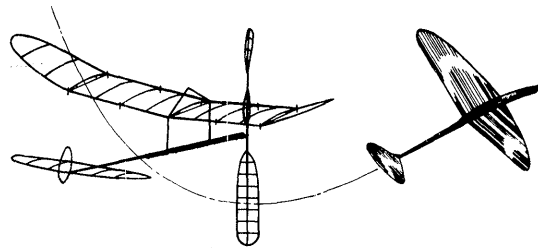
New Materials

Dan Domina has noted that the center strand of undamaged multi-strand control line wire is quite small and very nearly straight. For example, from .018" diameter stranded cable you can get a strand .005" diameter by untwisting the cable.

Financial Report

Last year, NIMAS reached a decision point on costs vs. services which resulted in overwhelming reader response in favor of 25% increase in dues - to \$3.25 per year. Also, a large number of people sent donations ranging from 50¢ to dollars, to make up the 1971 deficit. As a result, the income for 1972 amounted to \$899.26. With expenses up to \$865.49, the \$33.77 remaining does well toward erasing the deficit. The expenses break down as follows:

Printing + office supplies, misc.	\$455.85
Newsletter postage	324.74
Postage for correspondence	84.90
	\$865.49



Other statistics are as follows: newsletter circulation was 330 average, up 2½% from 1971. Incoming mail amounted to 609 pieces, with 676 pieces outgoing. The lower rate of correspondence is doubtless a reflection of slower response on my part. If I owe you a letter, I hope to get it off soon! I've spent more time earning a living lately, which reduces time for correspondence. Thanks to all of you for another good year!

SPECIAL INTERNATIONAL ISSUE

It has become traditional for the November issue to be dedicated to friends in other countries. This year, with happy recollections of the WCh, it has a special meaning to me. I renewed acquaintance with many of you and met so many more - my best wishes to all of you.

FAI INDOOR REPORTOne More Delay - A Minority Report

The latest word from the long-overdue FAI Program for next year (to pick the 1974 Team) is that AMA HQ requires yet another poll. This poll will probably be in your hands by the time you receive this newsletter - but only if you participated in the last Program. In other words, even if a newcomer might be interested in entering the new Program, he will have no say in its formation.

Some background: On p.7, Dec. '71 Competition News, it was announced as firm AMA policy that participants in the previous program will be polled "as soon as possible after completion of a program" to determine whether the site for the next program will be single (central) or at two or more sites. This poll was made, and the Feb. '72 CN announced that "a single suitable site will be sought within 600 miles of Kansas City."

The results of program planning by Rodensky and the Indoor Committee (Andrews, Stoll, Tenny and Matner) showed less than unanimous accord over the central site issue. Now, in clear violation of all previous announcements and "established policy", another poll will be taken by AMA HQ - who established this policy in the first place.

As a result, program planning will be delayed beyond Jan. 1, 1973, and announcements of the details will be far beyond that time. This violates more established policy which specifies that Team Selection Programs will begin not later than Jan. 1 of the year prior to the next WCh. In our case, the Program must begin Jan. 1, 1973. Erv Rodensky volunteered for his post fully two months before his appointment. If he had been promptly confirmed, we would still have time for this poll.

It is long overdue for AMA HQ to be taken out of the "decision loop" affecting FAI Programs, since this duty is not spelled out in the By-Laws. If that is not reason enough, take any criteria you wish - knowledge, competence, results, experience - AMA HQ has demonstrated an abysmal lack of stability needed to make coherent and meaningful decisions. Stated another way, any "expedient" decision that comes to mind is immediately implemented with no concern for short- or long-term effects. No one in the present "decision loop" has competitive or administrative experience in FAI FF or Indoor Team Selection matters. Further, and worse, no one in the loop is the least bit accountable to the membership, even indirectly. It is time for a change.

To end on a positive note: Things are what they are, and any possible change must be reserved for future programs if we are to have a Team for 1974. The best thing we all can do is to return the ballots promptly - 100% of us, whether we plan to enter the next Program or not. If the ballots can be 100% returned before the Dec. 15 deadline, we can at least salvage that much time.

Greetings to Indoor WCh Entrants

The message reproduced below was sent by Boyd Felstead to the WCh, to be read to the participants at the victory banquet. It arrived too late, so perhaps this issue of INAV is a suitable forum:

cont. p. 2

"After many trials and tribulations my model box should be on its way. I could write a book on the contents of the box, the highlight being when our cat hopped onto the dining room table and walked all over model parts - resulting in a rebuilding job in time not available.

Whether the box will arrive in time, whether the models will be in good condition, whether they will fly - all are unknowns. However, I am pleased to join you as an entrant, fully conscious that my 20 years on indoor inactivity leaves me well behind you established experts.

I would like to pay tribute to many and if I overlook anyone it is simply for lack of time and due to fatigue.

First my proxy, Manny Radoff; without his enthusiasm and encouragement I would not have considered entering - my work and home environment are not conducive to modeling just now. His many letters of advice and suggestions took much time and effort and were very much appreciated.

My thanks to many who freely gave advice and suggestions. In particular, Ron Plotzke, Erv Rodemsky, Tom Vallee, C. V. Russo, Charlie Sotich, Ernie Kopecky, Bob Platt, Bill Bigge, Reg Parham, Bob Champine, Bud Tenny, Al Rohrbaugh, Bud Romak, Clarence Mather and Bob Randolph. Also, Laurie Barr, who kindly offered to pick up my box despite all his other duties at the WCh.

The fact that indoor flying is now flourishing can be attributed to the die-hard enthusiast. People like Bud Tenny, who has published Indoor News And Views for over ten years, and the indoor suppliers: Lew Gitlow, who only recently retired after many years of wood cutting; Jerry Skrijanc, who continues to make available good materials, and more recently, Ron Plotzke and Erv Rodemsky have joined the ranks of suppliers to provide quality products.

My regrets to Joe Bilgri, who for personal reasons had to forego his place on the U.S. team - but welcome to Sal Cannizzo in Joe's place.

My good wishes to European fliers and other entrants not mentioned above. While I have not corresponded with you, I have followed your progress with great interest.

Much has been said on the new rules. The weight rule has been nullified by more wing area for low wing loading. I personally think we should keep the 65 cm span and forget the weight rule unless wing area is limited. If a modeler can build lighter why stifle that ability?

Finally I echo my sentiments expressed at the first World Championship in 1961 - I hope the conditions were good and that the best man won. Good luck to you all!"

CONTEST CALENDAR

FLORIDA - Miami

Indoor contests jointly sponsored by Miami Indoor Aircraft Model Association and the Dade County Park and Recreation Department on Dec. 10, 1972 and Jan. 14, Feb. 11, Mar. 18, Apr. 15 and May 20, 1973. The site is the Youth Fair Exhibit Building, 25' ceiling with floor 120' x 235' located at SW 107 Ave., and Coral Way, Miami. Contact Dr. John Martin, 3327 Darwin St., Miami, FL 33133 for details.

NEW JERSEY - Union

Indoor flying sessions Dec. 14, 1972 and Jan. 11, Feb. 8 and Mar. 8, 1973 at Livingston School, Union, NJ, 7 pm to 10 pm. Contact Dan Domina, 1229 S. Long Ave., Hillside, NJ 07208.

NEW YORK - Locust Valley

LIAMAC Cat. I Record Trials Dec. 30, 1972 and Mar. 31, 1973 at Friends Academy, Locust Valley, NY. Write J. G. Paillet, 30 Emerson Rd., Brookville, Glen Head, NY 11545, for details and a map.

OREGON - Albany

Indoor contests Jan. 13 and Feb. 11, 1973 at South Albany High School, 3705 S. Columbus St., Albany, OR. Contact Bob Stalick, 1120 Shady Lane, Albany, OR 97321, ph. 928-8101 for details.

OREGON - Eugene

Indoor contest at Sheldon High School, Eugene, Oregon, Dec. 3, 1972, noon to 4 pm. HLG, Easy B, Ready to Fly Gliders, Ready to Fly Rubber, Indoor Scale, plus special events. Contact Bob Staley, 4315 Pearl, Eugene, OR, ph. 686-1491.

INTERNATIONAL CONTESTS

1972 Championship of Budapest, May 14, 1972, 14.9 m site

1. Antal Egri	44:25 (Two flights)
2. Andras Ree	42:16
3. Geza Varszegi	38:51

1972 Hungarian National Championships, May 27-28, 1972 Assembly Hall, Kossuth University, Debrecen - 98'

1. Andras Ree	28:36	29:42	58:18
2. Zoltan Ocsody	28:24	29:32	57:56
3. Antal Egri	26:30	27:50	54:20
4. G. Buzady	25:42	27:17	52:59

Budapest Aeroclub Annual Meet, June 18, 1972, 14.9 m site

1. Zoltan Ocsody	27:01 (best one of four)
2. Andras Ree	25:04
3. Antal Egri	22:47

Fifth International Contest, Brno, Czechoslovakia July 15-16, 1972 Trade Hall in Brno

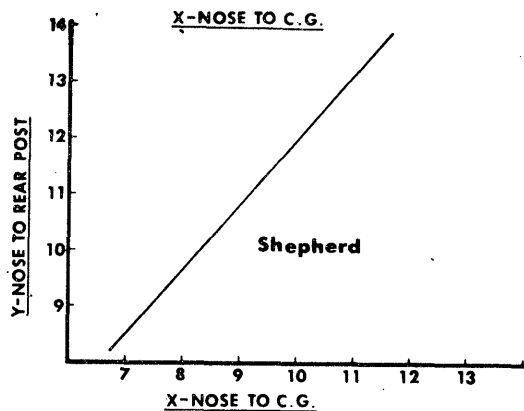
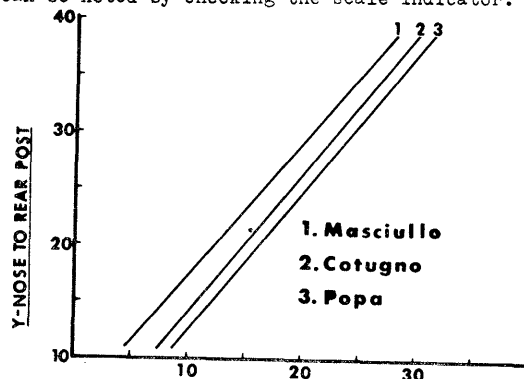
1. K. Rybecky Czechoslovakia	32:53	33:28	66:21
2. E. Clapala Poland	30:37	31:12	61:49
3. Aurel Popa Romania	28:42	30:46	59:28
4. R. Czechowsky Poland	30:55	27:40	58:35
5. A. Valenta Czechoslovakia	27:55	30:17	58:12
6. R. Cerny Czechoslovakia	27:24	28:56	56:20 (tie)
7. A. Moraru Romania	28:33	27:47	56:20 (tie)
8. E. Chlubny Czechoslovakia	27:34	28:01	55:35
9. L. Koutny Czechoslovakia	25:46	29:37	55:23
10. J. Kalina Czechoslovakia	26:09	29:04	55:13
11. Andras Ree Hungary	27:06	27:26	54:32
12. D. Chlubna Czechoslovakia	25:43	28:16	53:59
13. Z. Ocsody Hungary	27:01	26:20	53:21
14. J. Jirasky Czechoslovakia	26:26	26:20	52:46
15. H. Pernica Czechoslovakia	23:58	19:24	43:22

STATE OF THE ART

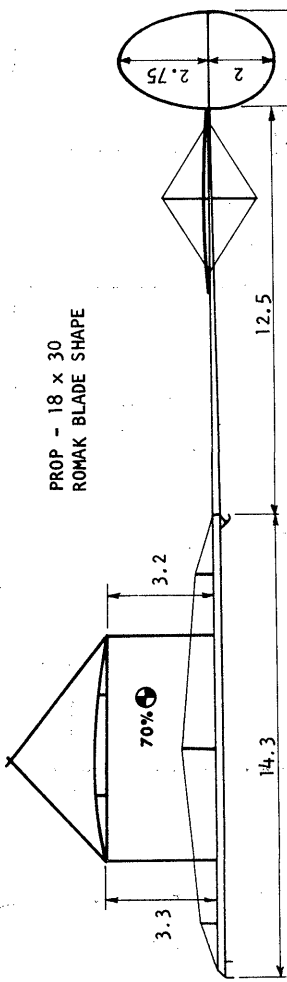
This offering of European models was chosen out of quite a few on hand - with more to come in future issues. Of the four, Martin Shepherd's model and Cotugno's twin boom model were WCh entries. It is possible that Germano Masciullo flew models of this design at the WCh, but this three-view was on hand before then. Finally, Popa's model won the 1971 Hadju-Cup contest in Debrecen, Hungary. It has two special features - the antenna on top presumably helped prevent the "down-the-arch kamakazi" which caught so many models at the 1966 WCh. Also, note that the one gram model carried only .85 g of very good rubber to make 57:50 two flight total! That is very good time in that site for any model, let alone one gram models.

The CMOS diagrams below were drawn for 0% margin as usual. Based on information furnished, or on measurements scaled from the drawings, the models were actually flown with these stability margins: Cotugno - -5%; Shepherd - +4.25%; Masciullo - -6.8%; and Popa - -10.5%. Popa's model should have been fairly touchy, but combined with the antenna, this may well have given superior ceiling touch characteristics in a very difficult site.

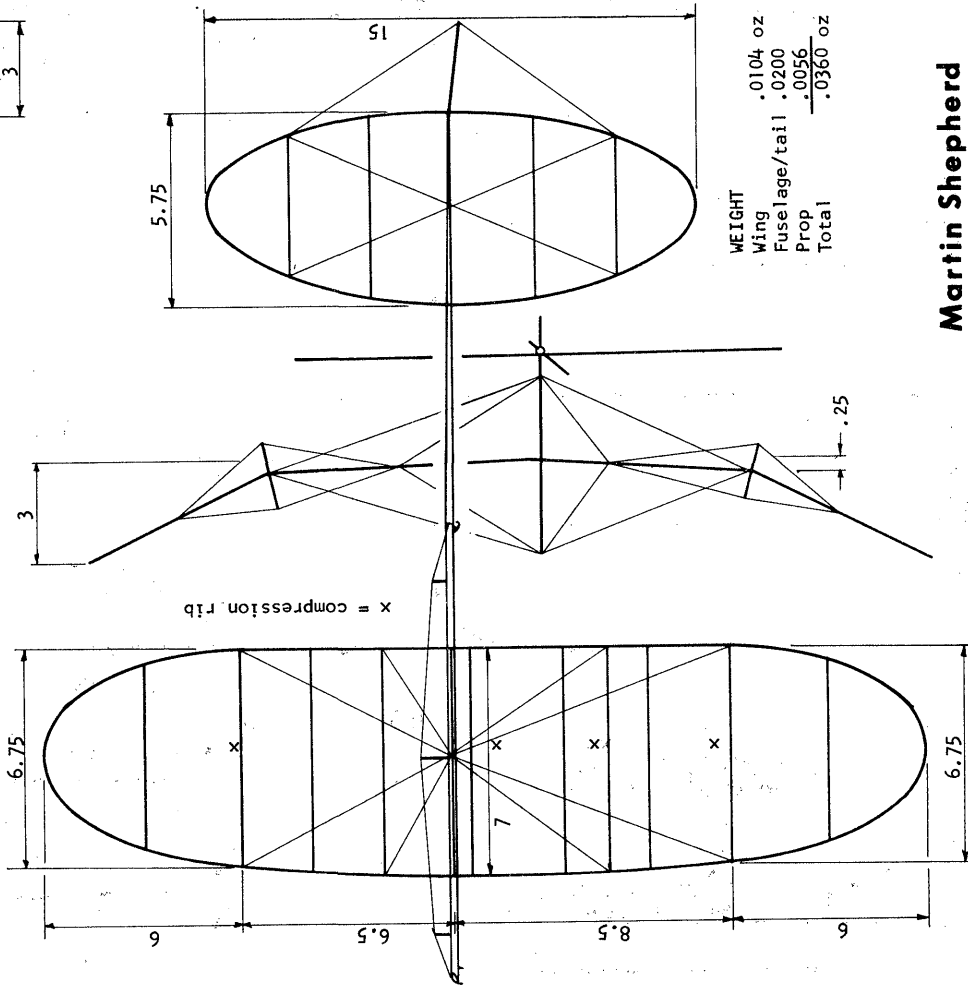
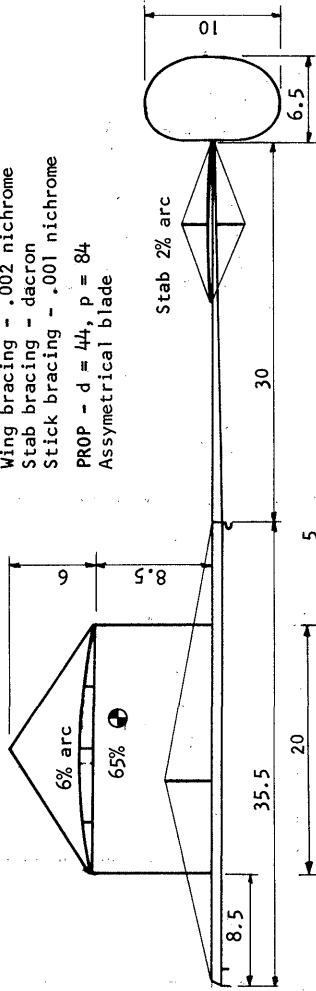
A note on the drawings: all the dimensions except on Marty Shepherd's model are in metric units (ditto for the CMOS diagrams), and the blade and airfoil outlines on Cotugno's drawing will be slightly less than full size, as can be noted by checking the scale indicator.



PROP - 18 x 30
ROMAK BLADE SHAPE

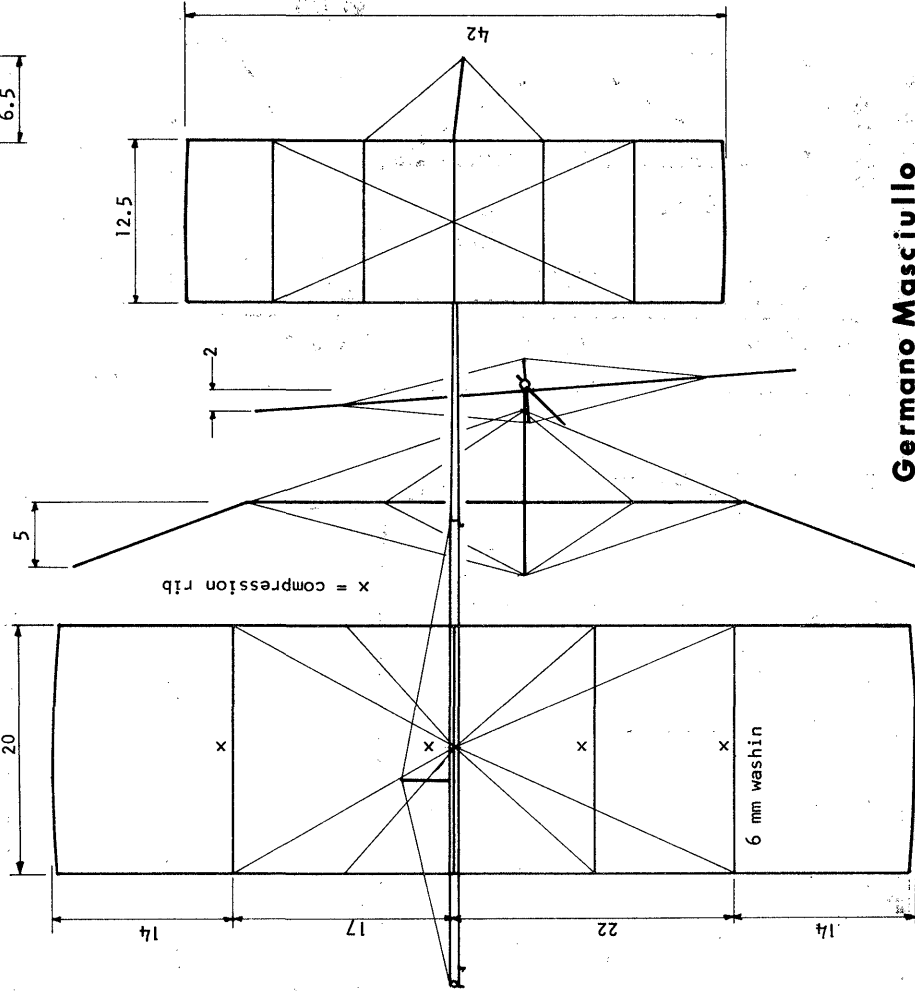


Wing bracing - .002 nichrome
Stab bracing - dacron
Stick bracing - .001 nichrome
PROP - d = 44, p = 84
Asymmetrical blade



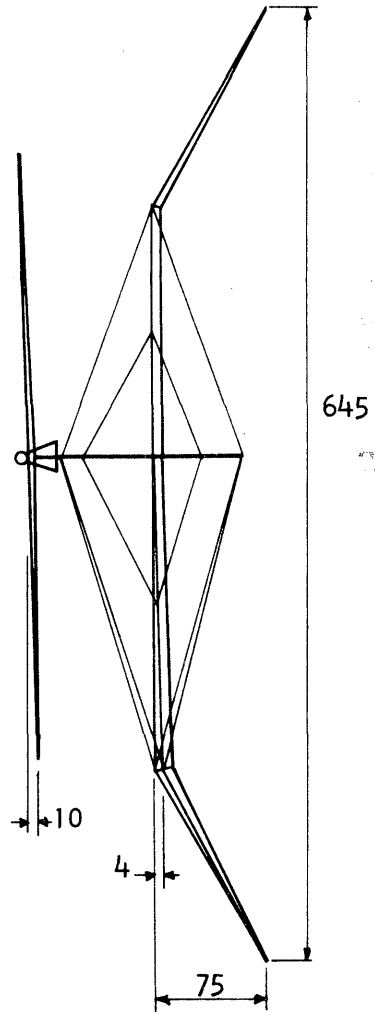
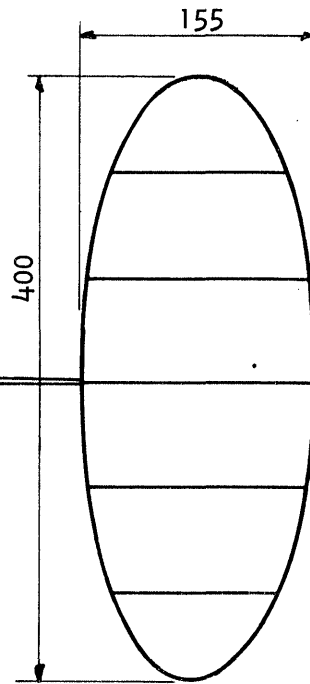
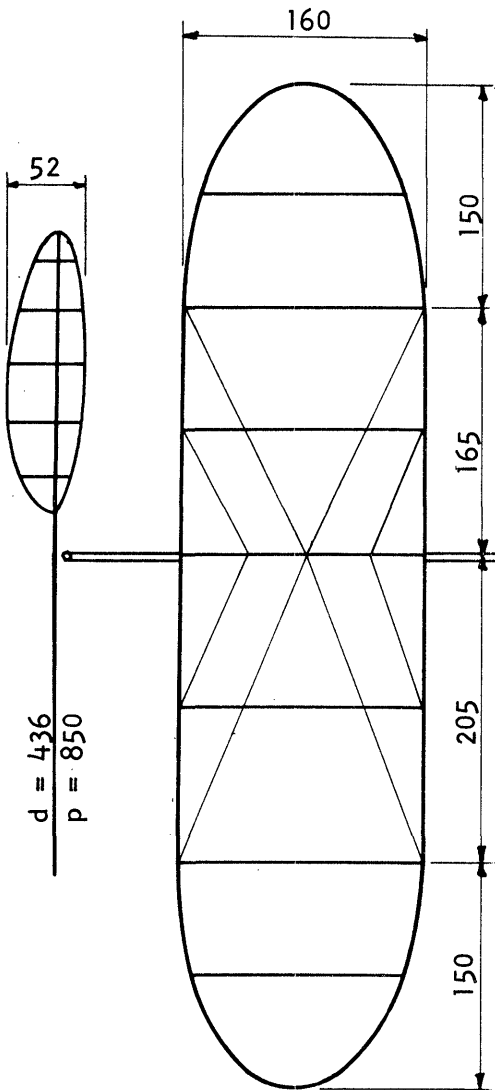
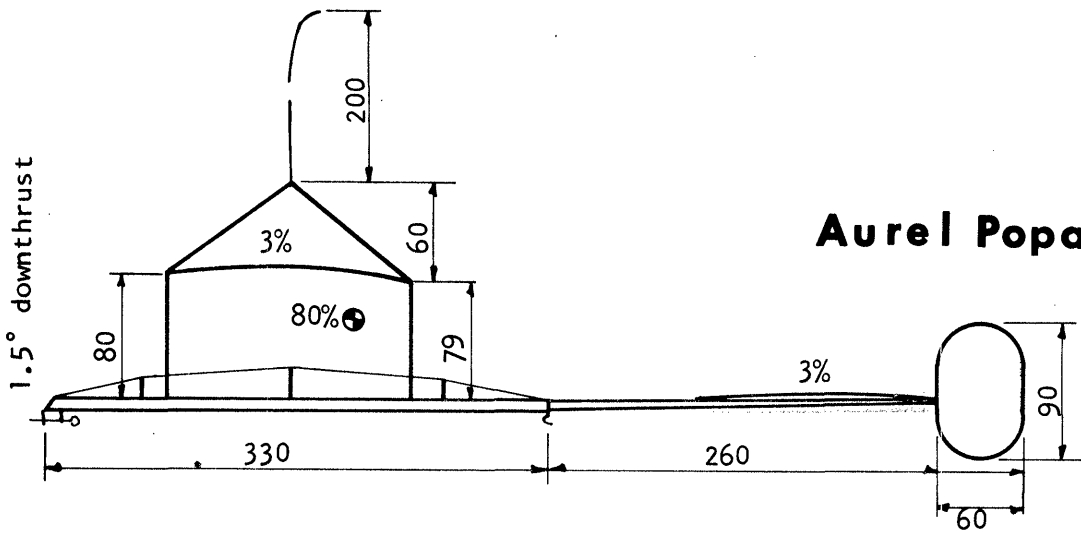
WEIGHT	
Wing	.0104 oz
Fuselage/tail	.0200
Prop	.0056
Total	.0360 oz

Martin Shepherd

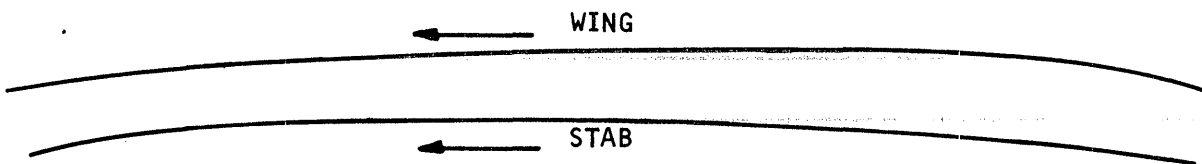


Germano Masciullo

Aurel Popa



WEIGHT	
Wing	0.250 g
Fuselage/tail	.610
Propeller	0.150
Antenna	0.020
Model wt.	1.030 g
Rubber	0.850
	<u>1.880 g</u>



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

CHARLES RIDDLE, P O Box 3075, San Francisco, CA 94119
DONALD M. WATSON, 4515 Parker, Dearborn Hts., MI 48125

Honorary Members

WIM H. BEEKMEYER, Roemer Visscherstraat 27, Vlaardingen,
Holland

Merry Christmas!

Many of you have already sent us Christmas cards and good wishes. Thank you for remembering us! I wish it was possible for us to send each of you a card, but there just isn't time enough. So, we wish all of you health and happiness for this season and for the coming year.

Recent Publications

The Jan. '73 Model Airplane News contains a report on the 1972 Indoor World Championships, written by Erv Rodemsky. This is a very interesting report with excellent pictures, and Erv's writing style is crisp and enjoyable. Thanks to Erv for a very good job, and thanks to M.A.N. for being the only magazine which cares.

What Do You Want?

Several INAV columns appear in every issue, but there are many more which appear on an occasional basis - as the information is available or as particular issues have the needed space to handle a particular topic. About every two years the INAV readers are asked to comment on these topics and to suggest others. So, please review the list below, suggest additions or deletions and send in anything you think would be of interest to INAV readers.

QUESTIONS AND ANSWERS - Readers ask questions which are then answered by the editor or experts willing to expound on that particular topic.

HINTS AND KINKS - Handy hints, with or without sketches, shared by the readers. Can deal with any aspect of indoor building and flying.

CHANGE OF PACE - Fun projects like mini-gliders, fly powered models, etc. that are a change from the serious aspects of indoor duration flying.

SPREAD THE WORD - Clubs or individuals share the results and methods of directing public attention to the many benefits of indoor flying.

LOW CEILING FORUM - Readers share their secrets, successful experiments, etc. in solving the special problems of getting maximum duration in low ceiling sites.

THE LAB - Reports of, and speculation about, scientific and semi-scientific measurements and experiments of the problems of attaining the most performance from indoor models and materials.

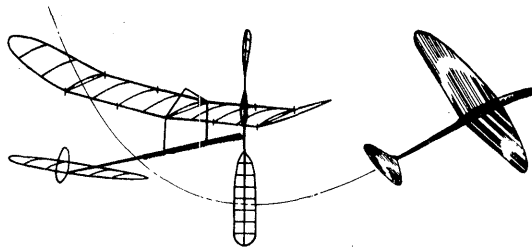
PROP FORUM - Theory and practical experiments on props are reported to encourage more prop development.

A LOOK AT YESTERYEAR - Trivia and tidbits relating how it "used to be" during the formative years of Indoor.

NEW MATERIALS - Reports of new and better materials which make possible better indoor models.

DESIGN FOOTNOTES - Discussion of design principles and theory, intended to foster systematic and scientific development of better indoor models.

INDOOR FLYING SCALE - This column has suffered greatly for lack of material. Several advisors have wrestled with the problems of the INAV format in handling Scale info within the space and publication limitations which are present. It is anticipated that this can become a fairly regular column of Scale hints and ideas, to be edited by a volunteer.



FAI INDOOR REPORT

CIAM Actions

The 1972 Plenary meeting of the FAI CIAM took place in Paris, France Nov. 30-Dec. 1, 1972. The following statements summarize actions taken at the meeting which affect indoor activity:

A proposal which would have had entry countries share the expenses of FAI Jury, Judges and timers was defeated. The major effect of this proposal would have been to help indoor WCh host countries with expenses, since the relatively fewer entrants reduces the financial base of indoor WCh's.

A proposal to require identification of indoor models, using indelible colored inks with different colors for each team member, was passed. Presumably this would affect only WCh teams.

A proposal which would have limited future indoor WCh meets to sites lower than 100' (approx.) was defeated. This concept was first discussed in 1966 after the beautiful success of the 1966 WCh at Debrecen; however the idea was to "encourage choice of lower ceilings" rather than requiring the lower ceiling. Where the mandatory portion of the proposal originated is not known, but it is small wonder that a mandatory change was defeated. However, discussions at the 1972 WCh's seemed to indicate that the idea of encouraging lower sites was acceptable.

Whither Goest The Program?

After the last issue went to press, there was indication that perhaps another ballot would not be circulated at this time. In any event, there has been no word from AMA HQ or Erv Rodemsky about what is transpiring. Due to the extreme lateness of the season, AMA HQ will furnish program info to all who send a stamped, self-addressed envelope to HQ. Otherwise, the earliest that program info can be available (other than thru INAV) is late Dec. '72 in Competition News (if the program is decided then), or in January club/officer mailings from AMA and the Mar. '72 AAM (out in February).

CONTEST CALENDAR

FLORIDA - Miami

Indoor contests jointly sponsored by Miami Indoor Aircraft Model Association and the Dade County Park and Recreation Department on Jan. 14, Feb. 11, Mar. 18, Apr. 15 and May 20, 1973. The site is the Youth Fair Exhibit Building, with 25' ceiling and 120' x 235' floor, located at SW 107 Ave., and Coral Way, Miami. Contact Dr. John Martin, 3327 Darwin St., Miami FL 33133 for details.

MISSOURI - Kansas City Area

Indoor contest on Feb. 18, 1973 at Richard Gebour AFB, Mo. (Grandview, Mo.), 8 am to 5 pm. AMA Cub, HLG, Indoor Scale, PennyPlane, Indoor Stick. Contact Roger Schroeder, 4111 W. 98th St., Shawnee Mission KS 66207.

NEW JERSEY - Union

Indoor flying sessions Jan. 11, Feb. 8 and Mar. 8, 1973 at Livingston School, Union NJ, 7 pm to 10 pm. Contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07208.

NEW YORK - Locust Valley

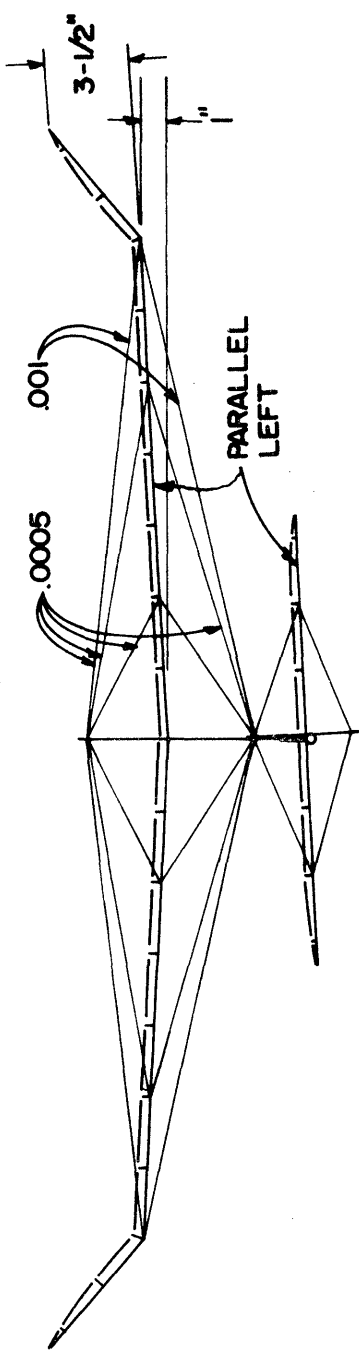
LIAMAC Cat. I Record Trials Dec. 30, 1972 and Mar. 31, 1973 at Friends Academy, Locust Valley, NY. Write J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, NY 11545 for details and a map.

OREGON - Albany

Indoor contests Jan. 13 and Feb. 11, 1973 at South Albany High School, 3705 S. Columbus St., Albany, OR. Contact Bob Stalick, 1120 Shady Lane, Albany OR 97321, ph. 928-8101 for details.

VIRGINIA - Hampton

Indoor contest on RT at Hampton School, Hampton, VA on Dec. 30, 1972. Contact Hal Crane, 4002 Buchanan Dr., Hampton VA 23369 for details.

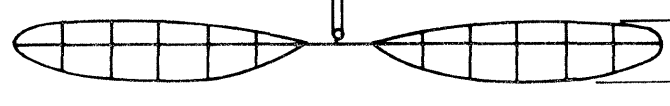
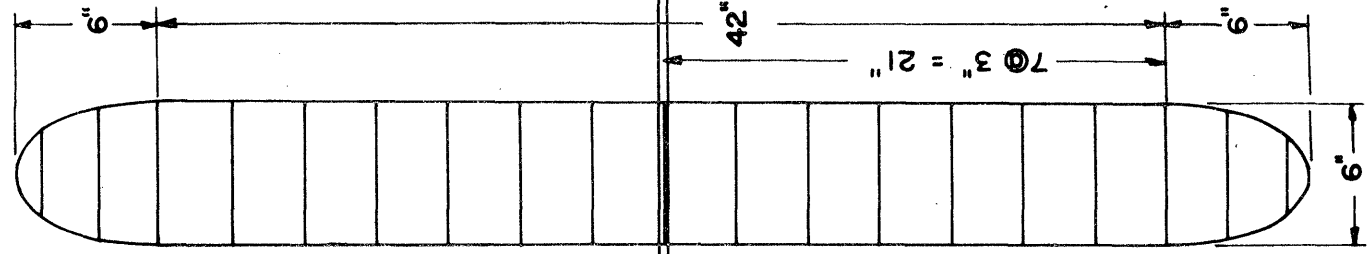


HIGH ASPECT "D"

51" PROJ.
 295.55[□]"
 WING .0264 OZ.
 STICK ASSY. 0376 OZ.
 PROP .0122 OZ.
 TOTAL .0762 OZ.

.085 X 19 PIRELLI
 R.P.M. 32 CRUISE
 36 CLIMB

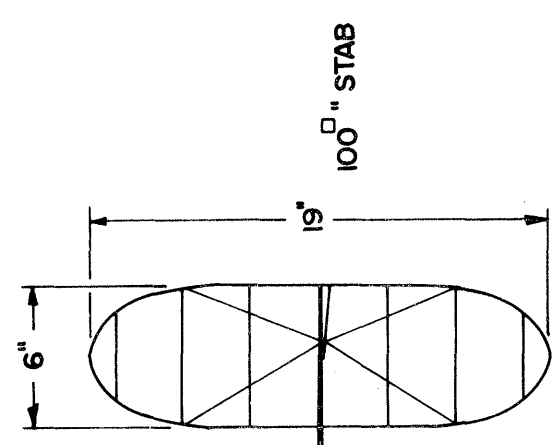
DESIGN BY A. ROHRBAUGH
 DRAWN BY S. G. *ambler*



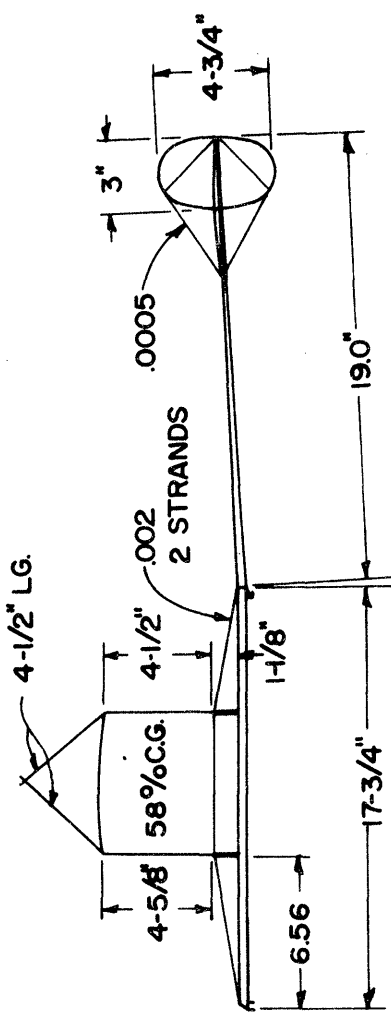
3/16" WASHOUT

27D. 52P

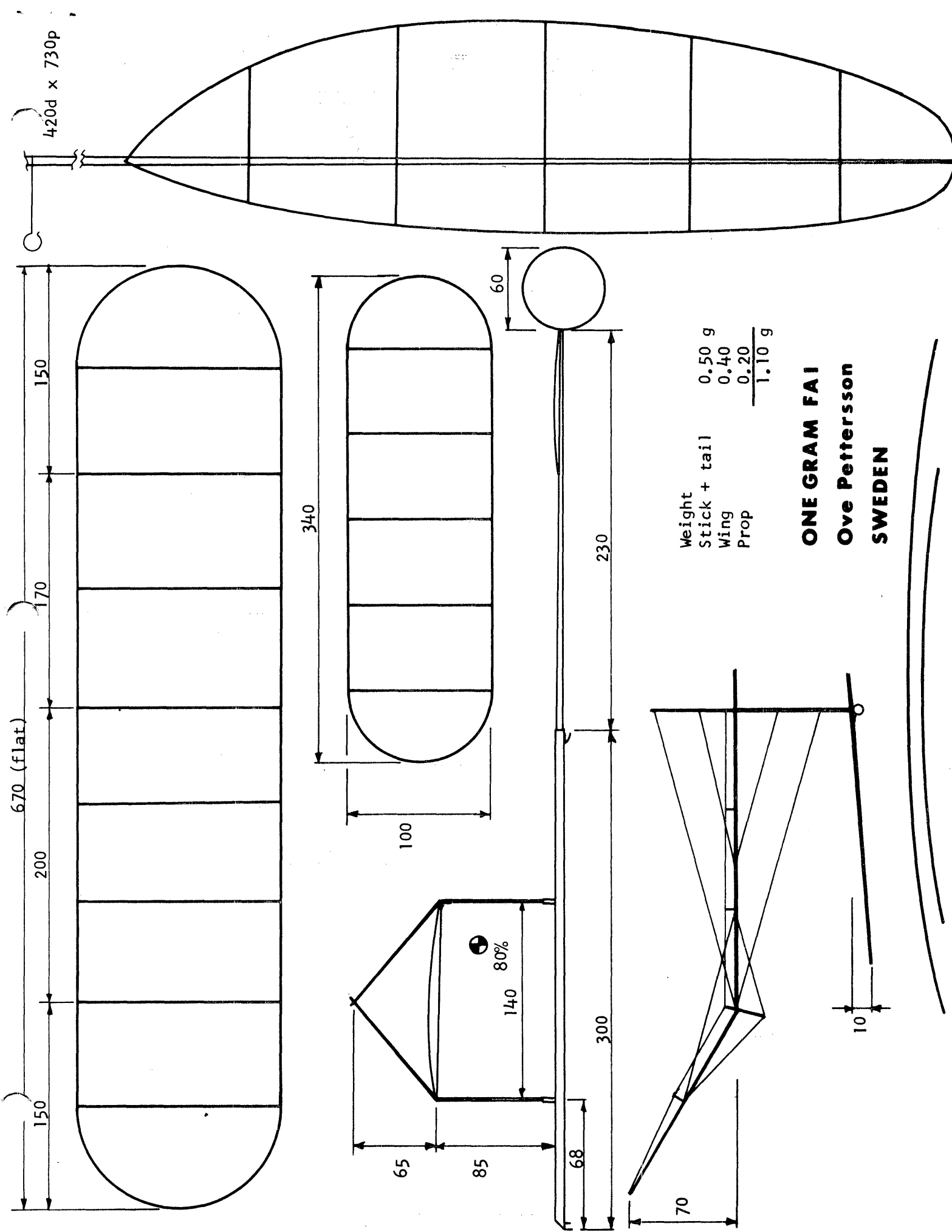
3/16" WASHIN



STAB & WING
 AIRFOILS 3/16"
 ARC



STICK .020 .017 .020 X 1-1/8" PLUG IN BOOM 1/16" D.
 .020 M.W. SHAFT, R.HOOK & DBL. BRG.



ONE GRAM FAI
Ove Pettersson
SWEDEN

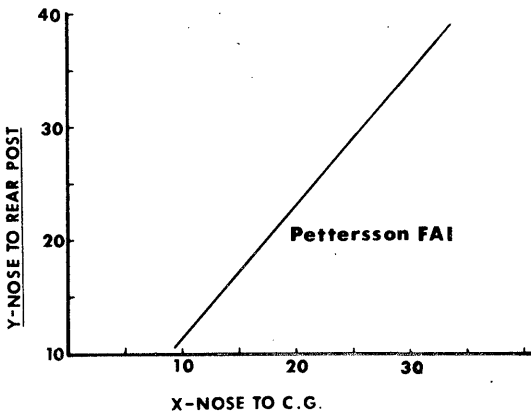
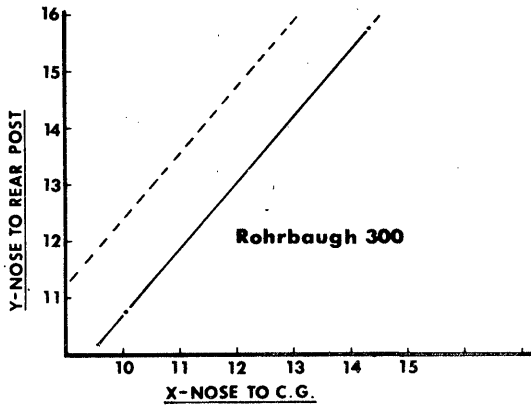
STATE OF THE ART

Al Rohrbaugh's "High Aspect D" caused a sensation at the '72 Nats, and is an interesting study in model development. Of the model, Al says, "As reported by Janke, this high A/R 300 has very slow RPM and great potential. Using .085 x 19 pirelli, and considering turns used vs. RPM, it is interesting to speculate on maximum time. I've flown the model only a few times but I feel that it will fly on good .080 rubber. The weight can be reduced, but at the time it was built the span and general size posed structural problems which were new to me. We who were watching the Nats flight (27:28.6; 3rd place) estimated the altitude as between 45' and 50'. The next flight with turns sufficient to win hit the lights and that was it. It's an interesting model, worth the design and building effort."

Curtis Janke later related that everyone was cheering Al on by urging him to "get it up". However, Wayne Zink, Al's building buddy, said "He can't get it above the lights - it can't get between them!"

The second model featured this month is Mk. II of Ove Petterson's One Gram FAI. This model holds the Swedish national record for Cat. I. Sweden's activity is slowly growing, and it is hoped that Swedish teams will begin to participate in future European meets.

The CMOS diagrams below are for 0% margin; Rohrbaugh's 300 was flown at +26% margin, and Petterson's FAI was set up at about 0%.



TOP TEN EASY B

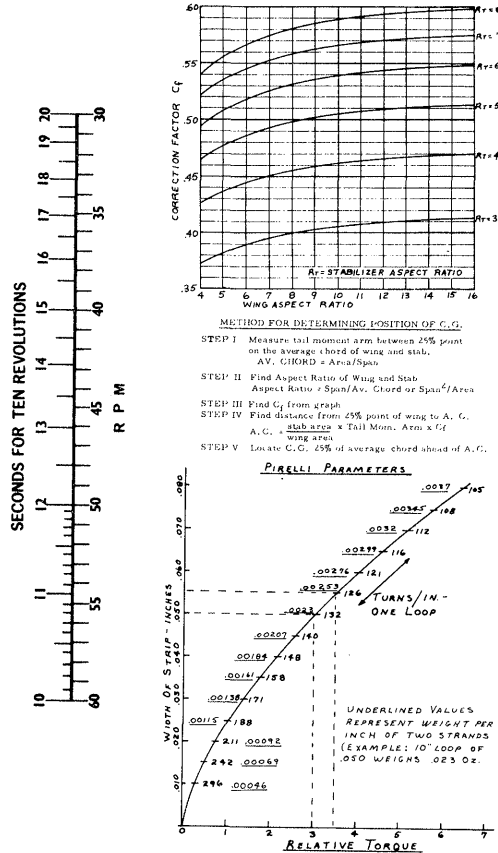
	Time	Ceiling	Fudge	Score
1. Dick Hardcastle	585	18'	1.394	815.5
2. Clarence Mather	636	22.3'	1.253	796.9
3. Ted Gonzoph	626	26'	1.16	726.6
4. Stan Chilton	540	20'	1.323	714.4
5. Bob Platt	529	20'	1.323	699.8
6. Hal Crane	492	20'	1.323	651.0
7. Bill Langley	491	20.5'	1.306	641.7
8. Dick Starks	451	20.5'	1.306	599.0
9. Jim Bennett	545	31'	1.063	578.3
10. Gordon Wisniewski	480.2	20'	1.323	555.9

TOP TEN CEILING DODGERS

1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Hal Crane	682	20'	1.323	902.3
4. Dick Hardcastle	602	23'	1.234	742.9
5. Hewitt Phillips	528.2	20'	1.323	698.8
6. Howard Haupt	456	22'	1.261	574.5
7. Harry Cook	471	26'	1.16	546.4
8. Bill Langley	421	27.5'	1.128	474.8
9. Jim Davidson	280	13'	1.64	459.2
10. Gordon Wisniewski	300	20'	1.323	396.9

NIMAS CHARTS

Several years ago, NIMAS Charts of various designs were made available in the form of metal plates which are almost indestructible. Three of these chart designs are shown below - Pirelli Parameters, CMOS Design Chart and an RPM calculator. Several of the RPM calculators are on hand now, and the others can be made available if enough people should want them. In addition, the Pirelli Nomogram on page 4 of Oct. '72 INAV could be made available. If you are interested in these, drop a card and let us know. The prices are: RPM Chart - 70¢, Pirelli Parameters - \$1.10 and CMOS Chart - \$1.25. Projected price for the Pirelli Nomogram would be about \$1.25.

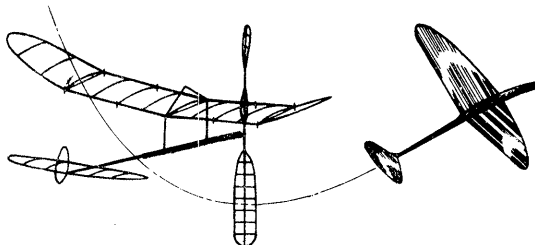


In "Beginning To Fly - The Book of Model Airplanes", Ray Harlan found rules for the Stout Indoor Contest. It is of interest to compare these 1928 rules with modern indoor rules for Indoor Stick:

- No restrictions on the design of the model except that it shall have a distance between the propeller bearing and the motor hook, fastened to the opposite end of the motor stick, not to exceed fifteen inches. All models must be hand-launched, and the only motive power be derived from the use of rubber bands.
- The contest will be for duration. A contestant will be allowed a total of three official flights. He will be accredited with the greatest elapsed time made in any one of his three flights.
- A contestant will be allowed a maximum of three models, and he may use any or all to complete his official three flights.
- No contestant shall launch his model before receiving the launch-signal from the official starter. Any contestant doing so will be disqualified. All contestants must have their models ready for examination by the officials fifteen minutes before the starting time of the contest. Each contestant will draw a number, giving his place in rotation. He will be allowed two minutes within which to launch his model. Should he fail to launch his model in the time allowed he must withhold that official trial until his next turn in line and a delayed flight will be charged against him.
- Any flight under fifteen seconds and every failure to fly in turn shall be considered a delayed flight. Three delayed flights will be considered an official flight.
- The finish time will be taken when the model strikes or lands on any object preventing further flight. (Rules 7 thru 10 deal with contest administration.)
- Minimum number of contestants eight. Maximum number of contestants twenty-five. (This applies only to the finals.)

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****New Members!

JOE EMONS, 2201 State, Alton IL 62002
 EDWARD J. GUMELL, 5641 Willow Terrace Dr., Bethel Park PA 15102
 DAVID HAUGHT, Rt. 2, Box 10, Coeur D'Alene ID 83814
 A. F. HOLGERSON, 2724 Hickory Lawn MI 48063
 BOB MEUSER, 4200 Gregory St., Oakland CA 94619
 WILLIAM C. YOUNG, 2516 Oakwood Dr., Bakersfield CA 93304
 CHARLES WEISE, 33242 Tall Oaks Ct., Farmington MI 48024

Honorary Members

NEREO BEGGIATO, Roma 950, Ateneo Popular de Versailles, Buenos Aires, Argentina

New Year's Greetings

John Clemens, AMA President, recently sent out large hand-drawn New Year greeting cards. We received one with the request that it be passed on to NIMAS; so, best wishes to all of you from John Clemens!

Change of Address

Jerry Skrjanc, owner of Micro-X, requests that the new firm address be made known: Micro-X, P. O. Box 1063, Lorain OH 44055.

Renewal Reminder

Fully 40% of the January renewals are already in, and thanks to all of you! It is a tremendous help for members to note the date code ("02" and "03" for February and March respectively) and send in their renewal ahead of time. This date code appears in the upper left-hand corner of the label field on all addressograph printings.

Recent Publications

Model Airplane News has done it again - this time the subject is Junior C/P Jackpot - the model design flown by Bruce and Barry Paillet to several places in Junior Paper Stick and Cabin at the '71 and '72 Nats. It is a simple, rugged, good-flying design especially suitable for Junior competition. The use of different fuselage design with identical wing and tail surfaces minimizes the number of jigs needed to build two model classes. Thanks again to MAN for presenting indoor subjects when other U.S. publishers are cutting back!

Last month's comments about MAN being the only magazine which cares drew fire from Laurie Barr. He supported Aeromodeller, and rightly so. This magazine has given international indoor a good support for years - sorry for the unintentional slur!

NIMAS Awards

Silver Cat. I Rubber Award - 11:00, Dan Domina

Follow-Up!

Only one person expressed opinions regarding the content of NIMAS (What Do You Want?, Dec. '72 INAV), so in the absence of more opinions things must be OK!

Also, insufficient interest was shown so far to make it worthwhile to make up more of the out-of-stock NIMAS Charts displayed in the Dec. '72 issue. Several of the RFM Calculator charts are available for 70¢ each.

CONTEST CALENDAR

CALIFORNIA - Santa Ana
 The next Santa Ana Record Trials will be held on Feb. 18, 1973. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354.

CONNECTICUT - Glastonbury
 Indoor sessions at Glastonbury High School, 8 am to 12 Noon, Feb. 11, Mar. 18, Apr. 8, May 20 and June 17, 1973. Contact George Armstead, Jr., 89 Harvest Lane, Glastonbury CT 05073, ph. 203-633-7836.

FLORIDA - Miami

Indoor contests at the Youth Fair Exhibit Bldg., at SW 107 Ave. and Coral Way, Miami, on Feb. 11, Mar 18, Apr. 15 and May 20, 1973. Contact Dr. John Martin, 3327 Darwin St., Miami, FL 33133 for details.

ILLINOIS - Chicago

Indoor contests Feb. 11, Mar. 4, Mar. 25, Apr. 28-29, and Record Trials in May 1973. Various combinations of events at both Cat. I and Cat. II sites. Contact Pete Sotich, 3851 West 62nd Pl., Chicago IL 60629 for details.

MASSACHUSETTS - Amherst

Indoor sessions at Univ. of Mass. in Amherst on Jan. 28, Feb. 25, Mar. 4, Apr. 22 and May 13, 1973. Contact Charles Learoyd, 100 Mill Valley Rd., Hadley MA 01035.

MASSACHUSETTS - M.I.T.

Indoor sessions at M.I.T. Armory, Vassar St. & Mass. Ave., Cambridge MA. Sessions on Feb. 17 and Mar. 17, and a contest on Apr. 14, 1973. Sessions 3 pm to 6 pm; contest 10 am to 6 pm. Contact Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 358-4013.

MISSOURI - Kansas City Area

Indoor contest Feb. 18, 1973 at Richard Gebour AFB, Mo. (Grandview, Mo.), 8 am to 5 pm. AMA Cub, HLG, Indoor Scale, PennyPlane, Indoor Stick. Contact Roger Schroeder, 4111 W. 98th St., Shawnee Mission KS 66207.

NEW JERSEY - Union

Indoor sessions Feb. 8 and Mar. 8, 1973 at Livingston School, Union, NJ, 7 pm to 10 pm. Contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07208.

NEW YORK - Locust Valley

LIAMAC Cat. I Record Trials on Mar. 31, 1973, Friends Academy, Locust Valley, New York. Write J. G. Paillet, 30 Emerson Rd., Brookville, Glen Head, NY 11545 for more details and a map.

OREGON - Albany

Indoor contest Feb. 11, 1973 at South Albany High School, 3705 S. Columbus St., Albany. Contact Bob Stallick, 1120 Shady Lane, Albany OR 97321, ph. 928-8101.

FAI INDOOR REPORTTeam Selection Chairman Appointed

Bob Champine, P.O.Box 6213, Newport News VA 23606, has been appointed as Chairman of the 1973 Indoor Team Selection Program. For details of the Program, send a stamped, self-addressed envelope to AMA HQ with your request for info.

Program Status Report

The FAI Indoor Program has been announced in the Jan. '73 Competition News, with essentially the same format as was used to pick the 1972 Team. The matter of central vs. regional flyoffs is not yet decided, with several central sites under investigation before the unpopular two-site regional Finals becomes mandatory upon failure to qualify a central site. It may be remembered that this choice was forced by inept wording (or especially clever wording, depending upon your viewpoint) of the poll questions which defined this program.

Meanwhile, the CN commentary (aside from program details) contains misleading statements and outright distortions. Contrary to the leadoff statement "A deadlock concerning finals arrangements - -", this particular member of the Committee knows of no deadlock. Further, it was stated that the Committee's alternate recommendation involved alternation between East and West Coast sites. Rather, the recommendation was that a rotating site location similar to previous Nats practice be adopted, with a long-range planning committee involved.

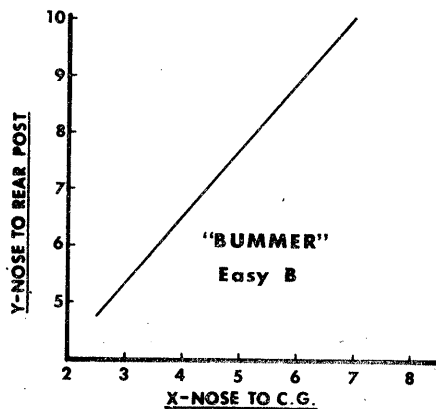
In another article "1973 Off To A Slow Start?", CN intimated that the general delay in the FAI Programs is due to careful study to avoid past mistakes blamed on hasty decisions. However, the Indoor section of the program has been troubled for 16 months; requests for early action got the reply "The Indoor Program is not the only thing that is important!" If the whole story becomes known, it will

be found that priority for our problems is so low that time runs out and only hasty decisions are made - too little and too late.

Only the latest of these unfortunate delays was the appointment of Erv Rodemsky two full months after he volunteered; if he had been accepted the day he offered, the appointment would have been months too late to do a proper job. The most flagrant lack of consideration for FAI Team Selection problems lies in the utter failure of the Executive Council to define official policy. 16 months ago, numerous FAI fliers petitioned their respective District VP's for redress, along the lines outlined in the Sept. '71 INAV. The result was a ten-minute discussion in the Feb. '72 Council meeting, which was then short-circuited by HQ announcement of a Document Which Answers All Problems. Unfortunately (and conveniently) the Document was not then available; it was subsequently published without Council scrutiny or approval. That the Document utterly failed except as a history report is obvious to all who read it; the only question is "When will something be done?" As a result of the lack of definite, defined policy, hasty, last-minute decisions regarding the Indoor program were made and became binding on all FAI Programs. Thus the cancer spreads through all the FAI Programs.

STATE OF THE ART

Larry Renger's "Bummer" is an outgrowth of his "Easy Breeze" which, as a microfilm-covered Easy B, held the Cat. I Senior Stick record for many years - until the B Stick class was combined with other Stick classes. The usual CMOS chart (below) is computed for 0% margin.



TOP TEN CEILING DODGERS

1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Hal Crane	682	20'	1.323	902.3
4. Dick Hardcastle	602	23'	1.234	742.9
5. Hewitt Phillips	528.2	20'	1.323	698.8
6. Howard Haupt	456	22'	1.261	574.5
7. Harry Cook	471	26'	1.16	546.4
8. Bill Langley	421	27.5'	1.128	474.8
9. Jim Davidson	280	13'	1.64	459.2
10. Kevin Wehner	308.8	18'	1.394	430.4

RECORDS? MAYBE!

LIAMAC Indoor Record Trials, Dec. 30, 1972 Cat. I
 Friends Academy, Locust Valley, New York
 Jr. Indoor Cabin - 2:08.4, Richard Whitten*
 Jr. Indoor Cabin - 3:34.4, Barry Paillet**
 Jr. Autogyro - 0:02.6, Richard Whitten
 *Flight made at 1:15 pm; **flight made at 2:50 pm

LANGLEY BRAINBUSTERS Record Trials, Dec. 30, 1972 Cat. I
 Sr. R.O.G. Stick - 3:59.4, Phil Hainer

HINTS AND KINKS

Bill Landrum Suggests:

A spark plug gapping tool makes an excellent gage to set up the straightedge location while stripping spars and ribs. The "L" shaped variety has wires ranging from .023" to .042"; for tapered spars select two gages which match the desired dimensions and visually "measure" how far the straightedge is from the edge of the wood at each end.

Meanwhile, if your straightedge tends to slip while you make the cuts, Bill suggests that a strip of #400 wet-or-dry sandpaper glued to the bottom of the straightedge will hold it nicely in place with minimum pressure.

POSSIBLE WORLD RECORD!

The Dec. 30, 1972 record trials held at Willis School in Hampton, Va. had an almost world record by Hal Crane, followed by Bob Platt's series of flights culminating in a flight of 22:10. The model had an 8" x 33" wing, weighed .042 oz. and used .05 oz. of rubber .041" x .076".

DESIGN FOOTNOTES

Constant Margin of Stability

Since CMOS was introduced in the Jan. '69 INAV, most stick model 3-views in INAV have been accompanied by CMOS balance charts. Various questions about the method led to the development of an info packet on CMOS which was available upon request. This presentation is further explanation on how to use CMOS to design better models.

CMOS stands for constant margin of stability. The margin of stability of an airplane is a measure of how the model's stability differs from neutral stability. (A model with neutral stability has no tendency to recover from upset or ~~un-natural~~ un-natural attitudes.) With positive stability, the model tends to recover from upset, while with negative stability the upset will tend to get worse. By choosing an optimum margin of stability, it is possible to have a new model almost perfectly trimmed before it leaves the workbench. Certainly, it should never be necessary to move wing sockets or add ballast as sometimes happens with new models that must be flown that certain day!

In other words, models of similar design which have the same stability margin will fly almost the same, and after anyone "zeros in" on their favorite margin, they can build other designs with a minimum of adjustment problems to cope with.

The NIMAS CMOS Chart was designed by Hank Cole and was originally published in the Dec. '47 Air Trails. It was designed for A-2 gliders instead of indoor models, so it gives relative stability figures which are smaller than the absolute stability of the indoor model. Even though this difference may amount to perhaps 20% margin, the CMOS method allows direct comparison and can be used as if the results were correct.

Many people tend to shy away from CMOS because of the computations involved. However, if the balance diagram is furnished (as with INAV 3-views), it is simple to balance the model using CMOS. Assemble the model with prop and rubber motor on the complete fuselage/tail group and find the balance point as usual. Measure from the balance point to the thrust bearing - let's assume the distance is 8". If Fig. 1 is the balance chart for the model and we wish to use 0% margin, follow the dotted line up from 8" to the 0% line and across to the Y axis at 8.55". Thus, the rear post should be located 8.55" from the thrust bearing. If the stab tilt and wing washin/washout is OK, only incidence and thrust line should need to be set for a good flying model!

Calculation of CMOS balance diagrams is simpler than most people realize. Fig. 2 is the top of the CMOS computation form, listing wing and tail specifications. Beginning with span and area, the average chord (span/area) and aspect ratio (span/av. chord) are computed. Fig. 3 is the CMOS Chart (extrapolated to wing aspect ratio = 3). With a wing aspect ratio = 6.25:1 and stab aspect ratio = 4.3:1 both lines have to be interpolated; the intersection on the Chart is at .46 (C_r).

Tail moment arm is usually defined as the distance between 25% of average chord on the wing to the same point on the stab. As a beginning example, let's assume a wing and stab that are rectangular; the root chord will equal the average chord. Thus for the model with dimensions as defined in Fig. 2, 25% of wing and stab chords are 1" and .7" respectively. Since the wing and stab do not taper in any fashion, 0" is noted as the dimension between average chord and trailing or leading edges. With a tail boom 12" long, subtract 2.1" from 12" to reach the rear hook, then add the distance "2" and 3" to define the tail moment arm.

The CMOS method is a graphical solution which eliminates several computations by defining a straight line. To do this, the aerodynamic center is calculated for two wing locations; in this example the wing will be 1" from the rear hook (Z = 1") and 6" from the rear hook. The formula for A.C. is shown solved for these two wing locations and values for X (distance from balance point to nose) and Y (distance from rear post to balance point) are plotted on Fig. 1, working from values in the box on Fig. 2.

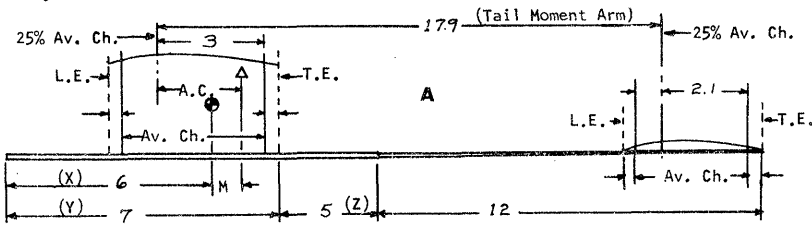
The computations discussed above were also made with the stipulation of 0% margin - the aerodynamic center and center of gravity are coincident. This simplifies the computation considerably. Note that Fig. 1 has three balance lines - +5%, 0% and -5%. Only the 0% line was calculated in Fig. 2, and the other two lines were established

by moving the 0% line .05 x 4 (4" avg. chord) in each direction. Three dotted lines on Fig. 1 show the effect on wing location that different choices of stability margin will have: rear wing post locations are 8.8", 8.55" and 8.3" from the nose as the margin changes from +5% to -5%.

The final factor to consider in CMOS computation is average chord. If the model in question had used a wing with parabolic planform, 25" span and 5.1" root chord, the area would still be 100 sq. in. and average chord would be 4" - same as before. The only change in computation would be that the wing is 1.1" wider at the root, half in front and half in back. The 0" dimension at the T.E. would then become .55", tail moment arm figures would change to 14.45 and 19.45. The slope of the graph and location of the 0% line will not change.

The location of the end-points of the average chord is obvious on wings symmetrical with respect to the lateral centerline. A shortcut for locating mean chord of wings with odd shapes is shown in Fig. 4. With a span of 25.4", root chord of 6" and area of 127 sq.in., average chord is 5". A scale drawing of the wing planform was used, and the T.E. dimension checked to be .25".

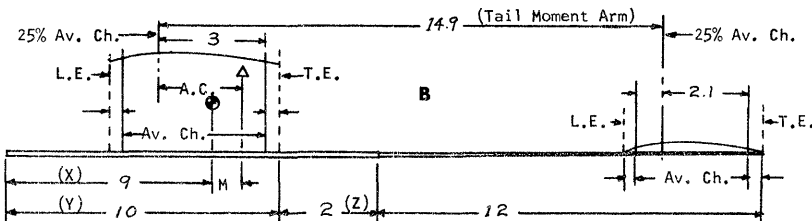
To figure stability margin on an existing model, compute the A.C. as before, then measure where the CG is with respect to the CG. Compute the margin according to the formula shown in Fig. 2. Fig. 5 illustrates this process on two models built to the design illustrated in Fig. 2, except that both models were built with fixed 70% CG. Model A balanced 6" from the nose and model B balanced 9" from the nose. The margin computation shows dramatically how much variation is possible between models of the same design which vary in balance point - the wing posts of model A might have to be moved as much as 1/2" to make it fly as well as model B!



$$A.C. = \frac{32.8}{100} \times 17.9 \times .46 = 2.7 \quad 3 - 2.7 = .3; \Delta \leftarrow T.E.$$

$$1 - .3 = .7; CG \leftarrow A.C.$$

$$\text{Stability Margin} = \frac{.7}{4} \times 100 = 17.5\%$$

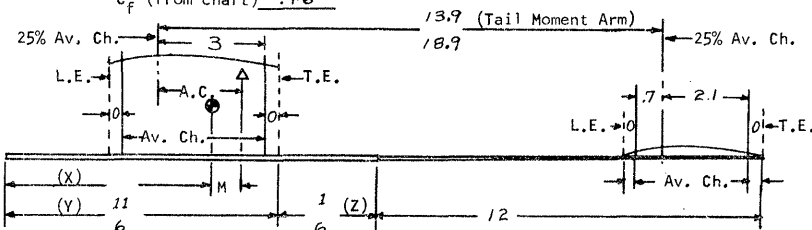


$$A.C. = \frac{32.8}{100} \times 14.9 \times .46 = 2.25 \quad 3 - 2.25 = .75; \Delta \leftarrow T.E.$$

$$1 - .75 = .25; CG \leftarrow A.C.$$

$$\text{Stability Margin} = \frac{.25}{4} \times 100 = 6.25\%$$

MODEL SPECS: Wing Span 25 Wing Area 100 Av. Chord 4 Aspect Ratio 6.25:1
 Stab span 12 Stab area 32.8 Av. chord 2.8 Aspect ratio 4.3:1
 C_f (from chart) .46



$$\text{Tail Moment Arm} = 12 - 2.1 + Z + 3$$

$$A.C. = \frac{\text{Stab Area}}{\text{Wing Area}} \times \text{Tail Moment Arm} \times C_f \quad \text{Stability Margin} = \frac{M}{\text{Av. Chord}} \times 100\%$$

$$= \frac{32.8}{100} \times 13.9 \times .46 = 2.1 \quad (Z = 1) \quad 3 - 2.1 = .9; A.C. \leftarrow T.E.$$

$$11 - .9 = X = 10.1$$

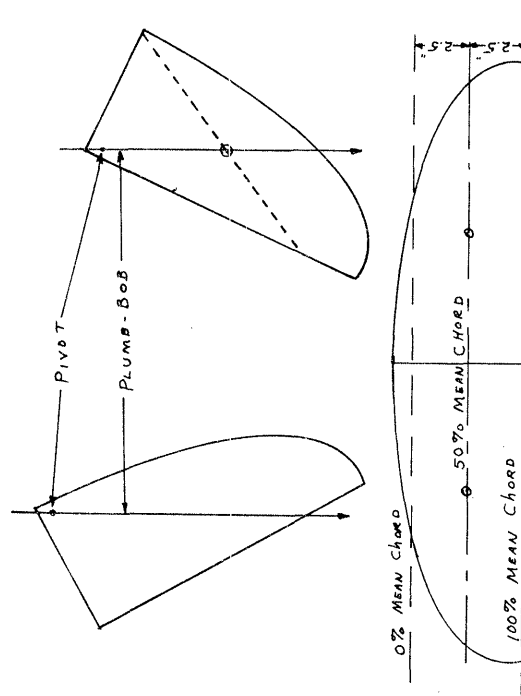
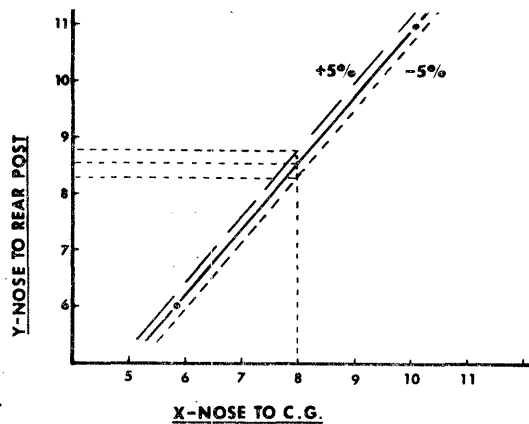
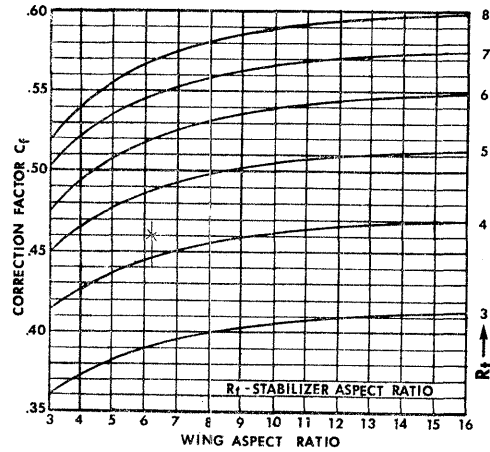
$$= \frac{32.8}{100} \times 18.9 \times .46 = 2.85 \quad (Z = 6) \quad 3 - 2.85 = .15; A.C. \leftarrow T.E.$$

$$6 - .15 = X = 5.85$$

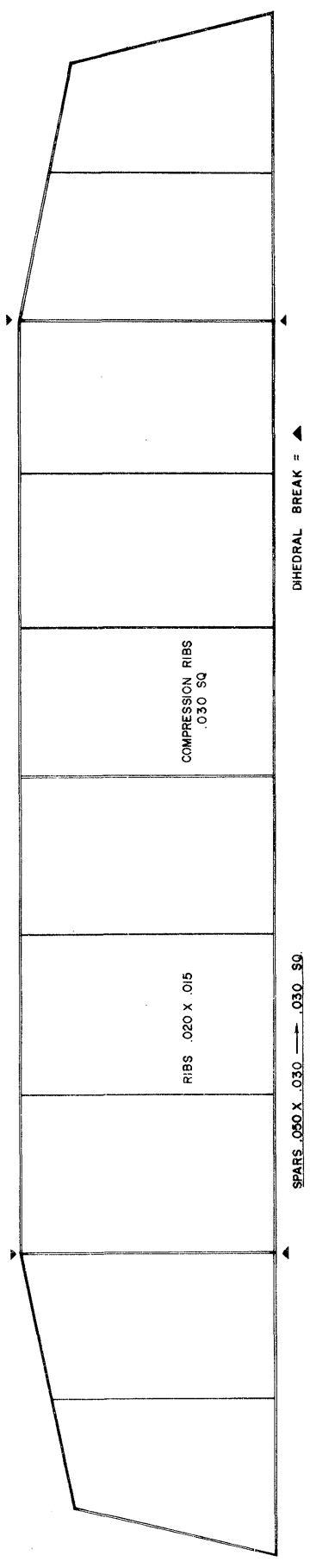
Z = 1
Y = 11
X = 10.1
Z = 6
Y = 6
X = 5.85

Besides the benefits of more efficient flying and ready-made flight trim, models balanced near 0% margin by this system and adjusted with washin/washout wing trim are usually excellent rafter-banging models. Also, and this is not yet proven, CMOS balanced models seem less affected by light drift than models with high positive margin such as model A of Fig. 5.

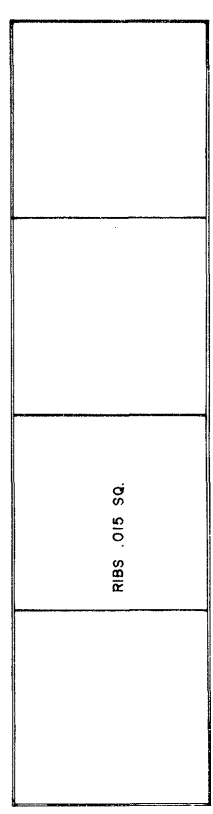
Three final points regarding CMOS: First, C_f remains unchanged so long as wing and stab dimensions and tail boom length remain unchanged. Changes in motor stick length can be handled by making a corresponding change in both X and Y dimensions. It is easiest to use projected wing area and build the wing to fit max span limits on FAI and PennyPlane models.



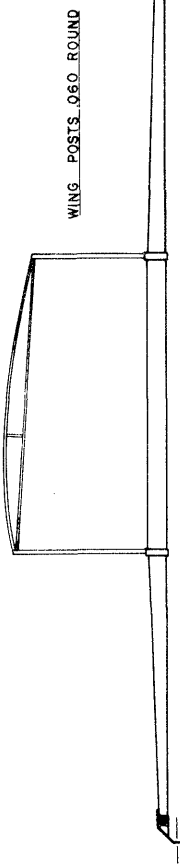
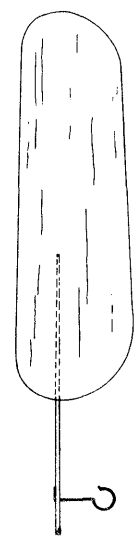
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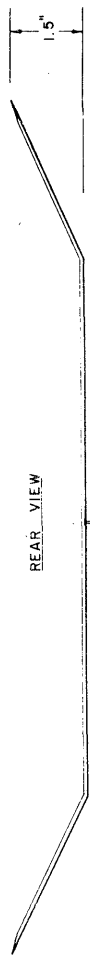
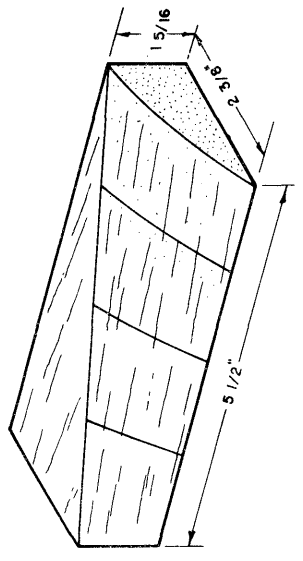
COMPRESSION RIBS AT CENTER AND DIHEDRAL BREAKS ONLY.



SPARS .030 X .020 → .010 X .020



BOOM .040 → .020 ROUND



"BUMMER"

CONDENSER PAPER EASY-B NO BRACING
SOLID STICK RULES
DESIGNED BY LARRY RENGER 10-24-70



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

DAVE BEASLEY, 6601 Nestle, Reseda, CA 91335
R. H. FORST, Rt. #1, Box 59B, Minooka IL 60447

Change Of Address

BILLY H. PETTIT, 1795 Medallion Ct., Mississauga, Ontario
Canada

NIMAS Awards

Silver Cat. I Rubber Award - 10:36.5, Bill Langley

Silver Cat. I Rubber Award - 10:06.5, Dick Starks

Youth Recognition Lacking?

It was recently pointed out that even though Juniors and Seniors turn in exceptional performances with indoor models at the Nats, in FAI trials and in the record columns, it is seldom that they receive recognition for their fine efforts.

Is it possible that NIMAS can and should remedy this oversight with some sort of honorary award? If this idea strikes your fancy as it did mine, please drop a line to give ideas about how such a program should be set up.

Renewal Reminder

55% of the February renewals have already come in, and this is a welcome and helpful situation. Incidentally, it was mentioned that these renewal notices have failed to give the amount for renewal - sorry about that! NIMAS membership (including INAV) is \$3.25/year, while INAV subscription only is \$2.25/year. When to renew? All those whose address was printed by the addresser printer instead being a paper label will find a number (like 03) in the upper left corner of the address block. "03" stands for March, and that sub expires in March!

New Glider Mark!

In his series "The Hand Launch Glider", Richard Miller says (Feb. '62 INAV) "The next ten seconds, the 1:20 to 1:30 range, are not going to be easy to come by. To those who have thrown in the vicinity of 1:15 the problems are evident; to those who haven't spent a minute-and-a-half looking at your stop watch, this will convince you that a glider has to go mighty high and come down mighty slow to hit 1:30." Further on, Richard says "I wouldn't go so far as to say that the medium aspect ratio glider (5:1 to 7:1) has gone as far as it can go but I do feel that the high aspect ratio machine, once its aerodynamic peculiarities are mastered, is the most likely contender for the 1:30 mark and that its very special advantages should make it especially potent in low and medium ceiling flying."

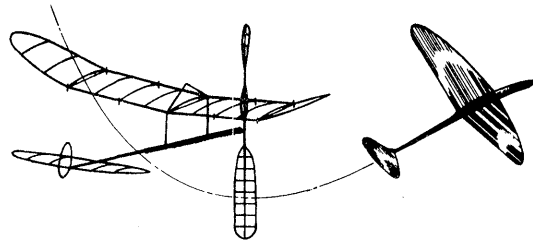
It took eleven years from Miller's prediction, but the 1:30 IHLG mark has been achieved by Ron Wittman at the Feb. 18, 1973 record trials at Santa Ana. Ron's "new generation" glider, Super Sweep 22, set a new IHLG record of 1:30 + 1:28.7 = 2:58.7. These gliders represent a truly evolutionary approach, and the result is a solidly consistent machine. All three of Ron's SS-22's have averaged over 1:20, and he has logged over 50 consecutive flights over 1:20. Ron is to be congratulated for his solid contribution to the state of the HLG art!

'73 Nats

The 1973 Nats will be held Aug. 6-12, at Oshkosh, Wisconsin. No site has been chosen for Indoor at this time, according to the AMA news release, but it is expected that a suitable site will be located within 100 miles of the Oshkosh site.

For Lack Of A Blade

Bob Cowley mourns the passing of the last of his supply of Gillette Blue Blades. Has anyone an idea where good steel (not stainless) double-edge blades can be purchased? If you have access to a supply, how about revealing the source?



Cops!

In the wee hours before the last issue went to press, figure numbers were omitted from the CMOS discussion. So, on p. 4 of the Jan. '73 INAV, in column 1 the illustrations are (moving down) 5A, 5B, 2. In column 2: 3, 1, 4.

Recent Publications

"The Fascinating World of Indoor Models - A Visit With Bill Bigge" is featured in the March '73 AAM. This piece by Tom Vallee gives many details of Bill's very successful model dirigible, and includes photos of several of Bill's other indoor model sidelines. A good effort!

The Jan. '73 issue of Aeromodeller contains an excellent article by Laurie Barr; an analysis of and report on Pete Andrew's World Championship FAI model. Pete gave the model to Laurie in a gesture of thanks for Laurie's large part in the excellent preparations for the WCh, and this afforded Laurie an excellent chance to analyze the model.

"Chicago Aeronuts", by Sid Miller, reports on the more recent activities of one of the best-known model clubs in Indoor history. Although the Aeronuts fly all free flight events, much of the U. S. state of the art can be traced from developments and achievements of Aeronuts in the past 35 years of the club's activity. In addition, the story is almost a blueprint of how the Aeronuts solved the problem of lack of indoor sites. This interesting article appears in the Mar. '73 Model Airplane News.

Finally, a tribute to a long-time NIMAS member - Dave Linstrum. His column, "VTO", in MAN, remains an excellent continuing report on indoor and outdoor FF. In the April '73 VTO, Dave departs his normal orbit enough to make a very entertaining review of "Jonathan Livingston Seagull", a rising best-seller about a very unusual bird. Don't miss it (the book or the review!)

FAI INDOOR REPORT

Executive Council Action

The February meeting of the AMA Executive Council set up a committee of three AMA VP's; Stan Chilton (Dist. VIII) is chairman of the committee and represents FF and Indoor interests. Glenn Lee (Dist. VI) represents C/L, and John Spalding (Dist. IV) represents R/C interests. The group has the responsibility of creating FAI program guidelines which are so sorely needed. Let's wish them well.

Team Selection Program

The exact wording of the 1973 Indoor Team Selection Program can be had from the Jan. '73 Competition News, or by sending a stamped, self-addressed envelope to AMA HQ with your request. In general, the program provisions are thus:

1. Open to all 1973 AMA members who have or purchase a FAI stamp; any Team Members chosen must be at least 14 years old by the start of the 1974 World Champs.
2. Enter by sending \$1 to AMA HQ, or by paying \$1 to CD of a Local Qual. Trials. HQ entry is recommended, as it is then possible to qualify at any sanctioned indoor contest.
3. Qualify by scoring 75% of the top time at a Local Trials, or by scoring 75% of the winning time of any indoor event for rubber powered models which weigh at least one gram and have a maximum wing span no greater than 65 cm. (PennyPlane, Easy B if model weighs 1 g, and other indoor events meeting span and weight rules)
4. Exceptions: Program entrants more than 200 miles from either AMA contests or Local Trials may by-pass the Local Qualification; also any winner through fifth place in Stick, Cabin or Paper Stick at the '72 Nats may enter directly at the Semi-Final level.
5. Semi-Finals Trials - entrants must score 30% of the winning time or be in the upper 2/3 of the placing to advance to the Finals.
6. Finals - Top three winners at the Finals will represent the U. S. at the 1974 Indoor World Championship.
7. Fees: Besides the \$1 registration fee, Local entry fee is \$5 (\$2 for Juniors). Semi-Final fee is \$8 (\$2 for Juniors), and Finals fee is \$10 for all entrants. For those who by-pass Locals, entry fee is \$13 (\$6 for

8. Juniors). The extra fee represents money which would have been spent on travel, etc. in the Local Trials. Schedules: Local Trials must be completed by May 27, 1973; registered participants may fly in as many Local Trials as desired until qualification is accomplished; only one Local entry fee need be paid.

Finals Site Located

Word has been received from Erv Rodemsky that American Airlines' 747 hangar in Tulsa, Oklahoma has been cleared by AA for use as the 1973 Team Selection Finals site. The hangar will "swallow" a 747 whole, with room to spare and has no internal supports.

NIMAS POSTAL MEET

The 8th Annual NIMAS Postal meet will be open for entry through April 16, 1973. All flights made as part of a sanctioned indoor meet from Jan. 1 through April 16 are eligible, as are flights made in informal sessions between now and Apr. 16, provided these sessions are run in accord with AMA rules.

Events: Easy B, paper covered only, solid motor stick and boom, with unbraced surfaces.

HLG - AMA Rules except two ceiling classes - Class I - 18' to 25'; Class II - 25' 1" to 35'.

Indoor Stick - AMA Rules except FAI ceiling measure to compute fudge factor.

PennyPlane - Chicago Aeronauts rules except that ceiling contact permitted and FAI ceiling measure.

Ceiling Dodger - Any class indoor model, flown by AMA Rules except flight must not touch ceiling or obstructions for time to count. In response to a query, this interpretation was made regarding contacts: Models landing on obstructions during the descent phase of flight (chairs, stage, balcony, helicopters, etc.) are not disqualified. The intent of the event is to encourage model development; the principle governing a decision is that obstacle contact must not limit the model's climb in any fashion. For example, a model which drifts into a wall during the descent, then slides to the floor would not be disqualified.

General Rules: Entry fee 15% per event, stamps preferred. Separate events may be flown at different sessions, but all flights for a given event must be flown on one day. Please note ceiling height for each entry, as this will be used to compute fudge factors (see below) to equalize ceiling heights. Separate classes for Juniors in each event, with awards for high placing Seniors. Separate class for sub-junior (age 12 and under) in HLG. Anyone may enter, send entries to Box 545, Richardson TX 75080.

Postal Fudge Factors

The following fudge factors will be used for the NIMAS Postal; multiply the flight time by the appropriate factor to obtain postal scores.

Ceiling (feet)	Class I HLG (Fudge to 25')	Class II HLG (Fudge to 35')	Rubber (Fudge to 35')
18	1.39		1.394
19	1.316		1.357
20	1.25		1.323
21	1.19		1.29
22	1.136		1.261
23	1.087		1.234
24	1.042		1.207
25	1.0	1.4	1.183
26		1.346	1.16
27		1.296	1.139
28		1.25	1.118
29		1.207	1.098
30		1.167	1.08
31		1.129	1.063
32		1.094	1.046
33		1.061	1.03
34		1.029	1.014
35		1.0	1.0

STATE OF THE ART

Two of the top models from the 1973 Indoor WCh are featured this month - Pete Andrews' winner and Sal Cannizzo's fourth place ship. In truth, any of the top several models might have changed places, and both of these models have excellent performance and points to recommend them for others to build.

Pete's "FAI '72", rated by Pete at .037 oz (it seemed even heavier as he weighed in on the precision balances of the SMAE) and not even close to the maximum span (nearly two cm short of allowable span), was clearly designed and constructed by a master. The subtle sophistication of the design and Pete's intimate knowledge of its performance

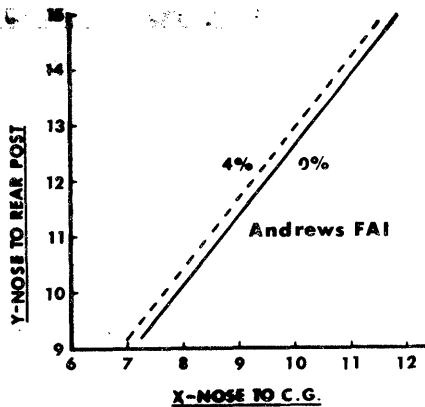
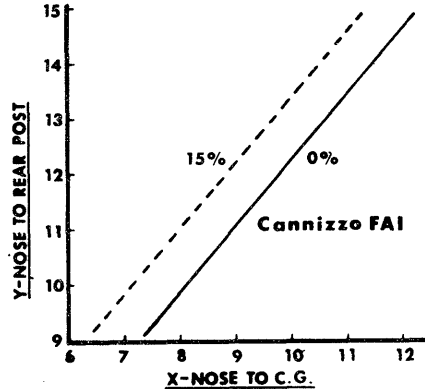
gave him an edge that wasn't overcome by some mighty sharp filiers. Besides the information on the drawing, the following comments apply:

- Wing - 26" x 8" parabolic development, divided 3 1/5" with 25" projected span. Wing posts each 3" long and offset 1" from wing center. Cabane equal angle, 2.5" above spars. Bracing .001" nichrome. CG 5.6" behind leading edge. Airfoil (shown) 3% thick @ 40%.
- Stab - 18" x 5.4" parabolic development, symmetrical, airfoil 3% thick @ 40%, no bracing.
- Rudder - 3" x 4.5" ellipse.
- Motor Stick - 14.5" long, 5/16" dia., double bearing, 45° offset bracing, .001" tungsten.
- Tailboom - 12" long, 1/4" dia. tapered to 1/16" dia.
- Prop - 20" x 32", 2.25" max width, 1/4" flare.
- Motor - 19" loop .055" x .042" pirelli, 1950 turns, 36:12.

Special note - The compression ribs were specially constructed to have double thickness in the center and normal thickness at the ends; two templates are needed to cut these ribs:

Sal Cannizzo must be rated as a relative beginner to indoor flying, but also he is an old hand at both rubber powered models and international competition after having been on two U. S. Wakefield teams. "SC-3" is a simple but thoroughly sound design with a clean power pattern rivaling that of "FAI '72". Sal supplies the following extra information about his WCh models: "I used a 50% stab model on one of the 34+ flights, but the design is otherwise the same. The prop on the 50% model (pattern shown) was 18" x 33" with max width of 2 5/16", using .052" loop of rubber 18" long and 2100 turns. My other 34+ flight used a Bilgri prop ('72 NFFS Sympo report) increased to 20" dia."

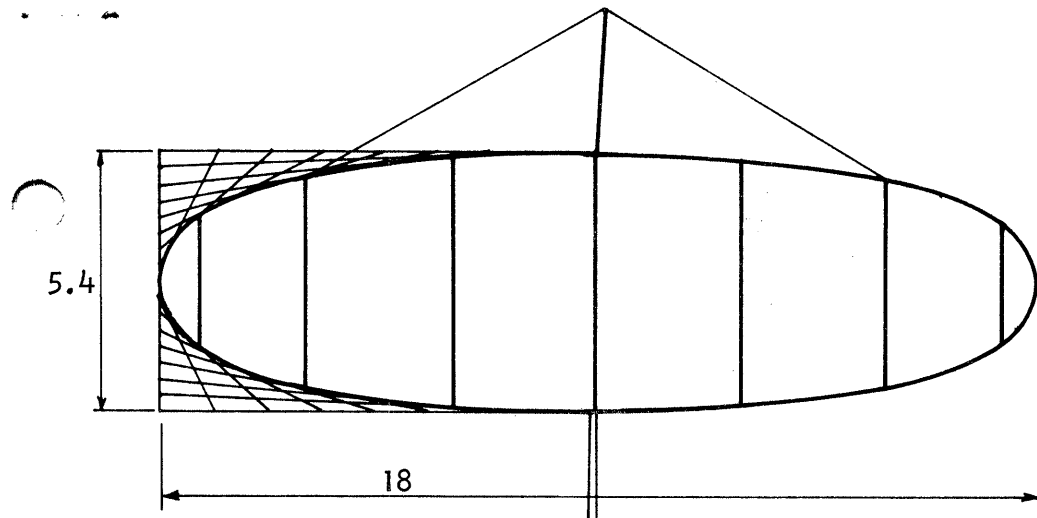
Presented below are the CMOS charts of these models; Andrews used approximately +4% margin, while Sal's trim checked out to +15% on the model shown.



CONTEST CALENDAR

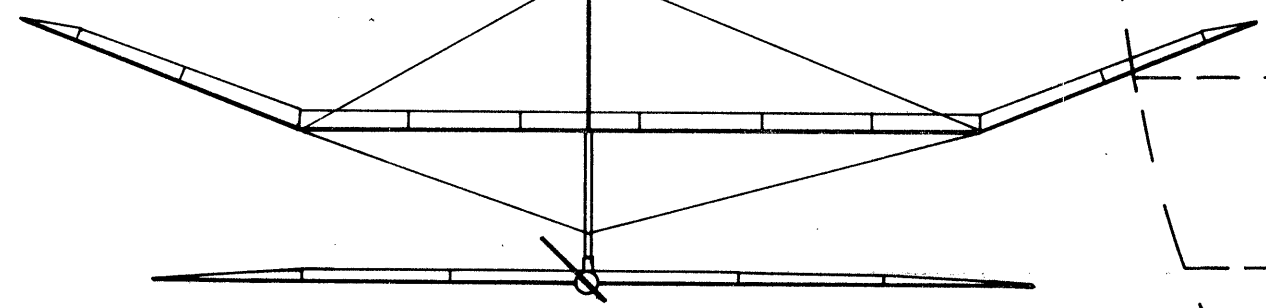
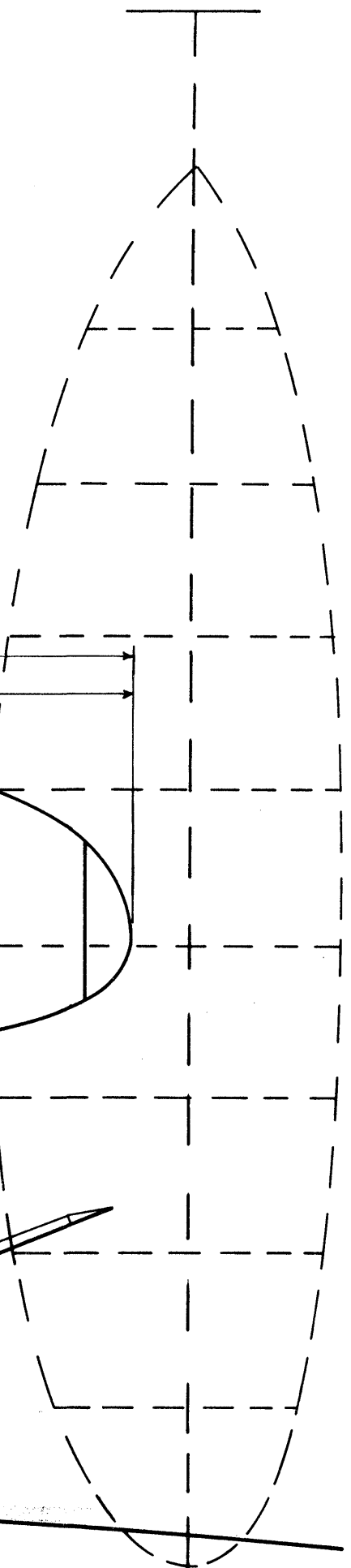
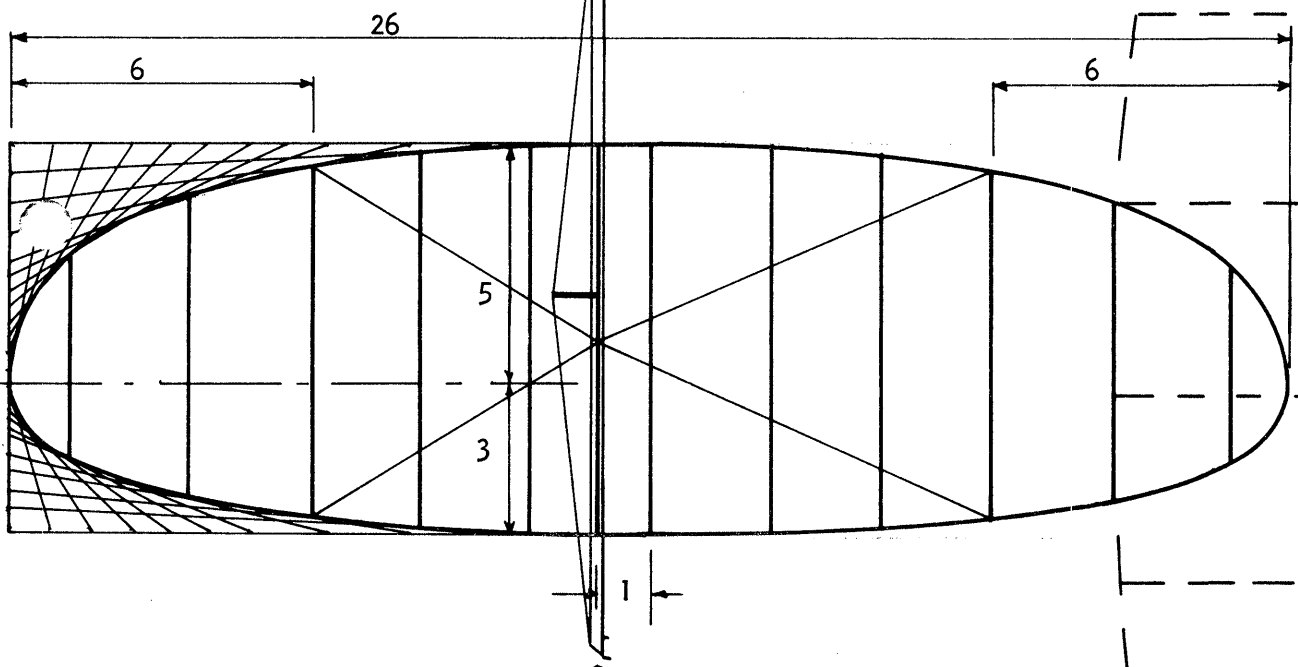
CALIFORNIA - Santa Ana
Record Trials at Santa Ana MCAF, Mar. 17-18, 1973.
Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354 for more info.

CANADA - British Columbia
Contests in the 90' Agrodome in Port Coquitlam will be held on Mar. 4, June 30, Oct. 6 and Nov. 17-18, 1983, with FAI Indoor, PennyPlane, HLG and Scale. Contact Alan Richee, 1568 Celeste Cres., Port Coquitlam, B.C., Canada for more details. (to P.5)

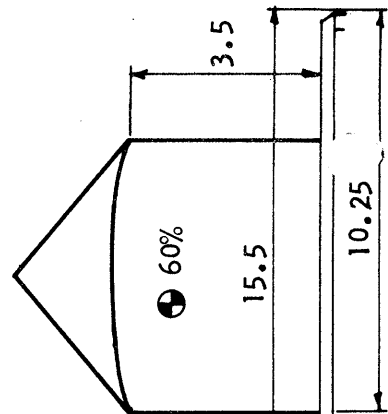
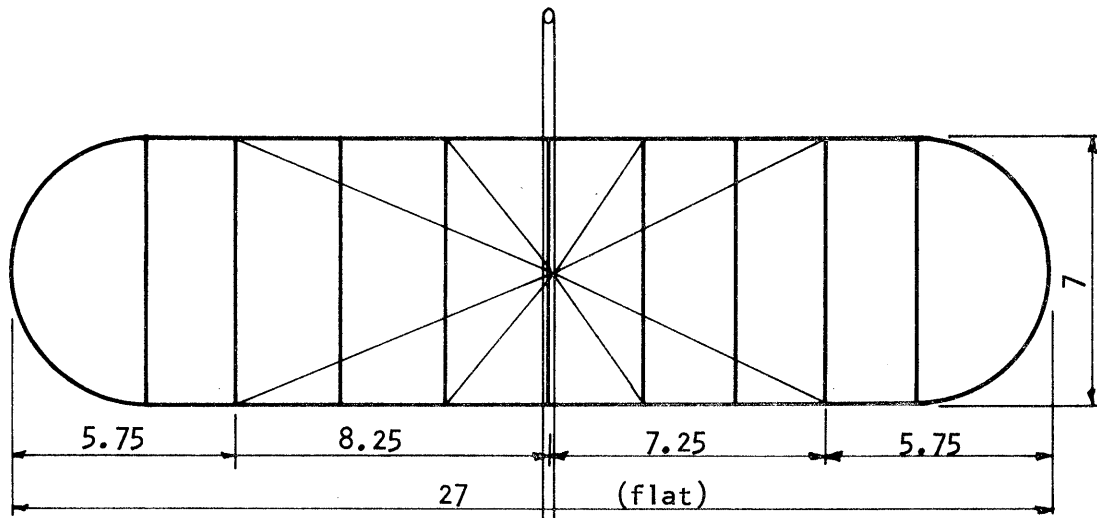


$$\begin{array}{r} 14.5 \\ 12 \\ \hline 3 \\ \hline 29.5 \end{array}$$

FAI '72
Pete Andrews



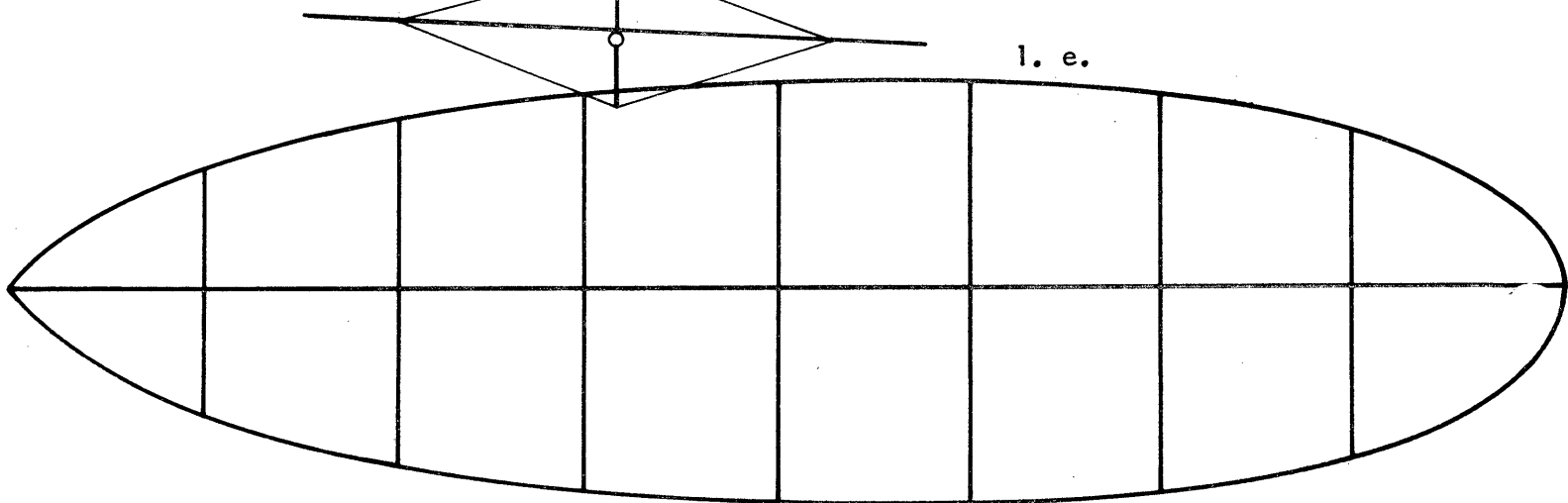
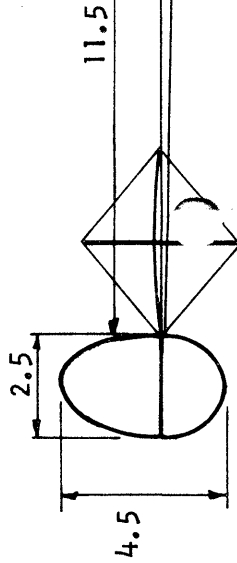
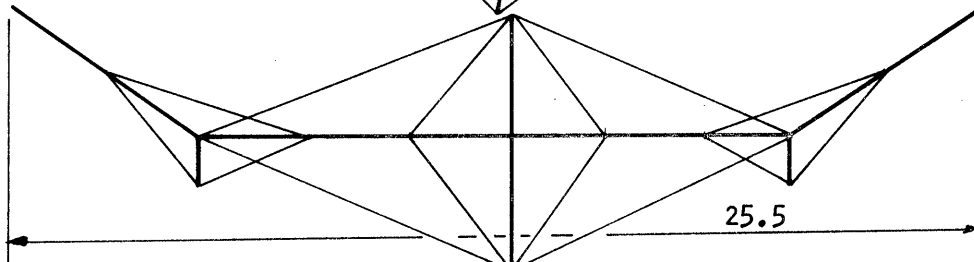
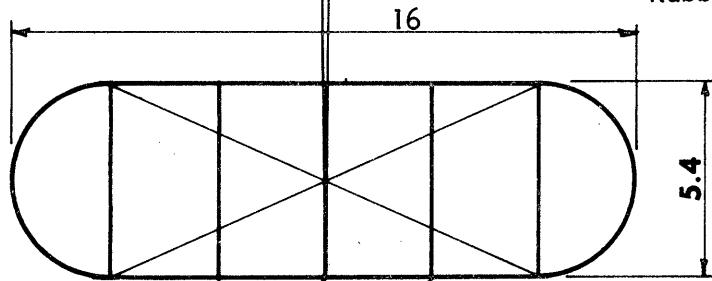
CENTER RIB - cut from rear



Kowalski
airfoil

FAI SC-3
Sal Cannizzo

Weights	
Stick + Tail	.0195
Wing	.0095
Prop	.0065
	<u>.0355</u>
Rubber -	.053 x 18
	2050 turns



CONNECTICUT - Glastonbury

Indoor sessions at Glastonbury High School, 8 am to 12 noon, Mar. 18, Apr. 8, May 20 and June 17, 1973. Contact George Armstead, Jr., 89 Harvest Lane, Glastonbury CT 05073, ph. 203-633-7836.

FLORIDA - Miami

Indoor contests at the Youth Fair Exhibit Bldg., at SW 107 Ave. and Coral Way, Miami, on Mar. 18, Apr. 15 and May 20, 1973. Contact Dr. John Martin, 3327 Darwin St., Miami FL 33133 for details.

ILLINOIS - Chicago

Indoor contests Mar. 4, Mar. 25, Apr. 28-29, and Record Trials in May 1973. Various combinations of events at both Cat. I and Cat. II sites. Contact Pete Sotich, 3851 West 62nd Place, Chicago IL 60629, ph. 312-RE5-1353.

MASSACHUSETTS - Amherst

Indoor sessions at Univ. of Mass. in Amherst on Mar. 4, Apr. 22 and May 13, 1973. Contact Charles Learoyd, 100 Mill Valley Rd., Hadley MA 01035 for details.

MASSACHUSETTS - M.I.T.

Indoor sessions at MIT Armory, Vassar St. & Mass. Ave. Cambridge, Mass. Session on Mar. 17, and a contest on Apr. 14, 1973. Contact Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 358-4013 for details.

MISSOURI - St. Louis

Indoor contests at East St. Louis Armory on Mar. 4, Apr. 8 and June 2, 1973. HLG, Easy B, Paper Stick, Indoor Stick, Scale, Peanut, Tern Aero and Delta Dart. Contact Jim Bennett, 324 Helfenstein, St. Louis MO 63119, ph. 314-962-5271 for details.

NEW JERSEY - Lakehurst

Sessions at Hangar #1 Apr. 1, Apr. 15, 1973. Contact C. V Russo, 143 Willow Way, Clark NJ 07066 for details.

NEW JERSEY - Princeton

Indoor contest at Jadwyn Gym, Princeton Univ., Princeton, N.J., 9 am to 5 pm, May 20, 1973. HLG, Paper Stick, Scale, Paper Glider. Contact John Kukon, 14 Brandon Rd., Trenton NJ 08638 for more info.

NEW JERSEY - Union

Indoor session Mar. 8, 1973 at Livingston School, Union, N.J., 7 pm to 10 pm. Possibility that FAI Local Qual. will be held Mar. 25, 1973. Contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07208.

NEW YORK - Locust Valley

LIAMAC Cat. I Record Trials on Mar. 31, 1973, Friends Academy, Locust Valley, New York. Write J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head NY 11545 for more details and a map.

INTERNATIONAL CONTESTS

Romania has announced an international indoor meet at Slanic (the salt mine, site of the '70 WCh), May 11-13, 1973. It is expected that three U. S. fliers, Bud Romak, Erv Rodemsky and Jim Richmond will attend as a team from the U. S.

NEWS FROM AROUND THE WORLD

ITALY

Recently, an announcement was received from the Aero Club of Rimini, Italy, which apparently indicated that Italy has adopted PennyPlane as an event, with essentially the same rules as used in the U. S. Due to slow postal delivery, the announcement was received in January, but the first Rimini contest was to be held last November. No word has been received of their results or what site was used.

CALIFORNIA - San Jose

Richard Douglas reports that the San Jose area has been having Cat. I contests featuring HLG, Paper Stick and Indoor Scale. In sites ranging from 21' to 26', times have ranged up to 54 sec. in HLG and 10½ min. in Paper.

CALIFORNIA - Santa Ana

Besides the almost monthly record trials, there have been lively HLG contests in the hangar. A recent Jr. HLG contest sponsored by the San Diego Orbiters had the following results:

- | | | |
|-------------------|--------|--------|
| 1. Tony Patchin | age 11 | 1:34.5 |
| 2. Steve Wittman | age 9 | 1:31.4 |
| 3. Geoff Peterson | age 13 | 1:29.4 |
| 4. John Magnus | age 13 | 1:05.0 |
| 5. Chris Peterson | age 10 | 0:54.4 |

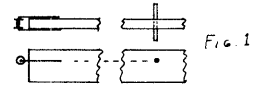
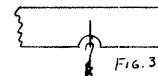
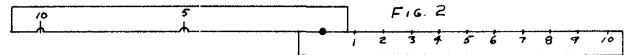
In addition, Bob Randolph has continued intensive efforts toward better performance. He has been flying models with anhedral stabs and no rudder; a "D" with 200 sq. in. wing recently did 40:07.

BEAM BALANCE COMMENTS

On page 65, Jan '73 AAM, I presented a simplified indoor beam balance construction piece. Bill Bigge offers the following comments for refinement:

I gather that the pan hangs from a wire hook which rests in a notch in the beam. This is an unnecessary source of error, even though it is insignificant in most cases. Fig. 1 shows a better pan support; note that the centerline of the pivot is at the same level as the center pivot (for the beam).

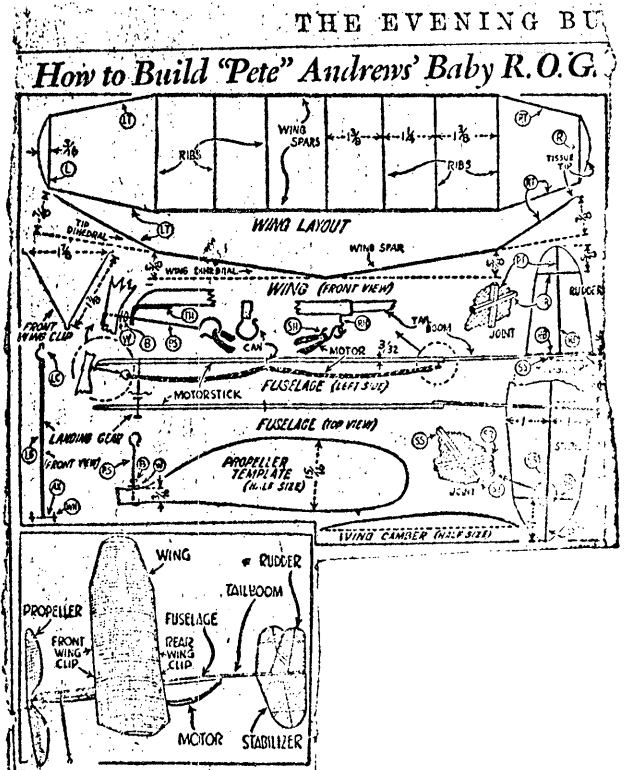
It is not apparent from the sketch whether the weights will swing freely from notches in the beam. If they do, the balance will be unstable with a large enough load unless the bottoms of all the notches are at the same level as the main pivot. In other words, both the movable weights and the pan should hang in the same plane as the beam pivot to avoid disturbing the beam sensitivity. Fig. 2 shows a beam arrangement which allows the pivot to be at the top of the right half of the beam and still permit vertical balance (sensitivity) to be set with very little extraneous weight. Check stations and the pan can use a wire "U" with a small notch for clearance (Fig. 3).



Probably something should be said about weighing by replacement, the so-called single-arm principle. It is convenient to use two arms, even two arms that are both variable as in the AAM sketch. This definitely should be used in constructing a set of weights, and regular use in critical weighing eliminates several sources of error.

A LOOK AT YESTERYEAR

In the early 1930's, Philadelphia was an indoor "hot bed" of activity. The activity was aided and encouraged by model airplane plans published in newspapers. Pete Andrews was active at that time, and below is a photostat of his ROG model which set a Senior record of 6:36. The plan appeared in 1932, in an issue of the Philadelphia Evening Bulletin.



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

Dr. ROBERT J. GALLAGHER, 319 W. Main St., Monogahela PA 15063
 ROGER A. KINGSINGER, 8317 August, Westland MI 48185
 MALCOLM LAUBACH, 4021 Lafayette Pl., Culver City CA 90230
 JOHN W. LEMON, JR., 16246 Edwards Ave., Southfield MI 48076

Sponsored Junior Members

STEVE LOVINS, 619 NE 39th Terr., Kansas City MO 64116

Steve has been nominated by Bill Langley, one of the kingpins of the growing and healthy activity in Kansas City. However, Kevin Wehner, a "graduate" sponsored junior, got Steve interested in indoor during 1971, helping him build an Easy B. In the recent Winged Motors Indoor contest, Steve won Open Indoor Stick, AMA Cub, placed 2nd in Jr. HLG and got the Junior high time award. It is easy to have high expectations for Steve's future work!

Rubber Stripper

For those who inquired about the rubber stripper mentioned in the Aeromodeller report of the '72 WCh (Jan. '72 issue), an improved version is reported to be available. For info, write Ryszard Czechowski, KRAKOW, str. Pradnicka 68a/60, Poland.

Follow-up - Razor Blades

Bob Crowley's plight of no razor blades yielded the following responses:

Charles Learoyd suggests that Sears Roebuck "Craftsman" (Swedish Chrome Steel) double edge blades are very good. These are found in the tool section, and are sold for scrapers. Unlike most scraper blades, the sample he furnished worked very well in a razor plane.

Bill Shailor, 13596 Montrose, Detroit MI 48227, will send furnish blades from the source used by the Detroit Balsa Bugs - his cost is 3¢/blade plus postage. Please limit your order to 10 packages of 5/package, and send 16¢ postage for that quantity.

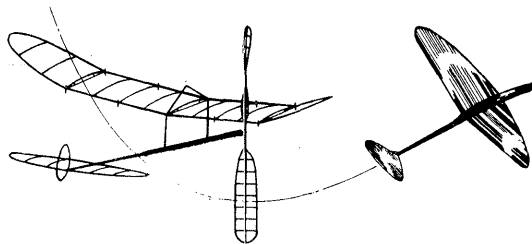
Ralph Dodsworth, 437 Ave. U South, Saskatoon, Sask., Canada, has ample supply of blades @ 45¢/package plus postage.

Changing Your Address?

Periodically we receive letters or renewals from someone who has moved. Usually, the new address is called to our attention, but sometimes it is not. It used to be easy to spot changed addresses, since I typed labels for the mailing. Since the thoughtful gift of an addresser-printer, it is much more difficult to remember the current addresses of over 300 members and subscribers! Therefore, it is quite disconcerting to suddenly note an unfamiliar return address and realize the sender has moved without even trying to call the new address to our attention. It is very much appreciated whenever new addresses are highlighted in some fashion!

This Issue

This combined issue hopefully represents a low point for the year. A special church project - audio system and stage lighting system for a youth choir musical - has absorbed an increasing amount of time over the past few months. This extra load, added to a backlog lasting from before the '72 Indoor WCh, effectively scuttled not only the Mar. '73 issue and delayed earlier issues, but also shut down almost all correspondence and all personal recreation activity. As distasteful as this is to me, post cards will likely be used to make some kind of response to many letters stacked up. Even so, it may some time before matters return to normal; increased responsibility coupled with a 9½ hour work day at Texas Instruments will continue to slow outside activity. Bear with me, and thanks for your patience!



NIMAS Postal Meet

The original announced deadline for entry in the 1973 NIMAS Postal meet has come and gone; due to the delay in everything else around here, additional entries will be accepted from contests flown as late as May 6, 1973. Since this will probably preclude publication of results in the May issue, mailing deadlines will be relaxed also.

'73 Nats

The last INAV announced the '73 Nats site as Oshkosh, Wis., on Aug. 6-12, 1973. There still has been no firm announcement of the indoor site; it is a strong possibility that the Chicago army used in past years will be used again. For those who are fretting about how to plan for indoor events, there is little likelihood of having a site in that area substantially different from the army.

FAI INDOOR REPORT

Time Is Short!

May 15, 1973 is the deadline to enter this Team Selection Program. By that time you must have registered and flown in either a local indoor contest or a Local Qual. Trials, or shown that you would have had to travel 200 miles or more to qualify, or if you have qualified for a previous Team Selection Program and wish to bypass the Local Qual., or have placed in the top five in Stick, Cabin or Paper at the '72 Nats. In the last three cases, you may apply to Program Administrator Bob Champine, P O Box 6213, Newport News VA 23606 for waiver to enter the Semi-Finals.

Semi-Final Listing

An extra effort will be made to get the May '72 issue out on time (about May 15). All CD's who plan to hold a Semi-Final Qual Trials should send this info to Box 545, Richardson TX 75080 for listing in INAV.

Local Trials Listing

OKLAHOMA - Tulsa: Apr. 27, 1973, beginning 5:30 pm at the National Guard Armory. Contact Bob Durham, P O Box 7151, Tulsa OK 74105 for details.
 TEXAS - Ft. Worth: Indoor contest opportunity to qualify on Apr. 29, 1973, at American Airlines hangar, GSW Airport, Ft. Worth, Texas. Contact Bud Tenny, Box 545 Richardson TX 75080, 214-235-4035 for details.

Qualification Trial Results

LIVINGSTON, NJ LOCAL QUAL. TRIALS, Mar. 2, 1973

1. Dan Domina	9:14
2. Ed Franklin	9:01
3. John Triolo	8:54
4. C. V. Russo	8:52
5. Don Garofalow	8:24
6. John Kukon	8:14
7. Stan Stanwick	8:11
8. Manny Radoff	8:09
9. Ernie Kopecky	7:57
10. Bill Landrum	7:25

Ten entries; all qualify via 75% of winning score.

FAI LOCAL QUAL. TRIALS, Hampton Va. Apr. 14-15, 1973

1. Hal Crane	21:45	22:08	43:53
2. Bob Platt	20:07	19:43	39:50
3. Tom Vallee	19:38	18:03	37:41
4. Fred Harlow	18:03	18:45	36:48

Four entries; all qualify via 75% of winning score.

TOP TEN CEILING DODGERS

Name	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Hal Crane	682	20'	1.323	902.3
4. Dick Hardcastle	602	23'	1.234	742.9
5. Hewitt Phillips	528.2	20'	1.323	698.3
6. Charles Learoyd	525	25'	1.153	621.1
7. Howard Haupt	456	22'	1.261	574.5
8. Harry Cook	471	26'	1.16	546.4
9. Bill Langley	421	27.5'	1.128	474.8
10. Jim Davidson	280	13'	1.64	450.2

RECORDS? MAYBE!

CHICAGO AERONUTS INDOOR MEET, Mar. 25, 1973, Cat. II
 Brig. Gen. R. L. Jones Armory, Chicago, Ill.
 Jr. Cat. II Helicopter, 1:59.2, Mindy Linstrum
 Jr. Cat. II Autogyro, 0:55, Mindy Linstrum
 LIAMAC INDOOR RECORD TRIALS, Mar. 31, 1973, Cat. I
 Sr. Cat. I Helicopter, 4:32.0, Ronnie Stransky
 Jr. Cat. I Autogyro, 0:13.0, Richard Whitten

HAMPTON BRAINBUSTER'S FAI LOCAL QUALS, Apr. 14-15, 1973
 Willis School, Hampton, VA, 20' 1" ceiling
 AMA Cat. I FAI - 21:45, Hal Crane
 FAI Cat. I FAI - 22:08, Hal Crane

An almost-record: The time was right, but there was a mix-up and neither CD had arranged for a sanction! So, Steve Wittman's 1:49.1 and Ron Wittman's 2:59.1 were not eligible for records even though they exceeded existing record times. Also, Bob Randolph sneaked close to the Cat. III Stick record with 43:15.

CONTEST CALENDAR

CALIFORNIA - Santa Ana
 Indoor RT at Santa Ana May 26-27, June 23-24, 1973.
 Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354 for details.

CANADA - British Columbia
 Contests in the 90' Agrodome in Port Coquitlam will be held on June 30, Oct. 6 and Nov. 17-18, 1973, with Scale, HLG, PennyPlane and FAI Indoor. Contact Alan Riches, 1568 Celeste Cres., Port Coquitlam, B. C. Canada for details.

CONNECTICUT - Glastonbury
 Indoor contest at Glastonbury High School, 8 am to 5 pm, May 13, 1973. HLG, Easy B/PennyPlane, AMA Cub, Slek Streak, Peanut Scale. Indoor sessions May 20, June 17, 1973, 8 am to 12 noon. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 05073, ph. 203-633-7836.

FLORIDA - Miami
 Indoor contest at Youth Fair Exhibit Building, at SW 107 Ave. and Coral Way, Miami, May 20, 1973. Contact Dr. John Martin, 3327 Darwin St., Miami FL 33133 for more details.

ILLINOIS - Chicago
 Indoor contest Apr. 28-29 and Record Trials in May 1973. Contest events: PennyPlane, Paper Stick, Indoor Stick, HLG, Tern Aero, Flying Scale. Pete Sotich, 3851 W. 62nd Place, Chicago IL 60629.

MASSACHUSETTS - Amherst
 Indoor session at Univ. of Mass. in Amherst on May 13, 1973. Contact Charles Learoyd, 100 Mill Valley Rd., Hadley MA 01035 for details.

MISSOURI - St. Louis
 Indoor contest at East St. Louis Armory on June 2, 1973. HLG, Easy B, Paper Stick, Indoor Stick, Scale, Peanut, Tern Aero and Delta Dart. Contact Jim Bennett, 324 Helfenstein, St. Louis MO 63119, 314-962-5271.

NEW JERSEY - Lakehurst
 Sessions set for Hangar #5 on May 6, May 27, June 10, July 1, 19 3. Out-of-town fliers should contact C. V. Russo, 143 Willow Way, Clark NJ 07066 on Friday to be sure military priorities have not pre-empted the facilities.

NEW JERSEY - Princeton
 Indoor contest at Jadwyn Gym, Princeton Univ., Princeton, NJ, 9 am to 5 pm, May 20, 1973. HLG, Paper Stick, Scale, Paper Glider. Contact John Kukon, 14 Brandon Rd., Trenton NJ 08638 for details.

NEW YORK - Hicksville
 LIAMAC Indoor Contest Apr. 29, 1973, 8 am to 5 pm, at Cartiague Park, Hicksville, L. I. NY. HLG, Easy B, Peanut Scale, Indoor Scale, Indoor Stick. W. Dunwoody, 985 Ft. Salonga Rd., Northport, L. I. NY.

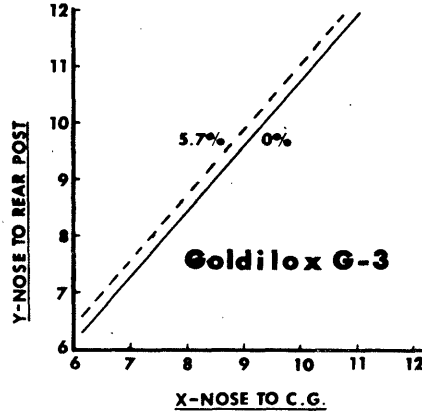
TEXAS - Ft. Worth
 Indoor contest at American Airlines Hangar, GSW Airport, Ft. Worth, TX. HLG, PennyPlane, Easy B Peanut Scale. Bud Tenny, Box 545, Richardson TX 75080, ph. 214-235-4035.

STATE OF THE ART

Goldilox G-3 is an excellent low ceiling model, as it proved in a series of sessions at the University of Tulsa last summer. Stan Chilton's latest bird was quite consistent, as he charted the drift patterns of the John Mabee Gym. Once the drift patterns were mastered it was simple to launch the model with essentially the same power as had been used on countless flights. In fact, drift patterns and other aspects of hall metrology is the second half of

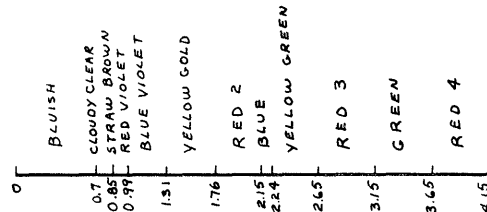
high Cat. I and Cat. II performance; the first half is the model. In fact, G-3 actually "flew the pants off" Stan as he practiced time and again charting the drift. As the day wore on, a minor split in Stan's apparel steadily worsened. Finally, during an excursion to the top of an obstruction to retrieve the model, Stan found himself hobbled effectively and had to be rescued with loaned pants!

The model itself bears the stamp of Stan's fine workmanship, and features advanced design ideas and fine trim. The prop is non-helical in pitch, with both tip and hub areas washed out according to the info shown on the plan. Other features include Kowalski-type airfoil, high aspect wing and stab, and quite light weight. CMOS static margin was +5.7%.

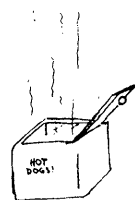
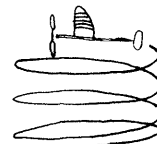


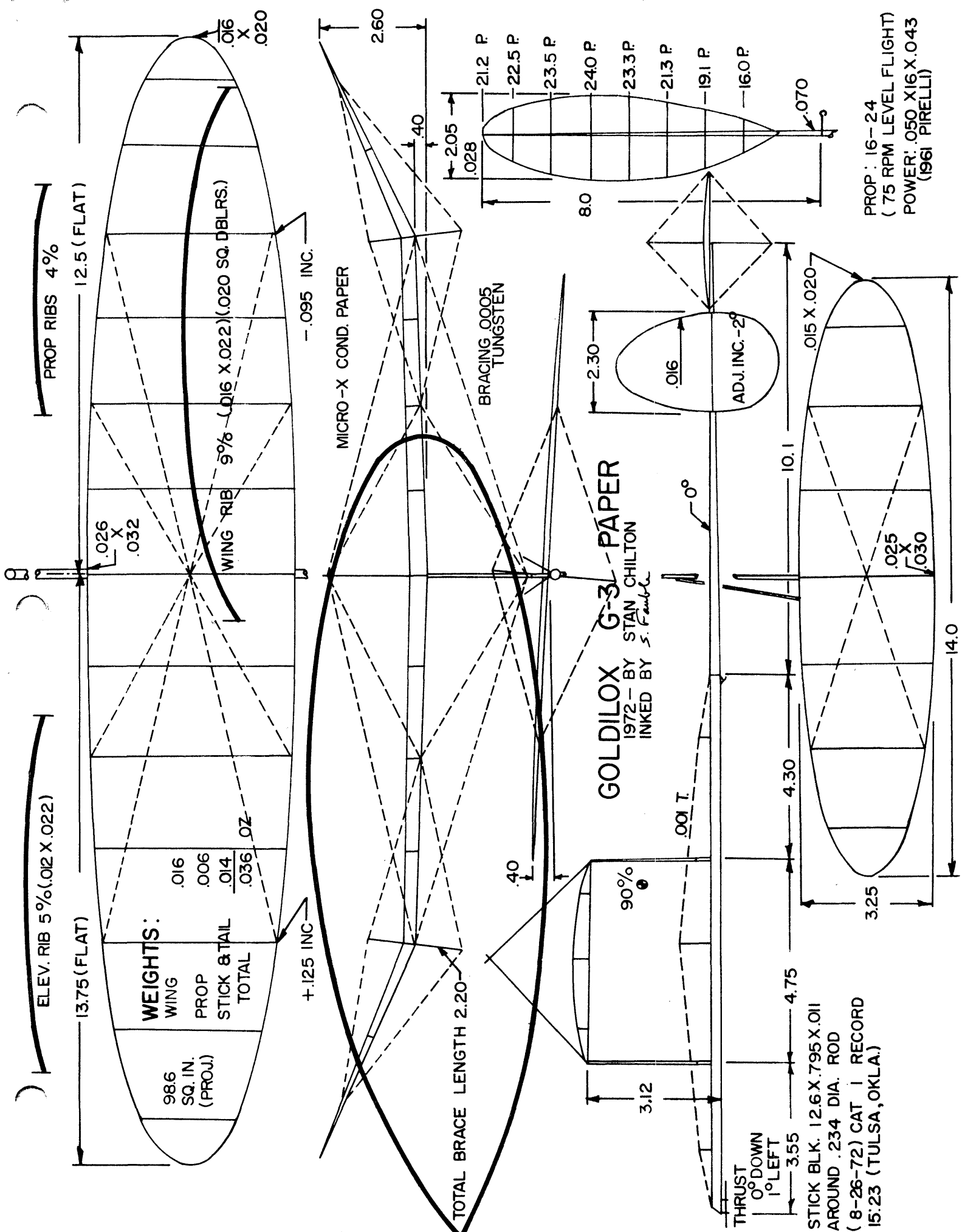
MICROFILM THICKNESS

In the Nov. '63 INAV Bill Bigge explained how he managed to measure the thickness of microfilm, then presented the scale of color vs. thickness shown below. The units shown are arbitrary, but can be translated thus: 1.0 on the scale is approximately 8 microinches (.000008"). In other words, red violet (the very first true color in the range) is about 8 microinches thick and the blue is twice as thick. Some builders call the straw brown color gold, which is half as thick as Bill's designation yellow gold. Incidentally, it is risky to use film thinner than straw brown, since the cloudy clear region covers about a 4:1 range of thickness, all of which is quite likely to be very brittle. Because of the wide range of thickness, it is impossible to determine the properties of clear film and straw brown is already borderline.



Pat Percival





ELEV. RIB 5% (.012 X .022)

13.75 (FLAT)

WEIGHTS:

WING	.016
PROP	.006
STICK & TAIL	.014
TOTAL	.036 OZ

PROP RIBS 4%
12.5 (FLAT)
WING RIB 9% (.016 X .022) (.020 SQ. DBLRS.)
-.095 INC.

.026 X .032

+1.125 INC

MICRO-X COND. PAPER

TOTAL BRACE LENGTH 2.20

BRACING .0005 TUNGSTEN

GOLDDILOX G-3 PAPER
1972 - BY STAN CHILTON
INKED BY S. Fawcett

.001 T

0°

THRUST
0° DOWN
1° LEFT

3.55

STICK BLK. 12.6 X .795 X .011
AROUND .234 DIA. ROD
(8-26-72) CAT 1 RECORD
15:23 (TULSA, OKLA)

4.75

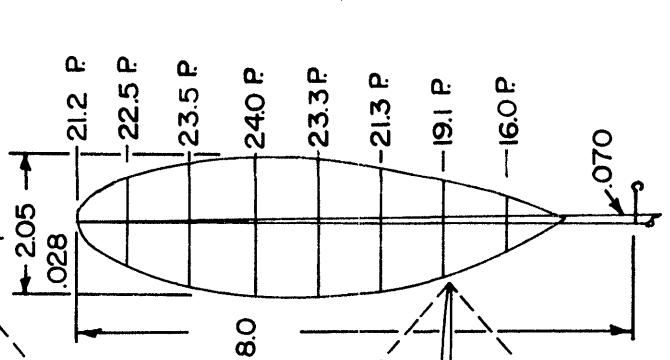
4.30

10.1

.015 X .020

3.25

14.0



PROP: 16-24
(75 RPM LEVEL FLIGHT)
POWER: .050 X 16 X .043
(1961 PIRELLI)

INSTANT NEUTRAL POINT

The Jan. '73 INAV had a review and recap of the CMOS balance method. In the past two or three years, Hal Crane has been developing another system to locate the neutral point - or to put it another way, compute the static margin. It was pointed out in the CMOS article that the basic chart was developed for A-2 towline, and thus does not exactly fit indoor models. However, it does have a provision for different aspect ratio of wing and stab, thus allowing comparison of reasonably diverse designs. Hal's method can be adapted to various designs by using a different chart for each subgroup, but the chart shown on page 5 is "peaked" for low aspect ratio designs such as are now common in one gram FAI. PennyPlanes follow this same basic trend, and should also work well on this chart.

The CMOS method requires considerable computation and construction of a graph which is then applicable to all models built to that exact design. Hal's method calls for less computation, but requires several guesses. At this time, several years of experience with CMOS has pinpointed the best range of balance points, but this advantage can be rapidly overcome if people using Instant Neutral Point will give feedback on the results. Hal's own "best guess" is to use at least 10% static margin; that is, the C.G. should be at least 10% of the average wing chord ahead of the neutral point.

A couple of examples will illustrate the method of using INP. First, let's compute the static margin of a hypothetical model which has been completed and flown, to see how it should have been trimmed. This model will have the following design: constant chord wing and stab with 7" x 25" wing and 4" x 18" stab. Fuselage and tail boom dimensions, plus wing location, will be as shown in Fig. 1. The basic procedure is as follows:

1. Compute average chord of wing ($C_{w,ave}$) and stab ($C_{t,ave}$). Note that the example model has constant chord wing and stab, which is a special case. See the CMOS discussion (Jan. '73 INAV) for computing average chord of tapered wings.
2. Measure (on existing model) or compute (on model under construction) l_t (tail length, or tail moment arm).
3. Divide l_t by $C_{w,ave}$.
4. Divide stab area (S_t) by wing area (S_w).
5. Refer to the INP chart (p. 5) and extend the line corresponding to the proper S_t/S_w .
6. Move vertically from the computed value $l_t/C_{w,ave}$ on the X-axis of the chart to the extended line, then across to the neutral point (NP) on the Y-axis.
7. Compare the NP location with the CG location.

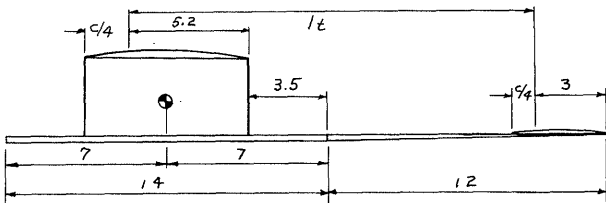


FIG 1

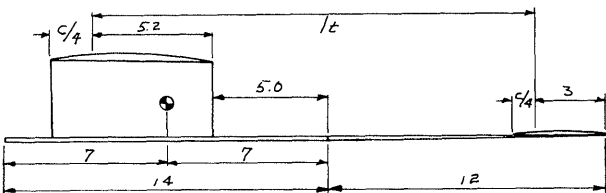


FIG. 2

Working with the specified dimensions of our "tested" model, the following figures come out:

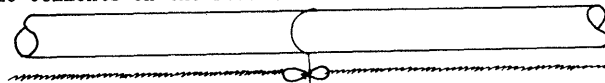
1. $C_{w,ave} = 7$, $C_{t,ave} = 4$.
2. $l_t = 17.7$ ". (From Fig. 1, note that l_t is defined (as in CMOS method) as the distance from $C/4_{wing}$ to $C/4_{tail}$. That is from 25% of the average chord on the wing to 25% of the stab average chord. Thus, from Fig. 1 $l_t = 9 + 3.5 + 5.2 = 17.7$).
3. $l_t/C_{w,ave} = 17.7/7 = 2.53$
4. $S_t/S_w = 72/175 = .41$. Refer to p. 5 and note that the line corresponding to .41 has been extended (step 5). Note that this line is the same for all models built to this same design.
6. Following the light line, NP is shown to be 79.5% C_w . In other words NP is 20.5% or 1.43" ahead of the rear wing post.
7. Since the CG is 7 - 3.5 or 3.5" ahead of the rear wing post, the static margin is $3.5 - 1.43 = 2.07$. Then, $2.07/7 \times 100\% = 29.4\%$ margin. Since Hal recommends about 10% margin, the hypothetical model is trimmed too far forward; as a result both the flight efficiency and the rafter banging qualities will be impaired.

Fig. 2 and the following discussion will illustrate the trial-and-error method for proper wing location. From the example above, we can assume that the wing will have to be moved forward. Therefore, assume a wing location 5" ahead of the rear hook, or 1.5" ahead of the original location. Then the new $l_t = 17.7 + 1.5 = 19.2$ ", and $l_t/C_{w,ave} = 19.2/7 = 2.74$. From the graph, NP = 82.4%, and NP is 17.6% of 7 or 1.23" ahead of the rear post. The CG is now only 2" ahead of the rear post (trial location) and the margin would be $2 - 1.23 = .77$. $.77/7 \times 100\% = 11\%$ margin, well within proper limits.

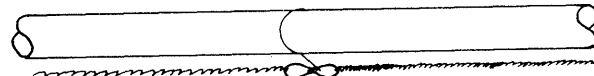
Why another method to compute static margin? What is it with this guy, anyhow? Simply this: it is the personal belief of many top fliers that computation of static margin is one of the major shortcuts to high-level performance. Most certainly it is possible to trim models at other margins and get respectable performance. However, once anyone tries balancing models with some method of static margin rather than by some arbitrary CG location, they usually continue regardless of the bother of computation. It is a measure of my own conviction that this is vital that I take time to compute CMOS on all models presented. In the future, INP will also be given for all models with low aspect ratio wings.

A LOOK AT YESTERYEAR

Back in 1936, there used to be a magazine called MODEL AIRCRAFT BUILDER. In one of these, Louis Garami suggested a gadget which was intended to help control model altitude in low ceilings. The device consisted of an S-hook and a wire pin. Two motors, shorter than the usual single motor, are hooked to the S-hook and to the prop and rear hook, so the S-hook is in between the motors. The pin mounts to the motor stick and prevents the S-hook from turning for a while. The sketch below shows (top) both motors wound and the pin engaged in the S-hook. The second sketch shows the rig as the front motor is mostly unwound; the S-hook has moved back almost enough to disengage the pin. The intent is for the model to climb on the power of the front motor, then drop down as the second motor rewinds the front motor enough for a second climb (but not as high). He also suggested that the pin location (and relative motor lengths) can be adjusted to tailor the climb pattern. Now - has anyone tried this idea? If so, how about some comments on the results?



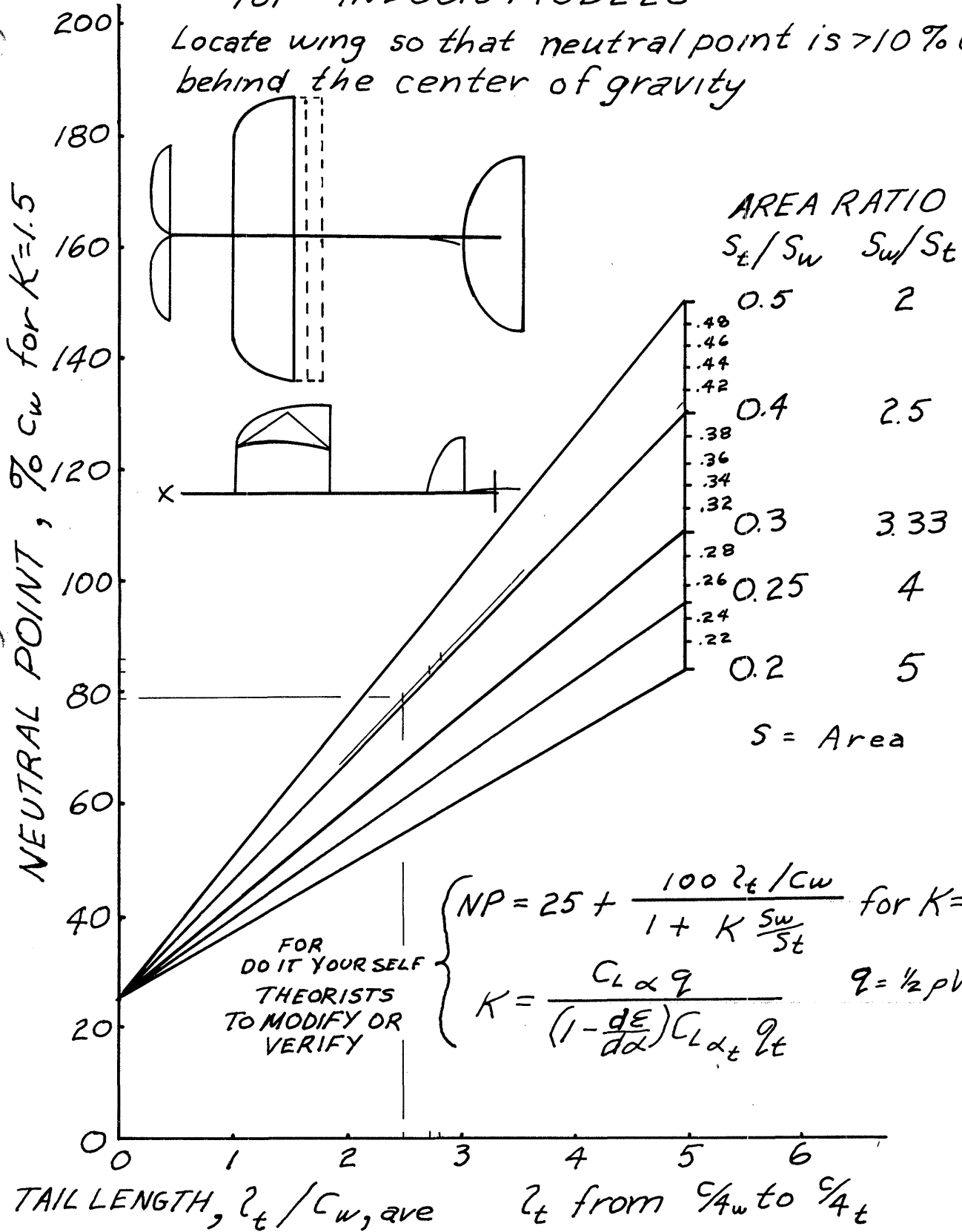
BOTH MOTORS WOUND



FRONT MOTOR UNWOUND

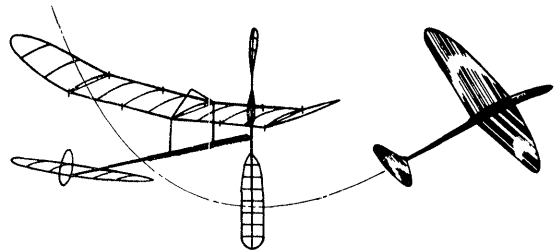
INSTANT NEUTRAL POINT for INDOOR MODELS

Locate wing so that neutral point is $> 10\% C_{w,ave}$ behind the center of gravity



INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****New Members!

STEVEN L. BROWN, 815 West Court St., Janesville WI 53545
 BILL CULLEN, 9 Honey Dr., Syosset NY 11791
 ROBERT L. PERKINS, M.D., 2285 Pinebrook Rd., Columbus,
 OH 43220

Family Memberships

ROBERT L. PERKINS, Jr., 2285 Pinebrook Rd., Columbus
 OH 43220

Change of Address

ROBERT HABERSTROH, 1109 W. Harmony Rd., Ft. Collins
 CO 80521

'73 Nats

It has been confirmed that the Brig. Gen. R. L. Jones Armory, 5200 South Cottage Grove, Chicago, Ill., will be the '73 Indoor Nats site. The activity there will be run on a self-sufficient basis - from registration to trophy presentation each day. More details on this are available from your entry blank which must be sent (postmark) no later than midnight, June 29, 1973. If you have not yet received an entry blank, send a stamped, self-addressed envelope to AMA HQ and request one.

Indoor HLG will be held Sunday, 9 am to 3 pm, with Indoor Scale following, 3 pm to 9 pm. On Monday, Indoor Stick, Paper Stick and Indoor Cabin will run 9 am to 9 pm.

As of this writing, no word has been received on when PennyPlane will be held; presumably, it will be held concurrently with Indoor Scale. Peanut Scale will be sponsored by the Detroit Cloudbusters and Navy Scale will be sponsored by the Miami (Florida) Indoor Aircraft Association; both events will be held concurrently with Indoor Scale.

Nats Reporters Needed!

Wanted: volunteers to report on all Nats indoor activity. This can range from reporting isolated but interesting events to a full report; also pictures of as much of the activity as possible. With your help, it can be a top level report - just drop me a line and let me know that you can help. I expect to be there, but with duties which will preclude much observation and reporting.

Recent Publications

A short but interesting article, "Indoor Flying", by Paul Wahl (a neighbor of Pete Andrews) appeared in the May '73 Science and Mechanics magazine. Even though this was a short article, a mention of NIMAS at the end has brought many, many requests for more information. This ought to tell us something about the importance of indoor activity being reported in the national press!

Full size plans and a humorous account of Ron Wittman's record HLG "SuperSweep 22" appears in the April '73 NFFS Free Flight Digest. "Super Editor" Bob Meuser finds time for such goodies besides putting out the whole thing - and the Digest is excellent, in case you haven't seen it.

Nimas Postal Meet

A final reminder - get your entries in for the 1973 NIMAS Postal Meet. Due to the lateness of the Mar/Apr issue, entry was extended to include meets flown as late as May 6, 1973. Please get the entries in by May 25, so it will be possible to tabulate the results for the June '73 issue.

FAI INDOOR REPORTEntry Deadline

Exception was taken to the announcement last month that interested fliers must enter the Program by May 15, 1973. The date was incorrect (should have been May 27), but it is my interpretation that all fliers must have

entered before the end of the time allotted for Local Qual Trials. Even though fliers may qualify for entry into the Semi-Finals by exemptions detailed last month, it seems reasonable that one must be entered in the Program before he can petition the Program Director (Bob Champine) for an exception under the Program rules. Either way, the cost is the same and if you enter before May 27, you just gotta be in line!

Team Selection Trials ScheduleSemi-Final Trials

SANTA ANA - Tentative date - June 23-24, 1973. Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354.

DETROIT - Tentative date - June 2, 1973. Paul Crowley, 32604 Tecla Dr., Warren MI 48093 ph. 313-294-0266.

EAST COAST - Hangar #5 dates - May 27, June 10, July 1; contact C. V. Russo, 143 Willow Way, Clark NJ 07066.

SOUTH CENTRAL - Contact Bud Tenny, Box 545, Richardson TX for info.

Qualification Trials Results

TULSA LOCAL QUAL TRIALS, Apr. 27, 1973 Cat. II
 15th Street Armory, Tulsa Okla. 37' ceiling.

A. D. Coe	20:28
R. J. Dunham	18:50
Stan Chilton	16:48
Robert Dunham II	15:59
John English	15:46

RECORDS? MAYBE!

CHICAGO AERONUTS INDOOR CONTEST, Apr. 28-29, 1973 Cat. I
 Meeting Room, Madison St. Armory, 20' ceiling.
 Cat. I Jr. Autogyro - 0:46.2, Mindi Linstrum

CONTEST CALENDAR

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 Indoor RT at Santa Ana May 26-27, June 23-24, 1973.
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 Indoor contest at Glastonbury High School, 8 am to 5 pm, May 13, 1973. HLG, Easy B/PennyPlane, AMA Cub, Sleek Streak, Peanut Scale. Indoor sessions May 20, June 17, 1973, 8 am to 12 noon. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 05073, ph. 203-633-7836.

FLORIDA - Miami
 Indoor contest at Youth Fair Exhibit Building, at SW 107 Ave. and Coral Way, Miami, May 20, 1973. Contact Dr. John Martin, 3327 Darwin St., Miami FL 33133 for more details.

MICHIGAN - Detroit
 Tentative date for State Meet - June 2-3, 1973. Contact Walter Hartung, 14759 Kilbourne, Detroit MI 48213, ph. 313-LA7-7620 for details.

MISSOURI - St. Louis
 Indoor contest at East St. Louis Armory on June 2, 1973. HLG, Easy B, Paper Stick, Indoor Stick, Scale, Peanut, Tern Aero and Delta Dart. Contact Jim Bennett, 324 Helfenstein, St. Louis MO 63119, 314-962-5271.

NEW JERSEY - Lakehurst
 Sessions set for Hangar #5 on ~~May 6~~, May 27, June 10, July 1, 1973. Out-of-town fliers should contact C. V. Russo, 143 Willow Way, Clark NJ 07066 on Friday to be sure military priorities have not pre-empted the facilities.

NEW JERSEY - Princeton

Indoor contest at Jadwyn Gym, Princeton Univ., Princeton, NJ, 9 am to 5 pm, May 20, 1973. HLG, Paper Stick, Scale, Paper Glider. Contact John Kukon, 14 Brandon Rd., Trenton NJ 08638 for details.

OKLAHOMA - Tulsa

Cat. II-(?) III(?) Record Trials in American Airlines Hangar (FAI Finals site) 3800 N. Mingo Rd., Tulsa OK. Contact Bob Dunham, Box 7151, Tulsa OK 74105, ph. 918-747-0720 for details. Assemble in front of American Airlines administration building at 10 am for directions to hangar.

TEXAS - Ft. Worth

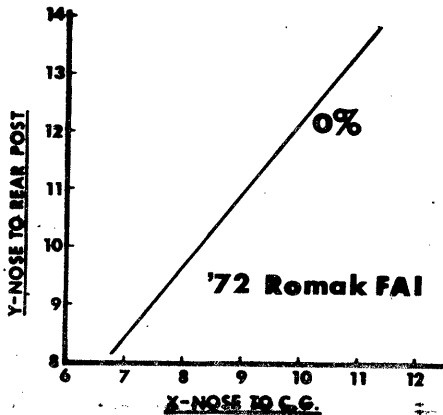
Tentative date - June 3, 1973 - American Airlines Hangar, Greater SW Airport, Ft. Worth, Tex. HLG, PennyPlane, Easy B, plus Peanut Scale pending arrangements for judges. Bud Tenny, Box 545, Richardson TX 75080 ph. 214-235-4035.

STATE OF THE ART

Bud Romak's models showed very high capability, as he posted 36:04 in the sixth round at the '72 Indoor WCh, in air which was beginning to deteriorate. The model shown is quite similar to the design which placed him on the Team, and was developed especially for the '72 Champs.

During his model development program, Bud tried wide chord wings twice. Both times he had problems which indicated that a wide chord configuration was not reliable for WCh conditions. As a result, he has retained a slightly tapered wing with a sort of rounded tip. This configuration has worked well, and any apparent lack of reliability at the WCh could be traced to the way the model could out-climb the site. Certainly, Bud's models were hung as many times as any others!

The CMOS diagram below gives the 0% balance point, and Bud's indicated set-up showed 0% also. On Crane's Instant Neutral Point chart (Mar/Apr '73 INAV), the static margin checked out at +9.5% - almost "perfect" according to Hal's suggested margin.



INDOOR CONSTRUCTION TECHNIQUES

The Braced Motorstick - Part I

The information presented here is gleaned from past INAV's and from material presented by several fliers since this topic was last discussed.

One gram FAI models are relatively high powered by the standards of normal indoor models - not in ratio of rubber weight to airframe weight - but in brute power. That is, a one gram model will likely have up to 1.5 grams of rubber, and very possibly motorstick lengths rivaling that of a "300". As a result, motorstick stress soars well above that for normal indoor models, particularly in the heat of WCh competition. Even with a required extra weight (65 cm models "gained" 50% in weight, on the average, when the one gram rule came in), it is important to get the maximum strength/weight ratio for the motorstick. After all, wider wings are heavier and so are the stubs. Larger rubber calls for larger props to handle the brute power, and increased flight stresses require stronger tail booms. It all adds up quickly, and not many extra milligrams are left to beef up the motorstick.

One of the more popular types of stick bracing is the double wire bracing, illustrated in A. This illustration, along with B, C, D and E, gives details of the motorstick construction used by Al Rohrbaugh. B shows important details of the bracing post construction; most important is that sharpened posts stick through the motorstick and are glued at both entry and exit points. After glueing the exit points, the tiny tips can be cut off and covered with another skin of glue. C illustrates one method of reinforcing the thrust bearing area - a 1/32" sq. post is stuck through the stick at the critical stress area. In

similar fashion, the rear hook (D) is reinforced also. E shows an important detail about mounting wing posts. First, a wood plug is installed in the bottom of each socket; second, a small hole in the bottom of the motorstick allows glue to be applied to the bottom of the plug to insure that the socket is firmly anchored. After all, a loose wing socket can cause erratic flying by allowing the wing washin/washout to change; only careful examination will reveal this problem before it worsens enough to be obvious.

Illustration B shows that the bracing posts are 45° apart, which allows them to strengthen the stick in both bending and torsion. It is important that these angles be correct and uniform at each bracing location; F and G are two views of Al's drilling guide which makes it possible to locate the holes accurately. Note especially that the two guide holes are staggered slightly so that the braces will slide past each other.

The usual method of reinforcing the stick at the rear hook and thrust bearing is to use a vertical web inserted inside the stick. Bob Randolph reported Erv Rodemsky's method as shown in H and I. Here the front cap is first installed, then a slot is made to just fit the web. This slot is slightly harder to make than it is to insert a web, but the major advantage is that the glue seams can be properly made. One method of making the slot is to make a single cut with a razor saw and then carefully shave away excess wood with a sharp double edge blade. Note that the grain of the web is always vertical, no matter how the web is installed.

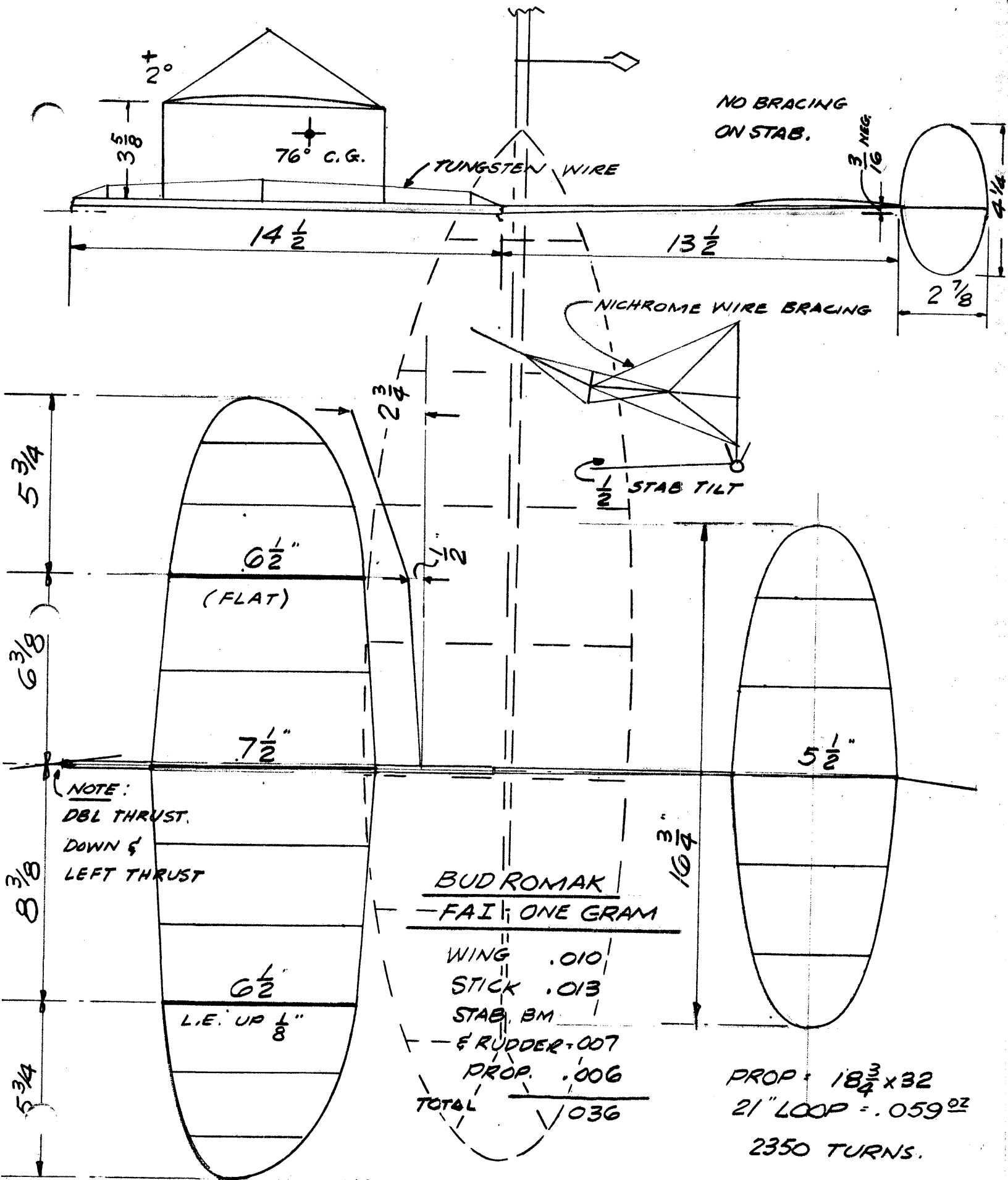
The question sometime arises, "What is the best way to get a straight motorstick?" J shows a method for holding the seam closed while it is being glued. The rolled and dried stick is placed between two straight blocks which are then brought together just enough to close the seam. It is necessary that these blocks be over 1/2 as high as the stick diameter; it is convenient that they be thinner than the stick diameter. After the seam is held closed - just touching - carefully apply glue to the seam and avoid using excess glue. Prior to this time, however, careful work will help produce a straight stick. Choose wood that is uniform in thickness and grain pattern, with grain running straight along the sheet. Roll and bake the tube in the usual fashion, then remove it from the form. At this point, if the rolled tube is not straight, do it over. It is too much to ask of a glue joint that it do more than hold the seam closed; if the stick is stressed by being forced straight from a crooked state it will eventually pull crooked.

Illustration K shows a motorstick by Jim Richmond. Note particularly the stick reinforcement and the variation of plug in the wing socket. Also, the Scotch-type thrust bearing has been modified by making a spiral hook which holds the rear of the prop shaft in line. The hook is engaged with the prop shaft by a twisting motion as the shaft is moved back.

CONTEST RESULTS

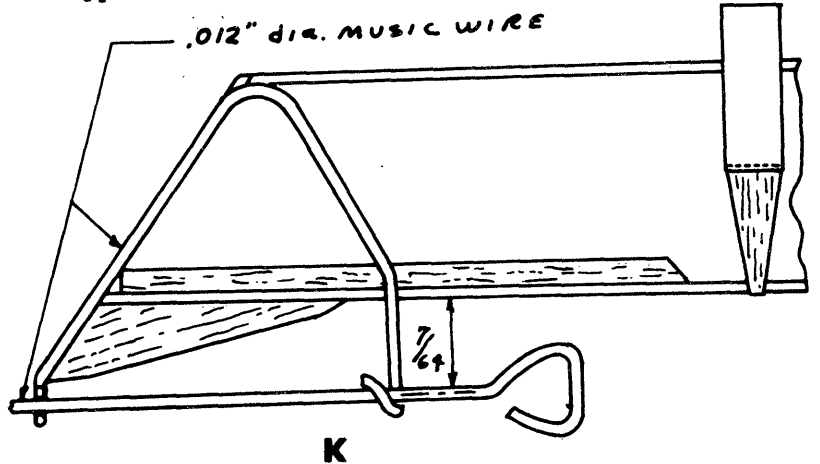
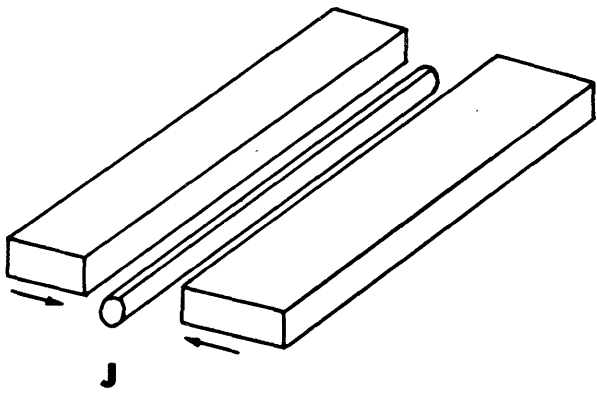
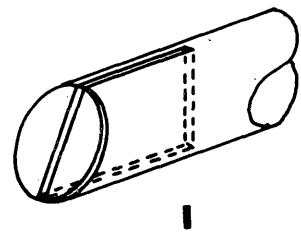
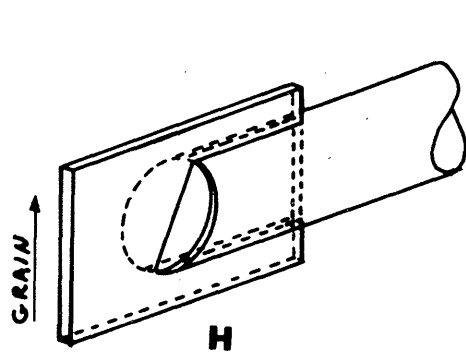
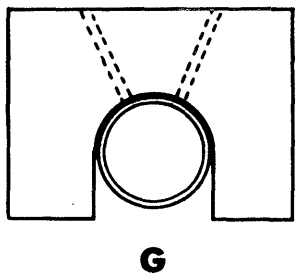
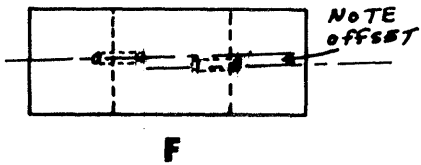
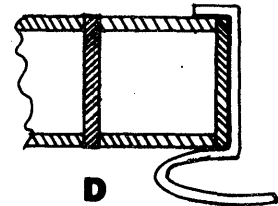
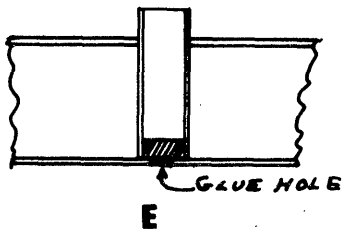
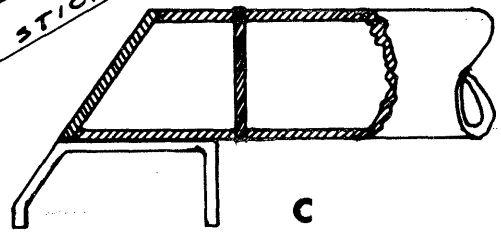
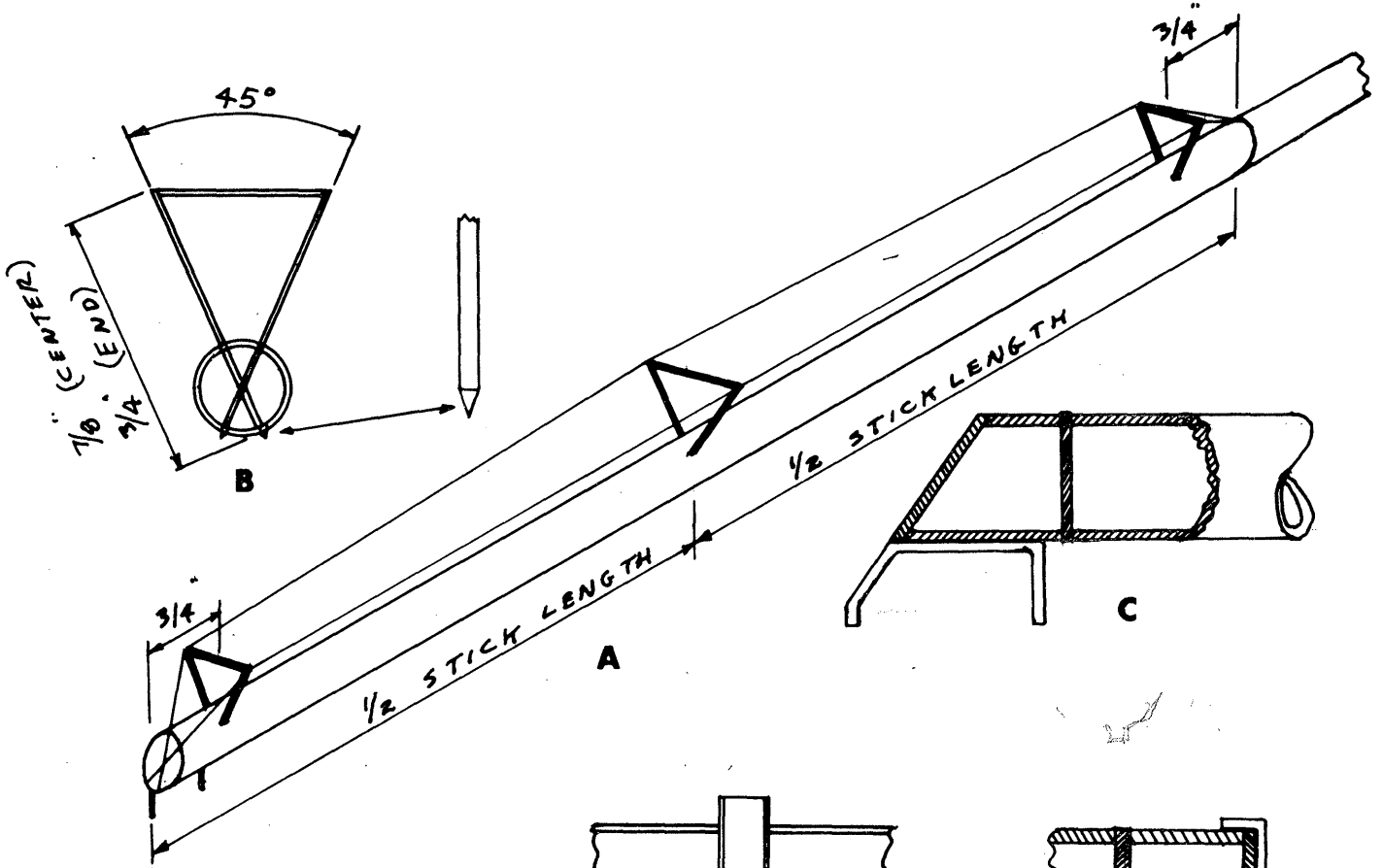
ILLINOIS MODEL AERO CLUB INDOOR CONTEST, Apr. 1, 1973
Brig. Gen. Jones Armory, Chicago, Ill. 90' Cat. II

<u>Jr. HLG</u>		<u>Open HLG</u>	
Steve Robbins	77.9	Bob Hayes*	119.9
Jeff Tillou	54.8	Keith Gordey*	115.5
		Mark Kummerow*	115.2
<u>Jr. PennyPlane</u>		Chuck Markos	113.7
Tim Stone	5:54.8	Dan Neumann	112.7
Tim Noonan	5:52.0	Bill Hutchins	107.3
Mindy Linstrum	3:07.0	Don Wright	106.8
		John Loribiecki*	105.8
<u>Sr. PennyPlane</u>		Bob Watson	103.7
Steve Oravec	6:34.0	Tom Neumann	103.8
Keith Gordey	5:55.0	Dick Swenson	100.8
Eric Miller	5:16.4		
		<u>Jr. Paper Stick</u>	
<u>Open PennyPlane</u>		Tim Stone	4:19.5
Dennis Jaecks	9:51.0	Steve Robbins	0:18.2
Rol Anderson	9:44.1		
Hank DeKat	8:45.0	<u>Open Paper Stick</u>	
Bob Hayes	8:07.7	Jim Richmond	16:49.2
Chuck Markos	6:51.0	Dennis Jaecks	16:44.0
Ken Kraemer	5:33.8	A. D. Coe	14:07.2
Bob Elman	3:55.4	Charlie Sotich	11:30.2
Dave Linstrum	2:59.5	Howard Haupt	10:04.6
Tim Banaszak	0:16.0	Jeff Annis	9:41.0
		Clarence Mills	8:42.0
<u>*Senior age contestants</u>		Steve Oravec	7:28.0
		Keith Gordey	7:05.5
		Rol Anderson	5:01.0
<u>Peanut Scale</u>			
Charlie Sotich	Volksplane	240.4 Points	
Chuck Markos	Piper J3	144.0	
Ted Dock	Piper Vagabond	117.0	
Ed Fort	S. E. 5	113.5	
Mark Kummerow*	Bucker Jungmeister	96.2	
Jim Pulley	Waterman "Gosling"	86.6	
Jim Gerz	Pietenpol Camper	86.0	
Phil Cox	Pietenpol Camper	73.8	
Jim Harris	Helio Super Courier	72.1	
Otto Curth	Heath Midwing	66.9	



NAT. RECORD
FLT. 35:42
SANTA ANA CALIF.

BEST TIME AT CARDINGTON,
ENGLAND - W.C. SIXTH ROUND
36:04



BALLOON STEERING - ANOTHER LOOK

Balloon steering was covered in May '63 and June '65 INAV's. These two articles can be briefly summarized in the following remarks. The basics are simple, and only require practice - the higher the model the more practice becomes important. The most important single thing is to decide when to steer; do not delay in getting the balloon up while you decide. If you safely can do so, put the balloon up if you even suspect you will need it; then you can agonize to your heart's content and you are ready for the decision when it comes. If possible, the balloon should be much higher than the model, and the string must be pretty snug. A loose balloon will only wreck the model or catch the prop, since you can't move it as fast as you need to.

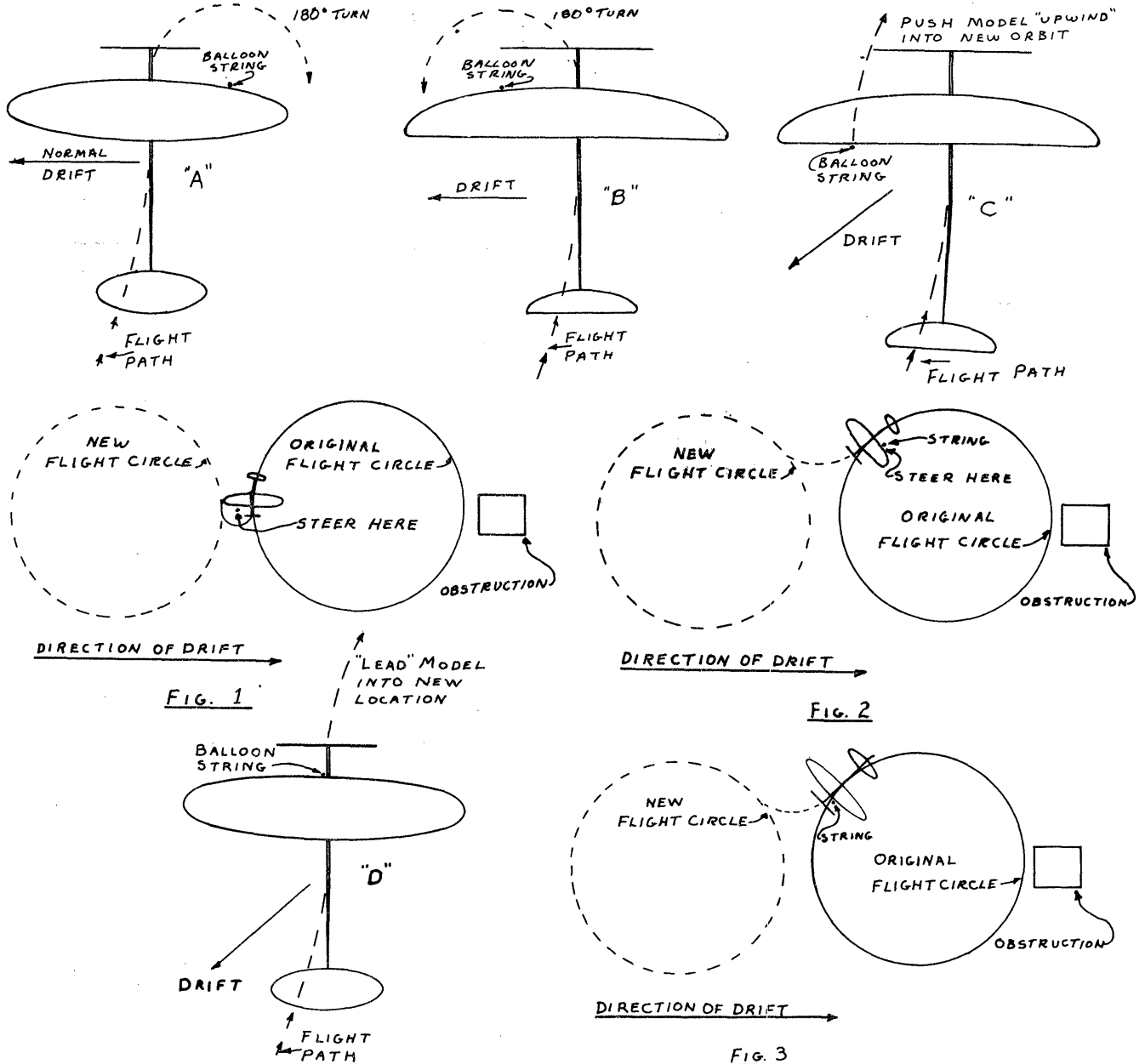
Three methods were discussed before, as illustrated in "A", "B" and "C" below, along with Fig. 1 & 2. "A" is the basic method outlined by Bruce Paton in 1963. The outboard wing is allowed to contact the string, and the model rotates 180° and you release it. Fig. 1 shows the action; the model winds up just over one flight circle upstream of its original orbit. Models in critical trim or those with extreme offset in the wing may either stall off the line or simply slide down the string.

This behavior can be overcome in some cases by using "B" or "C". In "B", the model is contacted on the inboard wing and allowed to pivot as before. Once again, models with critical trim may spin off the line if you do not use

a delicate touch. In "C", the model is contacted just behind the wing and is slowly pushed into a new orbit as in Fig. 2. You must move slowly in order to prevent a stall, but the model generally loses less altitude than with other methods.

An excellent method developed by Bob Champine is shown in "D" and Fig. 3. Incredible as it may seem, Bob passes the string through the prop arc (takes practice and timing to get it right!) and gets the string next to the inboard side of the motor stick. Now, with very careful moves, he "leads" the model where he wants it. It is easy to make one of two mistakes here - either stall the model by a sudden move and catch the prop, or snag the wing or prop as you release the model in the new orbit.

Two comments about rules are in order. First, AMA flights may not be steered; the time stops when you first touch the model. Second, FAI now permits three steers of fifteen seconds each per flight, and this is a lot of time which relieves the pressure somewhat. Although no clear ruling has ever been made, it is the opinion of most U.S. officials that you must break loose at least momentarily at the end of the fifteen second interval. It is to your advantage to do this anyway; if you can't complete a steer in 15 seconds you are either out of position or too tense to do it in unlimited time. Break away, take a couple of deep breaths and try on the next circle!



INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

BILL CULLEN, 9 Honey Dr., Syosset NY 11791
 WALTER E. ESTEN, Box 35F, Lake Shore Dr., Chepachet RI 02814
 EDWARD LOCKHART, 11611 Oak Creek Dr., Lakeside CA 92040
 W. T. TURNER, 3027 Rutgers, Long Beach CA 90808
 LOU YOUNG, 1190 Littleoak Dr., San Jose CA 95129

Renewal Reminder

Those of you who find "07" in the upper left-hand corner of the mailing label for this issue are due to renew your membership as of the July issue. It is very helpful and timesaving for me if renewal is made in advance. A few renewal checks have been accompanied by a note that the required amount was not known; \$3.25 is the current cost of NIMAS membership + INAV.

'73 Nats

All indoor events of the 1973 Nats will be flown at the Brig. Gen. R. L. Jones Armory, 5200 S. Cottage Grove, Chicago, Ill. Indoor HLG will be held from 9 am to 3 pm on Sunday, Aug. 5, 1973, and Indoor Scale will follow until 9 pm. Peanut Scale and Navy Scale will share flying time and space with AMA Scale, while PennyPlane will be held 3 pm to 7 pm at one end of the site. Indoor Stick, Indoor Cabin and Paper Stick will be flown 9 am to 9 pm on Monday, Aug. 6, 1973.

The Armory will be a completely self-contained operation, from registration through trophy presentation each day at the end of flying. For more details on this and other Nats matters, re-read your entry blank and get it in the mail before June 29, 1973. If you haven't received an entry blank, it is just barely possible to air mail your request and return via a stamped, self-addressed envelope!

NIMAS Awards

Silver Cat. I HLG Award - 0:29.6, Dan Domina

Gold Cat. I HLG Award - 0:31.2, Dan Domina

Silver Cat. II HLG Award - 0:50.4, Don Chancey

Gold Cat. II HLG Award - 0:55.4, Don Chancey

Nats Reporters Needed

Last year, a number of INAV readers presented a very good report of Indoor Nats activity. Therefore, space is already allocated (would you believe three pages of text and two pages of photos) in the Aug. '73 INAV for more of the same. Please drop a line to Box 545, Richardson TX 75080, telling of your intent to report; then follow this with text and/or photos as soon as possible after the Nats has finished. Hints, anecdotes, activity - anything except the official results - whatever you think might be of interest, should be sent. If I get a lot, some of it may be shortened or held for another issue. If I don't get very much, there may be a smaller issue!

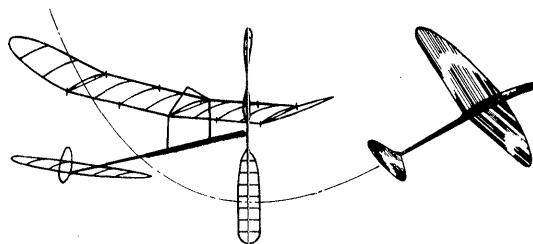
RECORDS? MAYBE

Santa Ana Record Trials, May 26, 1973, Cat. III
 Santa Ana MCAF, Santa Ana Cal.
 Open Indoor Stick - 44:50.2, Bob Randolph

North Central Semi-Finals, June 2, 1973, Cat. II AMA
 State Fair Coliseum, Detroit, 65' cell. Cat. III FAI
 FAI Cat. III FAI - 25:20, Jim Richmond
 AMA Cat. II FAI - 25:20, Jim Richmond

FAI INDOOR REPORTWho Qualified?

The usual sources of info open to INAV have seemingly dried up, and very little solid info is available at this time. However, program entry is apparently down by 10% from 1971, and 25% of the entrants are first-time entrants or have not participated for several years. This is the

Plan Ahead

largest turn-over in participation in the history of the Indoor program, which should be of concern to those who will plan future programs.

It is high time that a new program poll be taken, to deal with the program which will pick the team for the '76 WCh. The time is now, of course, since one question needed is whether the next program will be two years long like all the other team selection programs. This issue almost passed in 1971, and very likely will pass on the next asking. Several who voted against a two-year program did not understand the implications of a spread-out program, and several outdoor fliers have noted that indoor activity peaks (with a one-year program) at the same time as outdoor program preparation. This effectively prevents their participation in both programs, which hurts the indoor participation. Another comment from non-participants seems valid: according to present rules, a flier must go all the way through a program before he is allowed to have a voice in the formation of a new program (that is, ballots are sent only to participants of the previous program; not even to the previous administrator). It only seems fair that ballots could be made available to those who register in advance for the up-coming program if they wish to participate in program planning.

Semi-Final Results

North Central Semi-Final - June 2, 1973, Detroit, Michigan State Fair Coliseum, 65' ceiling. 9 entered, 7 qual.

1. Jim Richmond	25:20	24:35	49:55
2. Dick Kowalski	23:15	21:40	44:55
3. Ed Stoll	21:46	22:14	44:00
4. Bill Hulbert	21:47	21:51	43:38
5. Bucky Servaltes	21:23	21:55	43:18
6. Ron Plotzke	20:21	20:27	40:48
7. Al Rohrbaugh	19:00	21:31	40:31
8. Bill Shailor (Senior)	20:23	18:54	39:17
9. Tom Sova (Senior)	20:31	14:35	35:06

80% of 49:55 = 39:55 needed to qualify.

Team Selection Trials Schedule

SANTA ANA - June 23-24, 1973. Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354, ph. 714-796-9706.

EAST COAST - July 1, 1973. C. V. Russo, 143 Willow Way, Clark NJ 07066, 201-382-0871. (Hangar #5)

SOUTH CENTRAL - June 30-Jul. 1, 1973, American Airlines hangar, Tulsa, OK. Bob Dunham, Box 7151, Tulsa OK 74105, ph. 918-747-0720. Contestants who do not receive instruction sheet regarding entry should contact Dunham or Bud Tenny, Box 545, Richardson TX 75080 ph. 214-235-4035, after June 22, 1973.

CONTEST CALENDAR

CALIFORNIA - Santa Ana
 Indoor RT at Santa Ana ~~May 26-27~~, June 23-24, 1973.
 Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354 for details.

CANADA - British Columbia
 Contests in the 90' Agrodome in Port Coquitlam will be held on June 30, Oct. 6 and Nov. 17-18, 1973, with Scale, HLG, PennyPlane and FAI Indoor. Contact Alan Riches, 1568 Celeste Cres., Port Coquitlam, B. C. Canada for details.

NEW JERSEY - Lakehurst
 Sport flying and Record Trials Hangar #6, July 2, 1973 unless military schedule interrupts flying. Call C. V. Russo, 201-382-0871, on previous Friday to check about site availability.

'73 NIMAS POSTAL

Name	Time	Ceiling	Fudge	Score
<u>Jr. Indoor Stick</u>				
Steve Lovins	502.8	22.5'	1.248	627.5
Robin Stocking	41.5	20'	1.323	54.9

Jr. Class II HLG

Steve Lovins	20.0	27.5'	1.273	25.5
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Sr. Easy B

Kevin Wehner	254.3	20.5'	1.312	333.6
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Sr. PennyPlane

Bruce Matthews	316.2	22.2'	1.256	397.1
Kevin Wehner	322.0	27.5'	1.229	395.7

Sr. Class I HLG

Bruce Matthews	51.2	22.0'	1.136	58.2
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Open Class I HLG

Michael Thompson	53.1	20'	1.25	66.4
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Open Indoor Stick

Howard Haupt	1074.8	75'	.683	734.1
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Open PennyPlane

Alan Riches	410.4	20.2'	1.314	539.3
Clarence Mather	377.0	22.3'	1.253	472.4
Howard Haupt	355.0	22.5'	1.248	443.0
Bud Tenny	421.3	58'	.777	327.4
Ted Katsanis	236.0	20'	1.323	312.2

Open Easy B

Hal Crane	553.0	20.1'	1.318	728.8
Clarence Mather	531.0	22.3'	1.253	715.5
Fudo Takagi	445.0	22.3'	1.253	557.6
Alan Riches	422.2	20.2'	1.314	554.8
Bob Platt	393.0	20.1'	1.318	518.0
Michael Thompson	347.0	20'	1.323	459.1
Ted Katsanis	338.0	20'	1.323	447.2

CONTEST RESULTS

Second Annual Indoor Contest, Apr. 15, 1973, Cat. II
Univ. of Cincinnati Fieldhouse, Cincinnati OH 65' ceil.

Indoor HLG

Bucky Servaites	1:49	<u>PennyPlane</u> Tom Sovo*	9:22
Rudy Kluber	1:47	Marty Richardson	9:20
Phil Sullivan	1:45	Hank DeKat	8:58
Chuck Markos	1:44	Rol Anderson	8:52
Mark Kummerow*	1:29	Joe Sovo	8:22

Paper Stick

Chuck Markos	15:43
Bucky Servaites	13:19
Tom Sovo*	12:56
Joe Sovo	11:43
Rol Anderson	11:00

AMA Scale

Bucky Servaites	1911 Cessna	174 points
Chuck Markos	Westland Widgeon	164 points
Mark Kummerow*		161 points
Jim Bair	Impanema	131 points
Ken Johnson	Fairchild	125 points

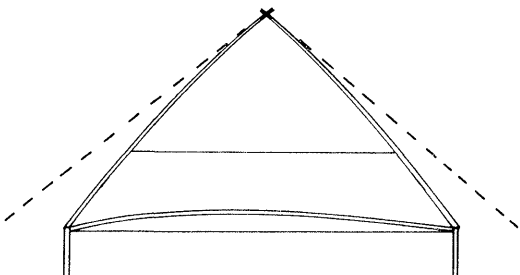
Peanut Scale

Bucky Servaites	Dayton Wright	5:54
Lou Willis	Ord Hume	5:39
Ken Johnson	Gee Bee Sportster	3:58
Jim Miller	Itch	3:36
Chuck Markos	Piper J3	2:55

*Senior age contestants

HINTS AND KINKS

Curtis Janke suggests that a stressed cabane will be stiffer for a given weight than the conventional type. To make a stressed cabane, glue the top at a greater than normal angle (see sketch below), then pull the ends to the proper distance apart. After installation, a short piece of dacron or wire across the cabane half-way up will prevent the cabane from bowing out further under load.



MODEL CONSTRUCTION TECHNIQUES

Model Assembly Jig

One of the more important steps in building a model is assembling the motorstick to the tail boom and then mounting the tail surfaces to the boom. The fixture shown below makes such assembly easy, safe, and accurate. As an added bonus, all the fixtures pack away in a small space for field repairs. In fact, one box 17 1/2 x 11 1/2 x 3 holds the fixtures shown, plus a built-up boom fixture and a prop spar matching fixture (Slithery-Dee, July '71 MAN), a spring scale and several prop covering frames (June '70 INAV), and finally, a stick bracing fixture and a simple prop pitch gage. A complete field repair kit!

To use the fixtures, locate a flat surface about 18" long and perhaps 10" wide minimum. Tape down the fuselage support stand and tape or pin the motorstick solidly in it. Set the tail boom stand behind the stick, raised to the approximate height. Slip the tail boom and stick together, then position the tail boom stand so the boom is in exactly the planned position relative to the stick. Glue the boom to the stick and allow to dry thoroughly. Arrange the universal supports on either side of the boom, then place the stab across the boom and supports. Arrange supports to the exact height (allow for stab tilt) needed. If the stab is to have washin/washout, this can be set into the supports also. Glue the stab into place. If the stab is to be braced, add the bracing post(s) and the bracing before removing the model from the jig.

Depending upon whether the rudder is behind the stab or in front, the fin can also be assembled on the jig. If the rudder is trailing or underslung, it may be best to attach the rudder before mounting the boom to the stick. With a rudder mounting in front of the stab, mount the boom to the stick, then rotate this assembly 90° so the rudder will be horizontal. Use one or both the universal stands to support the rudder while attaching it to the boom, then rotate the assembly upright and attach the stab as before.

Finally, for field repairs or major changes (such as changing the angle between boom and stick) mount the model in the fuselage support stand and use the other fixtures as necessary to support and steady the various parts while repairs/changes are made.

STATE OF THE ART

Free Flight News is an excellent FF newsletter published monthly by Ian Kaynes, 11 Parkside Rd., Sunningdale ASCOT, Berks, England SL50NL. Thanks to Ian's hustling crew of reporters, FFN had an excellent report on the '73 WCh and then follow-up three-views of many of the top models. Two of these three-views are reproduced on page 3, and the prop/rubber combo used by Jiraski is shown on page 4. It is now 11:30 pm, and the CMOS/INF info hasn't been computed; this info will be reported in the July '73 issue so this thing can get printed tomorrow!

INDOOR ELSEWHERE

ITALY - Rome

Coppa Urbe VIII (may also have been Italian Nats) was held in the 33.5 m (109') Palazzo Dello Sport (site of '68 World Champs), with FAI and PennyPlane. The contest was held Mar. 19, 1973; the results below may be incomplete.

FAI (one gram)

A. Fricoli	Rimini	30:13	29:40	59:53
Fl. Migani	Rimini	26:51	25:17	52:08
F. Migani	Rimini	26:36	24:47	51:23
G. Masciullo	Rome	23:43	26:15	49:58
C. Cotugno	Rome	24:05	24:38	48:43
I. Federici	Rome	21:31	21:02	42:33
Martini	Rome	15:23	24:36	39:59
Saba	Rome	16:19	22:32	38:51

PennyPlane (3.2 gram)

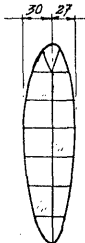
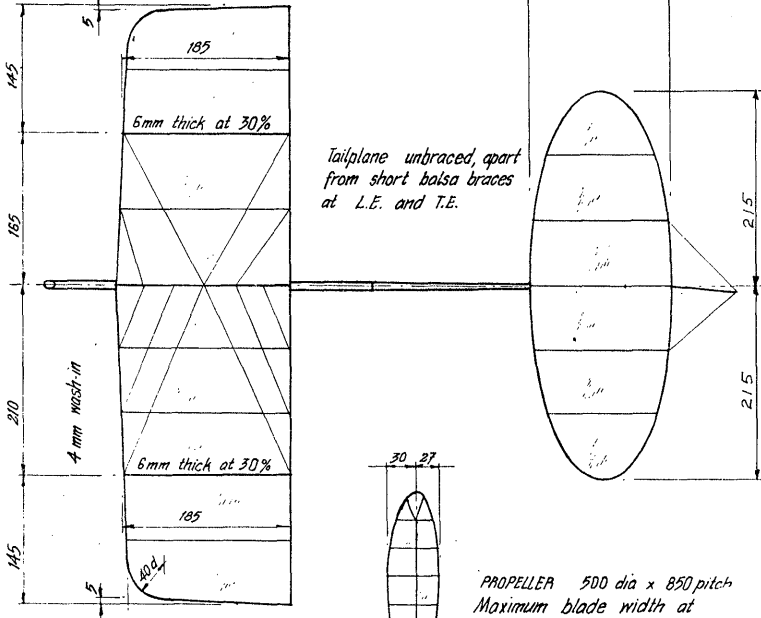
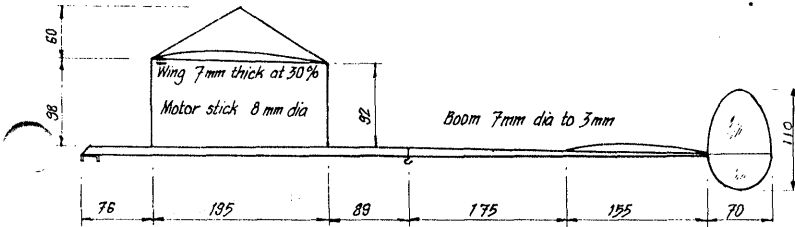
Fl. Migani	Rimini	7:37
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ARGENTINA - Buenos Aires

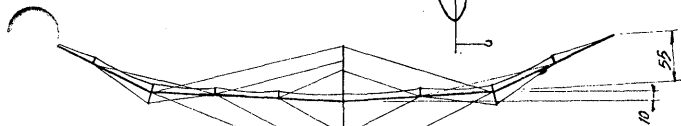
The Argentine Indoor Nats were held Apr. 20, 1973 in a site with about 10 m ceiling. Barilari's 15:32 is both an Argentine national record and a record for South America as well. The results:

Alberto Barilari	14:49	15:32	30:21
Nereo Beggato	14:50	14:52	29:42
Eduardo Grippo	13:48	14:10	27:58
Miguel Leone	10:03	14:10	24:13
Domingo Sassone	12:05	10:55	23:00
Marcos Molo	5:37	2:54	8:31

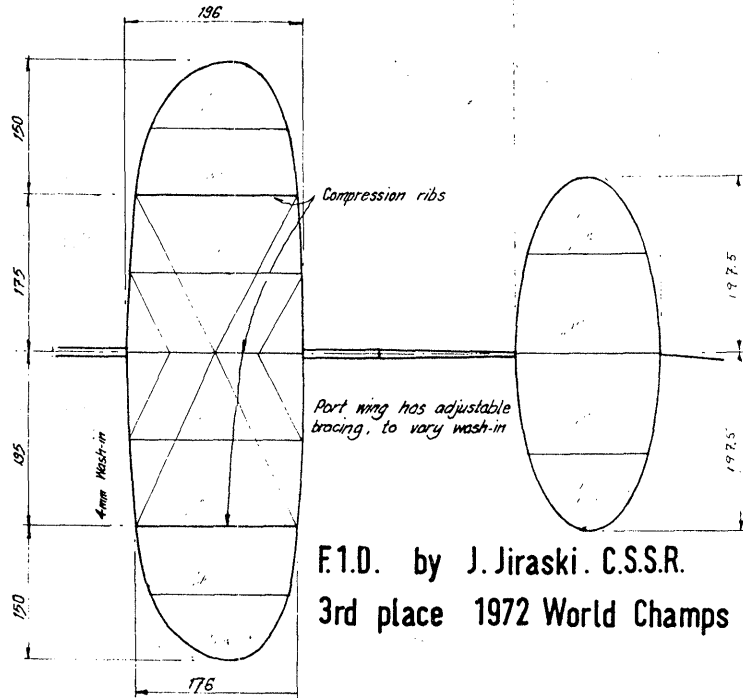
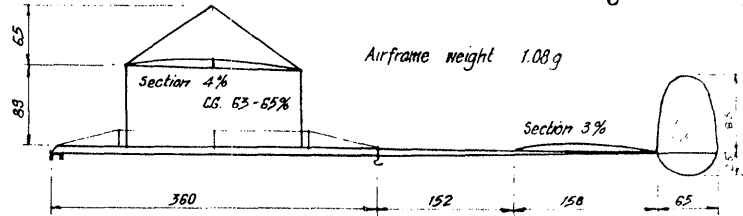
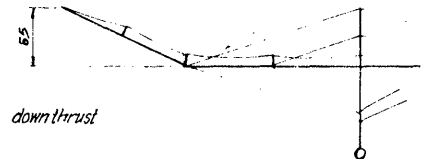
Timber sizes selected to suit weight and function from best available balsa.



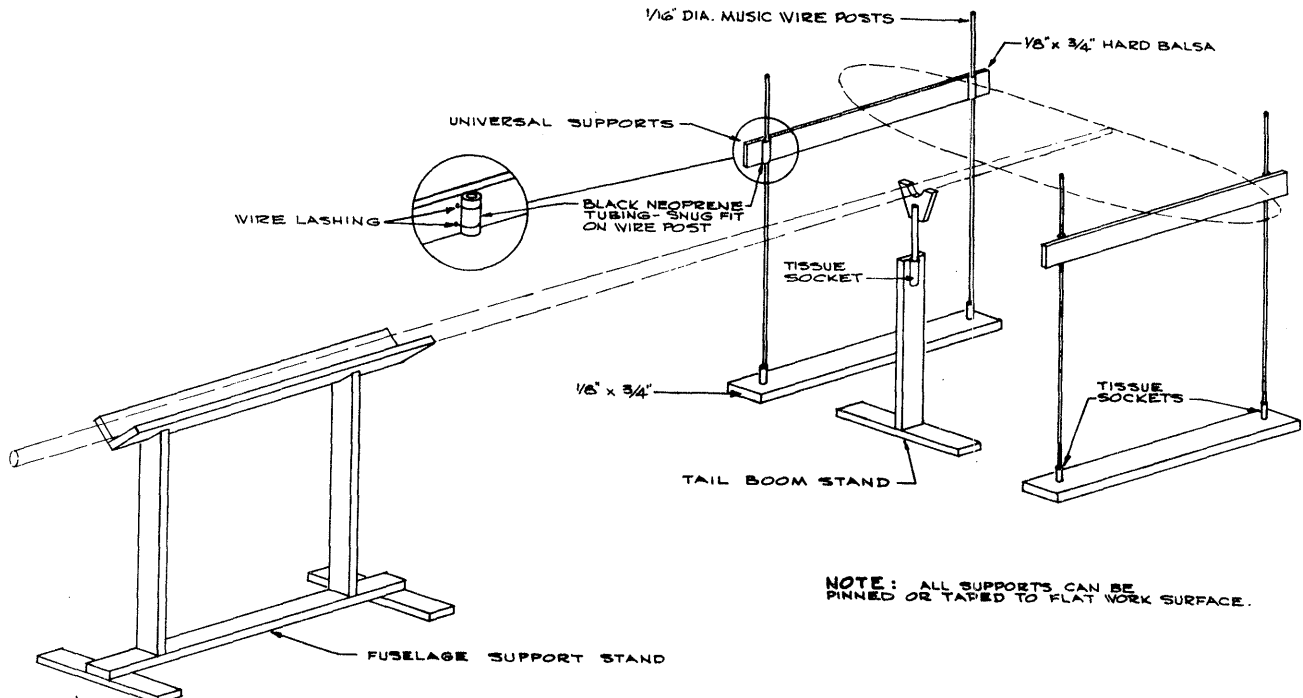
PROPELLER 30 dia x 27 pitch
Maximum blade width at 60 to 65% P.



F.I.D. by Jiri Kalina. C.S.S.R.
4th place 1972 World Champs

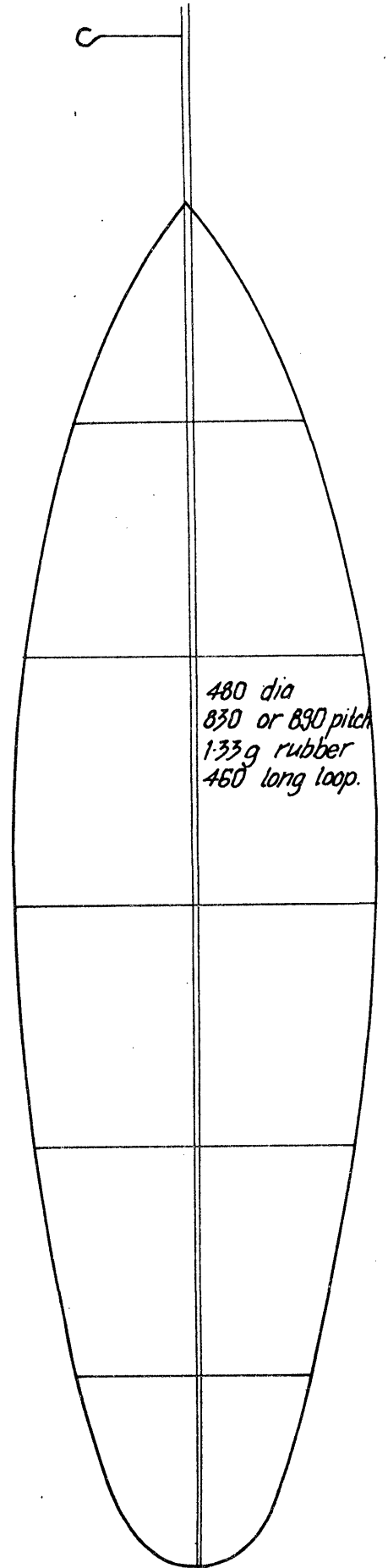
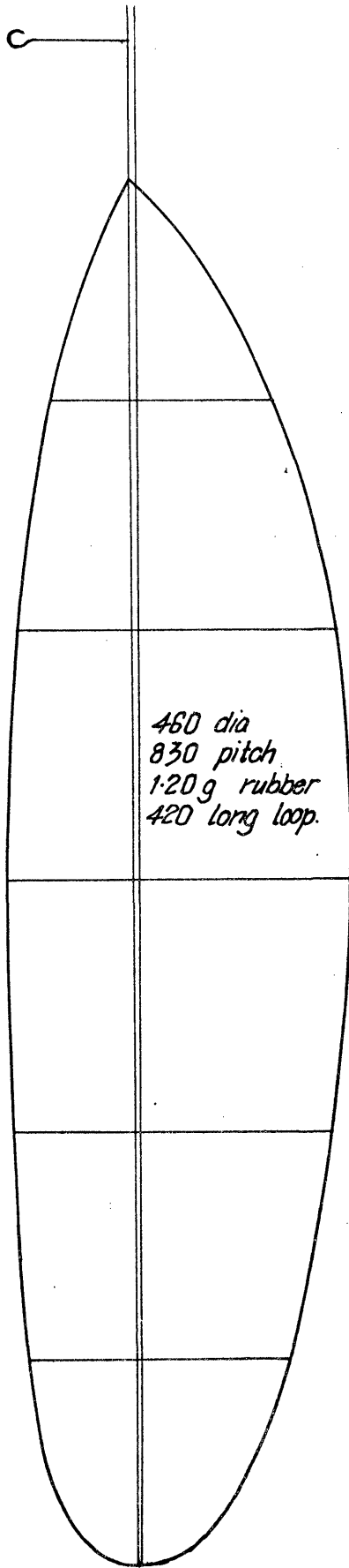
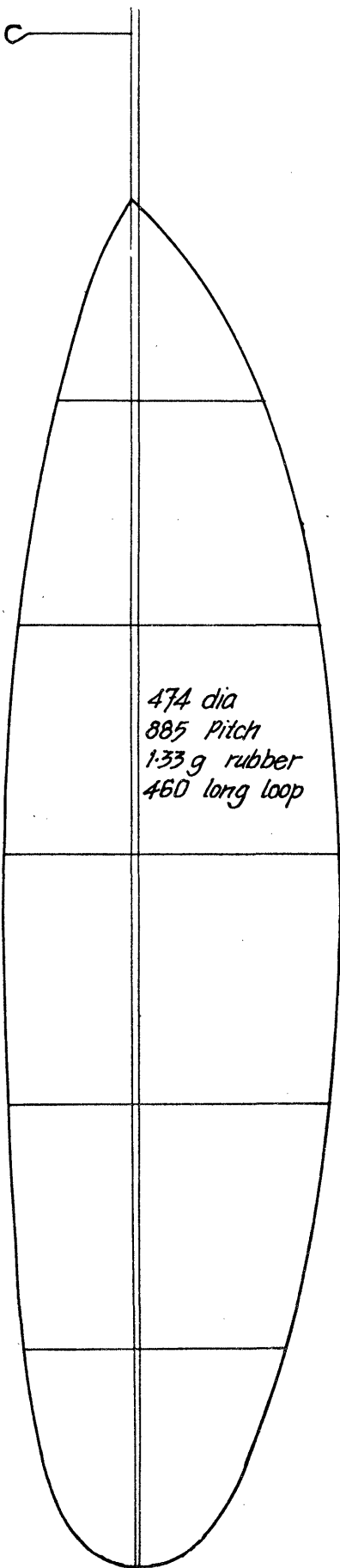


F.I.D. by J. Jiraski. C.S.S.R.
3rd place 1972 World Champs



NOTE: ALL SUPPORTS CAN BE PINNED OR TAPED TO FLAT WORK SURFACE.

FUSELAGE AND BOOM ASSEMBLY JIG



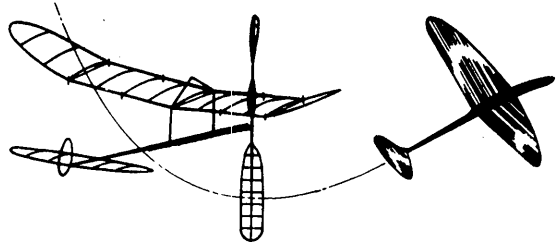
Jiraski 's propeller / rubber combinations.

Full-size

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

NORMAN JACKY, 674 Sterling Dr., Fond du Lac WI 54935
 FRANK PETRONIO, Presbyterian Rd., Albion NY 14411
 ROBERT RODEN, 7738 N 32 Drive, Phoenix AZ 85021

Honorary Members

GIOVANNI FEDERIGI, Via F. Tacchinardi 6/8, 01168 Roma, Italy
 FERNANDO MIGANI, Via N. Tommaseo 66, 47037 Rimini (FO) Italy

Change of Address

BILL HAUGHT, 3205 Nottingham Lane, Modesto CA 95350

Ernie Kopecky

We lost a good friend when Ernie Kopecky died on July 3, 1973. He finally succumbed to heart trouble which had plagued him repeatedly in the last few years. He was always a friend, helpful when he could be, and a hard, fair competitor. We will miss him greatly.

New Materials!

Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, has located a source of "0" rings - 9/64" OD, 3/64" ID, with 3/64" cross section. The cost is 15¢ each, and their weight is .0038 oz. Ray will furnish these at 15¢ each in lots of one dozen or more.

Jigs And Fixtures

Indoor modelers are probably more prolific users of special jigs and fixtures than any other kind of modeler. Many of you have furnished these ideas in the past, and these devices will be featured in a future series. All who have unusual and helpful jigs and fixtures are asked to share them for this series.

Airfoils

As I geared up for the team selection program, it was necessary to make arc templates of large radius. Four curves were drawn, arranged in pairs (25"/22" and 20"/17") to make Andrews-type double-curved ribs. These curves will be copied on request (send stamped, self-addressed envelope with your request) at no charge. The % thickness of these curves according to wing chord is shown below:

Chord	25"	22"	20"	17"
6"	3%	3.4%	3.8%	4.5%
7"	3.6%	4%	4.5%	5.2%
8"	4%	4.7%	5%	6%

Special Tools?

Stan Chilton suggests that Brookstone Co, Dept. C, 12 Brookstone Bldg., Peterborough NH 03458, is a very good source of special tools for model builders. Their catalog is 63 pages of very diversified and unusual high quality tools. Send for a catalog!

FAI INDOOR REPORT

Finals Site Confirmed

The South Central Semi-Finals showed that the American Airlines Maintenance Hangar at Tulsa International Airport (holds a DC-10, a 747 and two smaller airplanes at the same time) is quite satisfactory for the Team Selection Finals. AMA HQ has announced that AMA President John Clemens has approved the site choice on the previously announced dates of Aug. 17-19, 1973. Aug. 17 (Friday) is for test flying, while three official rounds will be held on each of the two remaining days.

Qualification Trials Results

Western Semi-Finals - June 23-24, 1973, Santa Ana MCAF

No formal report has been received on this event. It is believed that Paul Allen, Larry Cailliau, Clarence Mather, Bob Randolph and Erv Rodemsky qualified. In addition, Bud Romak and Joe Bilgri are qualified as having been chosen for the 1972 Indoor Team.

South Central Semi-Finals - June 30-July 1, 1973. American Airlines hangar, 94' FAI, 108' AMA ceiling.

Stan Chilton	39:36
Paul Tryon	39:32
Bob Dunham	37:51
Ted Gonzoph	36:43
Bud Tenny	36:25
Robert Dunham II	35:24
Jim Clem	32:46
Jimmy Clem	20:03

80% of 39:36 = 31:42; 7 qualifiers

Eastern Semi-Finals - July 1, 1973, Lakehurst #5

C. V. Russo	29:21	31:46	61:07
Stan Stanwiok*	28:52	31:33	59:39
Manny Radoff**	29:57	29:42	59:39
Hal Crane	31:23	27:50	59:13
John Triolo	26:55	32:16	59:11
John Kukon	27:45	30:42	58:27
Bob Platt	25:04	29:00	54:04
Dan Domina	26:53	26:54	53:47
Tom Valles	24:43	27:04	52:36
Bill Landrum	26:01	23:20	49:21

*Proxy flown by Pete Andrews.

**Proxy flown by Bob Champine.

80% of 61:07 = 48:54; 10 qualifiers. In addition, Pete Andrews and Sal Cannizzo are qualified via membership on the 1972 Indoor Team.

RECORDS? MAYBE!

- Santa Ana Record Trials, May 27, 1973, Cat. III
 Santa Ana MCAF, California
 FAI Cat. IV FAI - 36:12, Bob Randolph
 AMA Cat. III FAI - 36:12, Bob Randolph
- Cow Palace Record Trials, June 17, 1973, Cat. II AMA
 Cow Palace, San Francisco, Cal. 98' ceiling
 FAI Cat. III FAI - 27:09, Bud Romak
 AMA Cat. II FAI - 27:09, Bud Romak
- South Central Team Semi-Finals, June 30/Jul. 1, 1973
 American Airlines Hangar, Tulsa, Ok. 94' FAI Ceiling
 *FAI Cat. III FAI - 26:45, Stan Chilton
 Senior Cat. III Paper Stick - 14:10, Robert Dunham III
 Junior Cat. III Paper Stick - 10:36, Jimmy Clem
 Junior Cat. III ROG Stick - 1:52, Jimmy Clem

- *Stan's record attempt was made and applied for before Romak's Jun. 17 flight was made known.
- Lakehurst Record Trials, July 2, 1973, AMA Cat. III
 Hangar #6, Lakehurst NAS, NJ. FAI Cat. IV
 Sal Cannizzo, FAI Stick - 37:24**
 John Triolo, FAI Stick - 37:23**

**It is not known which flier will apply for which record; both flights qualify for both FAI Cat. IV FAI and AMA Cat. III FAI records.

TOP TEN CEILING DODGERS

Name	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Valles	810	20'	1.323	1071.6
3. Hal Crane	682	20'	1.323	902.3
4. Bud Tenny	1260	94'	.609	797.8
5. Dick Hardcastle	602	23'	1.234	742.9
6. Hewitt Phillips	528.2	20'	1.323	698.8
7. Howard Haupt	456	22'	1.261	574.5
8. Harry Cook	471	26'	1.16	546.4
9. Steve Lovens	433.2	22.5'	1.248	540.6
10. Bill Langley	421	27.5'	1.128	474.8

TOP TEN EASY B

Name	Time	Ceiling	Fudge	Score
1. Hal Crane	553.0	20.1'	1.318	728.8

2. Clarence Mather	531.0	22.3'	1.253	715.5
3. Fudo Takagi	445.0	22.3'	1.253	557.6
4. Alan Riches	422.2	20.2'	1.314	554.8
5. Bob Platt	393.0	20.1'	1.318	518.0
6. Michael Thompson	347.0	20'	1.323	459.1
7. Ted Katsanis	338.0	20'	1.323	447.2
8. Kevin Wehner	254.3	20.5'	1.312	333.6
9. *				
10. *				

*Unlike Ceiling Dodgers, Top Ten Easy B scores are carried only until the next postal meet, when the Easy B times from the postal meet are then declared as the new Top Ten. So, "bump" into the list if you can!

INDOOR ELSEWHERE

ROMANIA - Slanic

"Indoor '73", an international indoor meet attended by fliers from 5 countries, was held in the salt mine (site of '70 WCh). Conditions were excellent, due primarily to the fact that heaters used during the '70 WCh were not used this time. With 24 flights over 30 minutes and 7 over 35, performances rivalled those of the '72 WCh at Cardington.

1. Aurel Popa	Romania I	36:16	39:16	75:32
2. E. Holtier	Romania II	37:01	37:21	74:22
3. Karol Rybecky	Czech.	37:05	35:32	72:37
4. A. Moraru	Romania I	36:07	33:38	69:45
5. Andras Ree	Hungary	33:01	34:07	67:08
6. Otto Hints	Romania II	33:31	32:49	66:20
7. Antal Egri	Hungary	32:52	33:08	66:00
8. Jiri Kalina	Czech.	33:04	32:55	65:59
9. N. Bezman	Romania I	33:25	32:24	65:49
10. John Blount	England	33:02	30:38	63:40
11. Reg Parham	England	29:02	34:00	63:02
12. R. Czechowsky	Poland	31:35	31:08	62:43
13. S. Botos	Romania II	28:59	30:39	59:38
14. Laurie Barr	England	29:24	26:33	55:57
15. A. Valenta	Czech.	26:53	27:04	53:57
16. Gy. Buzadi	Hungary	25:49	27:04	52:53
17. Stefan Bombol	Poland	24:13	24:05	48:18
18. S. Kujawa	Poland	23:57	23:24	47:21
19. Zoltan Ocsody	Hungary	20:00	01:05	21:05

Team Standings

1. Romania I	211:06
2. Romania II	200:20
3. Czechoslovakia	192:33
4. Hungary	186:01
5. England	182:39
6. Poland	158:22

POLAND - Wroclaw

An international indoor meet was held in Wroclaw on June 8-10, 1973, with the following results:

1. Jiri Kalina	Czech.	27:35	27:52	55:27
2. Edward Ciapala	Poland	28:12	26:45	54:58
3. R. Chekowski	Poland	27:49	26:45	54:01
4. S. Kujawa	Poland	24:47	28:14	53:01
5. Andras Ree	Hungary	25:39	27:14	52:53
6. V. Nikorada	Romania	25:30	26:27	51:57
7. G. Buzadi	Hungary	23:43	28:10	51:53
8. N. Bezman	Romania	28:12	22:30	50:42
9. Karol Rybecky	Czech.	23:41	26:38	50:19
10. Stefan Bombol	Poland	25:17	23:15	48:32
11. A. Valenta	Czech.	20:46	22:20	43:06
12. Zoltan Ocsody	Hungary	18:10	27:14	42:57
13. D. Frateanu	Romania	17:43	14:04	31:47
14. Z. Szymanski	Poland	13:52	12:03	25:55
15. F. Frackiewicz	Poland	6:17	13:59	20:16

Team Standings

1. Poland I	155:34
2. Czechoslovakia	153:52
3. Hungary	142:43
4. Romania	134:26
5. Poland II	101:03

STATE OF THE ART

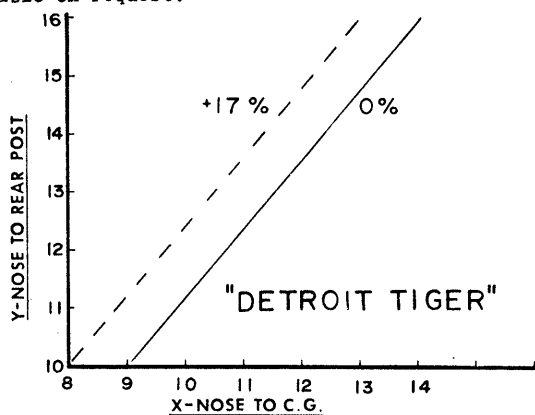
Jim Richmond's resounding come-back at Detroit (five minute margin over 2nd place) made it seem like old times. Those who observed his '73 design (Detroit Tiger) noted that the model looked the same as in earlier years. Jim made these comments on his model: "I have backed off on wing chord and have finally achieved flight characteristics similar to those of my old ('67-'70) designs. The symmetrical wing construction and the simplified stab bracing worked out OK. This method of getting wing offset works fine and doesn't produce long, unsupported spars on the left side as traditional methods do. These heavier, more powerful planes need the extra strength on the left, torque-loaded side of the wing. I think the motorstick is a bit longer than necessary. It's hard on the ulcers hooking up a motor stretched out that far! The 17½" prop was a bit on the small side, but worked out OK. It was the same type I always use."

Jim's balance point gave him +17% margin (CMOS). The INP (Mar/Apr '73 INAV) came out +22.6%, which may be somewhat misleading since the model is higher aspect ratio

than Hal designed the INP chart for.

Unfinished Business

Last month's models (Kalina and Jiraski) were set up as follows: Kalina - CMOS = +1.8%, INP = +20%; Jiraski - CMOS = +6.3%, INP = +23%. Copies of the CMOS charts are available on request.



CONTEST RESULTS

LIAMAC ANNUAL INDOOR MEET, Apr. 29, 1973, Cat. II
Cantiague Park, Hicksville, L.I. NY 50' ceiling

Jr.-Sr. HLG		Open HLG	
Adam Minissian	74.8	Jack Minissian	84.6
Ron Stransky	73.0	Bob Nichols	84.2
Bruce Paillet	70.8	George Rivers	82.2
Barry Paillet	69.2	Al Vollmer	79.8
Joe Nuszer, Jr.	65.2	John Kaufman	78.4

Jr.-Sr. Easy B		Open Easy B	
Dan Aggers	8:02.4	Pete Andrews	10:18.4
Chris Clemens	7:49.2	Frank Haynes	8:55.0
Jerry Haynes	7:01.0	Bob Clemens	8:36.6
Larry DeCarlo	7:00.0	John Kukon	8:22.2
Adam Minissian	6:32.2	Carrol Allen	8:20.0

Indoor Stick		Indoor Scale	
Larry DeCarlo	11:29.2	Don Garofalow	120.0 pts.
Dan Domina	10:55.6	Joe Muszer	114.4
John Kukon	10:35.0	Chet Bukowski	110.8
Pete Andrews	10:15.8	Bob Hatschek	108.8
Al Vollmer	9:38.6	Bob Bender	99.5

Jr.-Sr. Peanut Scale		Open Peanut Scale	
Bruce Paillet	57.4 pts	Dan Domina	92.5 pts.
Chris Clemens	52.8	Don Garofalow	67.0
Jerry Haynes	51.6	Ed Franklin	66.0
Barry Paillet	39.6	Frank Haynes	61.6
Ron Stransky	39.5	Bob Clemens	58.9

Jr.-Sr. High Point Champion - Bruce Paillet

Open High Point Champion - Dan Domina

Meet Champion - Dan Domina

HINTS AND KINKS

Curtis Janke reports some short-cuts used by Jim Richmond:

To stabilize the slightly curved tips on his wide-wing FAI design, Jim bowed the end rib outward slightly, then ran a tension brace across the ends to hold the tip bowed.

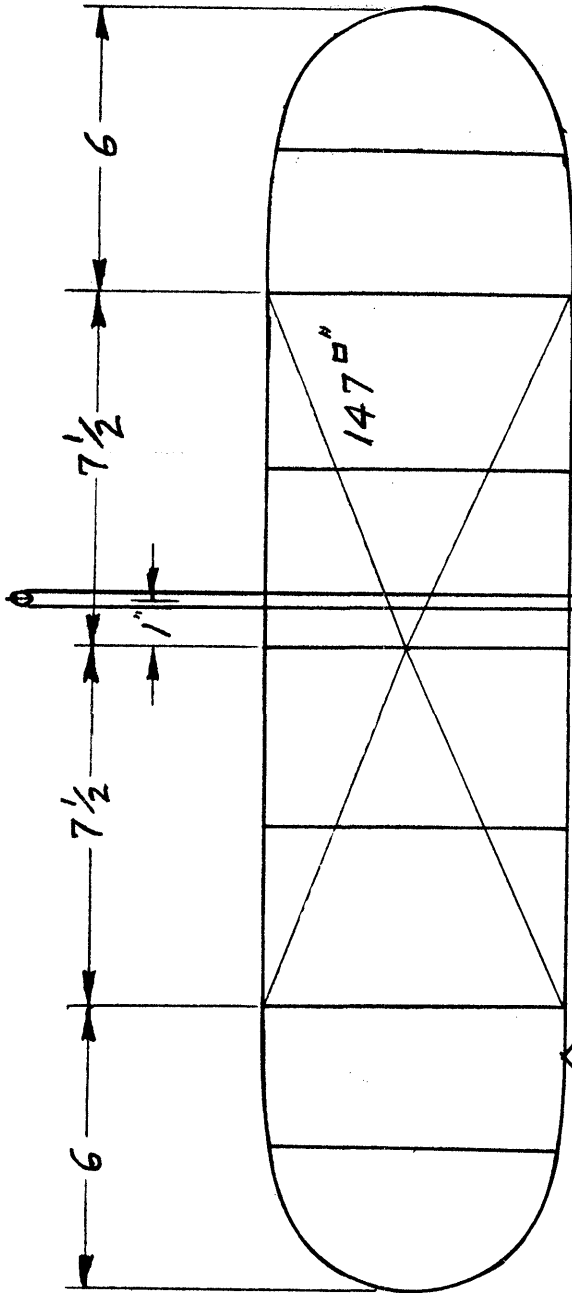
To cure warps due to film shrinkage, Jim passes a lit cigarette under the extra-tight film while warping the surface back into shape. The smoke has a sort of relaxing effect on the film, which lasts just about 30 minutes. It isn't clear why this works, but Curtis suggests that the smoke fumes force themselves into the pores of the film and expand it temporarily.

Jim uses saliva to attach his condenser paper; the moisture causes the spars to expand span-wise so that the paper and spars expand and contract together.

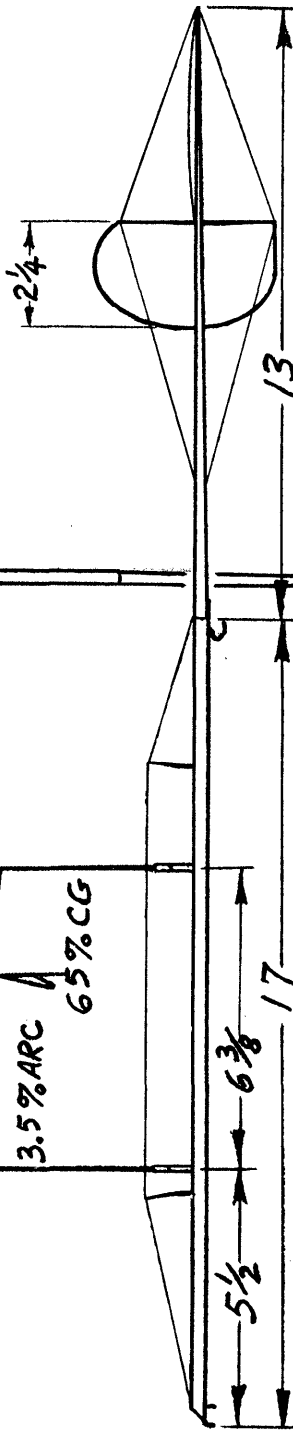
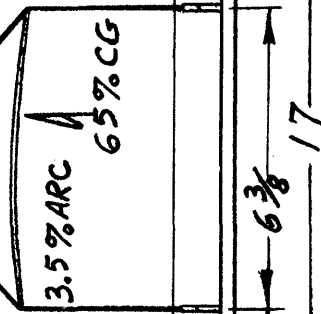
Jim uses tapered, rectangular prop spars. There are two major gains to this; the spars are stiffer for a given weight and are easier to cut and match.

A LOOK AT YESTERYEAR

Have you ever wondered why sheets of indoor wood are only about 1-1/8" wide? There may be other reasons for this particular size in modern times, but Frank Zaic relates that it all started because 1-1/8" wide sheets made exactly the right size motorstick blank for models flown by Carl Goldberg (and kitted by Frank).

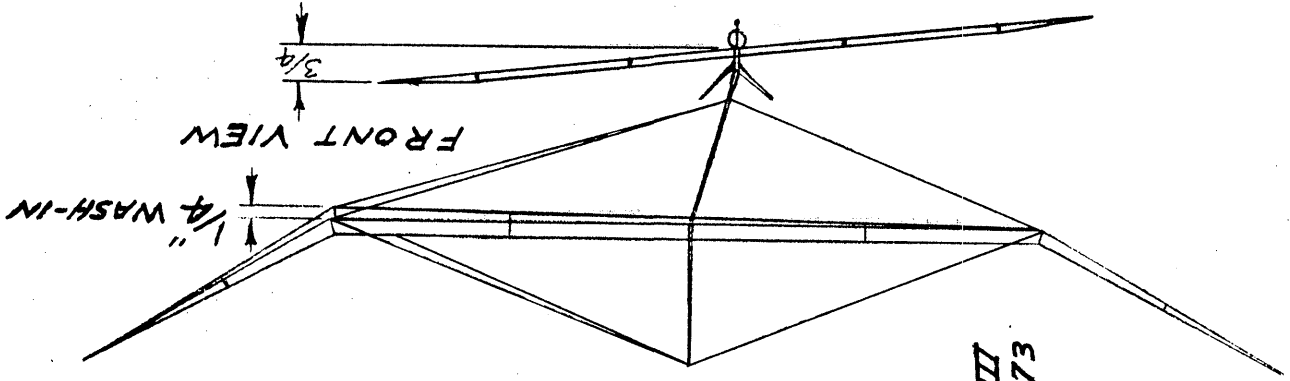


PROP
17 1/2 x 36

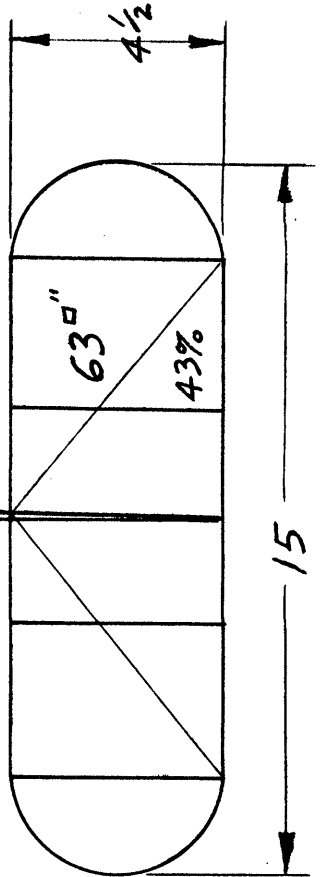


	OZ.	GM.
WING	.0087	.247
STICK	.0125	.355
STAB & BM.	.0071	.200
PROP	.0048	.137
BALAST	.0022	.061
TOTAL	.0353	1.000

BEST FLIGHT - 25:20
FAI RECORD FOR AMA CAT. II & FAI CAT. III
65 FT. CEILING - DETROIT - 6-2-73



DETROIT TIGER - FAI-
By Jim Richmond



INDOOR CONSTRUCTION TECHNIQUES

The Braced Motorstick - Part II

This discussion is continued from the May '73 INAV, which showed two-wire bracing and internal details of the motorsticks used by Al Rohrbaugh.

Fig. 1 shows a very common bracing scheme - the angled monowire. This is the easiest motorstick brace to make and "live with", in that it does not disturb the wing bracing and is mostly out of the way of handling the model without snagging the wire.

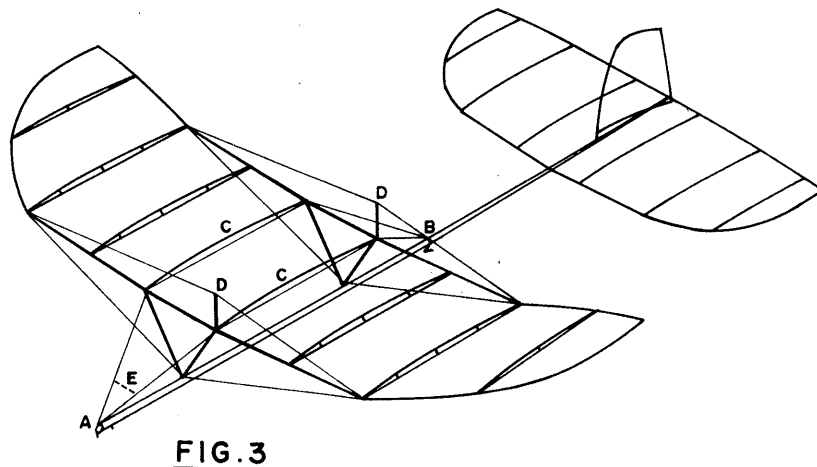
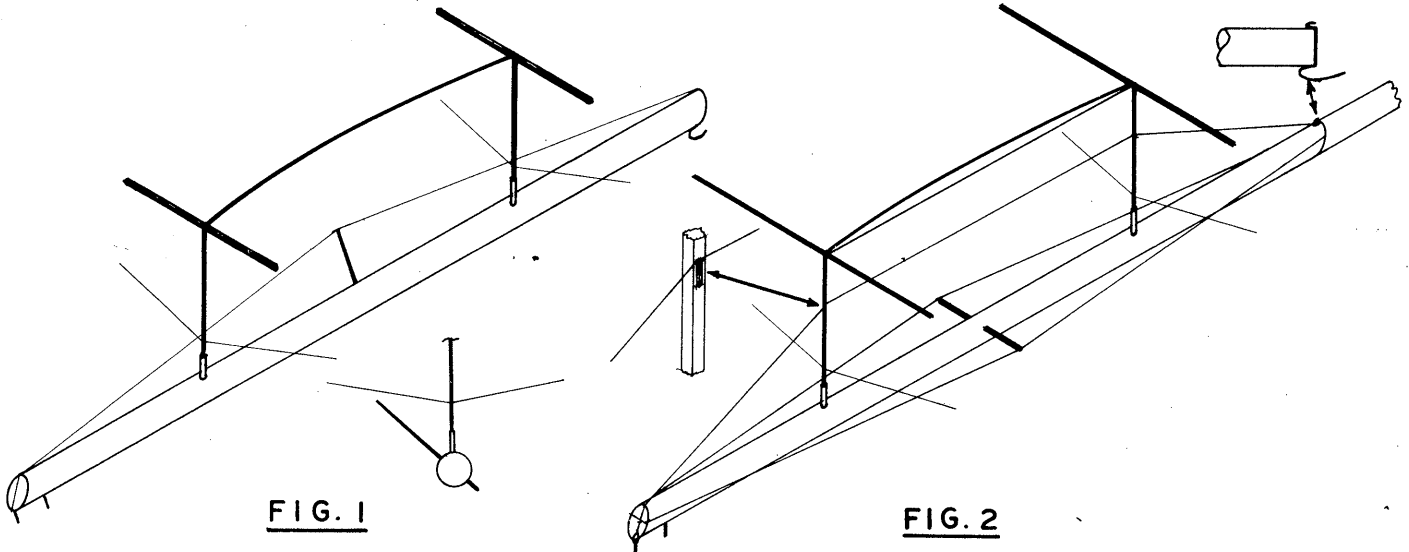
Fig. 2 shows an experimental scheme which combines the removable monowire with side brace wires. The top wire, a removable monowire, must be anchored at one end and removable at the other. If the wire is anchored at the rear hook, the prop must be removed to remove the wing, since the free end loops over the thrust bearing. With a rear hook like that shown, the prop can be assembled to the model before the wing is attached. Also, wing repair and adjustments are possible without removing the prop. Those side wires shown in Fig. 2 are a worthwhile addition, provided one can remember not to "twang" them with a wound motor on the model.

Of the four schemes discussed so far, only the angled monowire does not permit separate down thrust and side thrust adjustments. From a personal standpoint, I feel that side thrust is essential in most models to help pull the nose around in the turn during the burst. Again, from a personal standpoint, I prefer either the removable monowire or the three-wire system shown in Fig. 2. As a rule, downthrust (permanent adjustment in the bearing angle) is not critical; temporary downthrust caused by

slackening the upper monowire slightly may be very useful in controlling stalling during the burst. Because the two-wire bracing (May '73 INAV) is critical on exact balance in tension between the two wires, it is usually not feasible to adjust wire tension on the field.

A very interesting bracing system, designed by Erv Rodemsky, is shown in Fig. 3. His wing and fuselage are braced together as a unit, with the motorstick brace wires also lending torsional resistance to the wing so that no cabane is needed. As a result, very wide wing models or models with extra-long motorsticks can be braced without a lot of extra weight. Note three characteristics of this bracing scheme: First, the brace wires must unhook at A and B. Second, although Erv uses all compression ribs at all other stations in the wing (for reliability), tension ribs are used at the two center locations (C). Finally, note that flight loads on the wing are absorbed in two short posts which are offset toward the inboard wing so as to provide added support for the longer inboard panel.

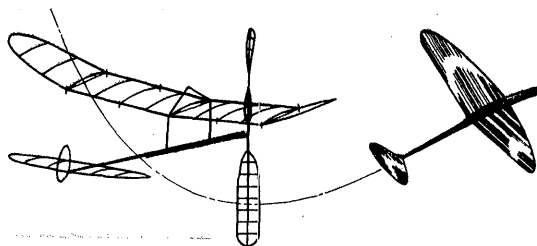
Erv cites one major disadvantage with this system - without a cabane steadying the posts, it is a bit scary to handle the wing when it is not plugged into the mount block or the fuselage! However, the wire braces are not critical on tension; in fact, he normally installs them so there is no visible slack. When the motor is hooked up, the whole model locks into a rigid structure. As for variable downthrust, this could be provided by installing the wires slightly slack and then tensioning them with a sliding loop shown as a dotted line (E).



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



Indoor Stick

Paper Stick

Indoor Cabin

Indoor HLG

Junior

Junior

Junior

Junior

1. Jimmy Clem 18:21.2
2. John Magnus 17:24.0
3. William Schlarb 8:41.6
4. Robert Perkins 7:55.4
5. Mindi Linstrum 6:44.4
6. Bruce Pallet

1. Jimmy Clem 12:22.0
2. Bruce Pallet 11:06.6
3. Barry Pallet 9:58.6
4. Robert Perkins 9:53.6
5. Chris Clemens 8:49.2
6. William Schlarb 7:57.0
7. Mindi Linstrum 5:44.0
8. John Magnus 1:04.1

1. John Magnus 11:15.4
2. Tim Patterson 6:34.5
3. Barry Pallet 5:44.3
4. Bruce Pallet 5:10.8
5. Jimmy Clem 4:48.6
6. Chris Clemens 4:28.6

1. William Schlarb 104.0
2. James Bayley 87.7
3. Barry Pallet 84.1
4. Bruce Pallet 83.9
5. John Magnus 83.0
6. Douglas Marsh 82.3
7. Robert Perkins 73.0
8. Tim Patterson 71.2
9. Daniel Sargent 53.0
10. James Loribecki 44.2

Senior

Senior

Senior

Senior

1. Bill Shailor 21:10.0
2. Tom Sovo 21:00.5
3. Richard Doig 18:35.9
4. Walter Lounsbury 15:28.4
5. Keith Gordey 12:04.8
6. Scott Wisniewski 9:35.6

1. Paul Shailor 17:08.0
2. Bill Shailor 16:07.0
3. Richard Doig 15:52.5
4. Tom Sovo 11:49.0
5. Steve Oravec 10:00.2
6. Walter Lounsbury 9:53.0
7. Scott Wisniewski 8:21.1

1. Tom Sovo 15:42.2

1. Robert Hayes 123.7
2. Charles Weise 122.2
3. Paul Shailor 114.4
4. Brian Fardue 111.5
5. John Loribecki 104.0
6. Peter Lewis 102.2
7. Keith Gordey 98.7
8. Mark Kummerow 97.8
9. Richard Doig 96.2
10. Walter Lounsbury 90.8

Open

Open

Open

Open

1. Al Rohrbaugh 29:04.6
2. Charlie Sotich 25:40.2
3. Dennis Jaecks 24:43.6
4. Bob Randolph 23:50.4
5. Howard Haupt 22:51.0
6. Dick Hardcastle 20:07.4
7. Gilbert Graunke 19:09.2
8. Wayne Zink 14:12.5
9. Otto Curth 13:21.2
10. Jeff Annis 13:02.5

1. Dennis Jaecks 20:14.2
2. Al Rohrbaugh 19:15.2
3. Bob Randolph 18:32.3
4. Charlie Sotich 17:45.6
5. Rolland Anderson 17:00.4
6. Curtis Janke 16:56.0
7. Chuck Markos 16:53.2
8. Ed Stoll 16:44.3
9. Larry Cailliau 15:16.2
10. Wayne Zink 13:56.0

1. Bob Randolph 23:19.5
2. Bucky Servaites 23:15.0
3. Larry Cailliau 20:48.2
4. Al Rohrbaugh 18:30.8
5. Dennis Jaecks 16:22.0
6. Wayne Zink 16:16.0

1. Bucky Servaites 132.1
2. Robert Watson 128.6
3. Rudy Kluber 122.0
4. Phillip Sullivan 120.6
5. George Lewis 116.2
6. Larry Cailliau 115.8
7. Denny Dock 115.0
8. Dick Swenson 106.6
9. Chuck Markos 106.4
10. Dan Belleff 98.4

Indoor Scale

PennyPlane

Junior

Junior

1. Rebecca Stark 99.50
2. Barry Pallet 99.33
3. Bruce Pallet 94.67
4. Tim Noonan 67.67
5. Laurie Stark 64.0

1. Dan Brown 10:24.5
2. Bob Perkins 8:53.6
3. Mindi Linstrum 8:17.9
4. Tim Stone 7:41.5
5. Ed Kozak 5:34.1
6. Tim Noonan 5:28.4
7. Andrew Cailliau 2:42.5
8. Carl Linstrum 0:08.0

9. Al Rohrbaugh 10:25.5
10. Rol Anderson 9:43.4
11. Chuck Markos 9:34.2
12. Robert Hayes 9:13.3
13. Hank DeKat 9:12.6
14. Charlie Sotich 9:12.5
15. Rolfe Gregory* 8:56.2
16. Jim Pulley 8:07.9
17. Otto Curth 8:00.0
18. Howard Haupt 7:25.5
19. James Jones 7:04.8
20. Gilbert Robbins 6:09.1
21. Dave Linstrum 5:46.7
22. Robert Elman 5:39.0
23. Martin Richardson 5:32.0
24. Jim Harte 4:59.1

Senior

Senior

1. Mark Kummerow 130.0
2. Scott Wisniewski 83.67
3. Jeffrey Nix 58.83
4. Bruce Bina 50.0
5. Jon Rogers 49.0
6. Michael Joerms 45.0
7. Alan Stone 20.0

1. Keith Gordey 9:53.3
2. Steve Oravec 9:17.5
3. Walter Lounsbury 9:00.0
4. Tom Sovo 8:56.4
5. Mark Kummerow 6:16.2
6. Rich Jaros 4:10.8

Open

Open

1. Keith Ward 158.50
2. Frederick Stark 153.0
3. William Naylor 143.33
4. Ron Martlet 141.67
5. Chuck Markos 138.33
6. Bucky Servaites 136.0
7. Hal Warner 128.17
8. John Martin 126.67
9. Don Garofalo 123.17
10. Edward Fort 119.25

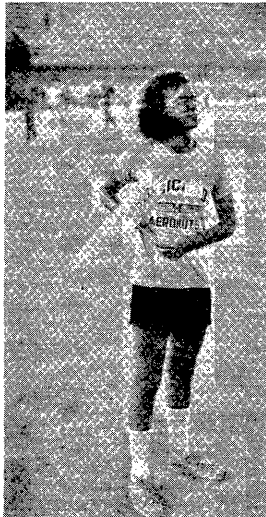
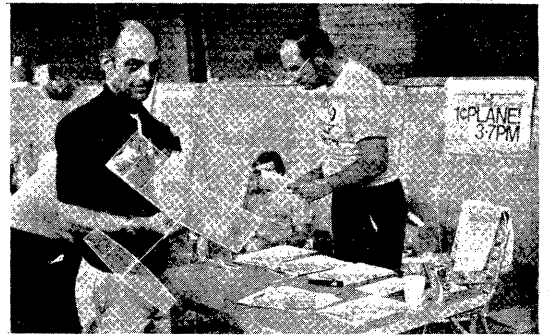
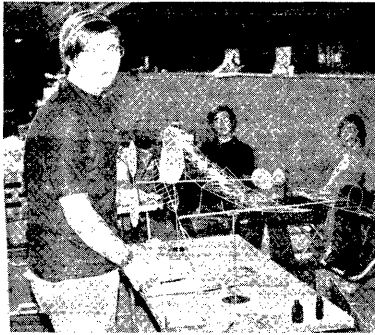
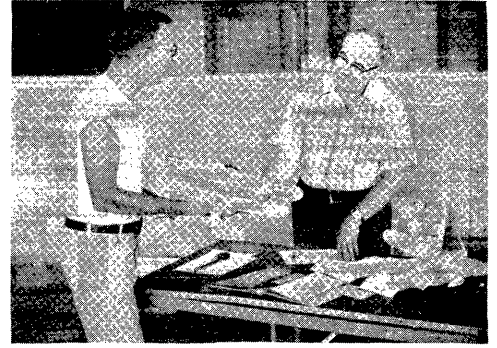
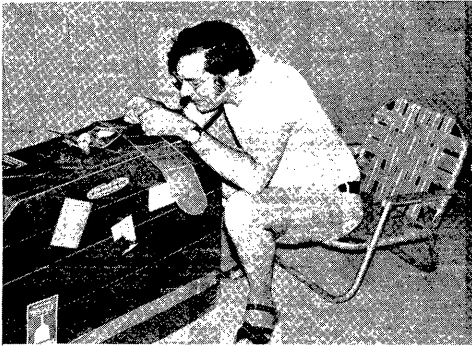
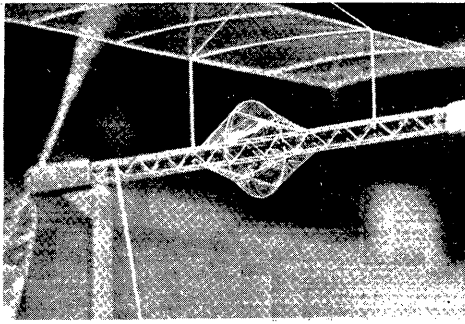
1. Dennis Jaecks 12:19.8
2. Dick Hardcastle 12:04.8
3. Gordon Wisniewski 11:52.0
4. Bob Randolph 11:45.0
5. Steve Brown 11:41.4
6. Larry Cailliau 11:26.0
7. Joe Sovo 11:01.0
8. Bud Tenny 10:44.8

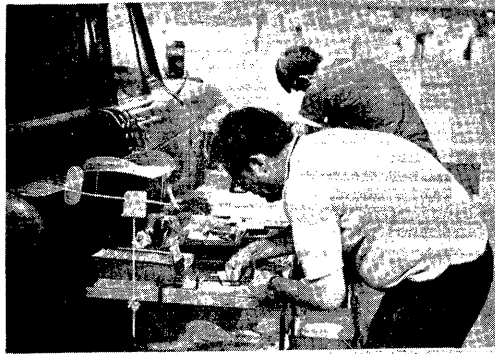
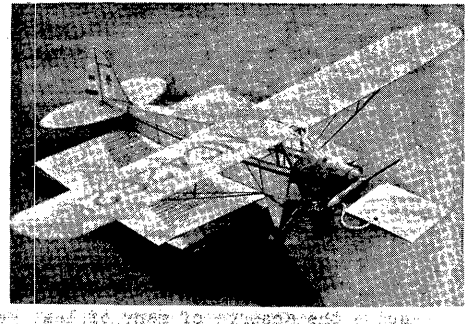
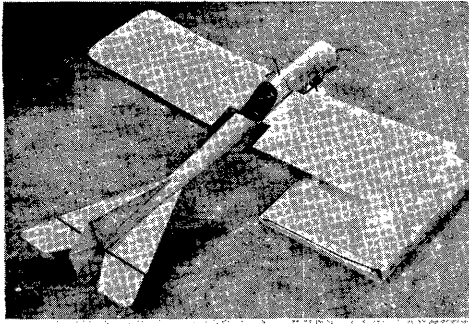
'73 Nats

Disjointed memories of the Indoor Nats: Several "Super Sweep 22"-looking HLG's that, as a rule, didn't "tune in" in time -- better flier cooperation with the test fly/official flying periods -- a couple of well-meaning kids "retrieving" HLG's from bleacher area by grabbing models in flight -- deadly serious mein of the leaders as they ran out of flights but not determination -- the sad shrug or pleased glow as the glider rolls out perfectly or not quite -- the "just one more launch" air after official flying ceased -- quiet applause for trophy winners as official results announced and trophies passed out on-site for the first time.

Purposeful activity and feverish preparation as record number of PennyPlane entrants tried to fit five officials into four-hour period -- personal chagrin over untested P/P prop intended to replace too-small original props and not enough time to make it work -- the minor triumph of being "only" 1:35 out of 1st place, offset by sad reality of 8th place -- excellent performance by Junior & Senior P/P models -- the very real challenge to improve models and strategy between the levels of average to good.

Sad memories of unusual and random drift patterns that destroyed many Paper Stick models on the lights -- nearly





normal entry in Indoor events with many not flying -- the ghost-like and majestic flight by Rohrbaugh's high aspect ratio model -- recalls the beauty of flight of 90 cm FAI models, but more slow, steady flight -- fierce rivalry between Jimmy Clem and John Magnus -- also between Bruce and Barry Paillet -- Paul Shallor's win in Paper Stick with the model his brother encouraged him to build -- dogged persistence of Jim Richmond as he repeatedly repaired pieces of models retrieved from the lights -- the quiet competence and firm command of Bob Champine (indoor director) -- Thanks to Bob and many helpers for a good meet!

THE SCALE REPORT

By Dr. John Martin

Despite the absence of many of last year's scale flyers, indoor scale entries were up 20% from '72, and the quality of models was up also. 73 scale models were entered - 36 in AMA Scale, 7 in Navy Scale and 30 in Peanut Scale. I feel that the 1973 Nats had the best collection of indoor scale models ever, and that, due to the challenging rules (with the exception of Peanut), the event will continue to grow and improve the breed.

AMA Scale - With the exception of Ron Martelet's microlite covered Pilatus Porter (which won 1st for him three years ago), all of the entries were very realistic. The realism even extended to having the scale number of ribs, longerons, stringers and rigging wires. This was the second year of the new indoor scale rules and most scale modelers are enjoying the challenge of building a realistic model light enough to fly well. All of the top placed models managed flights over a minute despite the fact they were dripping with details and "heavy" construction. Back again are the standbys of the 1930's - the Cubs, Mono-coups, and other cabin monoplanes. Although the judging was severe, as befits a national contest, there were some very high appearance point totals. This was particularly true of Bob Meuser's magnificent Blackburn monoplane. The scale presentation alone looked like an encyclopedia with 8 1/2 x 11 glossy photos and close-up detail photos. It scored a Nats record of 92.5 points but never made an official flight. The scale turnbuckles on the left wing rigging were too tight and crumpled the wing beyond repair on one hard landing.

The winner - Keith Ward, and second place Tom Stark, flew very similar planes. 3/4" scale, built like the factory, and weighing about one ounce. Both were capable of ROG flights of well over a minute. It was a joy to see this field of realistic aircraft take off, circle and land like their counterparts.

Navy Scale - Only seven entries appeared in this event which commemorates 25 years of Navy sponsorship of the Nats. The Miami Indoor Club will sponsor the event again next year, as they did this year, with the hope that the entry will grow. Any AMA Scale model of any nation's navy will qualify. More advance publicity may increase this entry; the many biplanes in bright service colors make it a very interesting event. The results:

Best Junior: Mark Kummerow, Jap Jungman Biplane
 Open: 1. Lloyd Wood British Navy Stinson 114.5
 2. Ed Fort Curtis Falcon Bipe 112.17

Peanut Scale - Easily the fastest growing indoor sport since Monopoly, Peanut Scale has a very disturbing trend not envisioned by the authors of the current provisional rules. Peanut has become the realm of the indoor Stout Cabin competitors. The winners, wispy, see-through aircraft, are not what the Megow and Comet 10% kit crowd had in mind, in my opinion. Soap bubbles capable of three or four minute flights are winning contests and looking not at all like scale airplanes. Minus points for appearance are easily overcome by endurance points. The '72 Peanut winners are not indoor scale builders, but three of the best indoor endurance builders in the country.

This event is sponsored by the Detroit Cloudbusters, who buy the trophies out of their club treasury. These fellows deserve much more recognition than they get, since they also do all the scale judging of indoor models. They drove down from Oshkosh after rising at 5 am, stayed all day, and left for the free flight area at Oshkosh at 10 pm. These judges will remain unsung heroes until I get their names from George Lewis, their leader. Whoever they are, we thank them profusely!

This year's winning Peanut Pilot was Indoor Cabin record holder Bob Randolph, flying a 13" Nesmith Cougar. His total of 751 more than doubled the 359 point total made by Clarence Mather last year with a similar plane. Second was Bucky Servaites, flying an interesting Dayton-Wright racer with retract gear up. Third place was Dick Hardcastle with the Hannan Pilatus Porter design. The Cloudbuster Best Craftmanship Trophy was won by Henry Frautschy,

a Senior, whose Bleriot 12 got maximum scale points (20). The Bill Hannan Best Antique award went to Jim Gery for a beautiful 1927 Pietenpol. It garnered maximum appearance points and still was able to make flights of 59, 58 and 55 seconds. In my opinion, Gery's model was the best of 30 entries because it looked so well and flew almost a minute each flight.

If rules which encourage building models of the type flown by Jim Gery can be devised, more Peanut fliers will be happy. Bob Clemens submitted a rule change this year which had many improvements; it was rejected, I believe, because too much documentation was required for a "fun" event.

Peanut Analysis - Randolph's Nesmith Cougar made a three-flight total of 751 seconds, all hand launched. Appearance points - minus 15. Modified Mather plans, microlite covering. Tail surfaces - outline only, no internal structure. Power - 15" loop of .028 pirelli, 2000 turns. Prop - 7" dia. bent sheet, 45° pitch at tips. Weight - 1.25 grams!

The Dayton-Wright RB-1 by Bucky Servaites was condenser paper covered from Henry Struck plans. Oval fuselage section with no landing gear; scored zero appearance points. Total of 498 points with 7" dia. hand-carved prop - "The only way", according to Bucky. Structure was 1/32" sq. 4# balsa; power was 14" loop of .050 pirelli with 1600 turns. Weight - 3 grams.

Dick Hardcastle's Pilatus Porter was from Hannan plans and scored minus 6 appearance points. Covering was dyed condenser paper with details added in india ink and rub-on letters from art store. A tiny three-blade prop looked like an electric fan; sheet balsa blades would clear scale length landing gear to permit ROG flights. A 16" loop of .038 pirelli with 2080 max turns gave a 291 sec. total; one flight climbed to the 90' ceiling to delight everyone.

THE PICTURE STORY

Photo credits: (1) Dave Linstrum; (2) Bob Clemens

Page 2, Row 1

Left: Close-up of cross-section bulge of Rohrbaugh's cabin model. (2)
 Center: Jimmy Clem with paper-covered cabin model. (1)

Right: Chris Clemens launches "Easy Cabin" - Easy B wing and tail on cabin fuselage. (2)

Page 2, Row 2

Left: Jim Richmond, as he appeared most all day. The lights and drift were brutal! (1)
 Center: Bob Champine (1), Indoor Director, greets George Lewis, Indoor Scale Director. (1)
 Right: George Lewis confers with a Scale judge. (1)

Page 2, Row 3

Left: Bill Shallor, Senior Indoor Stick winner. (1)
 Center: Dick Hardcastle with tandem PennyPlane. (1)
 Right: HQ central of PennyPlane event. (1)

Page 2, Row 4

Three HLG fliers, (1 to r) - Mark Kummerow, Robert Hayes, Walter Lounsbury. (all 1)
 Right: Unidentified PennyPlane flier. (1)

Page 3, Row 1

Left: Bob Meuser's excellent Blackburn Monoplane. (2)
 Center: Bucky Servaites' 1920 Dayton-Wright racer. (2)
 Right: Scale winner - Keith Ward's J-3 Piper Cub. (2)

Page 3, Row 2

Left: Wayne Zink checks motor for launch. (1)
 Center: Dennis Jaecks with the PennyPlane winner. (1)
 Right: Tom Sova winds his PennyPlane. (1)

Left: Mindi Linstrum and her cabin model.(1)
 Left Center: Karl Linstrum with Dave's Super Dart.(1)
 Right Center: Your editor, moustache, TennyPenny.(1)
 Right: Unidentified PennyPlane entrant.(1)

Page 3, Row 4

Left: Bill Bigge inspects Paper Stick model.(2)
 Center: Bob Randolph steers V-tail D Stick.(2)
 Right: Ed Stoll prepares Paper Stick model.(2)

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

GEORGE B. ARMSTEAD, Jr., 89 Harvest Lane, Glastonbury,
 CT 06037
 HANK L. DEKAT, 5656 Flanders Rd., Toledo OH 43623
 J. R. GRANT, 4797 Parkinson Blvd., Pierrefonds,
 Quebec, Ont. Canada
 STEVE ORAVECZ, 4839 Janet, Sylvania OH 43560
 WILLIS TRAPHAGEN, 61 Olde Stage Rd., Chelmsford MA 01824

Family Memberships

JOHN TRAPHAGEN, 61 Olde Stage Rd., Chelmsford MA 01824

Honorary Members

MARBER A MARTINEZ, Pernas 2490 Apt. 102, Montevideo
 Uruguay
 BORIS ZOUBAKIN, 65 Wecker Rd., Mt. Gravatt, Brisbane
 Queensland, Australia

Change of Address

BOB COWLEY, 3465 W. 159th St., Cleveland OH 44111
 MARTIN SHEPHERD, 344 Berkhamsted Rd., Chesham,
 Buckinghamshire, England

This Issue

What's here is here - there was no more. Several reports were promised, but the scale report and two sets of photographs arrived. There is no doubt of the talent available in NIMAS - presumably everyone got caught in a time crunch similar to the one here!

The Next Issue

The Sept. '73 issue will follow this one in short order, now that a late Nats, followed by FAI Finals and my annual responsibility for a Class AAA Labor Day meet are past. However: ***SHEEP***! Very few photos of the Finals are available here, but there were several cameras in use at the Finals. Does anyone care to share? How about a deadline of 10 days after you receive this issue? Send black and white photos to Box 545, Richardson TX 75080!

The Team

The Finals winners were: Cailliau - 30:35 + 28:34;
 Stoll - 30:06 + 28:37; Servaites - 30:28 + 27:54. 23 entrants participated, and conditions were good enough for 19 flights to exceed 27 minutes. Complete results in the Sept. '73 issue.

Thanks To American Airlines

Those fliers who wish to thank American Airlines for their excellent cooperation during the South Central Semi and the Finals should address these letters to:

Mr. Dick Tyler, Public Relations
 American Airlines
 3800 North Mingo Rd.
 Tulsa, Oklahoma

It should be noted that this is, to my knowledge, the very first example of major U.S. industrial assistance to, and acknowledgement of, formal model aviation in the U.S. In a very real sense we can claim to be a part of modeling history.

FAI Benefit Contests

In the Dec. '68 INAV, then Team Selection Chairman Clarence Mather conceived the idea of "team benefit" contests or events. The idea was to hold special events at regular indoor meets (or special meets); prizes were to be nominal in value so that entry fees could be donated to the Indoor Inboard Travel Fund. This fund defrays team travel expenses between home and the point of debarkation as the team members assemble to go to the WCh. Such an effort to boost the travel fund would only indirectly benefit the Team effort at this time, since the current fund balance at this time is probably sufficient to send two teams. Rather, perhaps we could boost the fund to a level such that some degree of travel expense reimbursement could be made to indoor Finalists traveling a long distance to Finals. Can INAV readers please share their views (postcard to INAV) on the issue of travel help?

FAI Challenges

Bill Shallor, one of a fine crop of younger fliers now breaking into FAI, asks for INAV reader reactions to this proposal: "Since indoor activity is almost nil, particularly in the FAI class, how about having an FAI meet of some magnitude to spur interest? It would have to be held in a large building to handle the models and to avoid overcrowding. We could even institute team competition with three-man teams, along with individual competition. I feel this would spark interest in FAI and create more activity. This can also raise the level of U.S. competition and give us better teams."

Ed. comment: Bill's idea parallels and supplements thoughts I've had. Perhaps this movement could begin with team and individual challenges on the local level - like inter- and intra-state challenges. For example, Jim Clem, Jimmy Clem and Bud Tenny challenge fliers in the Texas-Oklahoma area to face-to-face FAI competition at a time and place to be mutually decided. Who is game?

TOP TEN CEILING DODGERS

Name	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Robert Dunham II**	1454	89'	.627	911.7
4. Hal Crane	682	20'	1.323	902.3
5. Bob Dunham**	1357	89'	.627	850.8
6. Bud Tenny	1275*	89'*	.627*	799.4*
7. Dick Hardcastle	602	23'	1.234	742.9
8. Hewitt Phillips	528.2	20'	1.323	698.8
9. Howard Haupt	456	22'	1.261	574.5
10. Steve Lovens	433.2	20.5'*	1.307*	566.2*

*Entry corrected from last listing. **New listing

TOP TEN EASY B

Name	Time	Ceiling	Fudge	Score
1. Hal Crane	553.1	20.1'	1.318	728.8
2. Clarence Mather	531.0	22.3'	1.253	715.5
3. Fudo Takagi	445.0	22.3'	1.253	557.6
4. Alan Riches	422.2	20.2'	1.314	554.8
5. Kevin Wehner	414.3	20.5'*	1.307*	566.2*
6. Bob Platt	393.0	20.1'	1.318	518.0
7. Michael Thompson	347.0	20'	1.323	459.1
8. Ted Katsanis	338.0	20'	1.323	447.2
9. Bob Leishman	297.0	18'	1.394	414.0
10. Open				

*Entry corrected from last listing. **New listing.

CONTEST CALENDARCONNECTICUT - Glastonbury

The Glastonbury Modelers are holding indoor sessions with their club meetings on Oct. 4, Nov. 8, Dec. 6, 1973 from 7 pm to 9:30 pm at the Glastonbury High Gym. Contest at same site Nov. 18, 1973 8 am to 5 pm. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06033.

FLORIDA - Miami

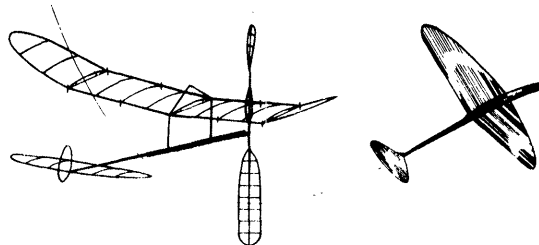
Arrangements under way to begin indoor sessions in Miami. Contact Dr. John Martin, 3227 Darwin St., Miami FL 33133 for details.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Ave., Union NJ, 7 pm to 10 pm, Oct. 11, Nov. 8, Dec. 13, 1973. Contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07205.

INDOOR

NEWS and VIEWS



Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

1. Larry Cailliau	25:49	<u>28:34</u>	<u>30:35</u>	20:15	26:00	28:32	59:09
2. Ed Stoll	19:23	27:27	<u>30:06</u>	22:40	26:22	<u>28:37</u>	58:43
3. Bucky Servaites	15:27	<u>27:54</u>	<u>30:28</u>	26:12	8:25	16:48	58:22
4. Dick Kowalski	25:32	27:14	6:45	25:22	<u>28:48</u>	<u>28:54</u>	57:42
5. Clarence Mather	23:08	25:38	23:36	<u>27:06</u>	25:41	<u>30:09</u>	57:15
6. Paul Tryon	17:50	23:00	<u>28:39</u>	19:41	<u>27:37</u>	8:53	56:16
7. Bud Romak	21:18	20:02	24:40	<u>27:51</u>	<u>28:21</u>	4:50	56:12
8. Jim Richmond	26:01	<u>27:46</u>	5:23	<u>27:26</u>	5:33	26:24	55:12
9. Hal Crane	19:40	21:17	<u>26:42</u>	23:56	<u>26:49</u>	7:04	53:31
10. Stan Chilton	20:48	<u>24:18</u>	<u>28:56</u>	23:49	21:45	22:20	53:14
11. Erv Rodemsky	24:09	<u>27:11</u>	14:27	24:47	<u>25:58</u>	6:59	53:09
12. Al Rehrrbaugh	22:10	6:32	<u>27:12</u>	15:09	<u>25:51</u>	5:23	53:03
13. Paul Allen	<u>25:41</u>	6:40	7:10	25:17	5:01	<u>26:16</u>	51:57
14. Bob Dunham	21:24	<u>25:10</u>	<u>25:05</u>	19:25	18:54	22:37	50:15
15. Bill Hulbert	20:24	<u>25:49</u>	13:32	22:10	9:45	<u>24:01</u>	49:50
16. Joe Bilgri	20:35	15:08	<u>22:10</u>	21:19	<u>25:32</u>	2:55	47:42
17. Bob Gibbs	<u>24:30</u>	0:24	21:12	<u>22:38</u>	0:21	17:01	47:08
18. Jim Clem	21:52	<u>22:21</u>	21:28	15:44	22:07	<u>24:22</u>	46:43
19. Ron Plotzke	<u>22:42</u>	<u>23:25</u>	3:24	21:54	4:40	-	46:07
20. Bob Randolph	0:07	<u>20:51</u>	0:07	5:07	<u>25:13</u>	4:05	45:04
21. Bud Tenny	19:24	21:34	22:03	17:13	<u>23:06</u>	<u>22:13</u>	45:18
22. Ted Gonzoph	<u>21:27</u>	<u>22:56</u>	5:56	0:51	-	-	44:23
23. R. J. Dunham II	17:12	16:27	0:10	<u>18:35</u>	0:14	24:14	42:49

THE TEAM FINALS

The 1973 Indoor Team Finals began with a meeting held by Mr. Dick Tyler of American Airlines. Mr. Tyler welcomed the entrants and meet officials, then explained the safety precautions and other matters regarding our use of a working hangar. It was apparent that American Airlines had made thorough preparations and plans for our arrival, and that American employees would have to forego comfortable working conditions in the hangar during our stay. We owe much to these people for allowing us to fly there.

The Friday evening practice session gave everyone a basic feel for the hangar even though no one really pushed hard on their practice flights. It was apparent that the workstands would interfere if drift got really bad, but these stands had bright lights at ground level which made model handling, adjustment and repair very easy. It is difficult to realize the total enclosed space of this hangar until one notices that it will hold one 747, one DC-10 (nose-to-nose, lengthwise), with plenty of room to bring in a 707 at right angles, then two 737's in the corners - all with the doors closed!

The major contest area was quite large, with two small areas at the ends of the hangar where test flying was permitted during the contest rounds. Even during the time when the DC-10 was in on Sunday, there was still room next to the DC-10's tail section for test flying of a limited sort.

Early morning conditions, before the air got really warm, were not buoyant enough to help the models any. By the 11 am starting time for Rounds 1 and 4, the air had warmed some, but most of the longer flights came in #3, #5 and #6. It has been said that "if you were ready in #3, it was hard to do better in any other round"; perhaps this impression comes from the fact that the Round 3 stan-

dings were almost identical to Round 6. However, a study of the results shows that several fliers made significant gains in #5 and #6, so it's hard to downgrade the last two rounds each day.

In general, after the air got warm, the hangar side also got warm enough to cause a circulatory pattern across the hangar. At the girder level, models moved east to near the wall, then back across the workstands again to land in the launch area. A few flights landed near the east wall or on stands, but more models made it to the floor.

Rafterbanging was the order of the day, for those who did well. This was the only aspect of the meet which left an odd feeling - luck in ceiling contacts played some part in the final outcome. However, only those who really hit hard got into trouble, and those who were able to set up a controlled climb pattern had the edge.

Those who chose the hangar originally had one worry - what would happen if an airplane had to be brought in during the contest? Their worst fears were realized as American officials announced it would be necessary to bring in a DC-10 for engine change at the end of Round 4. Careful coordination of models and the airline workers resulted in a ten-minute door opening and slight loss of flying area. Within 20 minutes, test flying was safe, and official flying resumed within an hour. So, from the score sheet, it appears as if only minor changes in conditions resulted, and the building is so airtight that it settled down quickly. Besides, what other Finals can boast of guided tours of one of the most modern airliners in the world?

In summary, it was a good meet, with conditions and

flying space quite similar to many places where a World Champs might be held in Europe. The aspect of needing a controlled climb is particularly pertinent for all sites on the European continent except Cardington and the salt mine. It is interesting to note that the times did not exceed top one gram times in the Debrecen site ('66 WCh site) which is just 10' higher and essentially not suitable for any ceiling contact. As will be reported in a future issue, Edward Ciapala logged a 33:44 in this difficult site which is only 93' high in the center of an arch. In comparison, the Tulsa site is 89' to the bottom of the girders, with girder spacing very suitable for repeated contacts at a slow climb rate.

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

JERRY BARNETTE, 4 Jefferson St., Fredericksburg VA 22401
TOM IOERGER, 41 Atlantic St., Winthrop MA 02152
WILLIAM C. OSBORNE, 2815 Fillmore St., Davenport IA 52804

Symposium Report

The 1973 NFFS Symposium Report is available for \$4.50 (members of AMA and NFFS), or for \$5.50 to others. Send a check payable to NFFS to NFFS Plans & Publications, P O Box 322, Dallas OR 97338. Include 50% postage and handling for 4th class mail.

FAI Challenges

In the Aug. '73 INAV, Bud Tenny, Jim Clem and Jimmy Clem issued a challenge to any teams in the Texas-Oklahoma area for competition in FAI Indoor. In response, Stan Chilton offered to team up with Bob and Bobby Dunham to compete with any Texas teams. The battle of the century - Tenny + Clem² vs. Chilton + Dunham²!

Team Challenge Meet

Bob Dunham has offered to host a Team Challenge Meet, with prizes of \$100, \$50 and \$25. Entry fee to be \$15 per team, with a minimum entry of six teams. If anyone is interested, drop Bob a line at P O Box 7151, Tulsa OK 74105.

Jigs And Fixtures

This is a reminder - as soon as it is possible to work up the necessary sketches, a series of articles will begin on jigs and fixtures. Anyone who wishes to contribute any ideas to the series should send sketches and description to Box 545, Richardson TX 75080.

PennyPlane Special

A future issue will be devoted to PennyPlanes, with three-vi ws, hints and all helpful information it is possible to obtain. PennyPlane Champs, Arise! Send us your winning techniques and plans!

Harlan Scale

We have on hand an article by Ray Harlan telling how to design and build an indoor scale; it will be printed as soon as room is available. Meanwhile, Ray is making and selling indoor scales in two models; .05 oz full scale and 1.4 grams full scale. The ounce scale has a minor scale division of .0002 oz, while the metric scale has minor division of .005 g. The scales are set to about .1" deflection for .0001 oz unbalance and have a magnetic damper to make the beam settle quickly. Price for one scale is \$20, and an extra beam (from companion model) is \$12 extra. Contact Ray at 15 Happy Hollow Rd., Wayland MA 01778, ph. 617-358-4013.

Executive Council Action

The 1973 Nats meeting of the AMA Executive Council finally produced a result which may eventually result in proper guidelines being established with regard to FAI Team Selection programs. Frank Ehling, Technical Director of AMA, was appointed as "czar" of FAI programs. It is not clear exactly what this entails, and Frank has requested immediate clarification from the Council.

Background - The 1971 Indoor Team Selection Program was marred by disagreements and misunderstandings which led AMA HQ to rather ineptly intervene, citing authority which has never been substantiated or documented. Eventually, matters reached crisis proportions and AMA presidential intervention was necessary to salvage the program. The Sept. '71 INAV requested clarification of a number of matters crucially important to FAI programs in general. In addition, AMA members from Districts VIII, IX and X requested Executive Council action on a similar list of concerns. The Feb. '72 Executive Council meeting considered the matter briefly and tabled it after mention was made of a document "at the printers" which answered all

the questions. This document was subsequently published without Executive Council review, and totally failed to address any of the questions. Further Council action was nil until the Feb. '73 Council meeting, when a special committee was appointed to study the problem. This committee failed to report at the Nats Council meeting, and only the insistence of Murry Frank (Dist. VIII) kept the matter open until Ehling's appointment was made.

What Follows PennyPlane?

Several CD's who have managed to build up indoor activity with PennyPlane, Easy B and HLG have asked what event would be good to allow indoor beginners to advance from PennyPlane. Just a thought - but how about no-weight limit PennyPlane? The basic idea would be to keep all the existing PennyPlane rules except one penny (3 grams) minimum weight. For those PennyPlane purists who might be horrified at eliminating the weight requirement altogether, keep the weight at one gram minimum. Thus, FAI one gram scales can be used for processing.

Remember, the question is: "What kind of model will allow PennyPlane fliers to learn more about indoor?" So, by using lighter versions of their same model designs, the fliers learn to build and handle lighter models. They can then go directly to AMA and FAI events. CAUTION!! It will be important to separate novices and experienced fliers by holding separate events. This is true in any competitive event which is supposed to aid beginners.

Photo Correction

Of the photos (Aug. '73 INAV) credited to Bob Clemens, only the scale shots and the one of Chris Clemens were taken by Bob. The rest were taken by Chris - then developed and printed by Bob. Thanks to both of you!

Nats Scale Officials

Bob Clemens sent the names of the scale judges for the Nats Scale, Peanut and Navy Scale events. The judges were Bob Mosher, Chuck Schobloher and Fred Wunsche. George Lewis was Scale Director, Ralph Kuenz was Ass't Director, while Scott Matteson, Pete Lewis, Andy McIsaac, Jack Russ, David Gloff and Chuck Weise. The Indoor Scale event is a complicated, detailed event which requires a high degree of dedication and perseverance. This same crew has done an outstanding job each year, and are responsible for the high degree of success Indoor Scale has enjoyed.

THE PICTURE STORY

All the photos shown were taken by Dick Ganslen except as noted below. It is expected that several color slides will be available for those who would like to borrow them, but the service of making black-and-white photos from color slides was not available except at expensive custom prices.

Row 1

Left - Ron Plotzke with the only V-dihedral design at Finals.
Center - Dick Kowalski retrieves model after flight.
Right - Bob Randolph prepares a biplane - note the narrow gap between wings.

Row 2

Left - Erv Rodemsky checks torque before flight.

Center - Jim Richmond with narrow-chord FAI (photo taken at Nats). (Servaites photo)

Right - Al Rohrbaugh (front) and Joe Bilgri rest and watch the action.

Row 3

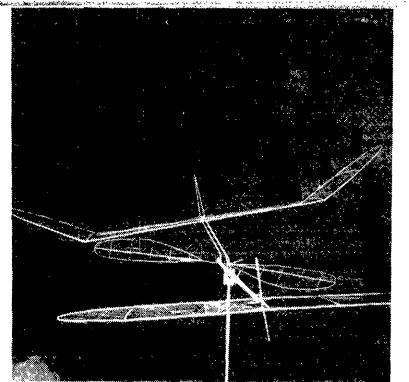
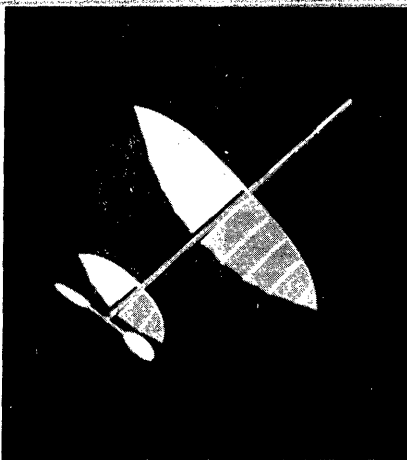
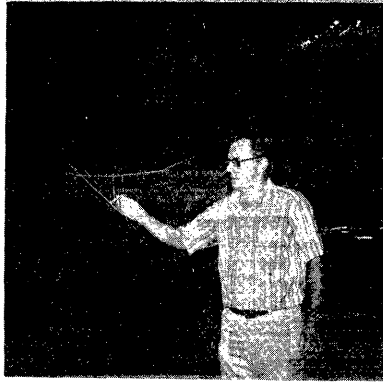
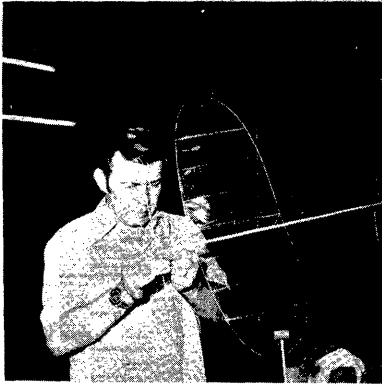
Left - Larry Cailliau retrieves winning model.

Center - Gunter Maibaum photo (see "A Look At Yesterday" elsewhere in issue).

Right - Rear view of Richmond's angled wing post feature (three-view of narrow chord model Jul. '73 INAV).

A LOOK AT YESTERYEAR

The Apr. '69 INAV mentioned Alphonse Penaud as being probably the first indoor flier. Gunter Maibaum built a replica of Penaud's model, using the same size, construction and weight, but with slightly lower rubber weight. He flew the model at the German Nats, held in Westfallenhalle at Dortmund. The center photo on the photo page shows the model in flight. It consistently flies for over 2 minutes on pirelli, which shows how much better pirelli is than the rubber available to Penaud. Gunter says that the model is difficult to fly under full power, and that the experience has given him great respect for Penaud's accomplishments without pirelli and without modern indoor flying knowledge.



CONTEST CALENDAR

CALIFORNIA - Santa Ana

Indoor flying sessions for regular indoor events at Santa Ana MCAF on Oct. 20-21, Nov. 24-25 and Dec. 22-23; Indoor Scale on Nov. 4, 1973. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354.

CONNECTICUT - Glastonbury

The Glastonbury Modelers are holding indoor sessions with their club meetings on Nov. 8 and Dec. 6, 1973 from 7 pm to 9:30 pm at the Glastonbury High Gym. Contest at the same site Nov. 18, 1973, 8 am to 5 pm. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06033.

FLORIDA - Miami

Indoor sessions to begin again in Miami. Contact Dr. John Martin, 3227 Darwin St., Miami FL 33133 for info.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gymnasium, Vassar St. and Mass. Ave., Cambridge MA (use Vassar St. Entrance), on Oct. 13, Nov. 3, Dec. 1, 1973 and Jan. 12, Feb. 9, Mar. 9, and Apr. 6, 1974, 3 pm to 6 pm. Indoor contest May 4, 1974, 10 am to 7 pm; Indoor Stick, PennyPlane, HLG, Delta Dart, Indoor Scale and Peanut Scale. Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 617-358-4013.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Ave., Union NJ. 7 pm to 10 pm, Oct. 11, Nov. 8, Dec. 13, 1973, and Jan. 10, Feb. 14, Mar. 14, Apr. 4 and May 9, 1974. Sponsored by Union Model Airplane Club; contact Dan Domina at 1229 S. Long Ave., Hillside NJ 07205.

CONTEST RESULTS

CHICAGO AERONUTS INDOOR CONTEST, Apr. 28-29, 1973 Cat. II Madison St. Armory, Chicago, Ill. 65' ceiling

<u>Jr. PennyPlane</u>		<u>Open PennyPlane</u>	
Bill Black	5:56.2	Dennis Jaecks	10:53.5
Mindi Linstrum	4:05.6	Rol Anderson	10:18.5
Jenny Linstrum	3:41.0	Charlie Sotich	10:15.8
		Dick Hardcastle	9:45.8
		Steve Brown	9:39.1
<u>Sr. PennyPlane</u>		Hank DeKat	9:15.2
Keith Gordey	8:37.8	Bob Hayes*	8:37.8
Mark Kummerow	7:56.3	Chuck Markos	8:35.0
Eric Miller	7:55.4	Dave Linstrum	8:17.4
Steve Oravec	6:38.5	Bob Elman	5:19.6

<u>Paper Stick</u>		<u>Indoor Stick</u>	
Dennis Jaecks	16:17.4	Charlie Sotich	23:55.9
Charlie Sotich	14:50.6	Dennis Jaecks	21:49.8
Rol Anderson	14:30.0	Gil Graunke	18:27.0
Jeff Annis	14:09.2	Howard Haupt	17:54.8
Dick Hardcastle	13:17.2	Dick Hardcastle	15:13.6
Chuck Markos	12:30.5	Jeff Annis	14:59.1
Richard Doig	12:11.0	Clarence Mills	13:02.0
Keith Gordey*	11:31.0	Mindi Linstrum**	7:52.8
Clarence Mills	8:41.0	Dave Linstrum	4:20.0
Steve Oravec*	8:07.0	Bob Hayes*	3:08.0

<u>Jr. Paper Stick</u>		<u>Open HLG</u>	
Bill Black	3:56.5	Bob Watson	115.6
		Keith Gordey*	109.3
		Dick Swenson	107.2
<u>Jr. HLG</u>		Chuck Markos	106.4
James Loribiecki	48.4	Tom Neumann	105.2
Jim McCarthy	16.5	Richard Doig	102.2
		Bob Hayes**	98.3
		John Loribiecki	97.2
		Chris Matsuno	88.0
		Dan Neumann	68.5

<u>Indoor Scale</u>		
Keith Ward	Piper Cub	174.4 points
Chuck Markos	Westland Widgeon	168.0
Mark Kummerow	1911 Cessna	160.0
Charlie Sotich	Volksplane	132.0
Bill Naylor	Pietenpol Aircamper	130.7
Ed Fort	Vought VE-7	116.4
Charlie Sotich	Filatus Porter	116.0
Phil Cox	Filatus Turboporter	84.8
Howard Haupt	Filatus Porter	74.0
Bill Gough	Nesmith Cougar	68.0

INDOOR ELSEWHERE

ENGLAND

The second trials for the English Indoor Team was held at Cardington on Aug. 19, 1973. The team was selected on the basis of the best two-flight total from either meeting, with the final selection being Laurie Barr, Reg Parham and John Blount. The first trial results:

1. Laurie Barr	33:25	28:57	30:57	64:22
2. Reg Parham	18:18	25:47	27:11	52:58
3. Marty Shepherd	25:33	25:17	21:00	50:50
4. P. Masterman	24:58*	21:45		46:03
5. B. Hadland	23:01*	15:34	16:15	39:16
6. T. Taylor	22:11*	13:15		35:26

Second Trials

1. Laurie Barr	34:19	34:50		69:09
2. John Blount	29:34	29:41		59:15
3. Reg Parham	31:29	27:44	26:30	59:13
4. Marty Shepherd	28:38	20:30	29:46	58:24
5. P. Masterman	18:45	23:23	22:46	46:21
6. T. Taylor	16:48	18:31	23:56	46:07
7. B. Hadland			(did not attend 2nd trials)	39:16

GERMANY

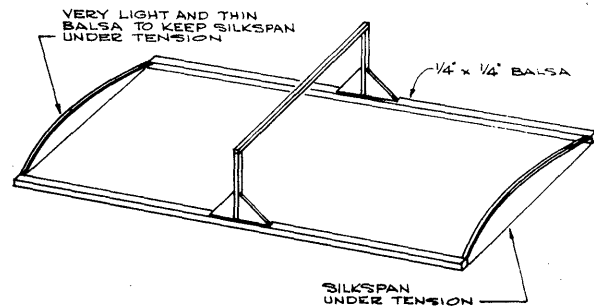
The German Nats were held in Westfallennalle in Dortmund, after two postponements due to last-minute rental of the hall. The ceiling is 24 meters high, with lamps hanging down and ventilator holes near the top. There were 31 entries, with results (top three) shown below.

<u>Class P1 (35 cm paper covered)</u>		
1. Gunter Maibaum		23:59
2. K. Nottelmann		21:23
3. W. Schaak		19:52
<u>Class P2 (65 cm paper covered)</u>		
1. A. Schwarz Sr.		22:05
2. P. Verbeek		21:29
3. A. Schwarz Jr.		21:02
<u>Class M1 (35 cm microfilm)</u>		
1. H. Tiemann		25:25
2. W. Jordan		18:16
<u>Class M2 (65 cm microfilm)</u>		
1. Kurt Vogler		50:44
2. W. Lueke		32:07
3. H. Langner		31:20

HINTS AND KINKS

Kopecsky Covering Frame

The sketch below amply covers the construction of this useful gadget by Ernie Kopecsky. In use, the frame is covered by placing it directly on the storage hoop; the film can be caused to adhere to the frame either by water or by rubber cement (rubber cement is probably preferable). It is then placed over the surface to be covered. The wing or stab has previously been wet down to the board in typical Bilgri covering style. As the covering frame is lowered over the wing, the light balsa end strips permit the film to conform to the rib shape; thus giving a smooth covering job with little extra effort. Thanks to Jim Mills for drawing up this sketch.



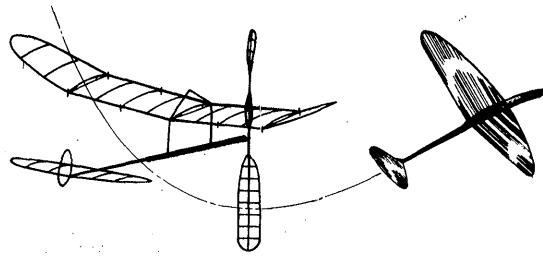
KOPECKY COVERING FRAME

(The above has been reprinted from an early INAV.)

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

HENRY H. FALES Jr., c/o Albert's Cabins, Rt.#7, Lanesboro, MA 01237
 BILL GAIBER, 4235 SW Agate Ln., Portland OR 97201
 T. L. McLEAN, 11754 Florinda Dr., San Diego CA 92127
 DICK STAMM, 6613 E. 134th St., Grandview MO 64030
 STANLEY W. WESOLOWSKI, 205 Weatherby Dr., Westwood MA 02090

Missed Any Issues?

In recent months, several people have written to say they have missed one or more issues. Apparently the Post Office is having more problems than usual, because the missing issues are neither delivered nor returned as "undeliverable", which used to be the case. If you have not received any particular issue within six weeks of when it should have arrived, or within a week of when a nearby friend receives his, please drop a line immediately. A couple of people have written after missing three or more consecutive issues, and by then it becomes nip-and-tuck as to whether a particular issue is still in print. It is preferable to me to have to deal with a few queries about an issue that hasn't been printed than to have to tell someone an issue is out of print because they waited too long to say they missed it!

It may seem unusual that recent issues are out of print before earlier ones, but this is a problem of any growing organization. In mid-1969, 300 copies of each issue were being printed to cover an average circulation of 280 copies per month. As soon as the circulation went up, it became necessary to increase printing to 400 copies per month and each month had a surplus of about 100 or so available as back issues. Now, we're near the point of needing an increase to 500 copies per month, and the files will soon be bulging with back issues again.

NIMAS Awards

Silver Cat. II HLG Award - 0:53.2, Richard Doig

New Materials!

Chet Wrzos sent some small wire hooks used by fishermen for quick-change mounting of fishing lures, and suggested that they would be useful as "O" rings on rubber motors. Although this type of hook is too heavy for FAI models, it is ideal for PennyPlane and strong enough to hold a fully wound P/P motor. The particular product Chet sent was "No-Knot Fas-Snap", by Nature Faker Lures, Windsor MO 65360.

New Hannan Catalog

Bill Hannan has announced the latest version of his "Plans & Things" catalog (25¢ postage and handling), and some neat little Peanut Scale mylar press-on decals. The decals are striking, and the catalog is the most interesting collection of Peanut Scale and fun/sport goodies that just has to be seen to be believed!

Renewal Reminder

Those whose newsletter was addressed with the addresser printer will note a number in the upper left-hand part of the address. If it is "11", your subscription expires with the November issue. Similarly, "12" applies to the December issue and "1" to the Jan. '74 issue. Please check and renew ahead of time if possible - it saves much time here in extra paperwork!

Future Issues - A Reminder

Future issues will present information on PennyPlanes and jigs and fixtures - provided that those who have info will share it!

RECORDS? MAYBE!

Chicago Aeronuts Indoor Contest - Nov. 4, 1973 Cat. II
 Brig. Gen. R. L. Jones Armory, Chicago 90' ceiling
 Cat. II Jr. HLG - 129.9, Bob Hayes, Jr.

FAI INDOOR REPORT

U.S. Indoor WCh?

AMA has completed the proper arrangements with Lakehurst NAS to permit an offer to host the 1974 Indoor WCh at Lakehurst, sometime in July or August, 1974. The Indoor event would be combined with a Scale WCh, running concurrently. The reason for combining the events is to make possible the offer of a charter flight from Europe, as was done for the 1971 RC WCh, held at Doylestown, Pa. The decision will be made at the upcoming CIAM meeting in Paris. At the same meeting, it is expected that Poland will also offer to host the 1974 Indoor WCh, and some rumors have it that Romania will again offer the salt mine for the event. It may be possible that the decision will be known in time for the Nov. '73 INAV.

FAI Program Czar

The Sept. '73 INAV reported that Frank Ehling has been appointed as FAI program "czar", and noted that Ehling had requested clarification of his status from the Executive Council.

No official word of the Council's vote has been revealed, even to individual Council members, but Ehling is proceeding to design an Indoor Program for the Council's approval. This action circumvents all established guidelines, and causes the viability of all other guidelines to be open to question. However, the guidelines were created by the Executive Council and can thereby be set aside by the Council. One must hope that the guidelines which were the result of years of experience will be replaced with enough new guidelines to prevent mass confusion.

CONTEST CALENDAR

CALIFORNIA - Santa Ana

Indoor sessions at Santa Ana MCAF on Nov. 24-25 and Dec. 22-23, 1973. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354.

CONNECTICUT - Glastonbury

The Glastonbury Modelers are holding indoor sessions with their club meetings Dec. 6, Jan. 30, Feb. 26, Mar. 12, Apr. 2, May 7 and June 4, 7 pm to 9:30 pm. Also on Sundays 8 am to noon, Jan. 20, Feb. 17, Mar. 17, Apr. 21 and May 12, 1974. Sessions at Glastonbury High Gym. Contact George Armstead, 89 Harvest Lane, Glastonbury CT.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gymnasium, Vassar St. and Mass. Ave., Cambridge, Mass. (use Vassar St. entrance). Dec. 1, 1973, 3 pm to 6 pm. Jan. 12, Feb. 9, Mar. 9, Apr. 6, 1974, 6 pm to 9 pm. Indoor contest May 4, 1974, 10 am to 7 pm, Indoor Stick, HLG, Indoor Scale, Peanut Scale, PennyPlane and Delta Dart. Contact Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Ave., Union NJ, 7 pm to 10 pm, Dec. 13, 1973 and Jan. 10, Feb. 14, Mar. 14, Apr. 4 and May 9, 1974. Sponsored by Union MAC; contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07025.

OREGON - Albany

Indoor contest Jan. 20, 1974, 10 am to 3:30 pm; HLG, Easy B, PennyPlane, Indoor Scale, Indoor Stick, Paper Stick. Feb. 9, 7 pm to 10 pm, Indoor Fun-fly. Feb. 10, Indoor Scale meet 10 am to 3:30 pm. All events at South Albany High School Gym, 3705 S. Columbus Ave., Albany. Site has 42' ceiling to obstructions with 75' x 105' floor area. Bob Stalick, 1120 Shady Lane, Albany OR 97321.

TEXAS - Dallas/Ft. Worth

Indoor contest Dec. 2, 1973 at American Airlines Hangar, Greater SW Airport, Ft. Worth. HLG, PennyPlane, Easy B, Peanut Scale, Towline Glider, 1 pm to 6 pm. Contact Don Chancey, 611 Bedford, Richardson TX 75080.

DESIGNING SENSITIVE BEAM BALANCES

by Ray Harlan

This note presents the design of a beam balance which is sensitive to .0001 oz and accommodates up to .050 oz. The significant design theory is included to permit modification to suit each builder's taste. Although the balance was made with the help of a milling machine, all the parts can be made by hand if care is taken.

Theory

The position of the fulcrum with respect to the center of gravity of the beam determines how far the beam will tip if a small weight is put on the hook (i.e. the sensitivity). For indoor models, one should be able to see clearly a change of .0001 oz. To find the relationship between the fulcrum height and the sensitivity, the beam can be simplified as in Fig. 1. It is convenient not to make both legs equal so as to limit the overall length to something reasonable while retaining a long scale. The short leg is weighted to balance the beam with nothing on the hook. Finding L_1 and L_2 is easy if the beam has constant cross-section. In this case L_2 is half the right leg length. If the density (D , oz/in.) of the beam material is known together with the weight (W_b , oz) required to balance the beam, L_1 is approximately:

$$L_1 = \frac{2DL_2^2}{W_b + DL_4} \text{ inches}$$

This equation is derived from equating the moments about the fulcrum. This sensitivity can be found in the same manner by assuming a small weight to be put on the hook and solving for the beam deflection. The result of a small weight, w , is that the right end of the beam will rise an amount, z , which is approximately,

$$z = \frac{wL_3}{\gamma D(1+L_2/L_1)}$$

As an example, let $L_1 = 6"$, $L_2 = 6 \frac{1}{4}"$, $L_3 = 6"$. For a $1/2" \times 1/8"$ aluminum beam, $D = .1$ oz/in. If $w = .0001$ oz, and a movement of $.1"$ for z is desired, the equation can be rearranged and solved for γ , which becomes $.0294$ in. Thus, we must be very careful to know where the center of gravity of the beam is, and to place the fulcrum close to it. If z is doubled, the sensitivity is halved.

Fulcrum

A sharp fulcrum is necessary and a razor blade is satisfactory if rigidly held in place on the beam. Fig. 2 shows an aluminum block which holds the blade with screws. If made by hand, two $1/4 \times 3/8 \times 3/4$ aluminum blocks can be substituted, eliminating the need to saw a slot. Also thin wedges can be used to secure the blade. The blade pivots on $1/8"$ aluminum edges (see Fig. 6).

Damper

A very useful feature is a magnetic damper. This limits the swing of the beam to one or two overshoots and is particularly handy when drafts are present. The damper uses two ceramic magnets about $3/4" \times 1"$, often found on typing correction tape (Touch and Go) boxes. They are epoxied to angle brackets as shown in Fig. 3 and mounted $1/8"$ apart on the baseboard. Make sure they are oriented to attract each other as strongly as possible. The damper arm is thin (.020" or less) aluminum epoxied to the beam.

The damper does not affect the accuracy or sensitivity of the beam. The damping forces are proportional to the speed of the damper arm only. One caution, however; keep all steel slide wire screws well away from the magnets. It may be better to use brass for these.

Sliding Weight And Scale

By putting the weight on a slide wire it won't get lost. Fig. 4 illustrates the design. The heavier the weight, the longer you can make L_3 , for a given L_2 and scale capacity. Mine is .024 oz. which, with the figures used under Theory yields a capacity of .050 oz. Fig. 4 shows the weight and slide wire. Carefully position the left slot head screw so the slide weight is pointing to zero when touching this screw.

The brass weight can be made to approximate length and then taken to the nearest university for finishing with a file. Most biology labs have accurate balances (e.g. Mettler) with sensitivities in tenths of milligrams. (.001 oz = .02835 gram.)

If a milling machine is available, the scale can be engraved by attaching the beam with double-faced tape

(against stop pegs) and securing a tool bit in the spindle. Lines for thousands of an ounce can be ruled $.2"$ long (.01 to .015 deep), while those for .001 oz increments can be made $.1"$ long. Spacing of $.050"$ is convenient in this setup. If done by hand, $1/16"$ may be more convenient. The lines can be filled with China marker and the excess wiped off.

Hook

The hook can be .016 wire in a .020 hole and can have the shape shown in Fig. 5. The baseboard shouldn't project far beyond the fulcrum toward the hook.

Zero Adjust

A 2-56 x 1" or 4-40 x 1" screw can be secured in the balance weight (Fig. 6). Two nuts on this screw can be moved to provide fine balance adjustment when the slide weight is at zero.

Use

Place the baseboard so that the fulcrum projects from the edge of a table a few inches. A thin table is best, as it permits the wing of a complete model hung from the nose to swing under it freely. If the table does interfere, make a long hook extension to lower the model several inches. Be sure to subtract the weight of the extension.

The accuracy of the balance depends only on the care with which L_3 and the scale are laid out and the accuracy of the slide weight. Greater sensitivities than .0001 oz can be achieved, but the beam may be unstable for large deflections.

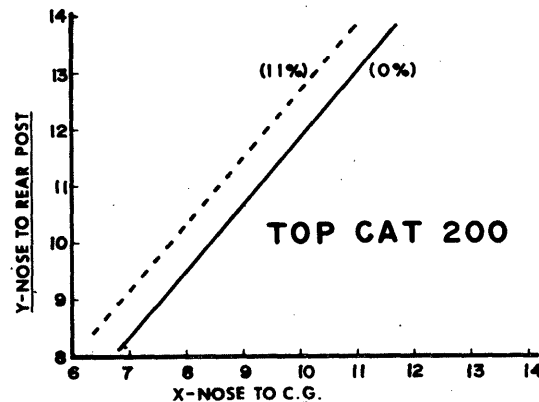
Note: All illustrations for scale on p. 4.

STATE OF THE ART

The model of the month is overdue in two respects - it was ready for printing three issues ago and kept getting crowded out. Also, as soon as Ernie Kopecky heard of Bob Randolph's 44:50.2 flight which eclipsed Ernie's 43:42 set at the 1963 Team Finals in Santa Ana, he said, "Send Bob my congratulations! I've held the record too long!"

Bob has been sneaking up on the record for over a year, with several different models. Of the record hop, he remarks, "This version of Top Cat had a thick section wing to hold the climb down. Evidently the thick wing also reduced the average RPM from the usual 50-52 down to 42.6. I was well centered for most of the flight and grazed the beams 12-15 times, the last time at 16 minutes. It went off with 2240 turns and landed with 336."

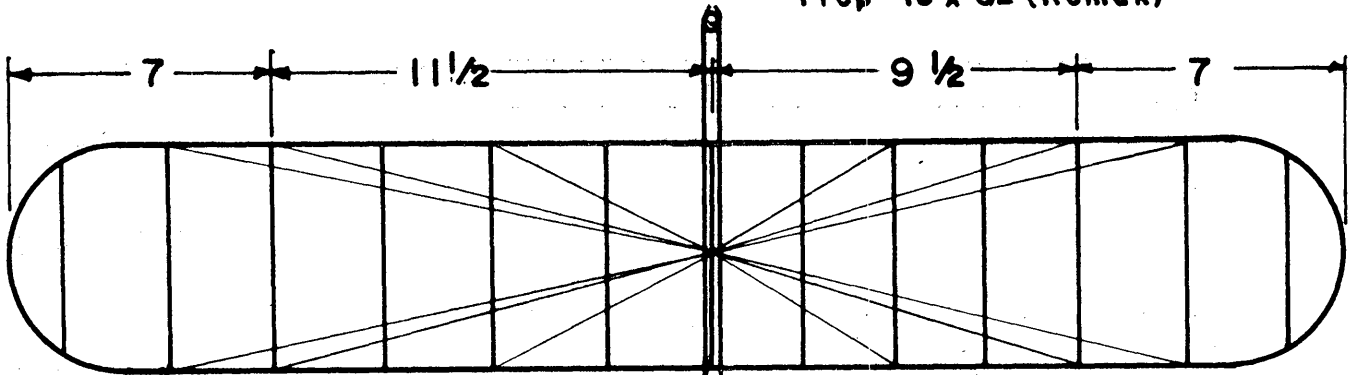
Bob's trim setting checked out at +1% on the CMOS charts, even with the forward wing position. The graph below shows both +1% and 0%.



HINTS AND KINKS

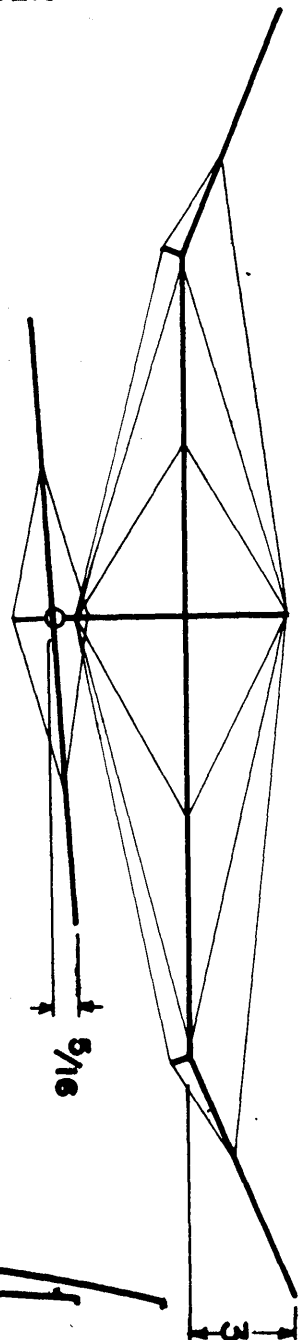
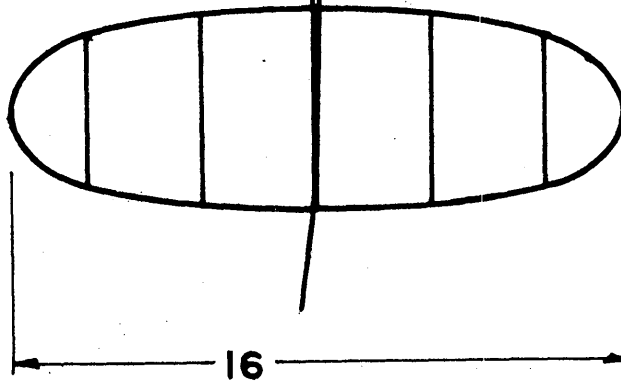
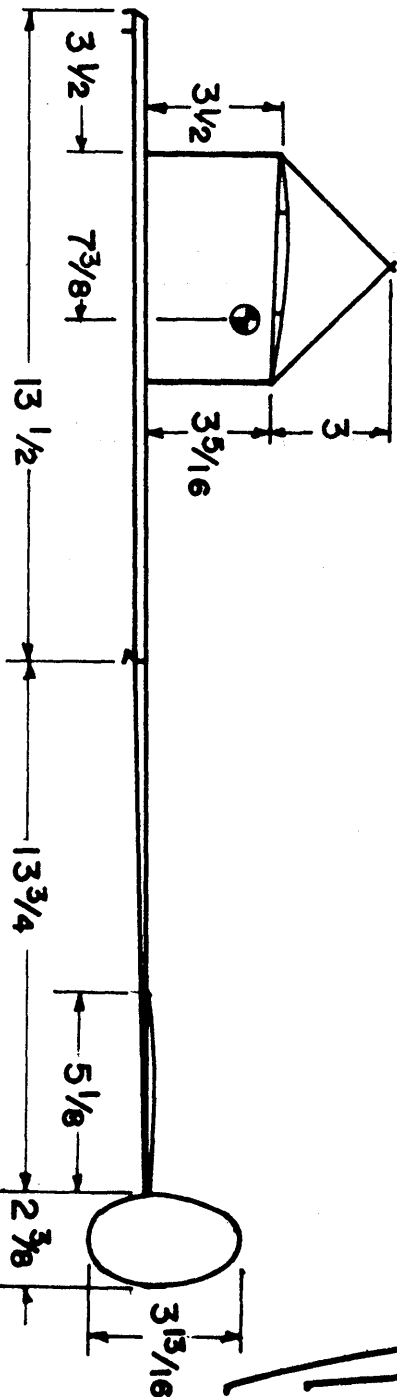
The bottom part of p. 4 is a reprint from 1968, showing Bob Putman's method of repairing a wing which lost film in a bad place - next to the cabane. He prepared the patch by using saliva to stick dacron monofilament across the hoop. After this dried, he trimmed the film loose on the outside of the patch to give room for the wing tip and cabane (not shown) to drop past the patch. Once the film is ready and the bracing is removed from the top of the wing, the patch job is just like covering - lay the wing down, attach the film and trim it loose.

Prop-19 x 32 (Romak)



WING	.0109
FUSE	.0168
PROP	.0068
TOTAL	<u>.0341</u>

POWER - 20" of .055
 2240 TURNS
 AV. RPM - 42.6



TOP CAT 200
 44.50.2 Santa Ana
 26 May 1972
 Bob Randolph

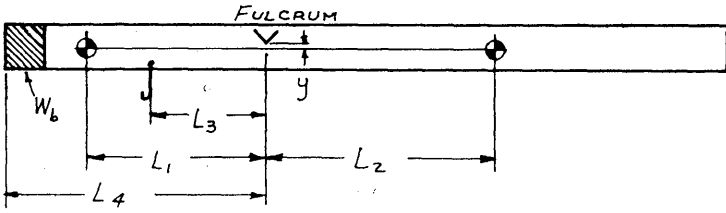


FIG. 1

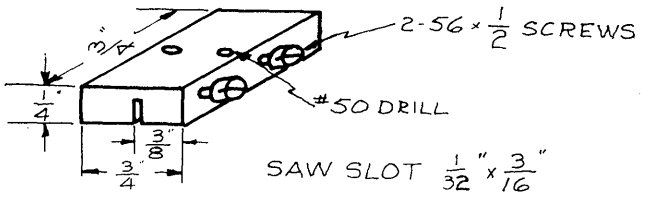
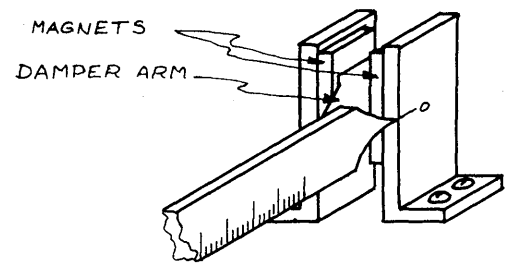


FIG. 2

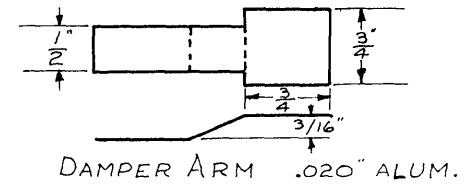


FIG. 3

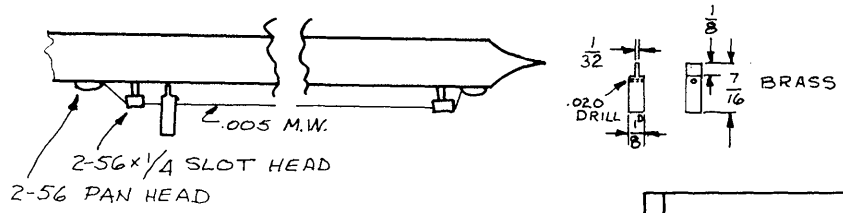


FIG. 4

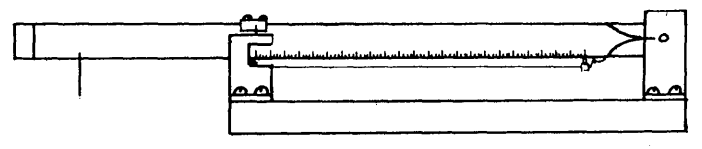


FIG. 6

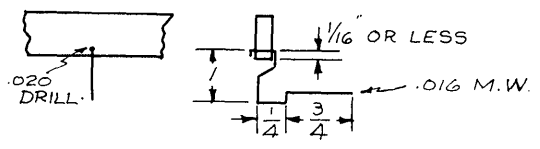
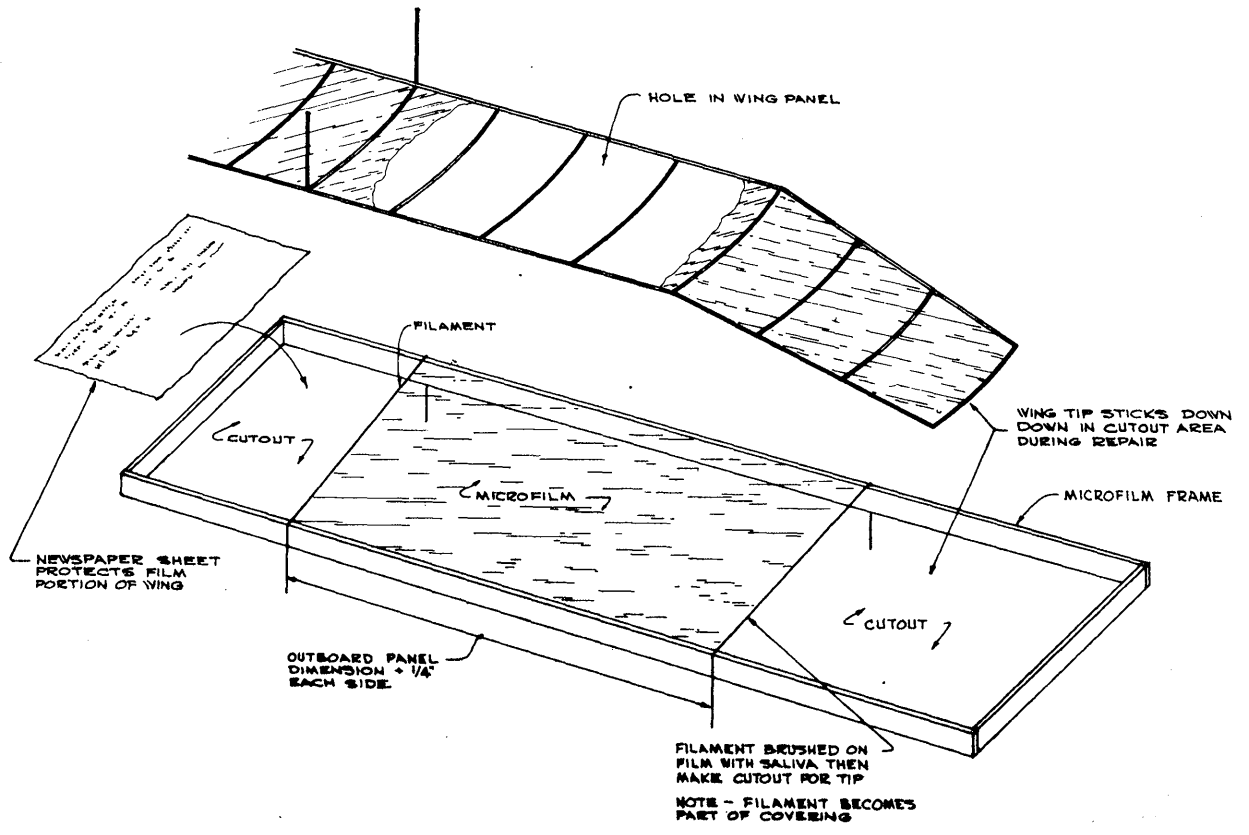


FIG. 5



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

TIM LAVENDER, 109 Villa, McMinnville TN 37110
 GYORGY G. POLCZ, M.D., 109 Riverside Ave., Muncie IN 47303
 FREDERICK WUNSCH, 3395 South Blvd. E, Auburn Hts. MI 48057

This Issue

It has been a fond hope and expectation around here that the INAV publishing schedule would eventually catch up to the schedule that used to be. With a 50-hour work week and an occasional 11 or 12 hour day, not much progress has been made. In addition, correspondence is way behind. Normally, correspondence is the life-blood of INAV - our mutual interaction is what has traditionally resulted in the broad variety of material available. That is, I note a comment which indicates you have something we would all like to know, then I ask for it.

Happily, many of you have sent material w/o prompting and others have responded to the pleas in recent issues for PennyPlane and Jigs & Fixtures info. So, in this interim (we hope) interval, please continue. If possible, camera-ready drawings are preferred, but all info will eventually be used. It just takes time to draw it all up - which detracts from time for correspondence.

So, the Nov. '73 issue is a late Christmas present, and Merry Christmas to you all!

Aeromodeller Annual - '73/'74

The new Aeromodeller Annual is out - as usual, it is easily classifiable as a collector's item. Topics range from FAI Indoor and Easy B thru all the most popular outdoor classes and cover some sport models and the latest developments in electric powered models. Ron Moulton's editing is clearly up to his usual high standards, and he is to be thanked for his efforts. Contact Model & Allied Publications Ltd., 13/35 Bridge St., Hemel Hempstead, Herts, England for prices and ordering info.

'74 Nats

The latest word is that the 1974 Nats will be held at Chennault AFB, Lake Charles, La., early in August. Very good outdoor facilities and housing accommodations are said to be available. Indoor arrangements include two possible low Cat. II (50' - 60') sites and also the Goodyear blimp hangar in Houston, Texas, 130 miles away. More details will be given as they are available and firmed up.

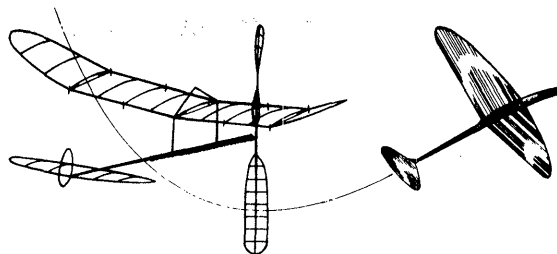
Financial Report

1973 NIMAS income reached an all-time high, due to donations, the 25¢/year dues increase (now \$3.25/year) which began in Jan. '72, and another banner year of membership growth. At the same time, expenses increased in proportion to growth, with an added boost due to an increase in printing costs. To lessen the suspense, income amounted to \$1044.79 for the year, with expenses totalling \$934.61 - a surplus of \$110.09. Looming in the immediate future is a postal increase of 2¢ per domestic mailing, and the immediate need to increase the number of copies printed of each issue. The increase in number of copies needed is due to the expanding membership as outlined in the Oct. '73 INAV. The income/outgo breaks down thus:

Printing costs	347.57
INAV postage	347.01
Correspondence postage	88.68
Office Supply, misc.	151.35
	<u>934.61</u>

The newsletter circulation increased from an average of 330 in 1972 to 345 in 1973, for a 4.5% increase. The incoming mail amounted to 1374 pieces, and outgoing correspondence amounted to 1412 pieces, with much of that to service new memberships and inquiries.

While pondering the expected increase in expenses, a projection based on the normal 5% growth and the 25% increase in domestic postage costs yielded a projected income of \$1177 and expenses of \$1116 as follows:



Printing costs	398.00
INAV postage	478.00
Correspondence postage	90.00
Office Supply, misc.	150.00
	<u>1116.00</u>

This projection shows a projected \$61 surplus for next year, barring another increase in printing costs. It has been a fond hope that the NIMAS decal could be re-issued, especially since many present members have never seen the decal and others would like to get more. The original issue of the decal was essentially a gift, so perhaps care in planning can give a plan of some free decals and some sold for a price which will permit the cost to be mostly amortized so new decals could be printed without financial crunch.

SPECIAL INTERNATIONAL ISSUE

Once again, the November issue is dedicated to all the indoor fliers around the world whose activity complements the U.S. activity and often drives us to greater performance just to catch up! It is especially good that this issue also announces the 1974 WCh at Lakehurst - and we can look forward to meeting many of our friends from other lands - in friendship and competition.

FAI INDOOR REPORT

'74 WCh In U.S.!

Word from the CIAM meeting in Paris is that the U.S. bid to hold the 1974 Indoor World Championships at Lakehurst NAS was accepted. More details are expected later, but the presently planned dates are July 1-7, 1974. The key to the acceptance was the offer to host RC Pylon contest during the same time frame, which enabled plans to run a charter flight from Europe at rates which could be reasonable.

FAI 74/75 - A Massive Upheaval

In the past ten weeks, the AMA Executive Council has acted in almost total secrecy, considering ideas put forth by FAI Czar Frank Ehling. These ideas, if accepted by the Council, would force regional Finals upon both FF and Indoor programs and would eliminate all formal FAI Indoor competition except the Finals. The program questionnaire, which formerly gave participants in previous programs some opportunity to express their views, apparently will be totally eliminated. Qualification for the Finals is proposed to be only via AMA contests, (including FAI Stick to be added to the Nats) but entrants in other AMA contests can use Easy B, PennyPlane, Indoor Scale, Peanut Scale and some Indoor Stick and Paper Stick models to qualify. If the Council approves the basic proposal of regional Finals with staggered entry to allow entry in all three, Ehling would then make the following proposals as quoted from Ehling memo of Nov. 8, 1973:

1. Select three CD's from each interest who would basically be from the western, central and eastern areas who would be the area finals CD's for a particular interest.
2. They would agree upon uniform qualifying performances (times, points, scores or places) to become eligible to fly at anyone of the three finals sites. Their requirements would come from past program requirements, contestant inputs and any inputs I could contribute from past knowledge of what worked best.
3. They would agree on which area would start the finals so the finals could be best attended and with approximately 30 days between dates to further increase attendance from those who could travel.
- 4, 5, 6 - details of program entry and HQ paperwork.

In fairness to the Executive Council, it should be noted that the October and November issues of the club mailings and Competition News made no mention of the Council's deliberations on this matter, and that the Council normally does not control the contents of these mailings. In fact, one Council member noted that HQ had not even communicated to him the results of initial voting which (implied in Ehling memos, but not revealed to date)

apparently gave Ehling essentially carte blanche power to handle FAI programs as he sees fit. In the most recent mailing, the negative vote of Dist. VIII was not circulated, but five responses which were either partly or wholeheartedly in agreement with basic Ehling proposals were circulated.

In summary, and speaking from the limited viewpoint of an Assoc. VP who has been consulted by his VP, this affair has many aspects of both managed news and secret meetings which contrasts starkly with the free and open member communication we have enjoyed in the past few years. Your VP has recently received a ballot which asks for the Council's selection of single site, regional site, or "pick Team at Nats" for each of the five FAI interest groups. Based on the five (out of 14 possible!) responses circulated, regional sites for FF and Indoor would be approved. It is likely that individual members will not be able to express an opinion except to his District VP. If you wish to do so, find your VP in the list below:

- I - Cliff Piper, Highland Ave., Atkinson NH 03811
- II - Josh Titus, 146 Garden Ave., Paramus NJ 07652
- III - Ron Morgan, School For Vet Children, Scotland PA 17254
- IV - John Spalding, 5803 Ellerbie St., Lanham MD 20801
- V - Jim Perdue, Kingston Circle, RFD #4, Athens TN 37303
- VI - Glenn Lee, 102 W. Mandrake, Batavia IL 60510
- VII - Jack Josaitis, 23663 Lawrence, Dearborn MI 48128
- VIII - Murray Frank, 2933 Blankenship, Wichita Falls TX 76308
- IX - Stan Chilton, 1401A S. Hydraulic St., Wichita KS 67211
- X - Alex Chisolm, 1100 West Shaw, Fresno CA 93705
- XI - Bob Stalick, 1120 Shady Ln., Albany OR 97321

CONTEST CALENDAR

CONNECTICUT - Glastonbury

The Glastonbury Modelers are holding indoor sessions with their club meetings Jan. 30, Feb. 26, Mar. 12, Apr. 2, May 7 and June 4, 1974, 7 pm to 9:30 pm. Also on Sundays, 8 am to noon, Jan. 20, Feb. 17, Mar. 17, Apr. 21 and May 12, 1974. Sessions at Glastonbury High Gym. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06037.

FLORIDA - Miami

The Miami Indoor Aircraft Model Association will have a Fly For Fun at the Youth Fair Jan. 4 and contest #4 at the Goodyear Blimp Base, Opa Locka Airport Jan. 20, 1974. Contact Dr. John Martin, 3227 Darwin St., Miami FL 33133.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gymnasium, Vassar St. and Mass. Ave., Cambridge, Mass. (use Vassar St. entrance). Jan. 30, Feb. 26, Mar. 12, Apr. 6, 1974, 6 pm to 9 pm. Indoor contest May 4, 1974, 10 am to 7 pm; Indoor Stick, HLG, Indoor Scale, Peanut Scale, PennyPlane and Delta Dart. Contact Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778.

MISSOURI - Kansas City Area

Two contests are planned in the KC area this winter, with Indoor Scale and beginner events tentatively planned for February. Easy B and Open Stick will probably follow in March. Special awards for the best constructed scale model and the highest "no touch" Indoor Stick time. Contact Roger Schroeder, 4111 W. 98th St., Shawnee Mission KS 66207.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Ave., Union NJ, 7 pm to 10 pm, Jan. 10, Feb. 14, Mar. 14, Apr. 4 and May 9, 1974. Sponsored by Union MAC; contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07025.

NEW YORK - Long Island

Cat. I Record Trials at Boy's Gym of Friends Academy, Locust Valley, L.I., NY, Dec. 29, 1973 and Mar. 23, 1974, 11 am to 5 pm. Gym shoes required. Site is approx. 60' x 72', with shallow peaked roof, max height approx. 33'. Contact J. G. Paillet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

PENNSYLVANIA - Philadelphia Area

Indoor contests in Bridesburg Rec Center, Richmond & Ash St., Philadelphia. Jan. 20, Mar. 17, HLG, Indoor Scale, "B" Stick; Feb. 17, HLG, Peanut Scale, "B" Stick. Contact Charles Stiles, IRC Co., Div. TRW, 6th Flr. R&D, 401 N. Broad St., Philadelphia PA 19108.

OREGON - Albany

Indoor contest Jan. 20, 1974, 10 am to 3:30 pm; HLG, Easy B, PennyPlane, Indoor Scale, Indoor Stick, Paper Stick. Feb. 9, 7 pm to 10 pm, Indoor Fun-fly. Feb. 10, Indoor Scale meet 10 am to 3:30 pm. All events at South Albany High School Gym, 3705 S. Columbus Ave., Albany. Site has 42' ceiling to obstructions with 75' x 105' floor area. Bob Stalick, 1120 Shady Lane, Albany OR 97321.

RECORDS? MAYBE!

Thermal Thumbers Record Trials, Nov. 24-25, 1973 Cat. III
 Santa Ana MCAS, Santa Ana, Calif.
 Junior Indoor Cabin - 12:29, John Magnus
 Junior A ROG - 3:04.8, Ken Bauer
 Junior HLG - 1:58.2, Ken Bauer

STATE OF THE ART

This month, there are four models - two top FAI models from Romania and Czechoslovakia, a 35 cm model from Great Britain and an "almost" PennyPlane from Sweden.

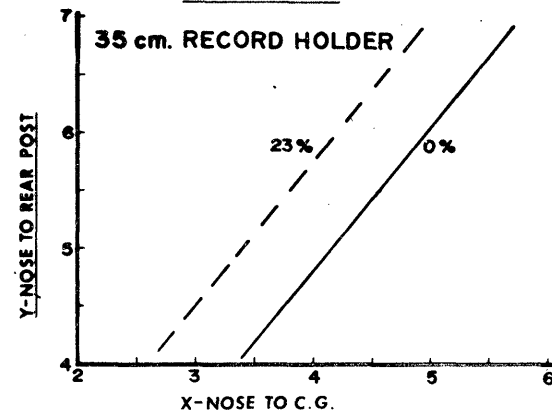
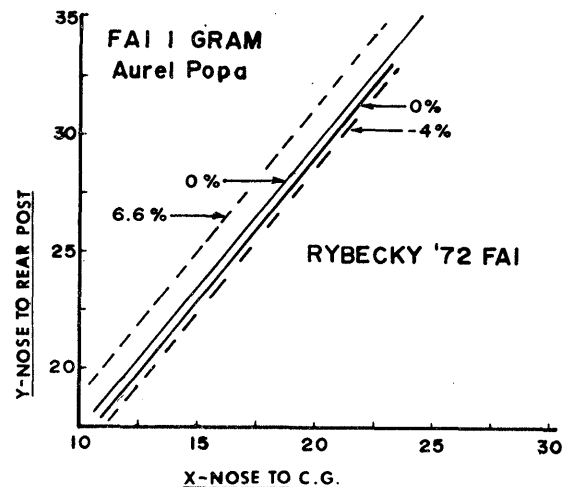
Karol Rybecky's 1972 FAI placed 2nd at the '72 WCh, then went on to garner its high time at the 1973 contest at Slanic (the salt mine). The model was developed from his previous (pre-one gram) models, and is a bit smaller than the current practice in Europe, with Slanic conditions in mind. Karol is pleased with the model's performance - 2nd at the WCh and 3rd at Slanic with 1½ minutes more time than 1st at the WCh - and feels the basic design is good for less experienced fliers.

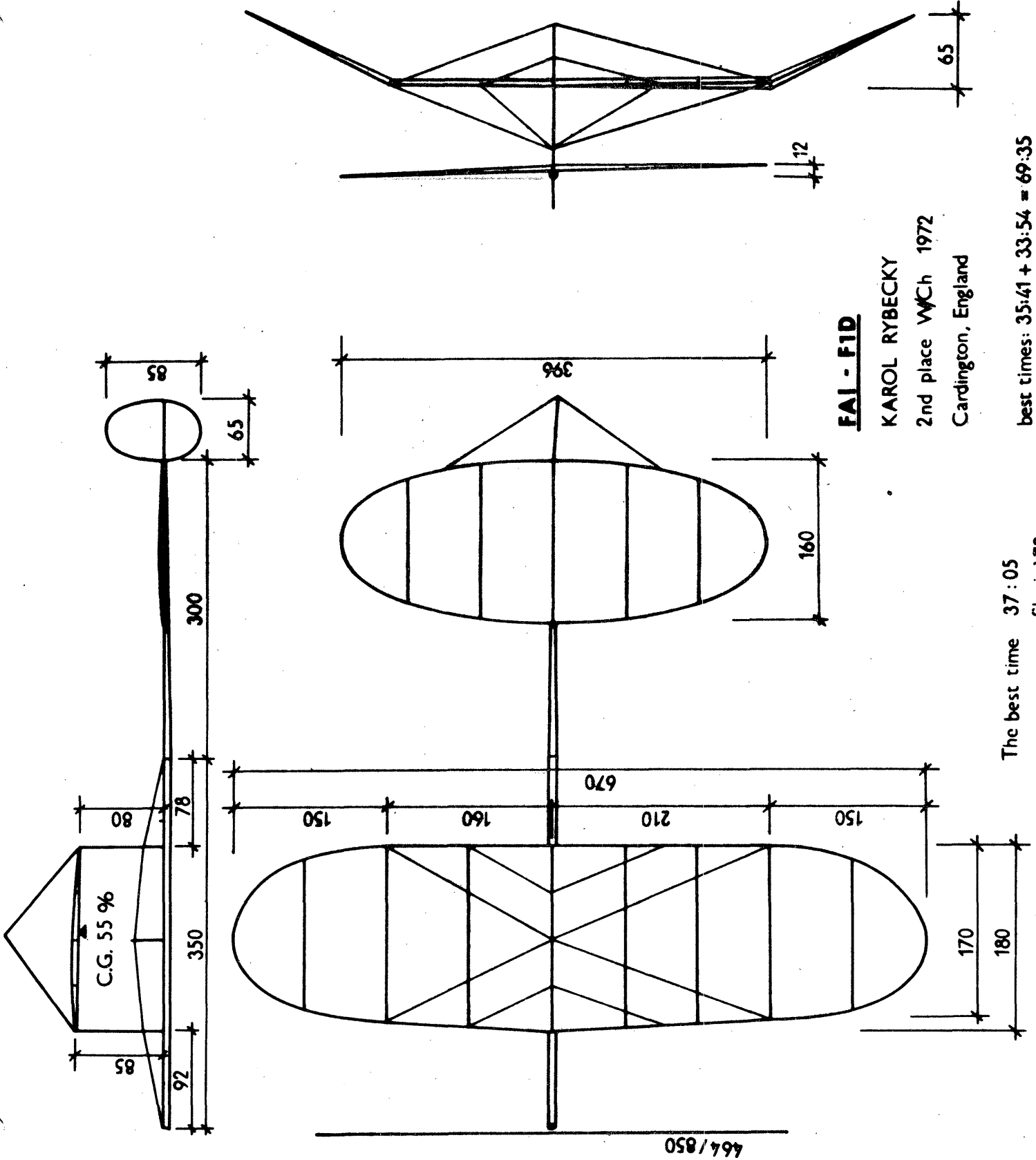
Aurel Popa is a young man with the touch for indoor that is rapidly making him a master. He has lately led the pack in Romania, and with the model shown he won the '73 Slanic meet with a handy 70 second margin.

Marty Shepherd's 35 cm model now holds the British record for that class, and is somewhat representative of a trend toward smaller models as an alternative class in Europe. At least three other countries now fly smaller models, with Hungary the latest to begin. Marty gave no indication of restrictions on the English 35 cm class, but the Hungarian class is 45 cm, one gram, 15 cm max wing chord and 20 cm motor stick length (hook to hook). Poland and Czechoslovakia are trying similar specs except for a 50 cm span.

Finally, the "almost" PennyPlane! In Sweden, the 25 ore coin is similar in size to the U.S. penny, but with 2.3 g weight instead of the 3 g weight of the penny. In recent months, the 25 ore class models have increased in wing area - paralleling PennyPlane development in the U.S.

All plans except Marty's are in metric, as are the CMOS charts below. As usual, the dashed lines represent the designer's trim location in contrast with 0% margin. INP (see Mar/Apr '73 INAV) for Rybecky = 35% margin; for Popa, INP = 32%.





FAI - F1D

KAROL RYBECKY

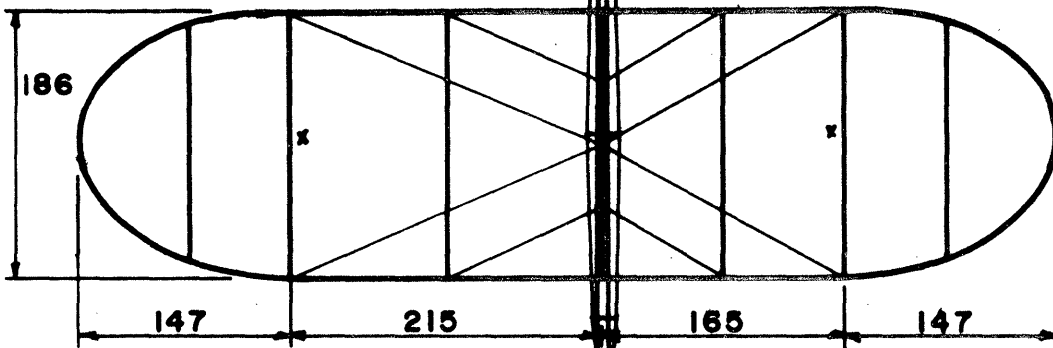
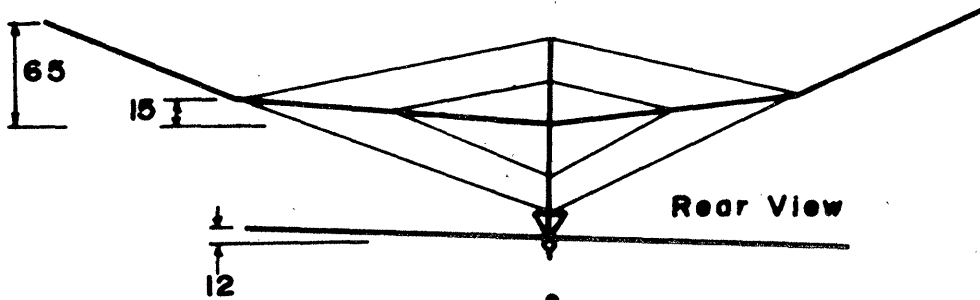
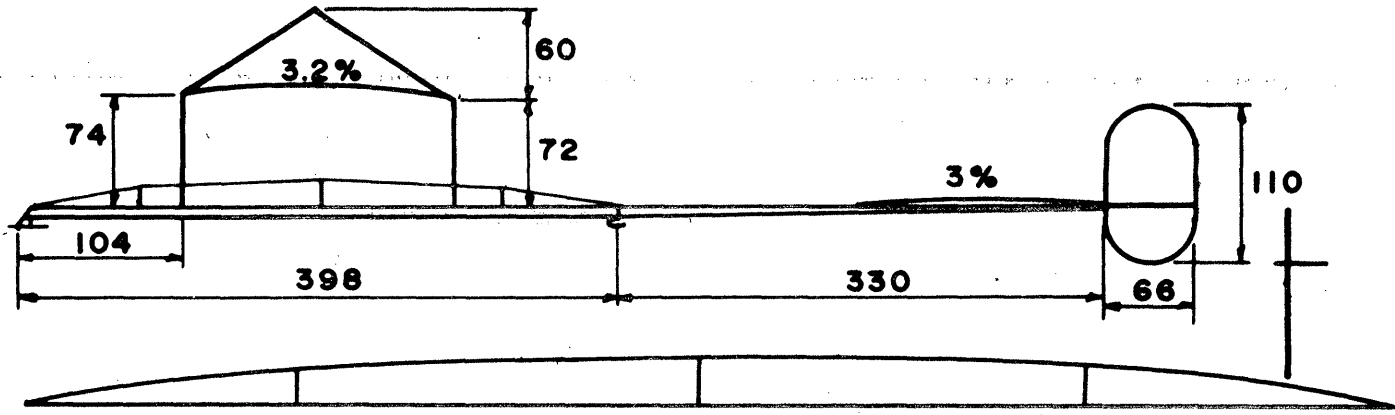
2nd place WCh 1972

Cardington, England

The best time 37:05
Slanic '73

best times: 35:41 + 33:54 = 69:35

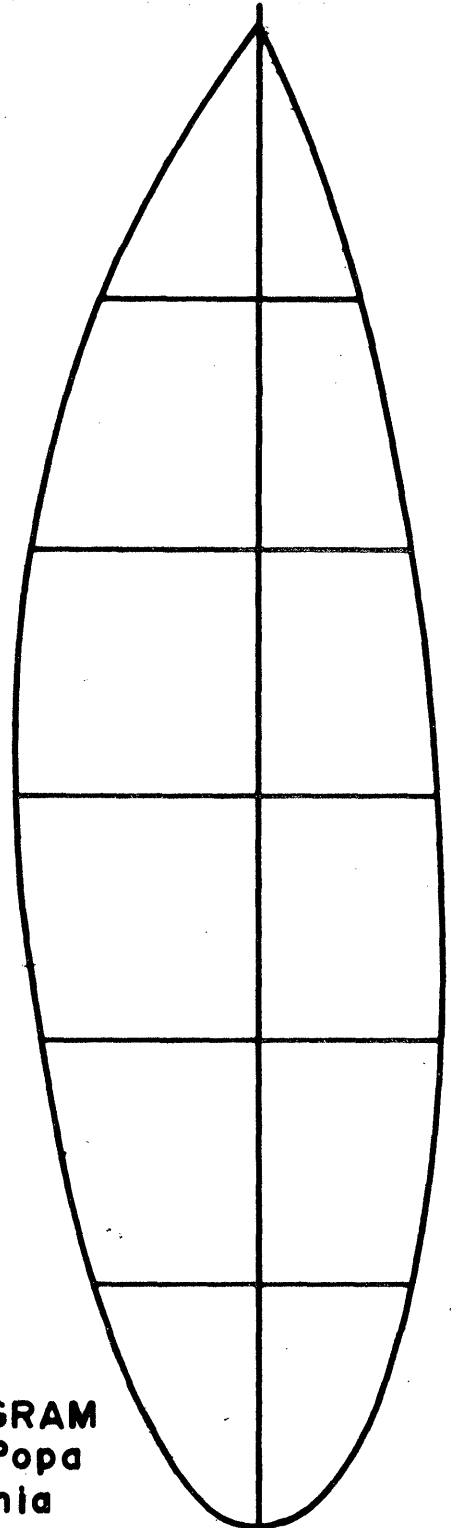
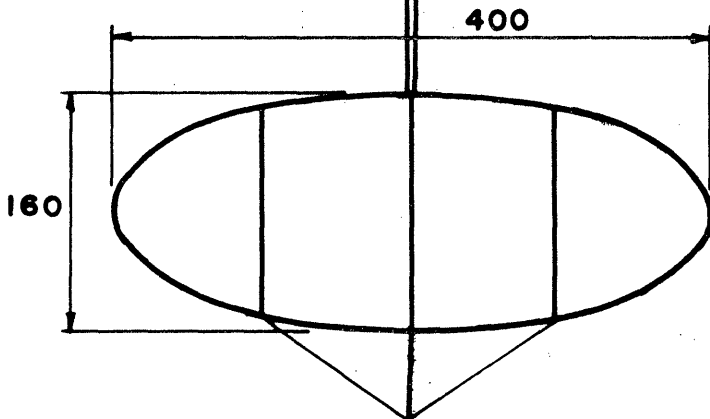
464/850



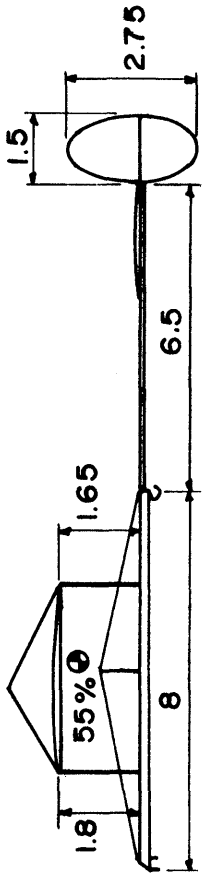
Weights

Fuselage	0.63 g
Wing	0.29
Prop	0.164
	<u>1.084</u>

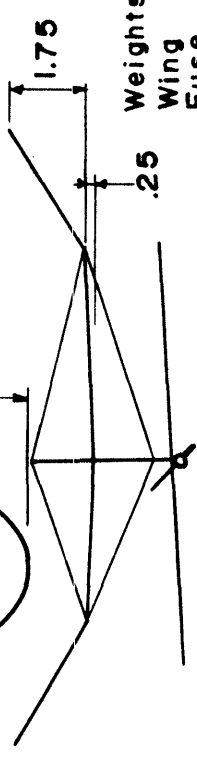
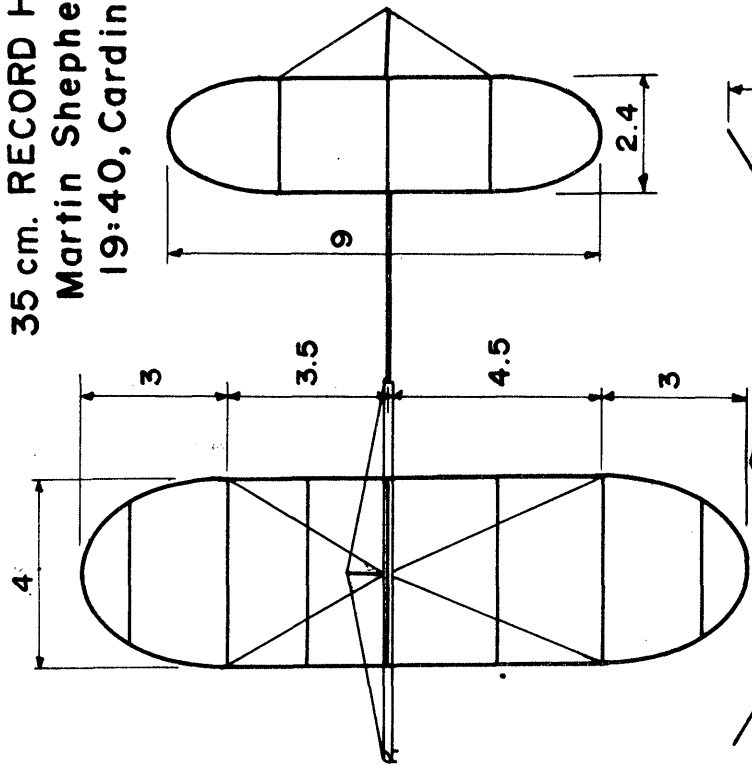
Rubber
 445 mm loop
 1.26 g, 2400 T.
 39:16 at SLANIC



FAI 1 GRAM
Aurel Popa
Romania

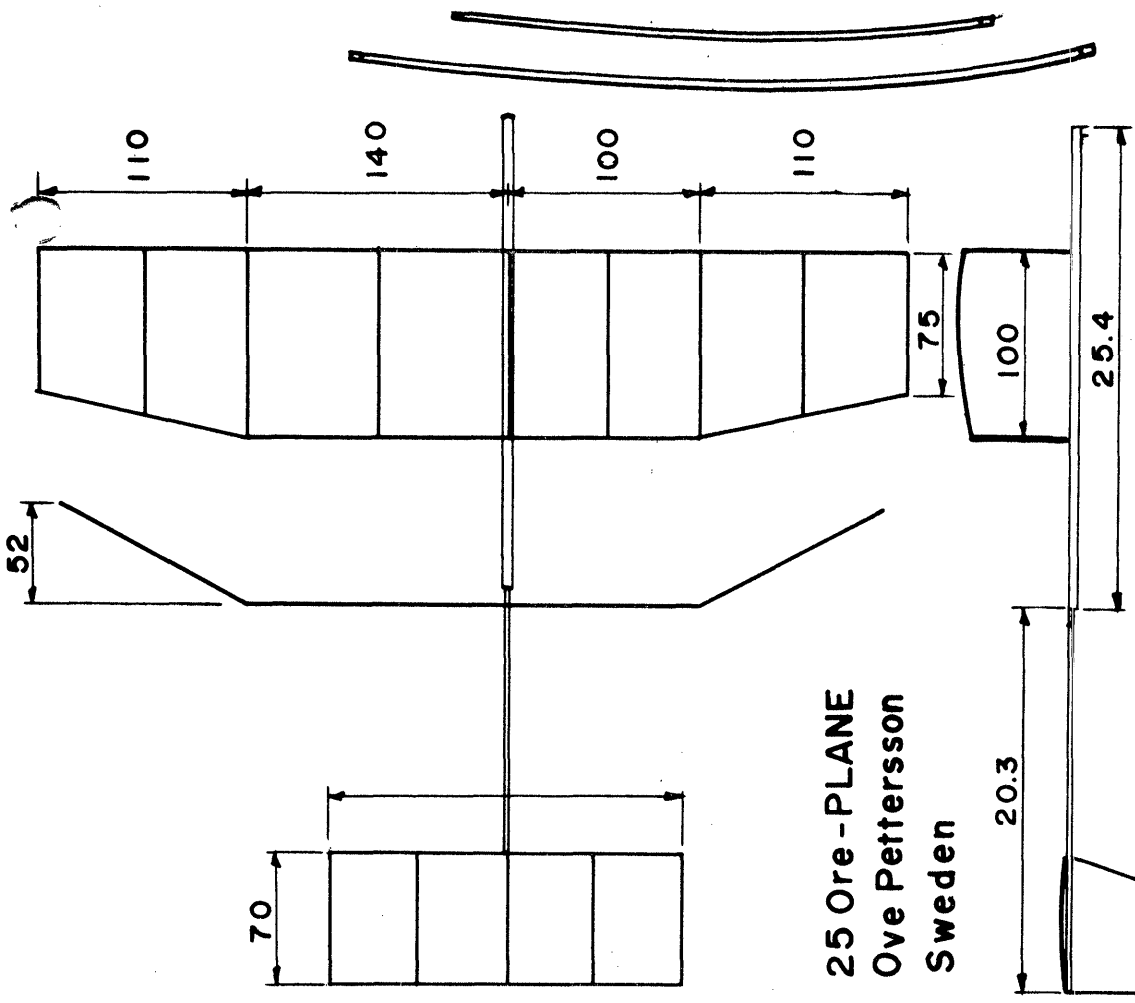
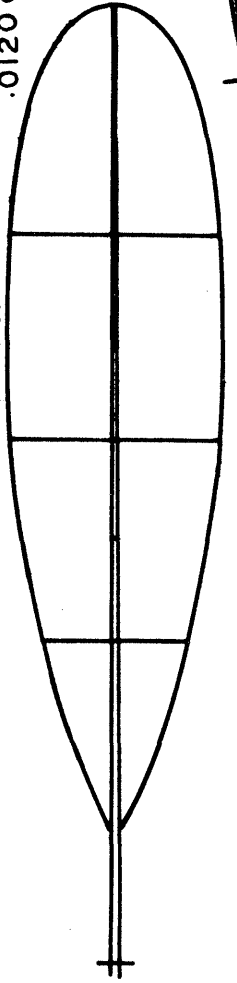


35 cm. RECORD HOLDER
Martin Shepherd
19:40, Cardington

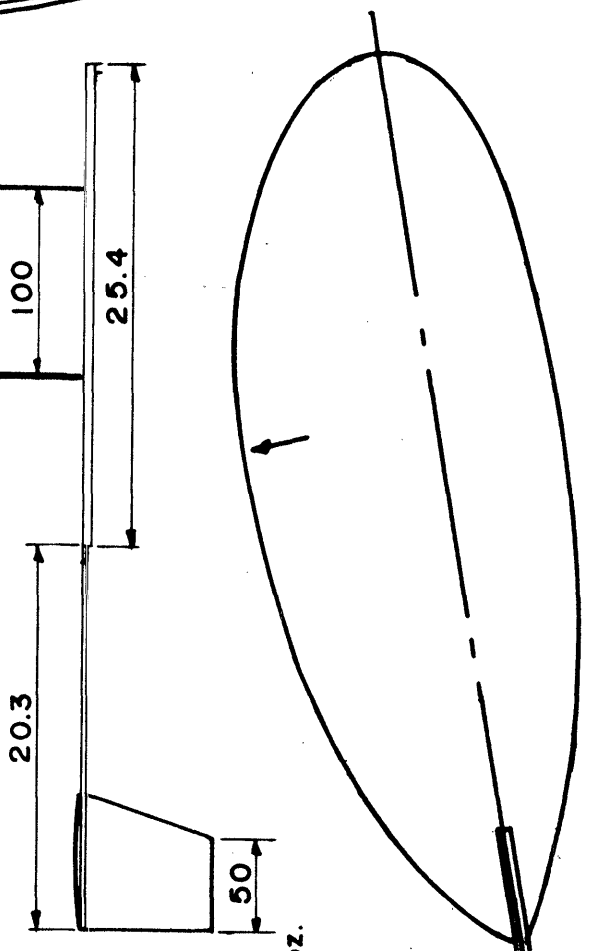


Weights
 Wing .0030
 Fuse .0063
 Prop .0027
 .0120 oz.

i.e.



25 Ore - PLANE
Ove Pettersson
Sweden



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

L. T. MYTINGER, 25 Renfrew Ave., Middletown RI 02840
MIKE REGAN, 18145 Leatherwood Way, Irvine CA 92664

Thank You!

Once again, we received many Christmas cards from many lands. We appreciate these, and the messages of good will. It has become impossible to return these wishes, except in this way. So, we hope that all of you had happy and bountiful holidays, and we wish you the very best for 1974.

New Materials!

Dave Linstrum and Charlie Botich are "pushing" a new material called Fomocore. It is available from artist supply stores, and consists of light plastic foam with light card stock on both sides. It comes in thicknesses from 3/16" to 1/2", in 4' x 8' sheets for prices ranging up to about \$7 per sheet. The thinner versions can be creased and then folded like corrugated cardboard, making it possible to bend and glue model boxes (Elmers Glue or aliphatic resin works best) just as with cardboard - but lighter and prettier. There will be some tricks to using the material, and it is hoped that an article will soon be available to explain the material.

HLG Info Anyone?

INAV has a lot of good HLG fliers in the "audience", but it is seldom that any HLG material comes this way. So, how about it?

Indoor Postal Contest

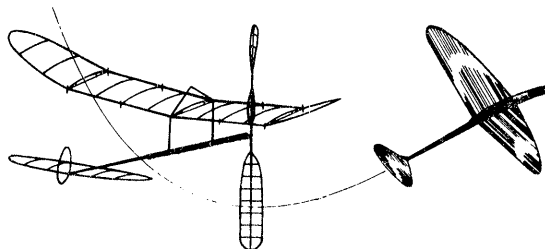
The Midwinter Iceburg Junior Contest will be held during January and February, 1974. It is for fliers thru age 15, and details are available from Richard Whitten, P O Box 176, Wall Street Station, New York NY 10005.

Filati Quality

Ever since the original manufacturers of the rubber strip we still call *Pirelli* sold out to another firm and the product became *Filati*, there has been concern over what the quality of the new product would be. The worst fears of all us "worry-warts" seemed to be proven true as the first shipments of *Filati* seemed to be of shoelace quality. Happily, the manufacturer was eager to work to upgrade their quality, and a shipment received by Ian Kaynes (editor of *FREE FLIGHT NEWS*) seemed to have better characteristics. The best of all worlds would be for us to find a manufacturer willing to work with us to control their quality toward our needs. Because of the very low total usage of rubber strip by all modeling, it is not hopeful. Maybe we can be lucky!

As long-time readers of INAV know, the matter of rubber quality, and how to test for it, has been a concern of mine. Since *Filati* has indicated enough interest to try to meet our needs, we may be able to "close the loop" by telling them which batches meet our needs best. If their production records are good enough to identify processing differences between batches, the result could be custom rubber production to our standards.

Wakefield fliers, especially those with torque-controlled trim which adjusts for differences in rubber hardness, are unanimous in their desire for rubber with the highest possible energy storage capability. Indoor fliers tend to prefer either hard or soft rubber, again with the highest possible energy storage. For all but the highest ceilings, rubber of the proper hardness can be more useful than softer rubber with higher energy. The real problem of giving feedback to *Filati* on rubber quality will be to quickly determine the suitability of any particular batch, or perhaps to route specific batches to either indoor or outdoor fliers, depending upon batch characteristics. If we learn enough about rubber to make the measurements, it will be possible to get the best usage from the rubber we can get. Once again, we should pool all our knowledge on rubber testing!



FAI INDOOR REPORT

The Nov. '73 INAV reported on the apparently secret AMA Executive Council discussions of program proposals by FAI Czar Frank Ehling. The December Club Mailing - #3 since beginning of the discussions - still had no mention of this matter. The December Competition News has a preliminary report (page 8) revealing some Council thinking.

A Sept. 20 Ehling memo asked whether programs should be designed to yield the best team or whether good teams should be sought via programs designed to encourage participation by more modelers. More specifically, the question was (1) pick teams with grass roots participation or (2) without grass roots participation. Favoring (1) were III, IV, V, VI, VII, X AND XI. Favoring (2) were I, IX. Dist. VIII responded without commitment and Dist. II did not respond. Dist. XI also stated that he felt the two concepts were not mutually exclusive.

An Ehling memo on Oct. 16 asked for permission to deviate from established guidelines in establishing new FAI programs. Nine districts granted this permission to deviate from guidelines in forming programs to be approved by the Council, VII said guidelines should be followed and Dist. II did not respond.

At this point, the report mentions the Council mailing reported in the first part of the Nov. '73 INAV comments, but obviously could not report on any results. For those who wish to contact their VP's on this matter, the listing of AMA VP's in the Nov. '73 INAV should be corrected per these election results:

V - Jim McNeill, 617 S. 20th Ave., Birmingham AL 35205
XI - Homer Smith, 1417 NW 191st St., Seattle WA 98177

An Editorial

However dark the picture may seem to many of us, it is heartening to remember that matters mentioned above represent the first FAI decisions in years which conform to By-Law requirements for such decisions. From a personal standpoint, I do not like starting essentially from zero when we had a working setup. I do not like having no say whatsoever in the program makeup. Finally, if I lived in Dist. II (New York & New Jersey), I would be pretty upset that I had not been represented in these decisions. Also, on the brighter side, it is possible that the matter will be reviewed, since my personal grapevine reports that some members of the Council are balking on responding to the ~~the~~ December Ehling memo requesting the Council to designate single site, regional finals or Nats selection for each of the five FAI interest groups.

It is still inexcusable, to my thinking, that HQ has neglected to mention anything of this whole matter until what might have been the final ballot was already in the hands of the Council. I feel certain that the Council had no intent of conducting its business in secret; however, I cannot believe the Council was unaware of the lack of membership communication.

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MISSOURI - Kansas City Area

Two contests are planned in the KC area this winter, with Indoor Scale and beginner events tentatively planned for February. Easy B and Open Stick will probably follow in March. Special awards for the best constructed scale model and the highest "no touch" Indoor Stick time. Contact Roger Schroeder, 4111 W. 98th St., Shawnee Mission KS 66207.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Ave., Union NJ, 7 pm to 10 pm, Jan. 10, Feb. 14, Mar. 14, Apr. 4 and May 9, 1974. Sponsored by Union MAC; contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07025.

NEW YORK - Long Island

Cat. I Record Trials at Boy's Gym of Friends Academy, Locust Valley, L.I., NY, Dec. 29, 1973 and Mar. 23, 1974, 11 am to 5 pm. Gym shoes required. Site is approx. 60' x 72', with shallow peaked roof, max height approx. 33'. Contact J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

PENNSYLVANIA - Philadelphia Area

Indoor contests in Bridesburg Rec Center, Richmond & Ash St., Philadelphia. Jan. 20, Mar. 17, HLG, Indoor Scale, "B" Stick; Feb. 17, HLG, Peanut Scale, "B" Stick. Contact Charles Stiles, IRC Co., Div. TRW, 6th Flr. R&D, 401 N. Broad St., Philadelphia PA 19108.

OREGON - Albany

Indoor contest Jan. 20, 1974, 10 am to 3:30 pm; HLG, Easy B, PennyPlane, Indoor Scale, Indoor Stick, Paper Stick. Feb. 9, 7 pm to 10 pm, Indoor Fun-fly. Feb. 10, Indoor Scale meet 10 am to 3:30 pm. All events at South Albany High School Gym, 3705 S. Columbus Ave., Albany. Site has 42' ceiling to obstructions with 75' x 105' floor area. Bob Stalick, 1120 Shady Lane, Albany OR 97321.

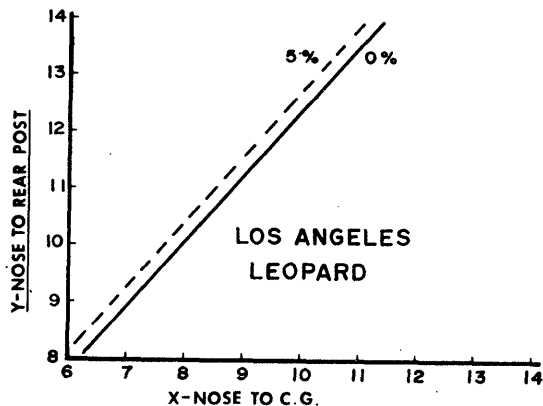
TOP TEN EASY B

Name	Time	Ceiling	Fudge	Score
1. Hal Crane	553.1	20.1'	1.318	728.8
2. Clarence Mather	531.0	22.3'	1.253	715.5
3. Kevin Wehner	431.4*	20.5'	1.307	563.8*
4. Fudo Takagi	445.0	22.3'	1.253	557.6
5. Alan Riches	422.2	20.2'	1.314	554.8
6. Bill Langley	418.0	20.5'	1.307	546.3
7. Bob Platt	393.0	20.1'	1.318	518.0
8. Michael Thompson	347.0	20.0'	1.323	459.1
9. Ted Katsanis	338.0	20.0'	1.323	447.2
10. Bob Leishman	297.0	18.0'	1.394	414.0

STATE OF THE ART

Larry Calliau's "Los Angeles Leopard" won all the marbles at the Tulsa Team Finals, while the Cabin version (just add more dihedral to the wing to lose 5 sq. in. of projected area!) placed third at the '73 Nats. Larry's description of the model: "This is the 12th FAI design I've tried. After going thru a wide variety of models, I came back to a basic design and tried to refine it. I wanted a FAI ship which was simple and easy to build and repair, with no cost of flight efficiency. This ship is the compromise I came up with. It flies as well as any I've tried and is by far the easiest to build. It has less ribs, one-piece compression ribs, primary wing bracing and unbraced stab. I also was looking for a way to avoid long unsupported spars but chose to eliminate excess offset and make the inboard tip a little longer. The model was originally designed for high ceilings, but I finally found a prop/rubber combination that would hang it up in Santa Ana and still give 30 minutes from about 90'. My cabin model is identical to the FAI except for a 10" boom and 17" prop."

The CMOS chart below is for the FAI model, but will work for the cabin model. The only effect will be to give about +3% margin for the cabin model. Larry's CMOS trim was +5.2%, and INP margin was +22%.



INDOOR ELSEWHERE

ARGENTINA - Buenos Aires

The Argentine Indoor Nats were held Apr. 20, 1973.

1. Alberto Barilari	14:49	15:32*	30:21
2. Nereo Begliatto	14:50	14:52	29:42
3. Eduardo Grippo	13:48	14:10	27:58
4. Miguel Leone	10:03	14:10	24:13
5. Domingo Sassone	12:05	10:55	23:00
6. Marcos Molo	5:37	2:54	8:31

HUNGARY - Debrecen

The Fourth Annual Hadju-Cup Contest was held Aug. 17-19, at Kossuth University in Debrecen. 24 entries from five countries, including a 3-man team from Bulgaria, flew in good site conditions. The site is an almost perfect 30 meter cube, with a slightly curved ceiling of stained glass which virtually assures that ceiling scrubbing will result in hangup on the walls.

1. E. Ciapala	Poland	33:34*	31:44	65:18
2. A. Popa	Romania	29:15	31:41	60:56
3. E. Chlubny	Czech.	30:00	30:26	60:26
4. A. Ree	Hungary	30:14	29:53	60:07
5. A. Pospichal	Czech.	28:53	29:06	57:59
6. G. Buzady	Hungary	28:37	28:40	57:17
7. J. Hrdlicka	Czech.	28:00	28:41	56:41
8. O. Hints	Romania	26:39	28:21	55:00
9. S. Kujawa	Poland	26:57	27:28	54:25
10. A. Egri	Hungary	25:34	27:21	52:55

*Ciapala's flight is an absolute flight for the site, as well as a new Polish national record.

One sad note from Hungary - Geza Varazegi, past member of Hungarian teams to 3 WCh's, and well known to many fliers in Europe, died at age 70. He will be missed by many people all over the world who knew him.

POLAND - Wroclaw

The Polish Indoor Nats were held in Wroclaw Oct. 7, 1973.

1. E. Ciapala	Slaski	22:49	27:35	50:34
2. R. Czechowski	Krakow	22:53	26:02	48:55
3. S. Kujawa	Poznan	24:10	24:35	48:45
4. S. Bombol	Wroclaw	20:44	24:05	44:49
5. J. Kapusniak	Bydgoszcz	21:30	22:57	44:27
6. S. Zurad	Wroclaw	21:45	20:49	42:34
7. S. Sierko	Bydgoszcz	18:17	19:17	37:34

CZECHOSLOVAKIA - Brno

The Czech team for 1974 was chosen from the results of three meets held in Z Hall in Brno. The Team will consist of Karol Rybecky, Jiri Kalina and Eduard Chlubny, with J. Jirasky as alternate.

National meet, June 30, 1973

1. K. Rybecky	31:58	31:15	63:13
2. J. Kalina	29:17	28:43	58:00
3. E. Chlubny	26:09	26:37	52:46
4. Pospichal	21:46	25:31	47:17
5. Koutny	27:42	19:26	47:08

International Meet, July 14-15, 1973

1. E. Ciapala	Poland	32:42	30:54	63:16
2. K. Rybecky	Czech	31:28	29:14	60:42
3. Sora	Romania	27:32	28:14	55:46
4. A. Popa	Romania	26:55	28:41	55:36
5. J. Kalina	Czech	29:57	24:42	54:39
6. E. Chlubny	Czech	26:40	27:54	54:34
7. Koutny	Czech	27:42	25:50	53:32
8. Donia	Romania	26:10	27:03	53:13
9. Czechowski	Poland	26:28	25:26	51:34
10. Pospichal	Czech	22:36	24:28	47:04
11. Holtier	Romania	24:44	22:07	46:51

National Meet, Nov. 10-11, 1973 (poor conditions)

1. J. Jirasky	25:53	32:30	58:23
2. R. Cerny	21:25	29:15	50:40
3. Hrdlicka	22:06	22:55	45:01
4. Sedlar	25:16	18:43	43:59
5. Kalina	26:46	16:34	43:20

CONTEST RESULTS

CANADA - Port Coquitlam, B.C.

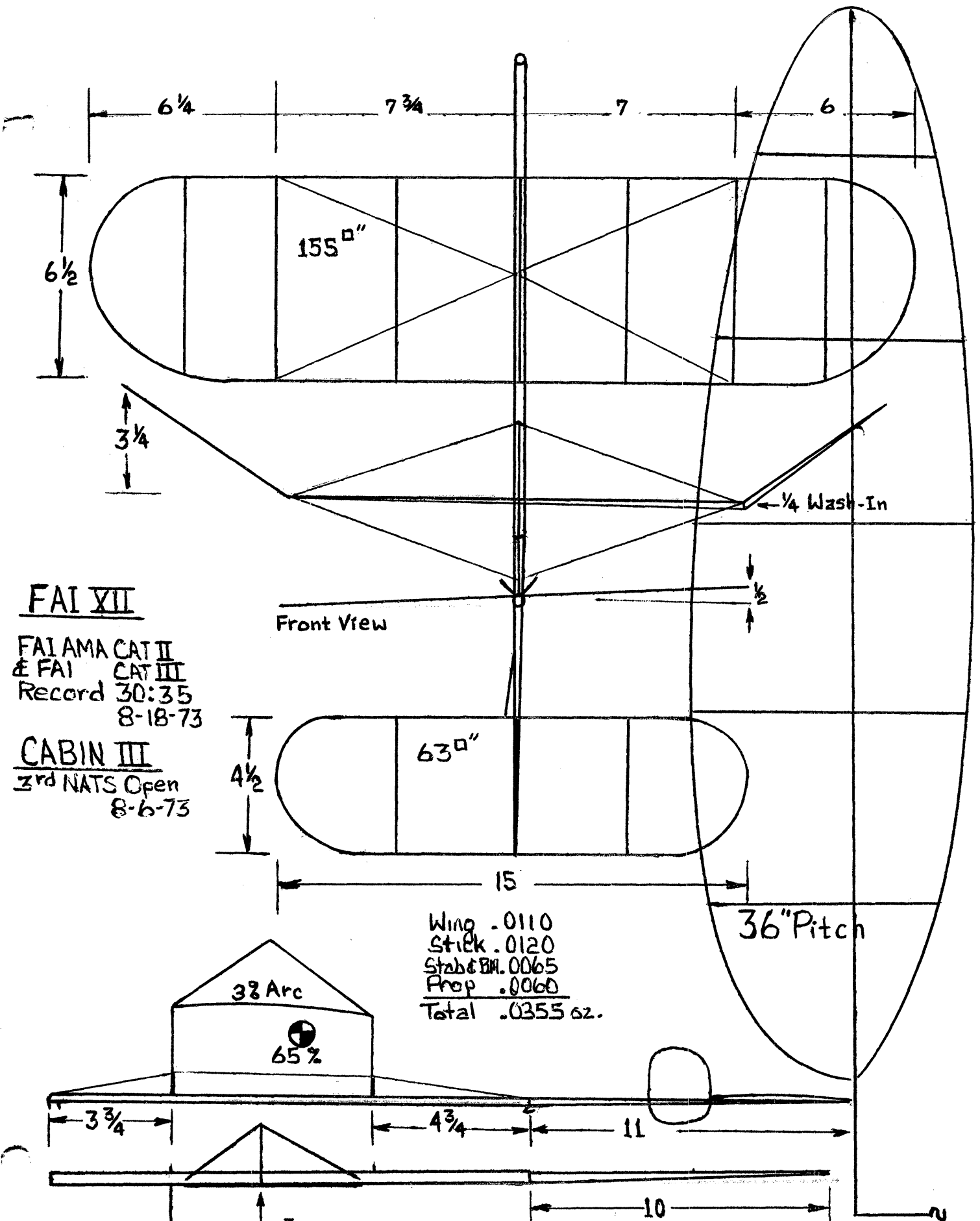
Fall Indoor Meet, Oct. 21, 1973, PNE Agrodome 90'

FAI Stick

1. Phil Walden	15:13.6
2. Bruce Matthews	12:49.2
3. Walt Windberg	12:45.6

PennyPlane

1. Pete Frattinger	6:10.6
2. Bruce Matthews	5:25.0
3. Dave Van Dieren	2:54.4



FAI VII
 FAIAMA CAT II
 & FAI CAT III
 Record 30:35
 8-18-73
CABIN III
 3rd NATS Open
 8-6-73

Los Angeles Leopard
 By Larry Cailliau

Indoor Scale

1. Walt Windberg 174.8
2. Dennis McLellan 120.6
3. Dave Van Dieren 106.65

HLG

1. Rick Lim 93.8
2. Bruce Matthews 89.2
3. Phil Walden 86.6

ILLINOIS - Chicago

Chicago Aeronauts Indoor Contest - Nov. 4, 1973
 Brig. Gen. R. L. Jones Armory, 90' ceiling

Junior HLG

1. Mario Moranetz 36.3
2. James Mackey 11.2
3. Jim Loribecki 6.0

Senior HLG

1. Bob Hayes, Jr. 129.9
2. Keith Gordey 95.2
3. Kurt Burg 56.6
4. Tom Grabera 46.1

Open HLG

1. Chuck Markos 127.5
2. Bob Watson 118.5
3. Dick Swenson 104.5
4. John Jensen 102.7
5. Phil Sullivan 102.1

Junior PennyPlane

1. Dan Brown 8:33.5
2. Tim Noonan 6:41.0
3. Mindi Linstrum 5:12.0
4. Jim Loribecki 4:25.0
5. Bill Black 4:25.0

Senior PennyPlane

1. John Loribecki 5:52.0
2. Keith Gordey 5:14.7
3. Kurt Burg 3:27.0

Open PennyPlane

1. Hank DeKat 9:02.5
2. Bob Hayes, Sr. 8:57.0
3. Steve Brown 8:34.0
4. Howard Haupt 7:21.0
5. Jim Harte 6:54.8

Junior Paper Stick

1. Bill Black 5:35.1
2. Jim Loribecki 5:05.0
3. Carl Linstrum 1:51.8

Senior Paper Stick

1. Keith Gordey 8:43.1
2. Kurt Burg 7:43.0
3. John Loribecki 4:38.0

Open Paper Stick

1. Gordon Wisniewski 15:51.0
2. Charlie Sotich 14:51.0
3. Chuck Markos 14:48.0
4. Howard Haupt 11:09.0
5. George Bucic, Sr. 8:40.6

A 10:1 INDOOR WINDER

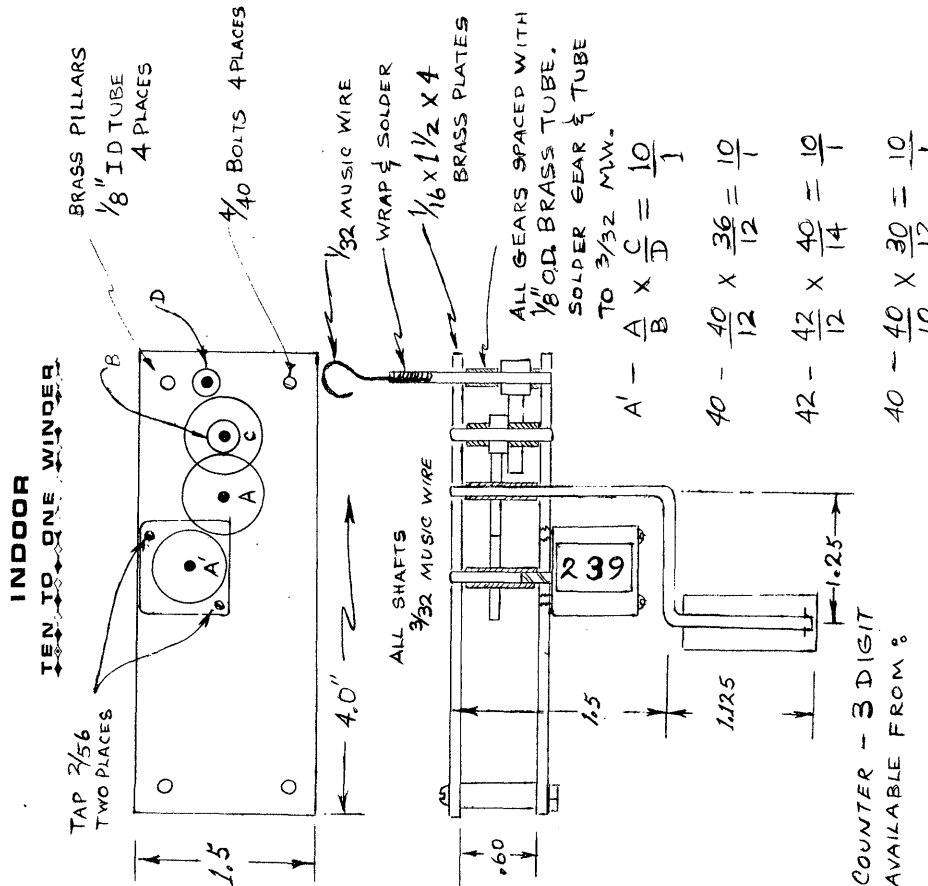
by Dennis Jaecks

Study the drawings carefully to become familiar with the design and construction, then study these notes for further hints.

1. Select the parts to be used. Gears are available with either 5-40 thread or 1/8" ID posilock; both work well.

1. Pinions are all 3/32" ID press fit (drill out 5-40 threads).
2. Tape the brass plate sides tightly together to drill holes for the corner spacers. After drilling, bolt the sides together temporarily.
3. Drill the hole for the output gear shaft (3/32" dia.) - location is not critical.
4. Make up a 3/32" music wire centerpunch. Slide punch thru 1/8" brass tubing and gear "C". Line up spacing with pinion "D"; punch & drill hole.
5. Temporarily mount pinion "C", locate & drill hole for gear "A".
6. Locate & drill hole for gear "A".
7. Separate brass plates and check gear spacing by temporarily installing gears and shafts.
8. Carefully check to get the proper side, then drill 1/4" hole for the counter shaft.
9. Make up 4 brass pillars .6" long x 1/8" ID.
10. Assemble winder and check alignment.
11. Remove two case screws from the counter and drill the frame to clear 2/56 bolts. Tap the counter 2/56 to proper spacing and mount counter.
12. Cut 1/8" OD brass tubing spacers to hold the gears in proper alignment; install on shafts.
13. Make crank with wood or teflon handle; solder washers to hold handle in place.
14. Check all parts for fit and alignment, then solder parts together using acid core solder. Clean parts thoroughly and oil.
15. A thrust washer on the output shaft is optional; if used, install it now.
16. Add 1/32" music wire hook; shape to suit and polish whole hook thoroughly.

The winder plus counter is a must for serious flying. This design has two minor drawbacks; the counter must be zeroed by cranking, and you must remember when the number of turns exceeds 1000 or 2000.



ALL GEARS SPACED WITH 1/8" OD BRASS TUBE. SOLDER GEAR & TUBE TO 3/32" M.W.

$$A' - \frac{A}{B} \times \frac{C}{D} = \frac{10}{1}$$

$$40 - \frac{40}{12} \times \frac{36}{12} = \frac{10}{1}$$

$$42 - \frac{42}{12} \times \frac{40}{14} = \frac{10}{1}$$

$$40 - \frac{40}{10} \times \frac{30}{12} = \frac{10}{1}$$

COUNTER - 3 DIGIT AVAILABLE FROM:

FAIR RADIO SALES CO.
 1016 EAST EUREKA ST.
 P.O. BOX 1105
 LIMA, OHIO 4582
 PHONE (419) 223-2196

ALL GEARS BRASS SLOT CAR TYPE: K4B CHALLENGER ABOVE ARE SOME GOOD GEAR COMBINATIONS.

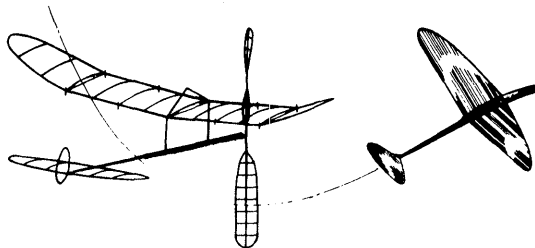
COST 75¢ ea - MIN ORDER \$3.00
 SO ORDER 4 UNITS AND ADD 75¢ POSTAGE - PART CATALOG # CAS334

DMJAECKS
 2-24-73

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

CECIL DAVIS, Jr., 6624 W. 72 Terr., Overland Pk. KS 66204
KEITH GORDEY, 2901 Prairie Dr., Brookfield IL 60513
HARVEY K. LICKSTEIN, 1252 Magee Ave., Philadelphia PA 19111

Recent Publications

FAT CAT IV, by Bob Randolph, is the story of Bob's cabin model which holds or has held all three Open Cabin records, plus being the first cabin model to reach 30:00. The article appears in the Feb.'74 MAN, and continues a pattern of indoor recognition by that magazine which has not been equalled by any other magazine. Thanks to Bob and MAN!

Indoor Sites

A hobby sideline enjoyed by several NIMAS members is to note various buildings and structures around the U.S. that might be suitable for indoor flying. In recent months, several people including indoor pioneer Bill Tyler have noted that the big Goodyear Aerospace airdock, near Akron, Ohio is being put up for sale. This site, with its 185' inside height, was the site of the 1934 Nats where Carl Goldberg's landmark 22:59 flight was made.

Ed Whitten has noted two such sites - the new sports dome near New Orleans, La., and the Savannah, Ga. Civic Center Auditorium. Both these sites are worthy of investigation - there is a shortage of sites in the South!

FAI INDOOR REPORT

Council Decision Deferred

A rising note of concern, sounded by both FAI fliers and Executive Council members, has resulted in a decision to wait until the March 9 Executive Council meeting to complete discussion of authority to be granted to Frank Ehling. He was appointed as chief FAI administrator at the '73 Nats Council meeting. Since then, efforts have been under way to define exactly his duties and authority. Considerable background on this matter appears in the past two issues of INAV, and those who have an opinion on what should be done should contact the AMA VP for your own AMA district. Do this well before March 9, 1974!

The Team Concept

Many of Europe's finest indoor fliers do most of their flying as part of a team, with a team representing their country at international meets all year. In contrast, U.S. team members fly together as a team only once - at one WCH - and may never have met until they assemble for their trek to the WCH.

Is it possible - and worth the trouble - to restructure U.S. team selection programs to cause most or all of the competition to take place in the context of rival team activity? This might be difficult for some areas in Indoor, but most areas of FAI FF activity have enough fliers to permit formation of teams.

As background to this idea, the Aug. '73 INAV aired Bill Shailor's request for both team and individual competition in FAI. The same issue had a challenge from Bud Tenny, Jim Clem and Jimmy Clem to any other team in the South. This was answered by Stan Chilton, Bob Dunham and Bobby Dunham in the next issue, and Bob Dunham offered to host a team competition with 1st place prize of \$100. So far, the required number of teams haven't entered Bob's meet, and the two teams mentioned haven't met. Even so, the team competition idea seems to be nearing its time, in the South at least.

NIMAS POSTAL MEET

The 9th Annual NIMAS Postal Meet will be open for entry through April 15, 1974. All flights made as part of a sanctioned indoor meet from Jan. 1 through April 15 are eligible, as are flights made in informal sessions between now and Apr. 16, provided these flights are made in accord with AMA rules.

Events: Easy B: paper covered only, solid motor stick and boom, with unbraced surfaces.

HLG: AMA Rules except two ceiling classes. Class I - 18' to 25'; Class II - 25' 1" to 35'.

PennyPlane: Chicago Aeronauts rules except ceiling contact permitted; use FAI ceiling measure.

Team Competition: Entry for three-man teams only, with one Junior minimum on team. Scoring by team total, fudged to 35'. Enter in Easy B and/or PennyPlane; times for team can also be used for individual entry if desired.

Ceiling Dodger: Any class indoor model, flown by AMA Rules except flight must not touch ceiling or obstructions. Exception: models landing on obstructions during descent are not disqualified. The intent of the event is to encourage model development; the principle governing a decision is that obstacle contact must not limit the model's climb in any fashion. For example, a model which drifts into a wall during descent, then slides to the floor would not be disqualified.

General Rules: Entry fee 15¢ per event, stamps preferred. Separate events may be flown at different sessions, but all flights for a given event (including team entry) must be flown on a given day. Please note ceiling height for each entry, using FAI ceiling measure. Ceiling height is used to compute fudge factors (see below) to equalize ceiling heights. Separate classes for Juniors in each event, with awards for high placing Seniors. Anyone may enter. Send entries to Box 545, Richardson TX 75080.

RECORDS? MAYBE!

Thermal Thumbers Record Trials, Dec. 22-23, 1973 Cat. III
Santa Ana MCAF, California
Junior Paper Stick - 13:52.4, Ken Bauer
Junior Ornithopter - 0:16.5, Ken Bauer
Junior HLG - 2:04.5, Ken Bauer
LIAMAC Indoor Record Trials, Dec. 29, 1973, Cat. I
Junior ROG Cabin - 4:32.4, Richard Whitten
Senior A ROG - 4:44.8, Ronnie Stransky

CONTEST CALENDAR

POSTAL MEET - U.S.A.

Midwinter Iceburg Junior Contest, Jan. & Feb. '74.
HLG, A ROG, Indoor Stick; for fliers thru age 15. Write Richard Whitten, P O Box 176, Wall St. Station, New York NY 10005 for details.

CONNECTICUT - Glastonbury

Indoor sessions Jan. 30, Feb. 26, Mar. 12, Apr. 2, May 7 and June 4, 1974, 7 pm to 9:30 pm. Also on Sundays Jan. 20, Feb. 17, Mar. 17, Apr. 21 and May 12, 1974, 8 am to noon. Sessions at Glastonbury High Gym. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06037.

FLORIDA - Miami

Indoor contest at Goodyear Blimp Base, Opa Locka Airport, Jan. 20, 1974. Contact Br. John Martin, 3227 Darwin St., Miami FL 33133.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gynnasium, Vassar St. and Mass. Ave., Cambridge Mass. (use Vassar St. entrance). Jan. 30, Feb. 26, Mar. 12, Apr. 6, 1974, 6 pm to 9 pm. Indoor contest, May 4, 1974, 10 am to 7 pm; Indoor Stick, HLG, Indoor Scale, Peanut Scale, PennyPlane and Delta Dart. Contact Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778.

ILLINOIS - Chicago

Indoor contest Jan. 19, 1974, 9 am to 4 pm, at Madison St. Armory, 2653 Madison St., Chicago. Paper Stick and Indoor Stick. Pete Sotich, 3851 W. 62nd Place, Chicago IL 60629. Same site is available for indoor sessions each Sunday thru Apr. 28 except for Jan. 27, Apr. 14, Apr. 21, 1974 from 9 am to 4 pm.

MISSOURI - Kansas City Area

Two contests are planned in the KC area this winter.

with Indoor Scale and beginner events tentatively planned for February. Easy B and Open Stick will probably follow in March. Special awards for the best constructed scale model and the highest "no touch" Indoor Stick time. Contact Roger Schroeder, 4111 W. 98th St., Shawnee Mission KS 66207.

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NEW JERSEY - Lakehurst

Second Annual East Coast Indoor Contest, July 21, 1974 at Lakehurst NAS. Indoor Stick, Easy B, HLG, Peanut Scale and PennyPlane. Sal Cannizzo, 20 Outerbridge Ave., Staten Island NY 10309.

NEW YORK - Long Island

Cat. I Record Trials at Boy's Gym of Friends Academy, Locust Valley, L.I., NY on Mar. 23, 1974, 11 am to 5 pm. Gym shoes required. Site is approx. 60' x 72', with shallow peaked roof, max height approx. 33'. Contact J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head NY 11545

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STATE OF THE ART

Dennis Jaecks won PennyPlane at the Nats for three years straight. His '71 winner was presented in the Dec. '71 INAV; it had a 6" chord. He won in 1972 with an 8" chord model quite similar to the one presented here, except for a smaller stab. His comments on this model are: "This version with the increased stab area is much better than my '72 design. I think a wing with 6% arc should be used for medium low ceiling, and anytime the model climbs as much as it did at the '73 Nats."

Several things should be noted on the plan. First, Dennis has firmly settled for +4% margin for PennyPlane (CMOS balance method; see Jan. '73 INAV). However, he has presented a formula on the plan which replaces the usual chart. Instructions for the formula: Balance the model completely assembled except for wing (motor installed) and measure "B". Calculate "A" according to the formula and install the rear socket. Wing washin/washout is made by skewing the wing posts. Note also that part of the trim is left thrust and downthrust. Finally, note that Dennis' original concept of building a light model and adding ballast was carried out here.

TRIPLE-WHAMMY FOR RUBBER!

Between the chart below and the two on page 4, all you need to know is right at your fingertips - except for the quality of your rubber. All the charts are based on data worked up by Charlie Sotich; the Rubber Weight chart was prepared by Dennis Jaecks from Charlie's data, and Charlie designed the other charts.

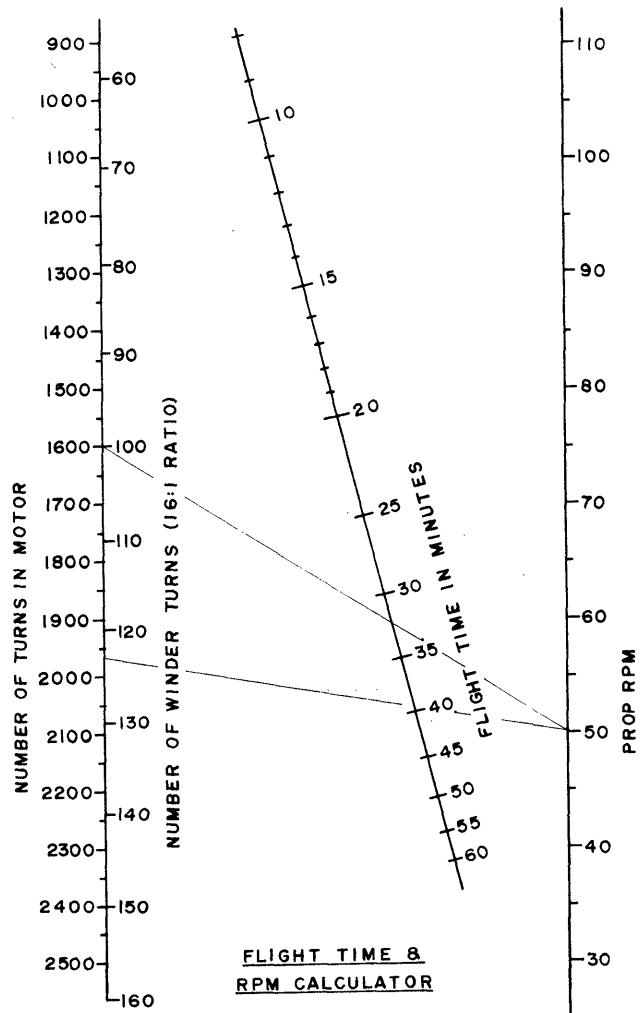
To use the Triple-Whammy, begin with model weight and multiply by 1.2; convert to ounces if model weight was in grams. Select a loop length (for new rubber) 15% longer than the hook distance on your model. With the weight and loop length known, draw a straight line between these two quantities on the Rubber Weight chart; the line will intersect the Thickness (strip width) line to give rubber size. From Pirelli Parameters, note the turns/inch and go to the Flight Time/RPM chart below. Multiply the loop length x turns/inch (this is max turns); draw a line from max turns to the average RPM performance of your model. This line will intersect the Flight Time line at some number of minutes which represent the flight time in an unlimited ceiling on a flight that uses 100% of the turns.

Now come the fudge factors! A time-proven rule-of-thumb for rubber usage is that a well-adjusted model with properly chosen rubber will land with about 10% of take-off turns. Leave about 5% margin in max turns for winding safety - unless you have to go-for-broke. In that case, have spare motors in hand when you call for a timer! In less than unlimited ceilings, max turns will also result in too much take-off torque.

The problem of excess launch torque must be dealt with by experimentation, after a preliminary test session using motors chosen from chart-aided guesses. Note the launch torque and altitude and double-check average RPM (turns used divided by flight time). For every launch, wind to nearly max turns, then back off turns to the desired level of torque. For a given rubber weight in stable air with no inversion layer, small changes in launch torque will give approximately proportional changes in altitude.

To put it all together, let's assume a 15" hook length on a model weighing .035 oz., which has a 50 RPM average on the day in question. $1.15 \times 15" = 17\frac{1}{2}"$; $1.2 \times .035 = .042$ oz. On the Rubber Weight chart, this line falls almost on .050" rubber. From Pirelli Parameters, .050 rubber gives 132 turns/inch. $17\frac{1}{2} \times 132 = 2320$ turns max. Allow 5% for winding safety and 10% turns left; $.85 \times 2320 = 1970$ turns. From the Flight Time chart, 1970 turns and 50 RPM average = almost 40 minutes (unlimited ceiling). Using the max torque/launch torque ratios I used at Tulsa, we could assume that after winding to 1970 turns, it would be necessary to back off to 1600 turns to avoid ramming the ceiling too hard. From the same chart, 1600 t. @ 50 RPM ave. would give about 32 minutes - almost in line with Team Finals results. Since my model was overweight and out of trim, it presumably needed a higher torque ratio than a well-trimmed one gram model, which would account for the inflated duration prediction.

Refer again to Pirelli Parameters. That same piece of .050 pirelli indicates (bottom line) relative torque of 3. This information is useful mainly in choosing new sizes of rubber if the model deadsticks (loop too short or strip too wide), or if it lands with too many turns (loop too long or strip too narrow). If a change is made from .050 pirelli to .055 - 10% larger - the relative torque changes by 5/30 or 16.6%. There are two possibilities for the new loop - same length or same weight. With a $17\frac{1}{2}"$ loop, the weight increases by 8.3% and turns decrease by 5%. With the same weight, the length decreases to $16\frac{1}{2}"$ and max turns decrease to 2080 or down 10%. Thus, with experience it is possible to quickly pinpoint needed changes in rubber size to match a given model to the flying site.



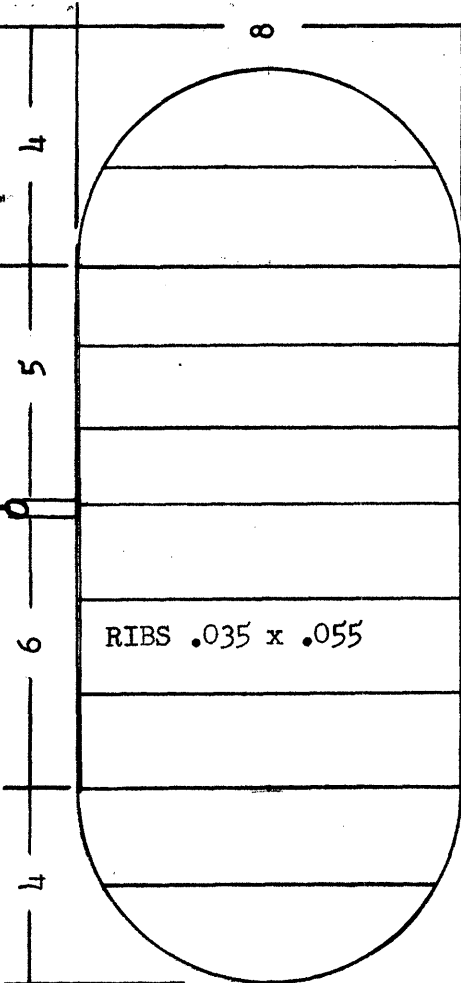
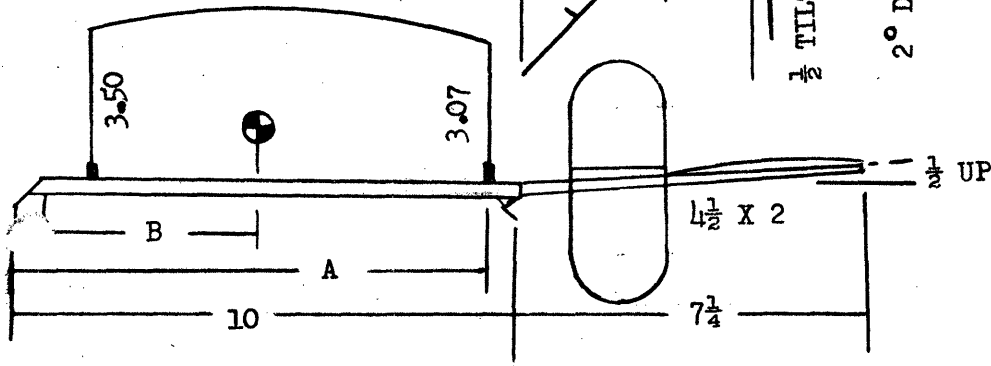
PENNY PLANE

BODY & TAIL - .34 p
 WING - .36 p
 PROP - .25 p
 NOSE WT. - .05 p

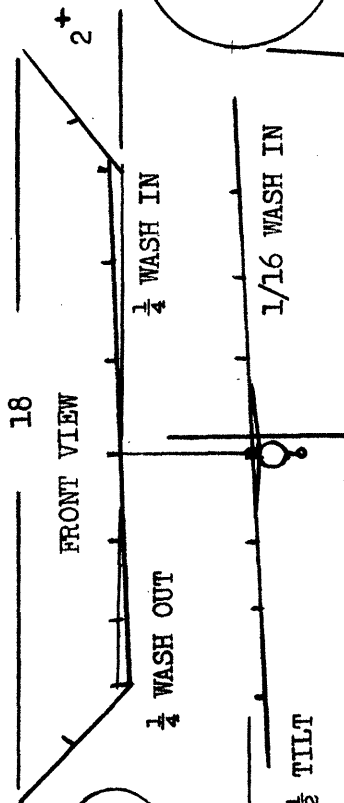
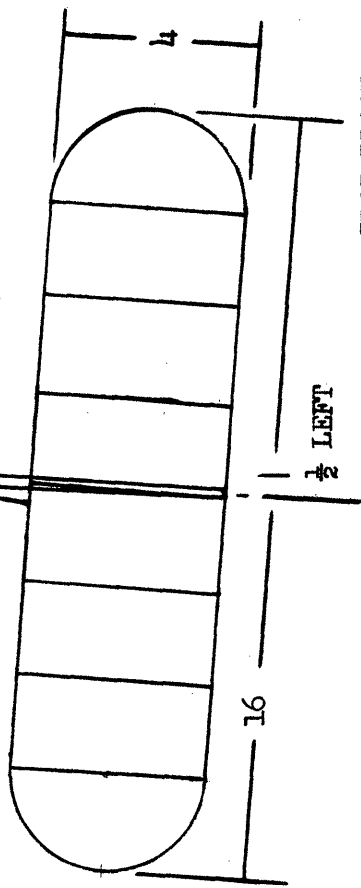
POWER .100 X 18 @ .79 p - 1450 TURNS
 TIME 12 MIN. 19 SEC. FIRST 1973 NATS

BODY .025 ROLLED ON .220 FORM
 TAIL BOOM .015 ROLLED

CMOS (4%) A = B x 1.2 + 2.5



MICROLITE COVERING
 AIRFOIL 4% - 25" R.A.RCH.
 (WING & H. STAB.)



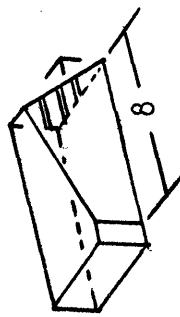
OUTLINES
 RUDDER .040 x .040
 STAB .040 x .050
 LE & TE .055 x .080
 TIPS .040 x .055

THRUST
 2° DOWN & LEFT

1/2 TILT

PROP BLOCK

3 x 1 3/4 x 10



PROP HUB: SIX TURN TISSUE TUBE 3/32 ID x 1
 3/32 BOUND SPAR WITH 1/4 LONG I.D. PLUG.

17 D x 27 P .025 "C" GRAIN
 WARP ON PROP BLOCK

NOTE: SKEW WING POSTS TO OBTAIN
 WASH IN & WASH OUT.

SLOT PROP BLADE TO ACCEPT SPAR.

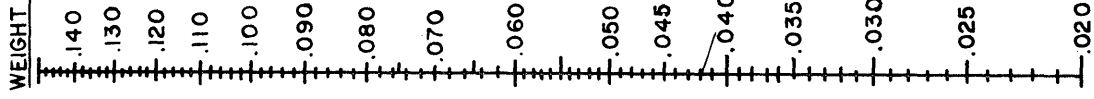


.015 M.W.

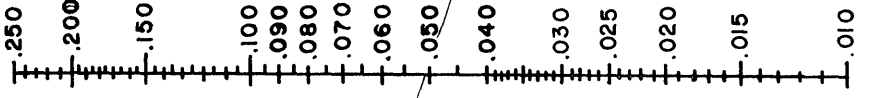
RUBBER WEIGHT FOR ONE LOOP

$$W = .046 T \times L$$

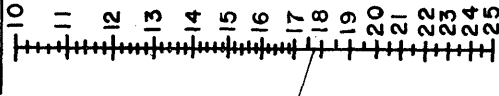
WEIGHT OUNCES



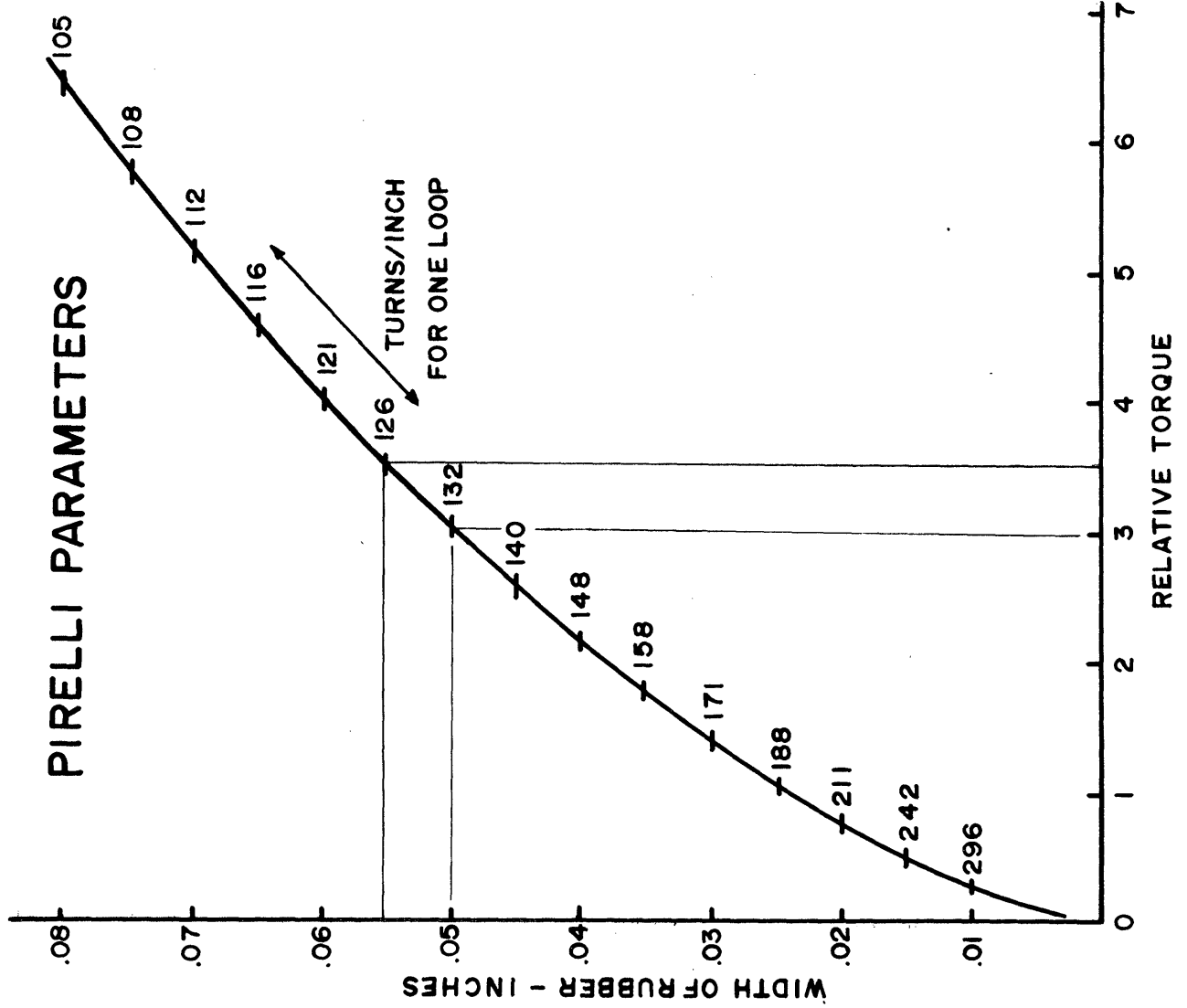
THICKNESS



LENGTH INCHES



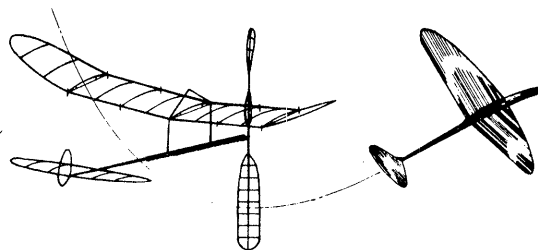
PIRELLI PARAMETERS



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

DANA ROSS, 2426 Gower, Los Angeles CA 90068
SCOTT SOUTHWELL, 2519 N. Brookdale Ct., Appleton WI 54911
WALTER YEIDER, 1323 Sunset Blvd. Cody WY 82414

Change of Address

Dave Linstrum has moved to a sunnier clime - but he denies having cold feet! His temporary address:

Dave Linstrum
P O Box 4850
Jacksonville FL 32201

Boyd Felstead III

Boyd Felstead is in the hospital, and wished others to know why correspondence from him may be greatly delayed. It also seems likely that he will not be able to attend the '74 WCh, which is a great disappointment. He will enjoy cards and letters which can be sent to his home address:

Boyd Felstead
10 Watson Ave.
Wahroonga, NSW
Australia 2076

New World Record

Edward Ciapala's 33:34 flight at the Aug. 17-19, 1973 Hadju Cup meet (Debrecen, Hungary) has been homologated as the new Cat. III World Record for Class Fid (Indoor).

Harlan's Machine Shop

Ray Harlan's latest specialty product is an aluminum thrust bearing, of the type which mounts below the motor stick. Two sizes are available, both 7/16" front to rear; one drops the thrust line .1" below the bottom of the motor stick, and the other gives .125" clearance between the shaft and stick. The major advantage of the bearings is that the clever construction allows the prop shaft to snap into place at the rear, which gives positive alignment and no possibility of becoming disengaged. Weight of the bearings is .00075 oz., and the cost is 75¢ each. Ray's address is 15 Happy Hollow Rd., Wayland MA 01778.

Ernie Kopecky Trophy

The East Coast Indoor Modelers Club is sponsoring an International Trophy, to be awarded for the highest individual time at the '74 Indoor WCh. Outside contributions will be accepted for this trophy which will perpetuate the memory of Ernie Kopecky and his contributions to Indoor over the years.

Recent Publications

The Jan. '74 MODEL BUILDER has Larry Renger's very entertaining and informative article "Boxy". The plans to this glider have appeared in INAV in the past, but Larry has added many good flying and trimming hints.

In case it has slipped past you as it did me, MODEL BUILDER is rapidly developing into an excellent magazine. The "contributors" (functionally, they serve as specialty editors) are all good writers/active modelers and all do an excellent job. The most attractive and significant single attribute of MB is the fact that each issue seems to attain a balance of coverage (of specialty interests like FP, CL, RC and Indoor) better than all the other "giants" combined.

'74 Nats

Apparently, the Nats is now sporting a new "handle" - the HQ bulletin carried the title "1974 National Miniature Aircraft Championships". Also new is a projected 12 day flying schedule, with two complete, two-day Indoor meets! All this is subject to AMA Executive Council approval (due during the Mar. 9, 1974 meeting at Lake Charles, La.) Anyway, pending final contract with Goodyear, the blimp hangar at Houston will be the scene of HLG, AMA Scale and

Peanut Scale on Sunday, Aug. 4; Indoor Stick, Paper Stick Indoor Cabin and FAI Stick will follow on Monday, Aug. 5.

Meanwhile, back in Lake Charles, La., the Civic Center will house the same indoor events as Monday, Aug. 5 with Easy B added, on Tuesday, Aug. 6. On Wed., Aug. 7, the Civic Center will feature HLG, AMA Scale and Peanut Scale. It is rumored that PennyPlane will also be held Aug. 7, but this was omitted from the AMA schedule, presumably because PennyPlane, if held, will again be sponsored by some NFFS-affiliated group.

Only events listed as Official Events in the Rule Book will contribute toward champs points, so presumably Indoor Champs contenders will only be able to declare 3 events as in previous years. (The rule states that not more than 1/2 the events in a category can be declared, with fractions being rounded up. Thus, previous Nats had 5 events with 3 able to be declared. With FAI Stick added, the total is 6 events, half of which can be declared.)

It is hoped that more site details will be available for future issues, but the Goodyear hangar is about 100' ceiling, and the Civic Center is about 55' high.

Renewal Reminder

Those subscribers who have "03" in the upper lefthand corner of the address block on this issue are due to renew after this issue. Advance renewal saves a lot of time here on "newsletter night", and is appreciated.

FAI INDOOR REPORT

World Champs Schedule

The latest word, subject to possible revision, is that "official" housing (on base, presumably) is available only for contestants and officials. The tentative schedule is:

1. Practice flying at least all day Tuesday (July 2); possibly also on Monday for early arrivals.
2. Official WCh flying on Wednesday, Thursday and Friday.
3. Indoor Banquet Friday night, including WCh awards.
4. Open international flying on Saturday and Sunday.
5. General Banquet Sunday night - windup of all activities; indoor and otherwise.

CONTEST CALENDAR

CALIFORNIA - Santa Ana
Indoor contest Mar. 24, 1974, 10 am to 4 pm, at Santa Ana MCAF. IHLG, Paper Stick, PennyPlane. Trophies to 3rd place. Test flying at Santa Ana Feb. 17 and Mar. 23. Bob Gibbs, 161 Larkwood Circle, San Ramon CA 94583

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Indoor sessions sponsored by Union MAC; held at Livingston School on Midland Ave., Union NJ, 7 pm to 10 pm, Mar. 14, Apr. 4 and May 9, 1974. Contact Dan Domina, 1229 S. Long Ave., Hillside NJ 07205.

NEW YORK - Long Island

Cat. I Record Trials at Boy's Gym of Friends Academy, Locust Valley, L. I., NY on Mar. 23, 1974, 11 am to 5 pm. Gym shoes required. Site is approx. 60' x 72', with shallow peaked roof, max height approx 33'. Contact J. G. Paillet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

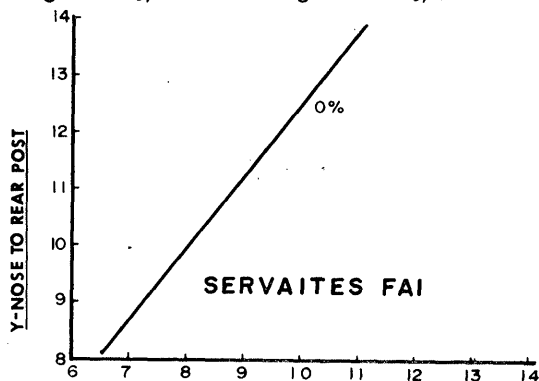
PENNSYLVANIA - Philadelphia

Indoor contest in Bridesburg Rec Center, Richmond & Ash St., Philadelphia, Mar. 17, 1974. HLG, Indoor Scale, "B" Stick. Contact Charles Stiles, IRC Co., Div. TRW, 6th Flr. R&D, 401 N. Broad St., Philadelphia PA 19108.

STATE OF THE ART

Bucky Servaites won a berth on the 1974 U.S. Indoor with the model design presented this month. Although he showed no name on the drawing, his remarks suggest a name: "The model could be called Copy Cat since I copied various other ships for its composition. The wing and stab outlines are from Joe Bilgri (Feb. '72 INAV). The rudder and wire front end assembly are those of Jim Richmond, and the prop outline is that of Pete Andrews (Feb. '73 INAV). The prop has a good amount of flex. The wire front end is a little more difficult to construct than the conventional dural type, but I believe it is lighter and much stronger."

Bucky's balance scheme resulted in the model's having CMOS margin of +3% and INP margin of 12.5%.

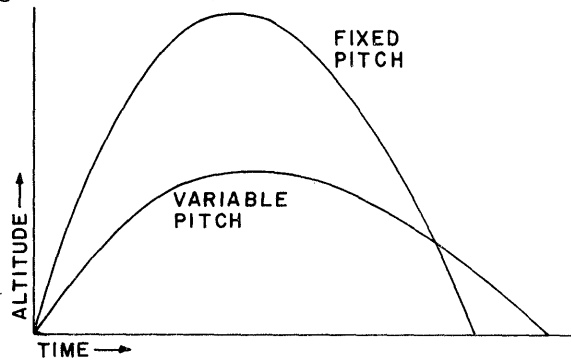


DESIGN FOOTNOTES

Jeff Annis designed a prototype of the torque variable prop shown on page 4 as a college engineering project. The version shown is a working model PennyPlane prop which enabled him to get 5:22 with no touch (max altitude 20') with his PennyPlane. Perhaps someone else has similar performance, but personal experience leads me to believe this is unusual time for the altitude.

The basic effect of such a prop is illustrated in the sketch below, and is exactly what one would expect from this type of device. That is, the full-torque climb rate is slowed, which increases the time required to reach level flight torque. Then, due to somewhat lower RPM in level flight (with proper adjustment), level flight time is also increased. Let-down may also be slowed a bit, so long as the minimum pitch setting is not too low and if the rubber cross section is high enough to keep torque

high until touchdown.



Details of the prop are pretty clear in the drawing, but here is how it works:

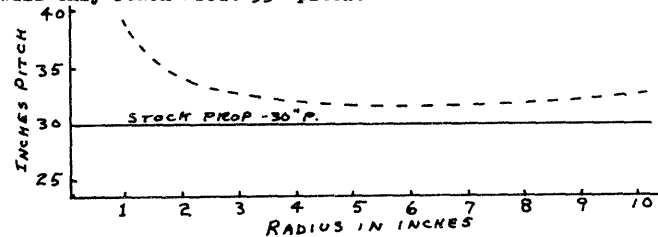
1. The prop shaft (#6) is glued to a torque bar (#7) via a square bend in the shaft. The shaft then extends to the prop itself in the usual fashion.
2. The prop blades fit into a socket just large enough to give free rotation. Two prop levers (#5) fasten to the prop blades (don't make permanent attachment until flight tests at low power show proper and equal pitch in the blades) and change the pitch when the torque bar pushes against the prop levers.
4. Items #4 are stops which keep the assembly all together; these must be far enough from the prop lever so that they never restrict torque bar movement at maximum torque. Items #3 are wire clips to prevent the prop blades from feathering in case of collision with an obstacle.
5. Under full torque, the part of the prop shaft between the torque bar and the prop hub twists, due to the drag of the blades. This movement increases the pitch of the blades by an amount determined by the strength of the shaft and the geometry of the mechanism as outlined below.
6. As torque reduces, the blade angle also reduces to yield more nearly constant RPM.

Jeff's approximation of the angular change caused by a particular configuration is this formula:

$$\theta = \frac{T \times L}{k \times G}$$

where θ is the angular twist in radians, T is the maximum torque of the motor, L is length "A" on the drawing, G is the modulus of shear for music wire (11,500,000 PSI), and $k = 1/2 \times \pi \times r^4$ (r = "B" on drawing).

Note also that small changes in angle will go a long way, as shown in the sketch below. This graph shows that for 2° (.035 radians) increase in angle, a 30" pitch prop increases to about 32" pitch over most of the blade and to nearly 40" pitch at 1" radius. Since the hub mechanism takes up a lot of hub area, the inboard end of the blade will only reach about 35" pitch.

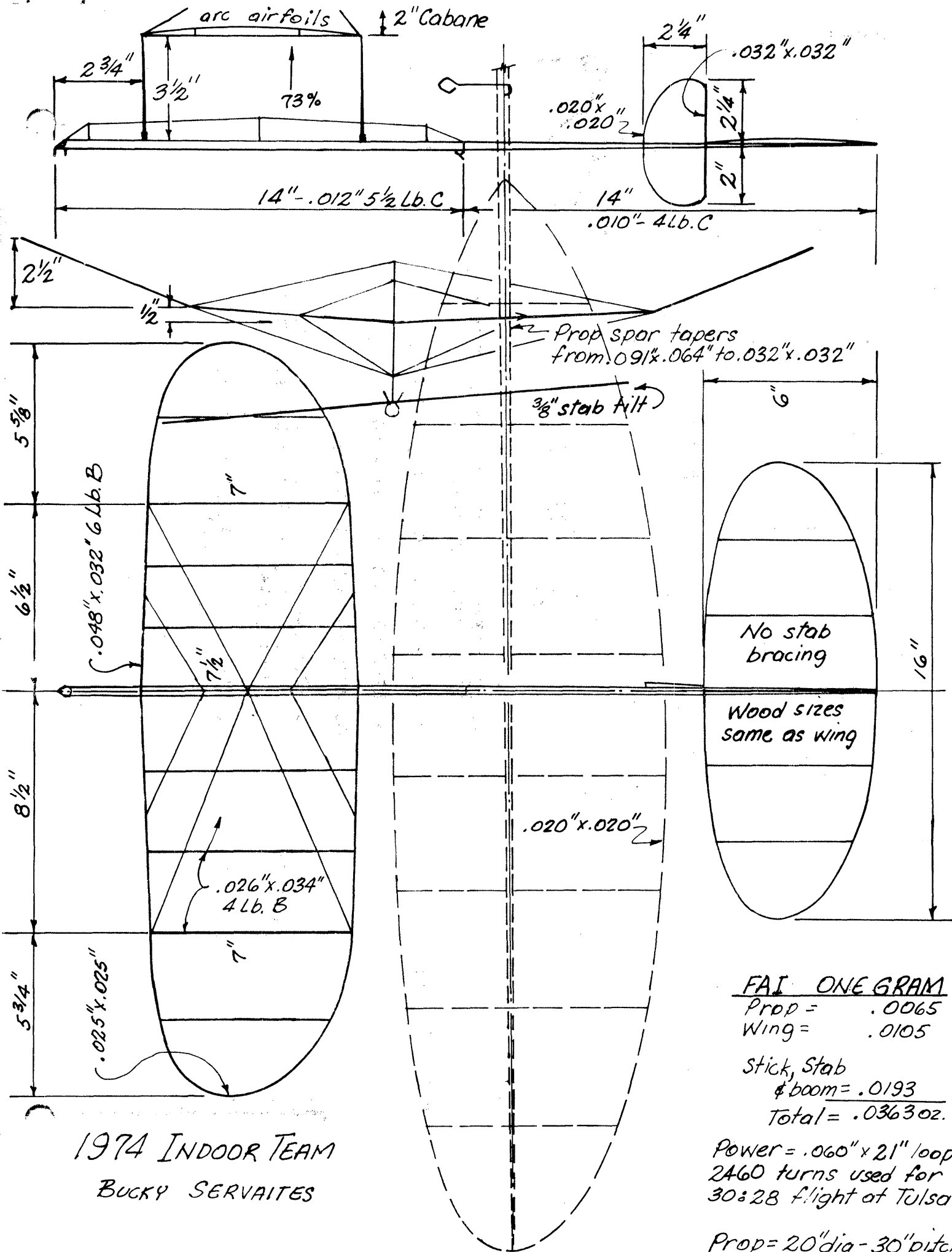


PENNYPLANE HINTS

As promised, this column is now open with hints from Dennis Jaacks, three-time winner of PennyPlane at the Nats ('71, '72, '73). Whether or not you are a big winner, if you have an unusual model, or a different technique for building, trimming or flying that you wish to share, send the information to Bud Tenny, Box 545, Richardson TX 75080. If possible, drawings should be high-contrast (ink if possible), but sketches are still welcome. The important thing is to share the idea!

PennyPlane Construction

1. When rolling P/P motor sticks, much heavier wood is needed than for microfilm models. Typical is .025" wood, which should be rolled with silkspan instead of tissue.
2. Coat the finished motorstick with thinned dope or microfilm solution to improve strength and reduce absorption of lube and moisture.
3. Make dual bearing from .015" music wire. Practice with soft wire first to get the hang of size and shape.



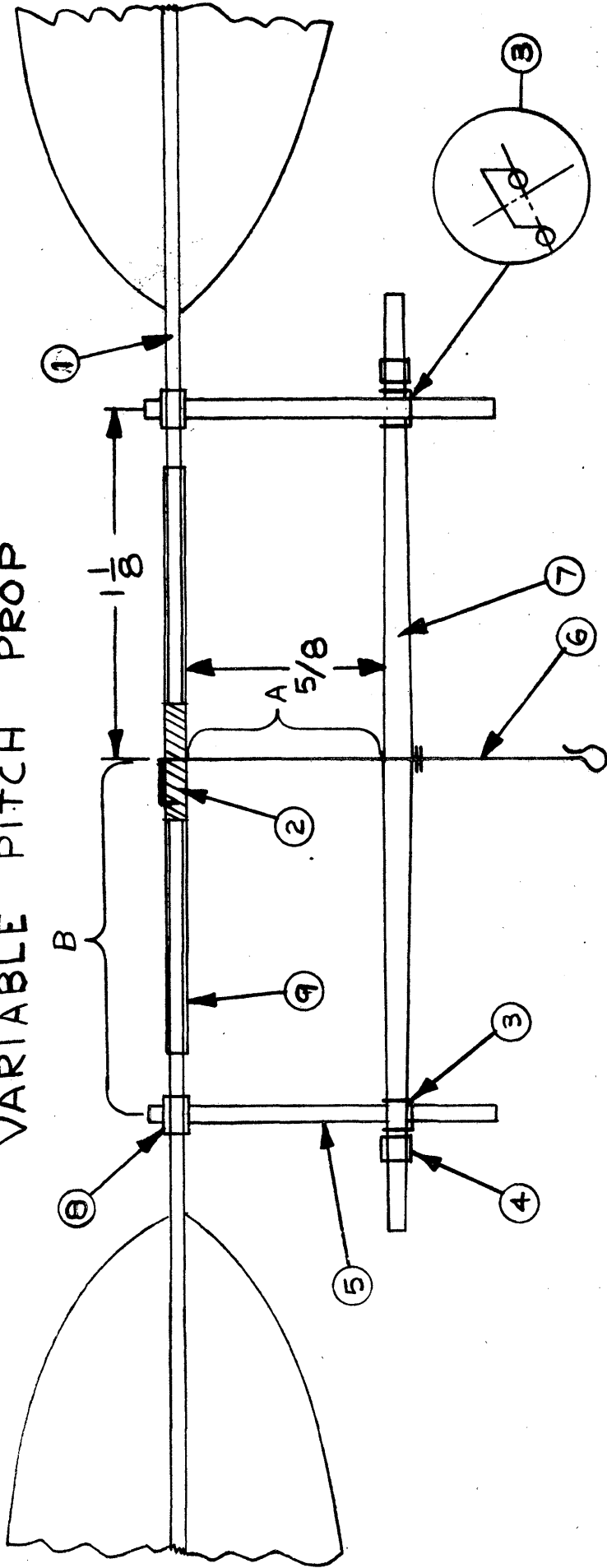
1974 INDOOR TEAM
BUCKY SERVAITES

FAI ONE GRAM
 Prop = .0065
 Wing = .0105
 Stick, Stab
 & boom = .0193
 Total = .0363 oz.

Power = .060" x 21" loop
 2460 turns used for
 30:28 flight at Tulsa

Prop = 20" dia - 30" pitch

VARIABLE PITCH PROP



1. PROP SPAR - 3/32 DIA., GLUE SKIN FOR PART INSIDE BEARING

2. Balsa HUB - 3/32 DIA., 1/2 LONG

3. WIRE BRACKET - .008 WIRE

4. WING SOCKET - 1/16 I.D.

5. PROP LEVER - 1" LONG, 1/16 ROUND, GLUE SKIN FOR PART IN CONTACT WITH TORQUE BAR.

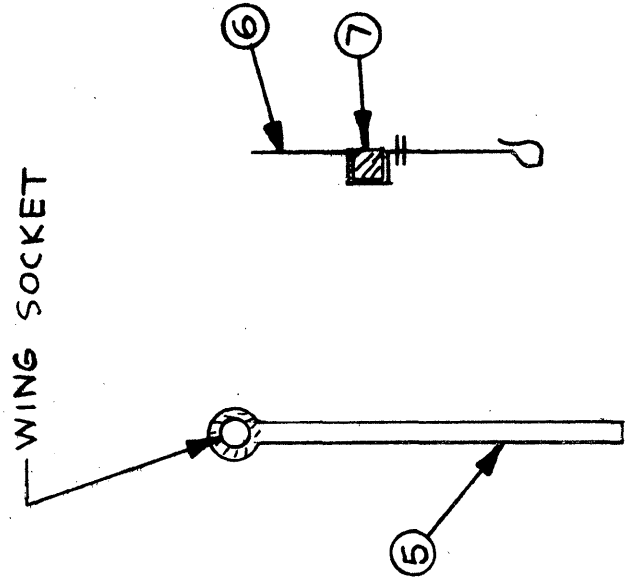
6. .015 SHAFT - SQ. BEND & GLUED TO TORQUE BAR (#7)

7. TORQUE BAR - 3" LONG, 3/32 SQ. - 1/16 DIA.

8. WING SOCKET - 3/32 DIA.

9. HUB - TISSUE SOCKET, 3/32 I.D., 1 7/8 LONG

WING SOCKET



DESIGNED AND
DRAWN BY

Jeff Mnie

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

TOM DEAN, 7125 Southaven, Corpus Christi, Texas

Change of Address

DAN DOMINA, 47-01 Fox Run Dr., Plainsboro NJ 08536

Oops!

In Jeff Annis's torque-variable prop article, the symbol for PI was left out of the formula for k. It should have read: $k = 1/2 \times \pi \times r^4$. Also, r = radius of the music wire prop shaft. Jeff also furnished a mathematical development and a sample calculation. To save space, those who wish to obtain a copy of Jeff's comments may do so by furnishing a stamped, self addressed envelope with their request.

Postal Reminder

Some entries are already in for the 9th Annual NIMAS Postal Meet, and entries will be accepted (postmark) until April 20, 1974 on meets or sessions thru April 16, 1974.

Postal Fudge Factors

The following fudge factors will be used for the NIMAS Postal; multiply the flight time by the appropriate factor to obtain postal scores.

Ceiling (feet)	Class I HLG (fudge to 25')	Class II HLG (fudge to 35')	Rubber (fudge to 35')
18	1.39		1.394
19	1.316		1.357
20	1.25		1.323
21	1.19		1.29
22	1.136		1.261
23	1.087		1.234
24	1.042		1.207
25	1.0	1.4	1.183
26		1.346	1.16
27		1.296	1.139
28		1.25	1.118
29		1.207	1.098
30		1.167	1.08
31		1.129	1.063
32		1.094	1.046
33		1.061	1.03
34		1.029	1.014
35		1.0	1.0

Use straight-line interpolation for ceilings between listings; convert inches to decimal fractions of an inch.

Ernie Kopecky Trophy

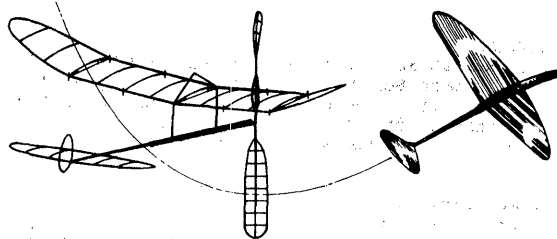
Anyone wishing to donate toward the Ernie Kopecky Trophy (to be awarded for high time single flight at '74 Indoor WCh) should send the donation to G. V. Russo, 143 Willow Way, Clark NJ 07066 or Pete Andrews, 100 River Rd. #A-11, Bogota NJ 07603.

Feb. '74 INAV Damaged?

Several subscribers have written to note that their copy of the Feb. '74 issue was damaged, or mangled beyond use. If yours was damaged, drop a line and it will be replaced. This is a dual-purpose offer; you ought to be afforded a chance to have a readable issue, and the offer will enable me to determine the dimensions of the mail mangling problem afforded by (apparently) malfunctioning machinery.

'74 Nats

The Feb. '74 INAV carried details about two complete indoor Nats sessions, with the proviso that arrangements had to be completed for use of the Goodyear hangar at Houston. Since that issue, word has been received that arrangements have been completed. Further, by advance contact with Mark Valerius, 2302 Pomeran Dr., Houston TX 77055, ph. 714-465-9818, it is likely that you can test-



fly any weekend you happen to be near enough; beginning in April.

Meanwhile, Mark reports that the hangar appears to be really air-tight with the doors closed, and that natural lighting is very good. The hangar is the usual quonset-hut shape, 160' wide and 260' long at the base, with 97' max internal. Construction is with curved, closed beams that should afford minimal hangup danger.

FAI INDOOR REPORT

AEROLYMPICS Status Report

The whole Lakehurst bash (Indoor WCh, RC Pylon Meet and Indoor International Meet) has come to be called the Aerolympics. AMA's Feb. '74 Monthly Mailing (see your club secretary or other officers if you belong to an AMA Charter Club; or contact your District officers) has a complete report. So far, 14 countries have indicated intent to participate in the July 1-7 gala, but no figures showed the number of Indoor teams expected.

It is now confirmed that only entrants and a very few special helpers and officials will be able to obtain on-base housing, so make your own arrangements if you plan to attend in a non-official capacity. The status of entrants in the Indoor International Meet was not defined, and it is not known at this time if advance entry must be made for this event.

Indoor Team to Practice?

The U. S. Indoor Team has officially requested they be allowed to practice at an early Lakehurst session as a team. If this is permitted, eastern indoor fliers have offered to make up several teams to give the session a competitive air. Not only is this worthwhile, it will be closely watched. Although special financial arrangements would be necessary for this to become a regular practice, it could well create the fine edge needed by all U.S. Teams regardless of model type flown.

RECORDS? MAYBE!

INDOOR RECORD TRIALS, January, 1974, Cat. III AMA
Santa Ana MCAF, California
Junior HLG - 2:07.2, Steve Wittman

CONTEST CALENDAR

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Indoor sessions sponsored by Union MAC; held at Livingston School on Midland Ave., Union NJ, 7 pm to 10 pm, Mar. 14, Apr. 4 and May 9, 1974. Contact Dan Domina, 47-01 Fox Run Dr., Plainsboro NJ 08536.

NEW YORK - Long Island

Cat. I Record Trials at Boy's Gym of Friends Academy, Locust Valley, L. I., NY on Mar. 23, 1974, 11 am to 5 pm. Gym shoes required. Site is approx. 60' x 72', with shallow peaked roof, max height approx 33'. Contact J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

STATE OF THE ART

Bucky Servaites won the '73 Nats with the glider shown on the plan page. He describes it thus:

The glider is a copy of Ron Wittman's SuperSweep 22 outlines with some modifications for low ceiling work. It was originally constructed for a Spring meet at the University of Cincinnati fieldhouse. The ceiling height there was 65 feet, so the ship was built to a weight of 14.8 grams. At the Nats I added ballast so the ship would roll out just above the lights. I've found that the less time spent flying through those lights, the better chance you have of making it down. On the 70 second flight, the rollout was about 10-15 feet above the lights for a total altitude of about 75 feet.

To obtain the 14.8 gram weight requires a choice of light wing stock. I used straight grained 4.6 lb. stock. I prefer straight grained wood for wings since it is more flexible and easier to bend for small trim adjustments. I've never folded a straight grained wing on launch, but have folded many wings of quarter grain wood. No warpage problems have been experienced with straight grain as long as dealer is limited. Quarter grain wood is necessary for tail surfaces since they are very thin.

An extremely handy gadget for selecting light wood is a small, cheap postal scale with a weaker spring substituted for the stock one, to give a maximum deflection of about three ounces. Glue on a piece of paper so it reads directly in lbs./cu. ft. for 1/4" x 3" x 36" balsa. The scale is compact enough to fit a coat pocket.

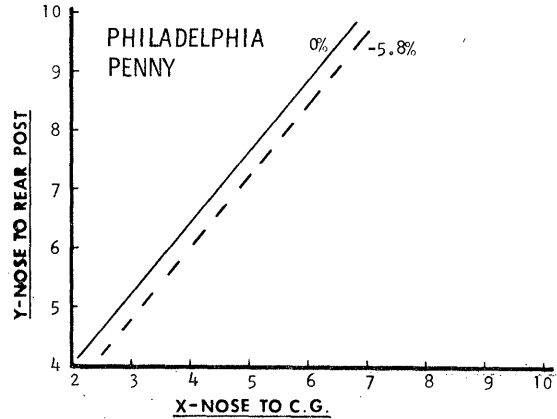
I have built subsequent models using heavier wood for the wings and the total weight really goes up. Using 5 lb. wood resulted in a model weighing about 19 grams. However these models climb much higher - perhaps approaching the optimum for a Cat. II site. The fuselage is a copy of one used by Richard Miller and fits my grip very well.

The Philadelphia Penny, by Dick Hardcastle, placed 2nd at the '73 Nats with 12:04. Dick claims his boy wasn't impressed, "Yes, Dad, but you were 2nd before. You didn't come up much!" About the model, Dick says, "My Philadelphia PennyPlane was conceived after viewing Kukon and McLean making flights over 12 minutes with tandems at a Philadelphia contest in 1971. My P.P.P. now has wings with chords of 5 1/2", 6", 7" and 8". I've also built tail wings/stabs with chords from 3" to 5 1/2". The model can fly with any combination of the above at pennyweight."

"I would like to say the combination flown at the Nats was chosen after exhaustive tests proved it best for the site. The truth is that a collision on the first test flight broke the 4 1/2" stab. While the repairs were drying, I sent up a test flight with a 6 1/2" wing and 3" tail. The first flight did 10:45, so I didn't change. Official flights followed: 11:14, 11:17, 11:36 and 12:04.8. I did not change wings, stabs, CG or rubber all of which were available. After the 12 minute flight a test flight of 12:27 was made on different rubber. The last official was "all out" and hung at 2:35."

"The Philadelphia Penny is truly a flying lab. With additional paper sockets along the stick and boom, wings and stabs can be changed to fly the model from tandem to conventional. Incidence can be changed on front and rear wings, and the rudder can be turned. A sliding ballast can be moved to adjust CG. Unfortunately, the only time I fly the model is at the Nats when time is short."

According to the NIMAS aero engineer (Hal Crane), the tandem type layout may not fit the normal balance schemes properly. However, the CMOS and INP calculations will allow duplication of Dick's general trim. Since the CMOS calculated to -5.6% (normally too "critical" for low aspect ratio PennyPlane) and the INP came to -2%, it may be that the low tail position places it out of downwash so it is more effective. Anyway, balance it certainly no more critical than -5% CMOS, and preferably 0% or more forward.



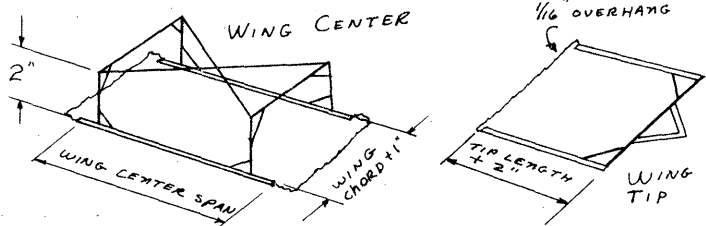
PENNYPLANE HINTS

PennyPlane Covering

by Dennis Jaacks

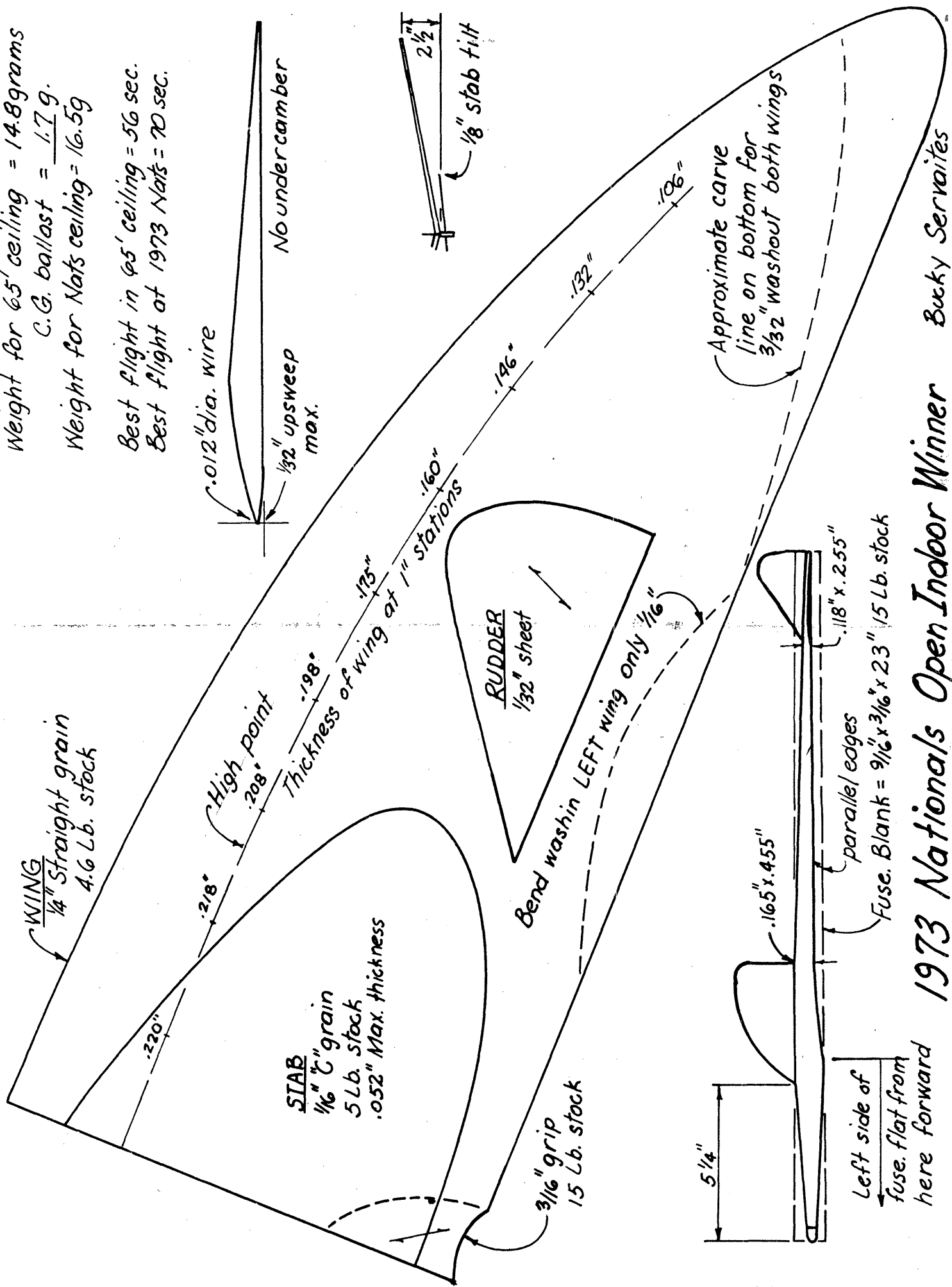
1. Handling of microlite* can be made easier by placing it between two sheets of paper, such as newspaper or heavy tracing paper. It can then be cut to size and shape with scissors.
2. Covering frames are worth the time and trouble needed to build them, since they speed up and improve the covering job. See sketches below for construction ideas, and it is recommended that 1/16" x 3/16" wood be used.
3. Used thinned rubber cement to attach either microlite or condenser paper. Thin the cement to about the consistency of water. Use naphtha based rubber cement, since this solvent does not affect microlite. Pipe cleaners make excellent disposable brushes to apply the cement.
4. Trim microlite with methylene chloride applied with a #000 size brush. This solvent can be slowed down by adding ethylene dichloride. **Safety Note:** both these solvents are hazardous to breathe, and should be used only under conditions of excellent ventilation. **Bear in mind** that this same comment applies to acetone, methyl ethyl ketone, butyl acetate and almost all other solvents used in microfilm solutions.
5. Coat wing and stab outlines (where covering touches) with thinned dope or microfilm solution to seal the wood. This prevents the thinned rubber cement from soaking in, so that only one coat is needed to attach the covering.

*Microlite is polycarbonate-type plastic film which weighs approximately half as much as the lightest condenser paper and perhaps five times as much as microfilm. It is dimensionally stable (won't shrink, except slightly with heat), and is quite strong. It is available from Micro-X, P O Box 1063, Lorain OH 44055. By using microlite to cover PennyPlane, it is possible to save perhaps 7% of the total weight. The advantage is to concentrate the required excess weight near the CG to reduce the moment of inertia of the model, which improves dynamic stability.



Weight for 65' ceiling = 14.8 grams
 C.G. ballast = 1.7 g.
 Weight for Nats ceiling = 16.5 g

Best flight in 65' ceiling = 56 sec.
 Best flight at 1973 Nats = 70 sec.



1973 Nationals Open Indoor Winner Bucky Servaites

PHILADELPHIA PENNY

1/4

12:04 20 '73 NATS 3/4

WING 750 mg
STICK 750
STAB 280
PROP 800
BALLAST 520

POWER:
.098 X .042 X 18 1/4
PIRELLI

MICROLITE
COVER

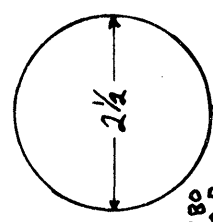
RIBS .045 X .065
SPARS .057 X .095 > .045

9 3/4

8 3/4

6 1/2

5/8



.023
O.D.

.013" C.G. RAIN

O.D. .330
.025 C.G. RAIN

69%

2 3/8

2 5/8

PAPER SOCKETS

.180
O.D.

.016 WIRE

7 1/4

10

6

DOWN & LEFT
THRUST

SPARS .045 X .060 > .040
RIBS .032 X .050

16

3

L.E.

STAB

Dick Hardcastle

WING

FRONT VIEW

1/4
WASHIN

2 3/8

17 1/4 D X 28 P

.028 C.G. RAIN

1/2 TILT

.015

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

DAVID ELLIS, 8301 W. 92 St., Overland Park KS 66212
 JOEL FONER, 31 Payson Terrace, Belmont MA 02178
 STEPHEN A. VOSA, 53 Ethel Dr., Portsmouth RI 02871

Honorary Members

MICHAEL SHERMAN, 22 Rosebank Rd., Papatoo, Auckland,
 New Zealand

NIMAS Postal Meet

By the time you receive this issue, your entry in the 9th Annual NIMAS Postal Meet should be in the mail. Good luck, and good flying!

Renewal Reminder

Check the mailing label on this issue now! If it has "04" in the corner, your subscription expires with this issue. Those with "05" and "06" expire in May and June respectively. If you send payment in advance, it saves time around here; thanks are due to the many who have made early renewal in recent months. Membership costs \$3.25, subscription only costs \$2.25.

Junior ACE

Ten year old Steve Wittman has amply qualified as a Junior NIMAS Ace in Cat. III HLG. Normally, an Ace candidate "works up" to Ace, by qualifying for Silver, Gold and Diamond awards. However, the respective times for Junior Cat. III HLG are 0:41, 0:49 and 0:56. Steve hasn't had times lower than 59 or 60 seconds for months, and his recent record application times are over 63 seconds - almost equal to Open Cat. III Gold times.

NIMAS Awards

There has been very little activity in the NIMAS Award program in recent years; perhaps because details haven't been published recently.

Basically, NIMAS Awards are made for flights meeting the time standards detailed below, when made under circumstances generally conforming to AMA contest conditions. Application blanks containing full details are available upon request.

Junior Awards

Indoor Stick (Any class model, single flight)

AWARD	Cat. I	Cat. II	Cat. III
Silver	7:30	15:00	21:00
Gold	9:30	18:45	26:30
Diamond	11:15	22:30	31:30

Indoor HLG (Best single flight of nine)

AWARD	Cat. I	Cat. II	Cat. III
Silver	0:18	0:34	0:41
Gold	0:22.5	0:41	0:49
Diamond	0:27	0:49	0:56

Open Awards

Indoor Stick (Any class model, single flight)

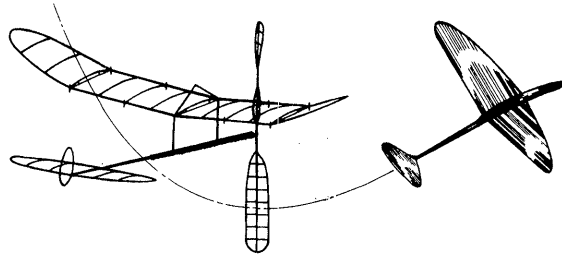
AWARD	Cat. I	Cat. II	Cat. III
Silver	10:00	20:00	30:00
Gold	12:30	25:00	35:00
Diamond	15:00	30:00	42:00

Indoor HLG (Best single flight of nine)

AWARD	Cat. I	Cat. II	Cat. III
Silver	0:24	0:45	0:55
Gold	0:30	0:55	1:05
Diamond	0:36	1:05	1:15

'74 Nats

The '74 Indoor Nats schedule by site is shown below. The following matters have not been officially cleared up,



as of this time; PennyPlane is rumored to be held only at Houston, presumably on Aug. 4. Peanut Scale is to be held at least once, maybe twice; no official word has been put out yet. An editorial speculation in the Feb. '74 INAV indicated that Championship points declaration would only involve a maximum of 3 out of 6 events; a conversation with Carl Wheeley (editor, Competition News) indicated that some other arrangement was perhaps being considered.

High Cat. II Indoor - Goodyear Blimp Hangar, Houston TX.
 Aug. 4, 1974 - Indoor HLG
 Aug. 5, 1974 - Indoor Stick, Paper Stick, Cabin, FAI
 Med. Cat. II - Civic Center, Lake Charles LA.
 Aug. 6, 1974 - Indoor Stick, Paper Stick, Cabin,
 FAI Stick, Easy B (Easy B not for Champs points)
 Aug. 7, 1974 - Indoor HLG, Indoor Scale

As noted above, Easy B will be a competition event at the Lake Charles site, but not eligible for Champs points. The rules to be used were defined by Event Director John Thornhill and shown here:

1. Solid motor stick and tail boom required.
2. Paper covering only.
3. No bracing permitted.
4. All other rules shall be as outlined on p. 14 of the 1974-75 AMA Rule Book.

The Modeler's Press

The Modeler's Companion is a handy appointment/calendar/reference pocket book with conversion factors and other handy info listed. If you need a pocket notebook to keep track of appointments, list contests and meetings, and need to look up metric conversions and mathematical formulas, the Companion is for you. It is available for 50¢ + 25¢ postage and handling, from The Modeler's Press, P O Box 170, Kensington MD 20795.

FAI INDOOR REPORT

AerOlympics

AMA's Monthly Mailing indicates that about 200 people have indicated intent to attend, or made deposits on the special charter flight from Europe. In addition, many from Canada and Mexico are coming. From Eastern Europe, at least Poland, Czechoslovakia and Hungary have indicated intent to send teams.

Part of the Aerolympics financial support will come from booster packets - available to all who donate \$10 or more to the AMA 1974 AerOlympics fund. The packets contain identification allowing special parking privileges, an official cloth patch emblem, parking bumper stickers, souvenir emblems and official program booklet.

Team Manager Chosen

When word came that Bob Champine, who ordinarily would have been the U.S. Team Manager, is to be the Indoor WCh director, the question arose, "Who is Team Manager?" Word has arrived noting that Dick Kowalski has been appointed, following the previous precedent of taking the 4th place flier from the Team Finals. Dick is experienced as manager, having served in 1961 and was appointed to serve in 1964 ('64 WCh was cancelled due to lack of entry). Our Team is in good hands!

Indoor Team To Practice

Official approval has been granted for the Indoor Team to practice as a Team at Lakehurst, with travel expenses paid. This was granted in view of the fact that no expenses for overseas travel would be needed for this Team. It is expected that the practice session will be May 18-19, 1974, and that several local teams will compete against the official Team. The practice date is late enough for good conditions, and early enough to mend any deficiencies the Team may find in equipment and models.

World Champion To Compete

Two or three years ago, the CIAM decided that the reigning World Champion could compete in the next WCh, even if he was not on the team. Accordingly, Pete Andrews will compete in the '74 Indoor WCh, defending his title on his home territory. This will add another interesting dimension to the competition!

New FAI Committees

The AMA Executive Council, at the Mar. 9, 1974 meeting at Lake Charles, La., recognized the NFFS in a special way. The NFFS has been given the responsibility of administering most aspects of the FAI Indoor and FF programs, following the guidelines presented by Hardy Brodersen, (Assoc. VP, Dist. VII) and approved by the Council.

All participants in the past three Programs (both Indoor and FF) have received a memo from Hardy (via AMA HQ), explaining the new program setup and asking for a vote on members for the two Committees.

Briefly, each Committee is intended to be made up of one member from each AMA District, appointed by NFFS subject to the approval of the VP of that District. The Committees are charged with the responsibility of designing Team Selection Programs acceptable to the AMA President and approved by vote of 2/3 of the participants of the previous Program. It is intended that Program participants help guide the program by voting on committee members, suggesting program formats, returning questionnaires which pose questions about program details, and voting on the final program makeup.

If you were somehow missed on the memo mailing, or haven't participated in a program but plan to enter some future program, contact AMA HQ for a copy of the memo.

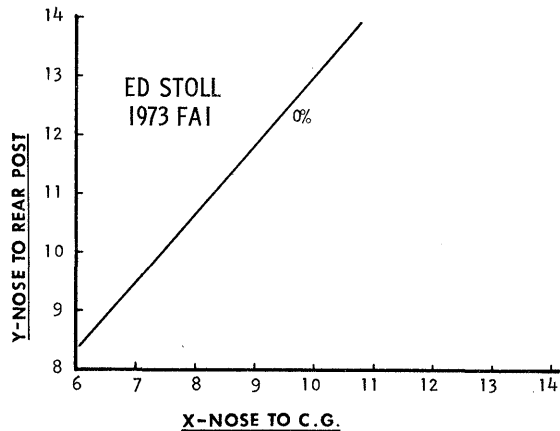
RECORDS? MAYBE!

THERMAL THUMBER'S INDOOR MEET, Mar. 24, 1974, Cat. III
Santa Ana MCAF, Los Angeles, Cal.
Junior Autogyro - 0:50.0, Jeanine Andrews
Senior Paper Stick - 16:37, Kim Mather
Junior HLG - 2:06.6, Steve Wittman

STATE OF THE ART

Ed Stoll's 1973 FAI was outstanding in one respect in that cruise/letdown RPM often was in the low 30's - a number seldom realized by models smaller than 90 cm FAI's. In other respects, the model looks conventional until the fine details show up. Many ideas on the model are credited to Dick Kowalski - wing airfoil, prop outline, etc; but Ed also learned from weaknesses demonstrated by Dick's models. The 6% airfoil was one such compromise. On airfoil thickness, Ed says: "It is our opinion that you actually consume less power throughout the flight by using the thicker airfoil. I plan to stick to my 6% wing, which is a little less than Dick's. There is probably less drag at low Reynolds Numbers for the lift produced in the thicker section than in the thinner airfoils. Like in so many things, there are exceptions. If we come up with a bad day the climb must take precedent over everything else, so I plan to build a couple of wings of 4 to 4½% thickness."

Ed's trim checked out at -1.4% margin (CMOS) and at 16% margin by INP. These figures are right down the line at theoretical optimum - the low cruise RPM with nose-high approach confirms both trim setup and optimum power selection (loop length and cross section).



CONTEST CALENDAR

CALIFORNIA - Santa Ana
Indoor Scale at Santa Ana, Apr. 28, 1974; contact Ferdinand Ramos (address not furnished, 1970 address was 19361 S. Mesa Dr., Villa Park CA 92667). Indoor Record Trials May 25-26 and June 22-23, 1974. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354.

CALIFORNIA - Taft
Indoor (PennyPlane, Peanut Scale and HLG) has been

added to the U. S. Free Flight Championships held at Taft, Calif. The events will be flown in a gym in Taft; the site has a 40' ceiling and 80' x 100' floor; date - May 25, 1974. Jim Scarborough, Box 393, Lawndale CA 90260.

CANADA - British Columbia

Indoor contests (FAI Cat. III) at the PNE Agrodome, Port Coquitlam, B. C.; Scale, HLG, PennyPlane, FAI Stick, May 5, June 9, 1974. Alan Riches, 1568 Celeste Crescent, Port Coquitlam, B. C., Canada V3C 1E2.

CONNECTICUT - Glastonbury

Indoor sessions May 7 and June 4, 1974, 7 pm to 9:30 pm. Also on Sunday, May 12, 1974, 8 am to noon. Sessions at Glastonbury High Gym. Contest Apr. 28, 1974, 8 am to 5 pm, HLG, Old Time HLG, Peanut, Old Time Peanut, Old Time Scale, PennyPlane, Indoor Stick, Cabin, Old Time Stick, Old Time Cabin, WWI Peanut Combat. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06037.

FLORIDA - Miami

Indoor contest at the Goodyear Blimp Base, Opa Locka Airport, 9 am to 5 pm, May 26, 1974. Indoor "Fly In" at JFK Gym, Miami Dade North, 9 am to 1 pm, May 5, 1974. Contact Dr. John Martin, 3227 Darwin St., Miami FL 33133.

MASSACHUSETTS - M.I.T.

Indoor contest at DuPont Gymnasium, Vassar St. and Mass. Ave., Cambridge, Mass. (use Vassar St. entrance), May 4, 1974. Indoor Stick, HLG, Indoor Scale, Peanut Scale, PennyPlane and Delta Dart. Contact Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778.

NEW JERSEY - Lakehurst

Flying sessions at Lakehurst: May 19 and June 16, 1974 with contest on July 21, 1974; Indoor Stick, Easy B, HLG, Peanut Scale and PennyPlane. Contact Sal Cannizzo, 20 Outerbridge Rd., Staten Is. NY 10309.

NEW JERSEY - Union

Indoor session sponsored by Union MAC at Livingston School on Midland Ave., Union, NJ, 7 pm to 10 pm, May 9, 1974. Dan Domina, 47-01 Fox Run Dr., Plainsboro NJ 08536.

NEW YORK - Long Island

Cat. II Indoor Contest at Cantiague Park, Hicksville, L.I. NY, Apr. 28, 1974, 8 am to 5 pm. HLG, Easy B, Peanut Scale, Indoor Scale and Indoor Stick. CD J. G. Paillet, 30 Emerson Rd., Brookville NY 11545.

OHIO - Euclid

Cat. I Indoor Contest, May 12, 1974, at the Euclid Arena, 10 am to 6 pm. Easy B, Paper Stick, Indoor Stick, Peanut Scale, Jetco ROG, Sleek Streak. CD Dr. Vern Hacker, 25599 Breckenridge, Euclid OH 44117.

WHAT HAVE WE DONE TO PENNYPLANE?

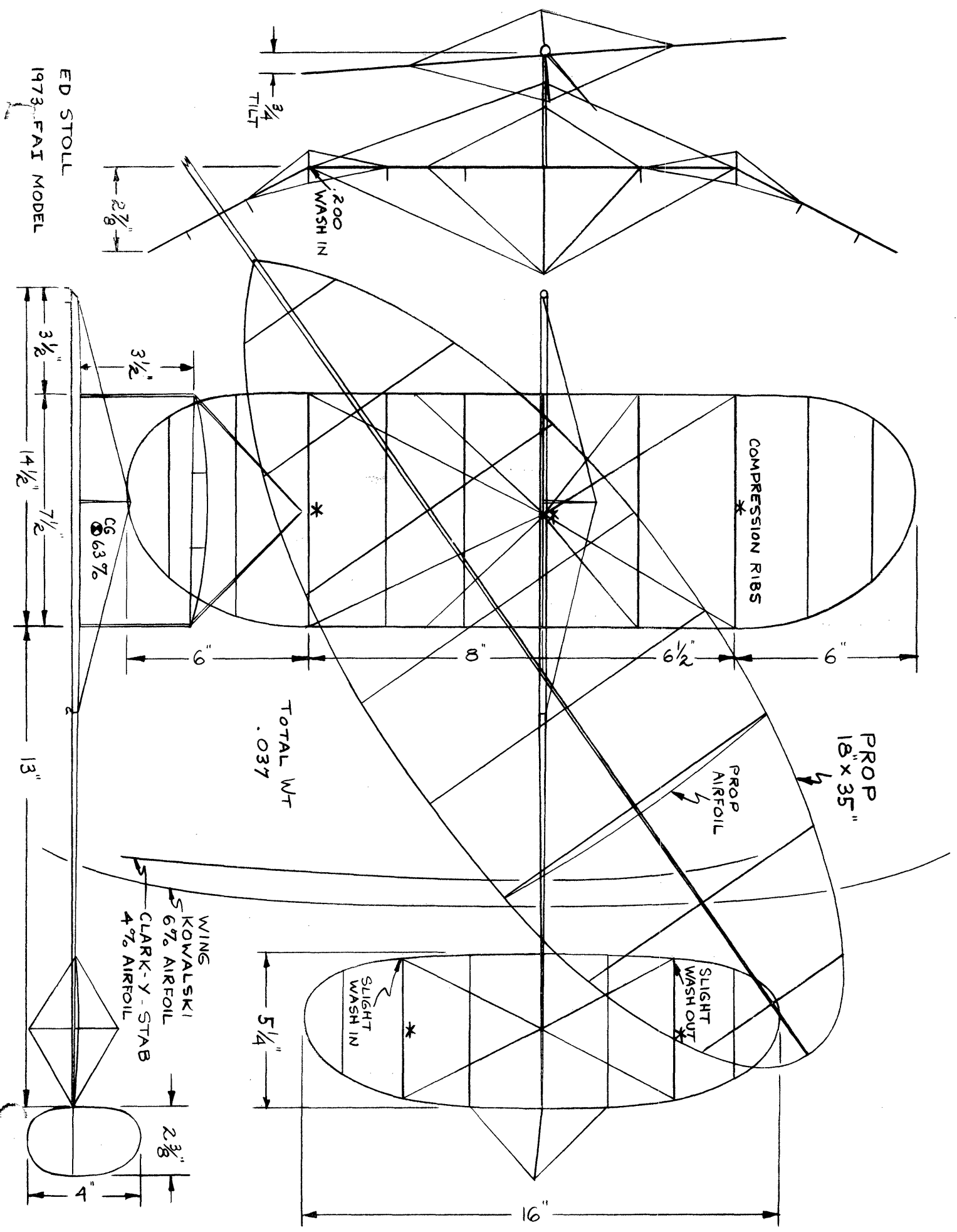
by Bob Clemens

I have very fond memories of flying PennyPlane at the Nationals in 1970. This was the first year for this then-new event, but it still managed to attract a total of 28 entries: 19 open and 9 juniors. Tim Noonan won Junior with 6:32.2, while Clarence Mather took first in Open with 8:28. Close on his heels was event director Ery Rodemsky with 8:16. My 6:48 gave me third, just ahead of Al Rohrbach with 6:24.

The thing I really remember about that afternoon was the sheer fun of flying our simple, stick-and-tissue ships, most of which looked like nothing more than slightly overweight Easy B's. No one really knew just how well- or how poorly- these new creations might perform as the contest got under way; by its end we were all pretty surprised at the duration we could get. Equally important, we all had a lot of fun competing.

In the three years that have passed since that first meet, what have we done to PennyPlane? Gone are the simple, easy-to-build-and-trim ships of 1970. In their place float the ultra-light, ballasted to weight creations of the indoor endurance experts, their stubby wings shimmering with Micro Lite film. These models, the end products of highly sophisticated building and trimming techniques, are capable of flight durations in excess of 12 minutes, fully 50% ahead of the best of 1970's PennyPlanes. Real progress, right?

Wrong! Who needs another super-sophisticated indoor duration event that only our top technicians and experts can handle properly? The existing paper stick, AMA Stick, and FAI Stick events certainly provide enough outlets and challenges for these people. PennyPlane, as originally flown, was a fun event in which contestants of somewhat widely varying degrees of skill and talent could all compete on a fairly equitable basis, and have a great time doing it. This was a real change-of-pace!



In the spirit of the early days of PennyPlanes, I would like to propose these changes in the PennyPlane rules:

1. Maximum wing chord - 4".
2. Only covering material permitted - Japanese tissue.
3. Only solid wood motor sticks permitted.

All other PennyPlane rules would stay as they are. If the experts find this version too dull, fine. Let them stick with paper stick and microfilm. Let's put PennyPlane back at the simple, fun level where it belongs.

PENNYPLANE IS TOO FUN!

by Bud Tenny

I guess Bob Clemens and I see it differently! The avid scale modeler finds a challenge in creating a scale model airplane in a form which balances scale points, construction skill and aerodynamic factors to create successful hands-off flight. My challenge in P/P is to accept size and weight limitations specified in the rules, then to balance many aerodynamic factors in an attempt to outdo other fliers. It was fun to compete against the best at the Nats! From that vantage point, I oppose Bob's suggested limitations for the following reasons:

1. Limit wing chord to 4": First, to specify chord makes just one more thing for the CD to check. Second, part of the event's challenge is to find optimum design parameters, one of which is aspect ratio. Finally, if limited chord can be shown to improve the event, the wing loading resulting from a 4" max chord is as extreme, in my opinion, as Dennis Jaeck's 8" chord. From past experience, I feel that a high wing loading model is as difficult for all but the expert to trim as is the very wide chord. Maybe this would be offset by the greater ease of construction and handling inherent in the narrow chord, and maybe not.
2. Jap tissue covering: I feel this is also an extreme. Jap tissue reacts to moisture just as condenser paper does. On the relatively fragile P/P surfaces, it would be no easier to work with than condenser paper. Worse, jap tissue is porous and should be doped to be airtight. This is an impossibility for any but an expert. Granted, microlite is also difficult to handle. However, one of the most frequent questions asked is how to prevent condenser paper from warping models. That is one problem that doesn't arise with microlite!
3. Solid motor stick: One of the most difficult skills to learn in Indoor is how to select good wood for solid motor sticks and booms. For a high power model such as P/P, the problem is aggravated. True enough, one can use a "log" with no problem except weight. However, my experience in working with beginners leads me to believe that a rolled stick is far easier to build than an equivalent solid stick. Only when ultra-long, lightweight sticks are needed does the skill needed approach that needed for a good solid stick.

The above reasons are all technical and philosophical. From a purely personal reaction, I find it immensely satisfying to have an indoor model that I don't have to buy special wood for, or agonize over which piece of special wood to use. Even though it is finicky to use, microlite is stable and long-lasting. In contrast, condenser paper is a nightmare to use and tissue isn't much better, without considering its need for dope. Finally, P/P is a class that is not delicate to handle, except when fully wound. It is possible to allow spectators to handle the model - thus showing them it isn't as hard to do as other indoor models. Finally, and most important to me, is the fact that site conditions here often have been poor (hangar door open slightly, for example) that microfilm models couldn't be flown. PennyPlane will fly pretty well under circumstances when even Easy B's wouldn't. And, if Bob is classifying me as one of the "experts" - let's remember that 6th place in Paper Stick, 5th in Stick and 8th in PennyPlane is my track record!

Anyone Else?

If the above comments on PennyPlane happen to strike a responsive chord, please share your thoughts and ideas!

CONTEST RESULTS

Fall Ceiling Banger contest, Nov. 17, 1973, Glastonbury Modelers. Glastonbury Gym, Glastonbury CT.

Junior HLG		Sr.-Op HLG	
E. Boldthwait	57.9	G. Armstead	70.7
J. Schaulbe, Jr.	46.2	R. Nichols	64.8
D. Armstead	34.0	A. Vollmer	62.2

Old Time Stick ('40 rules)		Old Time Fuselage	
Ray Harlan	10:20.0	Ray Harlan	114.0
Hank Struck	6:55.4	E. Novak	107.0
G. Donahue	4:23.9	D. Stott	103.5
Old Time Peanut		Old Time Scale	
C. Bukowski	43.3	D. Stott	70.9
M. Nallen	41.0	E. Novak	47.5
D. Stott	39.1	J. Hodgkin	29.1
Old Time HLG		Junior Peanut Scale	
R. Nichols	30.4	T. Nallen	146.3
E. Franklin	28.0	M. Nallen	115.4
G. Donahue	27.6	J. Foner	93.5

Sr.-Op Peanut Scale	
D. Stott	211.4
F. Hall, Jr.	197.5
C. Learoyd	186.0

Chicago Aeronauts Indoor Contest, Jan. 26, 1974 Cat. II
Madison St. Armory, Chicago

Jr.-Sr. Paper Stick		Open Paper Stick	
Scott Wisniewski	9:25.6	Chuck Markos	14:50.3
Keith Gordey	8:27.2	Howard Haupt	12:59.3
Eric Miller	7:57.6	Dennis Jaecks	12:36.5
Carl Linstrum	0:36.7	Bob DeBatty	11:07.6
		Steve Brown	10:05.0
Jr.-Sr. Indoor Stick		Charlie Sotich	10:01.7
Keith Gordey	12:58.0	George Bucic	7:44.4
Scott Wisniewski	5:40.4	Ken Kraemer	7:04.3
Open Indoor Stick			
Bob DeBatty	16:16.6		
Dennis Jaecks	14:37.6		
Howard Haupt	13:10.6		
Steve Brown	12:57.0		
Charlie Sotich	12:36.0		

INDOOR ELSEWHERE

ITALY - Rimini
On Nov. 3-4, 1974, an indoor contest was held in the arrivals room of the Miramare/Rimini Airport, with less than good conditions. Ceiling height was 8 meters.

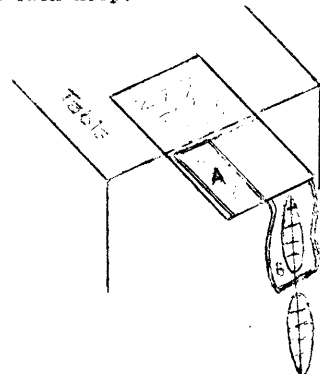
<u>FAI Stick</u>				
1. Carlo Cotugno	Roma	10:45	9:26	20:11
2. Adalberto Frioli	Rimini	10:22	8:50	19:12
3. Ferdinando Migani	Rimini	10:04	8:53	18:57
4. Germano Masciullo	Roma	8:31	7:52	16:23
5. Pierluigi Migani	Rimini	6:30	6:21	12:51

<u>PennyPlane (3.2 g weight)</u>	
1. Nello Sighelle	Bologna 4:50
2. Leonardo Militi	Rimini 4:22
3. Bruno Militi	Rimini 4:08
4. Pierluigi Migani	Rimini 3:30
5. Paolo Seghettini	Rimini 3:12
6. Armando Seghettini	Rimini 2:59
7. Quarto Cecchetti	Rimini 1:45

HINTS AND KINKS

Prop Covering

Larry Cailliau developed this method of prop covering and finds it quick and easy. As shown in the sketch, a mike hoop is extended over the edge of the workbench some distance in excess of the length of a prop blade. Then, lay 1/2" wide moist strips of newspaper on the film, with at least 1/2" clearance around prop outline. Allow paper to dry, then cut loose three sides of the paper outline and allow it to hang. Moisten the prop outline and lay the prop against the film. Allow outline to dry and trim it loose. With proper planning, more than one prop can be covered from each hoop.



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

BILL SCHUH, 267 E. County Line Rd., Barrington IL 60010

Newsletter Award

Some members of the Executive Council, following the lead of Dist. V VP Jim McNeill, are awarding special certificates to newsletter editors. One arrived here last month inscribed "The Academy of Model Aeronautics has conferred upon Bud Tenny membership in the Aero Honor Society for Newsletter Editors".

It was an honor to receive this, yet it is humbling to realize how much INAV's success depends upon active and faithful support by its readers. Only a small part of each issue cannot be characterized as having been furnished, inspired or reported by one or more of over 300 readers in over 20 countries. Quite simply, INAV is only the funnel thru which a great variety of news and information pours; the award belongs as much to INAV's readers as to the editor!

Spread The Word!

TV viewers in the Boston, Mass. area should watch TV station ZOOM sometime in June. New NIMAS member Joel Foner will appear in a sequence where he builds and flies a model helicopter. Although this program is aimed at Junior-aged kids, it should be interesting to all.

'74 Nats

It appears that the schedule for all the indoor events has stabilized as shown below:

Houston (97' ceiling) <u>Aug. 4, 1974</u> HLG - 9 am-5 pm PennyPlane - 5 pm-9 pm <u>Aug. 5, 1974</u> Indoor Stick Paper Stick All 9 am-9 pm Indoor Cabin FAI Stick	Lake Charles (55' ceiling) <u>Aug. 6, 1974</u> Indoor Stick Paper Stick Indoor Cabin All 9 am-9 pm FAI Stick Easy B <u>Aug. 7, 1974</u> HLG - 9 am-3 pm Indoor Scale, Peanut Scale Navy Scale - 3 pm-9 pm
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Nats Indoor Championship Points

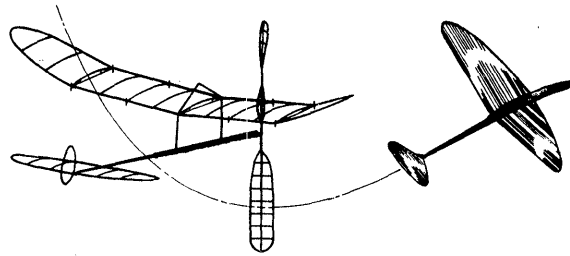
Editorial speculation (Feb. '74 INAV) raised the question of the number of events which could be declared by potential Indoor Category Champs. The Nats entry blank answered the question by setting the limit at 6 events. Therefore, any combination of the eleven events (5 at Houston and 6 at Lake Charles; PennyPlane, Easy B, Peanut Scale and Navy Scale are not eligible) can count. This new lineup may cause some interesting strategy planning by the Champs entrants!

New Winder Ready

Many fliers were interested in the Bob Wilder prototype winder which I had at the Nats and the Finals. At that time, Bob was sure that that particular design was difficult to manufacture and used too many scarce and expensive parts. However, he has now completed a new design which works beautifully and sells for \$24.50, plus \$1 for postage and handling. Bob tested the winder to 3 inch-oz. torque, so it is plenty rugged. Even so, it has the same smooth feel of the prototype and the same 20:1 ratio. The case size is the same - 3" dia. - with an overall length about 3 3/4". The turns counter resembles a lathe dial indicator, except that the 3" diameter allows 5 turn graduations and it can be interpolated to one turn. Counter capacity is 500 turns/revolution, with friction-type resetting action. Two standard hooks are available - 1/8" wire and .045" wire. Finally - no squabbles over whose winder it is - Bob personalizes each winder by putting a plate with your name on it. Order your winder from Bob Wilder, 2010 Boston, Irving TX 75060.

Info Wanted!

Several readers have requested that future three-views



show wood sizes of the various parts of the model. In the past, this information has always been made available when it was given, so it is up to those of you who send these three-views. If possible, let us have wood sizes!

Jim Pulley has noted that INAV has presented all sorts of detailed information, but never a formula for a glue that won't shrink. My personal favorite glue, which seems to shrink very little, is Duco Household Cement which has been thinned to suit with acetone and amyl acetate. Does anyone have other low-shrink or no-shrink glues?

FAI INDOOR REPORT

Charter Flight Cancelled

Until just a few weeks ago, it was expected that many European fliers and supporters would come to the Aerolympics via a special charter flight. Then, at the selected go-no-go point, not enough reservations had been made and the flight had to be cancelled.

The chief concern raised by the cancellation was the number of entries in the two WCh events - Indoor and Scale. At the latest word, the Indoor WCh entry was over the minimum of five teams entered, and there would be no cause for cancellation. At last count, the following team entries were in or promised: Japan, U. S., Canada, Finland, Poland and England.

Free Flight FAI Committee

As announced in the Apr. '74 INAV, the National Free Flight Society has been given the responsibility of naming FF and Indoor committees which are charged with recommending team selection program details. Participants in the past three team selection programs nominated the following members to the Indoor Committee:

Dist. I Ray Harlan	Dist. VII Dick Kowalski
Dist. II C. V. Russo	Dist. VIII Bud Tenny
Dist. III Bucky Servaites	Dist. IX Ted Gonzoph
Dist. IV Hal Crane	Dist. X Erv Rodemsky
Dist. V Dave Linstrum	Dist. XI Gaiser, Walters, Schultz
Dist. VI Al Rohrbaugh	

Each of the above nominees must be confirmed by the Dist. VP, or in the case of Dist. XI, one of the three will be confirmed by the VP. In similar fashion, Erv Rodemsky was named Chairman, subject to approval by AMA President John Clemens.

RECORDS? MAYBE!

Junior Cat. I Helicopter - 5:22.5, Joel Foner
Junior Cat. II Helicopter - 6:20.9, Joel Foner

1974 NIMAS POSTAL RESULTS

Name	Time(sec.)	Ceiling	Fudge	Score
<u>Jr. Class I HLG</u>				
Mark Grayson	39.0	20.2'	1.238	48.3
<u>Open HLG</u>				
Bob Lelshman	38.7	18'	1.39	53.8
Philip Walden	40.0	20.2'	1.238	49.5
Charlie Learoyd	45.0	25'	1.0	45.0
<u>Jr. PennyPlane</u>				
Jason Katsanis	159.0	20'	1.323	196.8
<u>Open PennyPlane</u>				
Clarence Mather	429.0	22.3'	1.253	530.9
Alan Riches	386.2	20.2'	1.316	477.9
Charlie Learoyd	370.0	25'	1.183	437.7
Ted Katsanis	233.0	20'	1.323	308.3
<u>Jr. Easy B</u>				
Phil Futo	188.0	20'	1.323	232.7
Jason Katsanis	51.0	20'	1.323	63.1

Sr. Easy B

Joe Skraba 65.0 20' 1.323 80.4

Open Easy B

Hal Crane 593.0 20.2' 1.318 733.9
Bob Platt 583.0 20.2' 1.318 721.5
Fudo Takagi 471.5 22.3' 1.253 583.5
Mike Thompson 349.0 20' 1.323 431.9
Bob Leishman 288.0 18' 1.394 401.5
Ted Katsanis 215.0 20' 1.323 266.1

CONTEST CALENDAR

CALIFORNIA - Santa Ana

Indoor Record Trials May 25-26 and June 22-23, 1974 at Santa Ana MCAF. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354.

CALIFORNIA - Taft

Indoor (PennyPlane, Peanut Scale and HLG) has been added to the U. S. Free Flight Championships held at Taft, Calif. The events will be flown in a gym in Taft; the site has a 40' ceiling and 80' x 100' floor, and the date is May 25, 1974. Contact Jim Scarborough, Box 393, Lawndale CA 90260.

CANADA - British Columbia

Indoor contest June 9, 1974 at the PNE Agrodome, Port Coquitlam, B. C.; site is FAI Cat. III and events are Scale, HLG PennyPlane and FAI Stick. Contact Alan Riches, 1568 Celeste Crescent, Port Coquitlam, B. C. Canada.

FLORIDA -Miami

Indoor contest at the Goodyear Blimp Base, Opa Locka Airport, 9 am to 5 pm, May 26, 1974. Contact Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

Midwestern States Indoor Championships, May 25-26, 1974, 9 am to 6 pm, at the Brig. Gen. R. L. Jones Armory, 5200 S. Cottage Grove Ave., Chicago. Paper Stick, Indoor Stick, FAI Stick, Indoor Cabin, HLG, PennyPlane and Indoor Scale. Pete Sotich, 3851 West 62nd Pl., Chicago IL 60629.

NEW JERSEY - Lakehurst

Flying session at Lakehurst on June 16, 1974 and contest on July 21, 1974. Contest events Indoor Stick, Easy B, HLG, Peanut Scale and PennyPlane. Contact Sal Cannizzo 20 Outerbridge Rd., Staten Is. NY 10309.

TOP TEN EASY B

Top Ten Easy B consists of the Postal winners each year, with a new listing beginning at the end of the Postal. For the remainder of the year, fliers may "bump" into the Top Ten by submitting flight times higher than existing times in the Top Ten.

	Time	Ceiling	Fudge	Score
1. Hal Crane	593.0	20.2'	1.318	733.9
2. Bob Platt	583.0	20.2'	1.318	721.9
3. Fudo Takagi	471.5	22.3'	1.253	583.5
4. Mike Thompson	349.0	20'	1.323	431.9
5. Bob Leishman	288.0	18'	1.394	401.5
6. Ted Katsanis	215.0	20'	1.323	266.1
7. Phil Fudo	188.0	20'	1.323	232.7
8. Joe Skraba	65.0	20'	1.323	80.4
9. Jason Katsanis	51.0	20'	1.323	63.1

PROPELLER SELECTION

by John Schauble

Say you have a Peanut Scale airplane with one of the little plastic propellers, and you have exhausted its potential for endurance by getting it precisely trimmed and by lots of experimenting to find the right size rubber motors. What should be done next to get more performance? The classic answer is to install more rubber and increase the propeller power handling capability. A rule of thumb (and some pretty fancy mathematics) says that performance should increase with added rubber until the rubber weighs as much as the airframe, or beyond.

Now this rule works when the airplane can handle the power, and the airplane is optimally trimmed for the new condition. Both conditions are substantially more difficult to meet if the amount of change is large, especially in Peanut. Here the aircraft form follows full scale, which may not be (usually isn't) ideal for handling power without a pilot. So what should one do?

Let's try to derive some common sense rules. First, we want minimal increase in thrust to minimize trimming problems, and maximum increase in duration of run for long cruising flight. This can be achieved by increasing the prop size relatively more than the motor size so that

thrust doesn't change with the bigger motor. (Perhaps thrust should increase just a bit to allow for the higher aircraft weight).

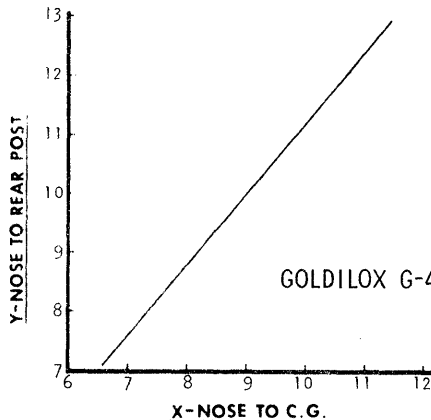
To achieve this result, increase the prop diameter in direct proportion to the area change of the rubber. For example, if your model flew well with .070 x .040 Pirelli, and you want to upgrade to .090 x .040, the prop diameter should increase by $(.090 \times .040) / (.070 \times .040) = 1.28$. Thus, a 6" diameter prop would increase to approximately 7 3/4" diameter. The bigger prop would give about the same thrust and minimize retrimming while giving a longer run because it will turn slower.

This rule ignores some factors, and should be regarded as a starting approximation. Be ready to make further adjustments by changing rubber size or clipping propeller tips. Also be careful of CG shift due to the heavier rubber. Ballast if necessary to restore the original CG.

Note: The above has been reprinted from GLASTONBURY MODELERS NEWS, edited by George Armstead. Thanks!

STATE OF THE ART

Goldilox G-4 is another in Stan Chilton's fine series of beautiful models. It set the FAI Cat. III record of 26:45 at the first session in the American Airlines hangar at Tulsa (South Central Semi-Finals), with room to spare. Besides the extra thick airfoil (Stan uses taut film which slightly reduces average camber), a feature not immediately apparent from the drawing is adjustable tail incidence. This is accomplished by mounting a socket on the end of the tail boom; the tail bracing post moves in the socket for incidence change. The long, lean look of the model coupled with Stan's trim (-3% CMOS; +6% INP) makes a very efficient model.



PENNYPLANE REBUTTAL

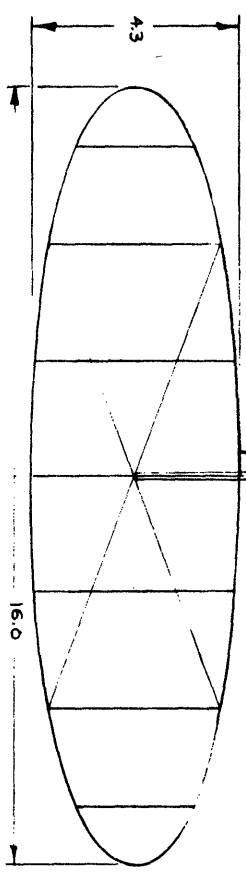
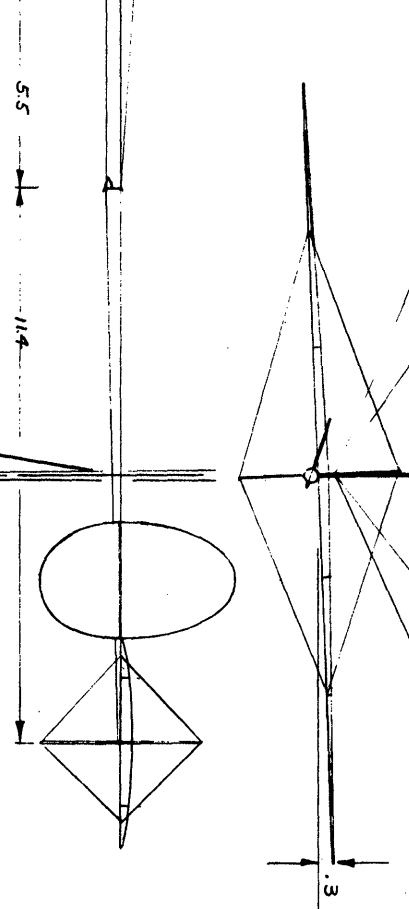
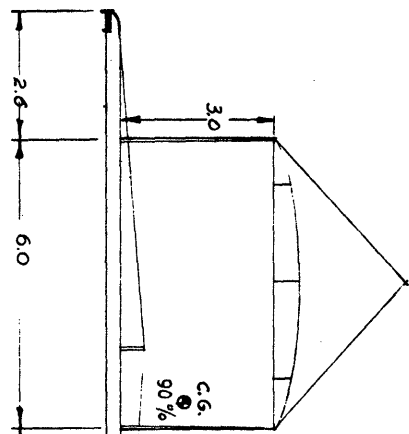
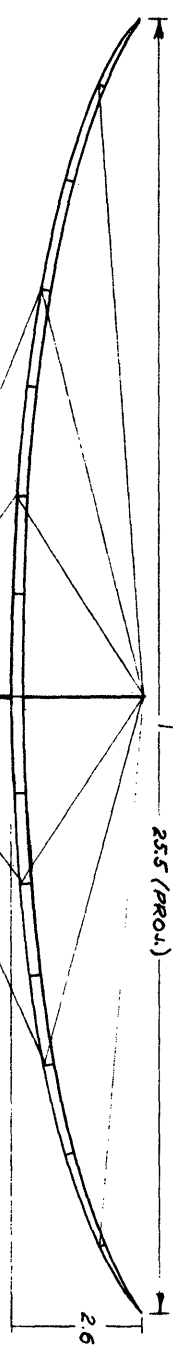
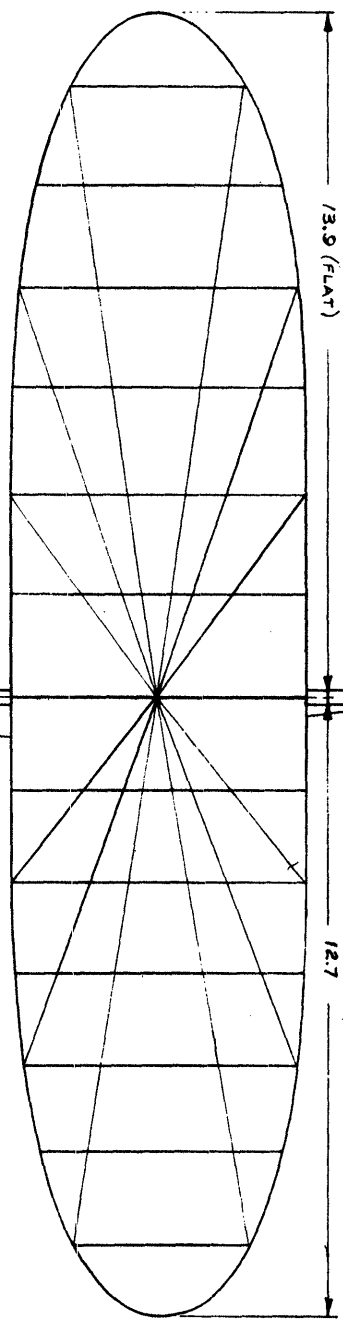
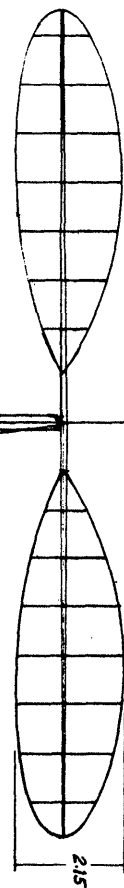
Bob Clemen's remarks and my rebuttal in the April '74 INAV brought forth some other comments:

Manny Radoff: PennyPlane, its predecessor Easy B, and any subsequent events are all doomed to be taken over by the experts. It is inevitable. There is no such thing as a fun model airplane if you are going to compete in a contest. The only fun in it is your fun of competition. If you are looking for a novice model airplane, you are groping in the dark without a candle. There ain't no such thing! There is only a novice model builder. You can't legislate or formulate a novice model - only a novice modeler. So if you want simple, easy, uncomplicated models, specify that only novices can enter. Novices can be defined. Define them as non-winners ever, in a contest. Second or third places only. One-time winners. Make it consistent. Thereby you will have a fun event with a novice built model and flown by a novice. CAUTION! No matter what your novice rules are, you will soon exhaust the supply of novices in the local area. SECOND CAUTION! Who is going to keep track of novice and expert modelers? Skipping all the other problems, if you go to the Nats with a "novice" event, do you just want to fly or compete once a year, after all the local talent has been used up? Think about it, fun modelers.

To paraphrase Gertrude Stein: A contest is a contest is a contest. Did she also say "A rose by any other name would smell just as sweet?" A contest is a competition. Somebody wins. If you object to the other guy wanting to win, and so building and designing a better model, give up competition and become what is known as a Sunday flier. President Truman put it very succinctly: "If you can't stand the heat, stay out of the kitchen!"

Otto Curth: In my opinion, the same "experts" will win any event because they expend energy (i.e. work at it) on

PROP - 17/30
 POWER - .052 x .041 x 18 1/2
 PIRELLI



CHILTON AIRFOILS PER
 HACKLINGER REPORT

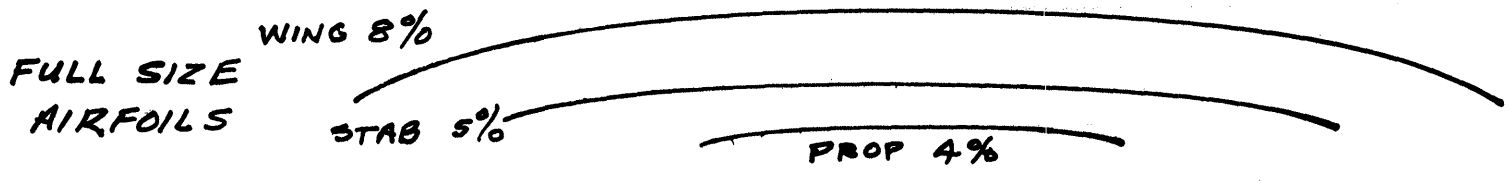
GOLDILOX - G4 - (1969)

WEIGHTS :

WING	.013
STICK & TAIL	.018
ROP	.007
TOTAL	.038

BY STAN CHILTON

RECORD TIME FAI CAT. II - 26:45 7/1/73 TULSA A/A HGR.



FULL SIZE
 AIRFOILS

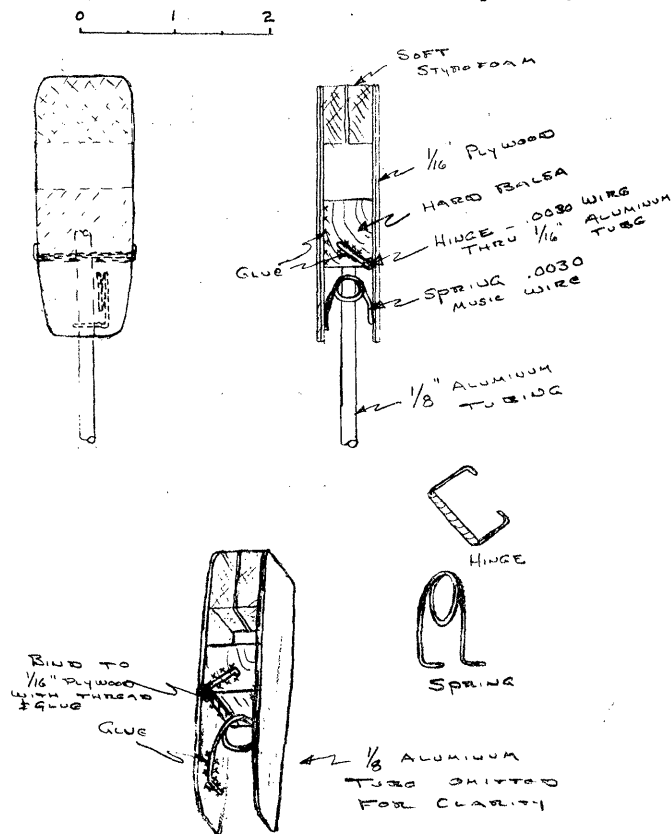
the event; that's what competition is all about, isn't it?

Fudo Takagi: I'm inclined to agree with Bob Clemens on the 4" chord bit. However, I don't agree with him on limiting covering to tissue, or on solid sticks. If a person wants to use carbon fibers, spider webs, etc., more power to him. I covered one with garment bag material; worked OK. A compromise would be to have two categories: Super Penny-Plane with the present rules, and Penny Fun Plane for the not-so-expert and fun fliers. The Fun Penny could use the 4" chord limitation, or also require Peck Polymers new 9 1/2" plastic prop and keep the other rules "as is".

Clarence Mather: I would like to see rules that produce models of better proportion and simpler construction. Yes, it will complicate the rules a bit but it seems to be a fact that simple models require detailed rules! I suggest limiting the area to 75 sq. in. or else 4" chord as Bob suggests. I prefer the area rule because it allows more variety of design - I believe that a square tip will fly as well as an elliptical one. Paper Stick has an area rule and it has been no problem to conduct the event. The smaller area allows the rest of the model to be built of heavier wood or solid stick, etc. I see no need to specify materials as the 1/2 weight takes care of advantages due to extra quality wood, etc. Microlite and other thin plastics have the great feature of not shrinking and warping the model. I would also like to see the rubber limited to 1/2 weight. I think that the monster props would no longer be needed - I could be wrong, though! I feel as does Bob that we need events where hollow sticks and booms are not required. I still find the present rules a fun event, but we need one for simpler models.

HINTS AND KINKS

One of the handiest accessories we use on the flying field is the run-down stand. Most of them just serve to hold the model between flights - and to let the motor unwind if we don't use an unwinding stooge. The one shown below, designed and drawn by Bill Hulbert, is an extra-special run-down stand in that it holds the model firmly without crushing the fuselage. The drawing is mostly self-explanatory, except for the notation "soft styrofoam". The material Bill used is usually referred to as foam rubber, and is much softer than styrofoam.



Two From Otto Curth

Microlite often is difficult to handle because of a heavy static charge. Mount the microlite on a frame, then

run hot water in a shower stall or tub until the air is laden with steam. Pass the microlite thru the steam and the static will leave, giving limp film.

Steel strapping such as is used on heavy packing crates makes a very handy straightedge. Put masking tape on the back to make a non-skid surface.

Pour Uniform Microfilm

Paul Allen suggests a way to learn the smooth pouring stroke necessary for uniform sheets of microfilm. He lays an aluminum angle lengthwise across the tank, and has the angle measured into equal sections with contrasting marks. A metronome gives him a cadence beat, so that his pouring motion is timed uniformly. For thinner film, he speeds up the metronome; for thicker film a slower beat is used. In addition to the metronome, Paul also uses a standard type pouring spout with interchangeable orifices.

CONTEST RESULTS

M.I.A.M.A Indoor Contest, Jan. 20, 1974, Cat. II
Goodyear Blimp Hangar, Opa Locka Airport, Miami, Fl.

Peanut Scale		Indoor Scale	
1. John Martin	235.3	1. John Martin	1:22.3
2. Bill Hiscock	169.8	2. Gary Myers	1:15.6
3. Gary Myers	131.0	3. Fulton Hungerford	1:20.8

Junior Easy B		Open Easy B	
1. Rick Myers	6:09	1. Jim Stewart	9:37.9
		2. Gary Myers	9:14.1
		3. Russ Dorsey	3:44.5

Junior PennyPlane		Open PennyPlane	
1. Rick Myers	6:05	1. Gary Myers	6:30
2. Charles Slater	3:08	2. Jim Stewart	6:15

Open Endurance		Open HLG	
1. Gary Myers	9:38	1. John Arthur	98.9
2. Jim Stewart	7:51	2. Gary Myers	89.4

Winged Motors Indoor Meet, Feb. 23, 1974 Cat. I 20.5'
Kansas City, Mo. area

Indoor Scale		Junior Rubber	
Dick Stamm	82 points	Mike Douglas	177 sec
John Krekovich	77	Chris Coninellis	108
Cecil Davis	77	Frank McCall	80

Winged Motors Indoor Meet, Mar. 16, 1974 Cat. I 20.5'
Kansas City, Mo. area

Easy B		Open Stick	
Roger Schroeder	7:12	Bill Langley	8:24
Bill Langley	7:01	Walter Lounsbury	7:57
Carl Perkins	4:59	Roger Schroeder	7:18
Kevin Wehner	4:42		

No Touch Award - 6:30, Walter Lounsbury

Thermaleers FLY IN, Mar. 10, 1974 Cat. I
Fort Zumwalt, Mo.

Jr-Sr Easy B		Open Easy B	
Doug DePaul	5:48	Dick Hardcastle	7:36.8
Allan Brittle	3:46.4	Chris Matsuno	5:32
Bent Humphries	3:18	M. DePaul	5:08

Jr-Sr HLG		Open HLG	
Doug DePaul	34.8	Dick Hardcastle	61.2
Bill Martin	24.8	Chris Matsuno	58.8
Erik Schwan	11.2	Paul Tryon	54.8

Jr. AMA Cub		Indoor Stick	
Chris Potts	38	Dick Hardcastle	5:47.8
Mary Cook	30	Paul Tryon	5:14.2
Tim Potts	30	M. DePaul	2:39

Peanut Scale			
Conrad Ruppert	153	Stinson Voyager	
Dick Hardcastle	142	Pilatus Porter	
R. E. Peters	73	Pietenpol Air Camper	

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

ERNIE J. CLARK, 2601 NE 9th Ave., Pompano Beach FL 33064
 ANDY deMELLO, 100 Leeward Glnwy, Apt. 1701, Don Mills,
 Ontario, Canada M3C 2Z1
 MARK DRELA, 222 Barry St., Philadelphia PA 19111

Change of Address

DAVE LINSTRUM, 2023 Woodleigh Dr. W, Jacksonville FL 32211
 ph. 904-725-8856
 STEPHEN FAUBLE, 522 Mullins, Lewisville TX 75067

Paul Harvey!

Most people know that Paul Harvey is a radio and TV news commentator. Those who listen to him regularly are aware that he almost faithfully finishes each broadcast with something on a lighter note - something to give a chuckle or brighten our day. Faithful listeners are aware that Paul is a member of AMA, and a member of an AMA Chartered Club, and that he gives AMA and modeling a boost in his cheerful and unabashed style. If you don't listen to his program, you are missing one of the most non-partisan, common sense, plain speaking commentators ever to speak in the media. At least once a week, there is some new insight - something undoubtedly true - presented with such clarity of thought that it glows. An example, which is an approximate quote: "Don't let any politician buy your vote with a promise to lower your taxes by raising the taxes of others. Big Business doesn't pay taxes - people pay taxes - all corporations pass their taxes on to people with increased prices."

So, thanks to Paul Harvey! He gives modeling a plug with perhaps the widest coverage achieved by any of those who tell our story. All modeling activity thereby gains in stature as more people hear our story.

Double Oops!

No one has shot me yet, but three high-placing entries in the NIMAS Postal were buried in my briefcase and only came to light two weeks after the May '74 issue was mailed out. The revised listing appears below, followed by a revised listing of Top Ten Easy B.

Jr. Class I HLG	Time	Ceiling	Fudge	Score
Scott Wisniewski*	57.6	22'	1.136	65.4
Mark Grayson	39.0	20.2'	1.238	48.3

Open Class I HLG

Dick Hardcastle*	62.7	22'	1.136	71.2
Bob Leishman	38.7	18'	1.39	53.8
Philip Walden	40.0	20.2'	1.238	49.5
Chalrly Learoyd	45.0	25'	1.0	45.0

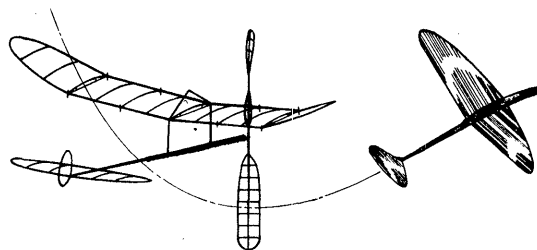
Open Easy B

Dick Hardcastle*	634	22'	1.261	739.4
Hal Crane	593	20.2'	1.318	733.9
Bob Platt	583	20.2'	1.318	721.5
Fudo Takagi	471.5	22.3'	1.253	583.5
Gordon Wisniewski*	433	22'	1.261	546
Mike Thompson	349	20'	1.323	431.9
Bob Leishman	288	18'	1.394	401.5
Ted Katsanis	215	20'	1.323	266.1

*New Listing

TOP TEN EASY B

1. Dick Hardcastle	634	22'	1.261	739.4
2. Hal Crane	593	20.2'	1.318	733.9
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9. Phil Futo	188	20'	1.323	232.7
10. Joe Skraba	65	20'	1.323	80.4



'74 Nats

All fliers who have made proper entry and received a Nats ID tag and bumper sticker from AMA Hq can go directly to the indoor site, don the ID tag, and present models for processing when ready to fly. If anyone has an entry discrepancy (the letter from Hq will note details of any such discrepancy), he must first report to the AMA desk at the indoor site to resolve the matter.

All trophies won at the high ceiling site (Goodyear Blimp Hangar, Spring, Texas) can be claimed there each day after finish of the day's events. Trophies won at the low ceiling site (Lake Charles Civic Center Sports Arena, in downtown Lake Charles) will be available at the Trophy Cage at Chennault Airbase, along with trophies from other events.

Indoor HLG will use the "time sharing" concept in use at all recent Nats - half-hour periods of test flying alternating with similar official flying periods. Also, the time-a-flight-fly-a-flight system will be used, where each contestant or his helper will time a flight before the contestant will be allowed to have a timer again. Note: official flights may be made during test flying sessions at the option of the contestant, but no testing will be permitted during official flying sessions.

Table rental at the workshop area on base can be handled at the AMA desk at the Goodyear Hangar on Aug. 4 or 5; otherwise the supply may be exhausted before indoor contestants reach the base on Aug. 6.

NIMAS Awards

SILVER CAT. II RUBBER - 20:27.0, Richard Doig

GOLD CAT. II HLG - 0:56.4, Richard Doig

FAI INDOOR REPORT

Team Practice Session

Team Manager Dick Kowalski made the following report to AMA Hq on the May 18-19 team practice session:

The team assembled at Philadelphia International Airport and motored to Lakehurst without difficulty. Test flying on both days was spirited but yet prudent due to the nearness of the WCh. During prior team discussions, it was decided that competitive team flying at this late date would be hazardous. Consequently, our strategy was to fly aggressively, but to restrain our "pressing" to a point where models might be lost or damaged. In spite of this conservative atmosphere, the team members made good individual flights as follows: Cailliau - 34 min., Servaites - 36 min., Stoll - 35 min.

In view of the atmospheric conditions which prevailed (good but not excellent), it would appear that we have a potentially strong and competent team for 1974. Harmony, rapport and morale among team members is excellent. In the manager's personal opinion, it is felt that we have the full potential to win or at least place very high in the Team Standings at the WCh.

World Champs Entrants

Barring possible entries delayed by international mail delivery schedules, the following list can be considered to be final with regard to the Indoor WCh: (managers listed last)

CANADA	CZECHOSLOVAKIA	ENGLAND
Andy deMello	Karol Rybecky	Laurie Barr
Jack McGillvray	Jiri Kalina	John Blount
Mike Thomas	Eduard Chlubny	Reg Parham
	Otakar Saffek	Butch Hadland
FINLAND	GERMANY	ITALY
Pentti Nore	Horst Tiemann	Fernando Migani
Harro Erofejeff	Werner Wetzel	Carlo Cotugno
Harri Raulio	Herbert Langner	Adalberto Frioli
Harro Erofejeff	Gunter Malbaum	

JAPAN	POLAND	SWITZERLAND
Shigeyoshi Nonaka	Edward Ciapala	Dieter Siebenmann
Junichi Sakoda	Sylwester Kujawa	Werner Heise
Toshiaki Minagawa	Ryszard Czechowski	Francois Tapernoux
Shigeyosha Nonaka	Zdzislaw Szajewski	Hans Reifler
AUSTRALIA*	NETHERLANDS**	
Boyd Felstead	Cornelis Wolthoorn	

*Boyd will send models to be proxy-flown by Manny Radoff, with John Triolo as manager.

**Hank Dekat (Toledo, Ohio) will serve as manager for the Netherlands.

CONTEST CALENDAR

CALIFORNIA - Santa Ana
Indoor Record Trials June 22-23, 1974 at Santa Ana MCAF. Contact Bob Randolph, 25145 Lawton Ave., Loma Linda CA 92354.

NEW JERSEY - Lakehurst
Indoor contest at Lakehurst on July 21, 1974; Indoor Stick, Easy B, HLG, Peanut Scale and PennyPlane. Contact Sal Cannizzo, 20 Outerbridge Rd., Staten Is. NY 10309.

NEW YORK - Long Beach
Cat. I indoor contest on July 28, 1974 at Nassau County Arena, Long Beach, L. I. NY. HLG, Easy B, Peanut Scale, Indoor Stick, Indoor Scale. J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

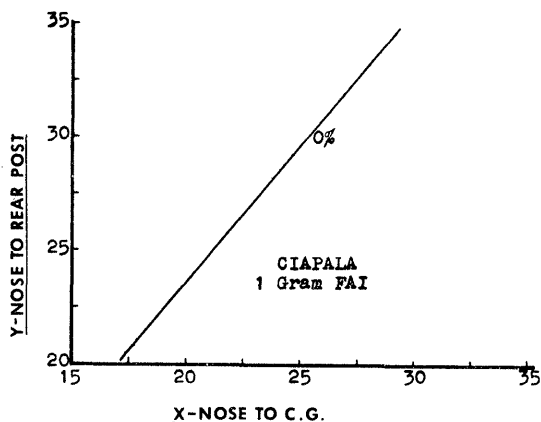
RECORDS? MAYBE!

LAKEHURST FLYING SESSION, May 19, 1974, Cat. III
Junior Helicopter - 3:24.8, Joel Foner

Glastonbury Modelers Cat. I Record Trials, Feb. '74
Senior HLG - 1:13.5, George Armstead III

STATE OF THE ART

Edward Ciapala's one gram FAI returned an enviable performance on the flight which now holds the Cat. III Record at 33:34, and the site record at Kossuth University in Debrecen, Hungary. When one considers that the previous site record was 32:42, set in 1966 by Hans Beck at the '66 WCh, this performance doesn't come into proper perspective until one realizes that Hans Beck's flight was made with an unlimited 90 cm model. Also, the site must be considered - the roof is a stained-glass semi-dome which is almost impossible to scrub safely. No word was received to indicate whether the model did contact the ceiling, in spite of the ceiling probe shown. At any rate, the model was trimmed "right down the middle" (+6% CMOS, +11.7% INP) and logically would be good in ceiling contact situations.



PENNYPLANE REBUTTAL

Erv Rodemsky and Charlie Sotich were two of the prime movers in popularizing PennyPlane, and Erv is generally regarded as the "inventor" of the event. So, it is fitting that both these should add their thought to:

THE GREAT PENNYPLANE DEBATE

by Erv Rodemsky

I'd like to add my two cents' worth (no, not another class!). The original intent was to have an event that was simple to build, could achieve reasonable performance, and be a challenge to beginner and expert alike. It doesn't matter what kind of rules you write, the best man will usually come out on top. The only way to prevent a good guy from consistently winning is to (a) disqualify a man after a certain number of wins, (b) use a handicap system

(cumbersome, hard to administer), or (c) step on his models. Let's face it. The best man will win no matter what the rules. The reason I stayed away from a max wing chord rule is to keep all models from having square wing tips. The rules obviously allow originality while keeping the models easy to build and handle.

As I see the problem of PennyPlane, a beginner will try to build a copy of the "expert's" model with discouraging results. So a great deal of thought has been given to a breakdown of classes. A novice could be told to keep everything within reasonable limits by specifying, in addition to the present rules, a max wing chord, max stab span and chord, solid motor stick and boom, and max prop size. This, in effect, would be a "one design" contest, except that wing tip shape and height would still be optional. BI-planes would be OK. Covering would still be your choice (the original PennyPlane was covered with Saran Wrap), the great equalizer being the weight rule.

As to regular PennyPlane, I'm not sure that over 6" chord does any good. Dennis Jaecks used 8" last year, but he admits that it was no real advantage. I believe Larry Cailliau was close behind with a much higher aspect ratio. As a matter of historical interest, Chuck Markos won the first PennyPlane contest with a 5" chord round wing tip design. And, as far as "experts" are concerned, I believe a careful check will reveal very few "names" that have ever won PennyPlane contests. Jaecks seems to have developed most of his skill by flying the event. His design objective was to build a ship that would be able to carry around three grams of rubber effectively - that meant a lot of wing area, wing offset, washin and a big prop.

One opinion that I hear over and over is "keep the rules simple." However, if it is a choice between a simple airplane regulated by hard rules, or a hard airplane with simple rules, give me strict rules, especially for beginners. The answer for beginners with a complicated set of rules is to provide full-size plans or kits that meet all the regulations. Once a flier gets the most out of the limited class, let him fly against the "big boys".

As the rules were originally written, this class has grown steadily in popularity. The April issue of INDOOR NEWS AND VIEWS showed half the scheduled contests with PennyPlane included, and the event is being flown in England, Italy, the Netherlands and other countries.

We in the Oakland Cloud Dusters are proposing that PennyPlane be adopted as an official AMA event, with suggested extra limitations for a novice class. If anyone has any ideas along these lines, I would appreciate hearing them and they will be considered in the official proposal. (Note: Erv's address is 1624 St. David Dr., Danville CA 94526, ph. 415-837-3314.

THE PENNYPLANE EVENT

by Charlie Sotich

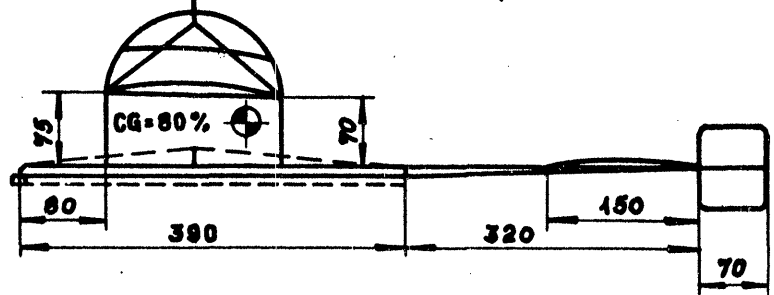
Should the PennyPlane rules be modified to make it easier for beginners? Bob Clemens suggested limiting (1) the wing chord to 4", (2) the covering material to Japanese tissue and (3) requiring solid motor sticks. Putting these or any similar restrictions on the model design or construction is not going to enable the novice or once-a-year flier to beat Dennis Jaecks. If you want to win in any event you have to work at it. Winning in a raffle where everyone has an equal chance is just a matter of luck, not skill. If you want to let the beginners have a chance of winning you should restrict the event to beginners.

My personal feeling is that the present PennyPlane rules as written by Erv Rodemsky are very good for a beginner event but they are also a challenge to the experts. The model size is reasonable, not big and clumsy or small and delicate. The weight requirement allows a sturdy model to be built. It can be braced if necessary, yet ultralight wood or covering isn't a necessity. Many unusual designs have appeared during the past few years. The models all are generally very simple and easy to make and yet are extremely rugged. These models can be kept flying for years, not just one or two flying sessions. The best thing about them is that most of them fly well and encourage their builders to continue building and flying.

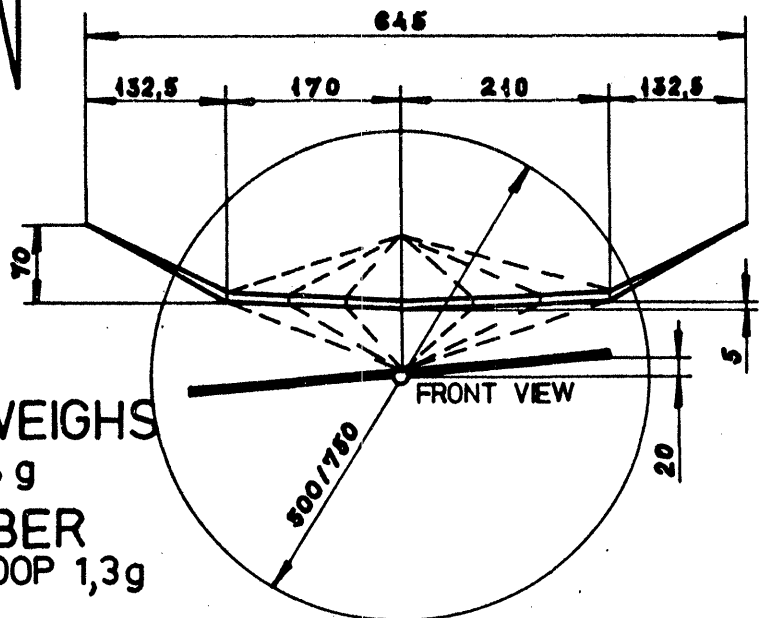
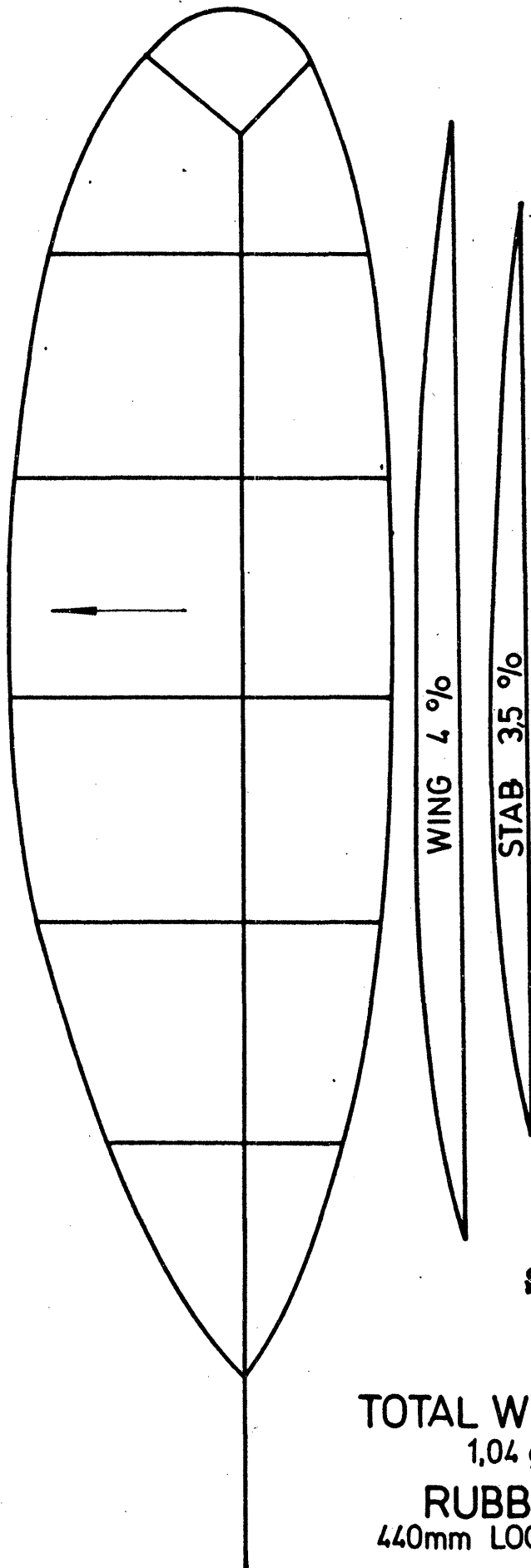
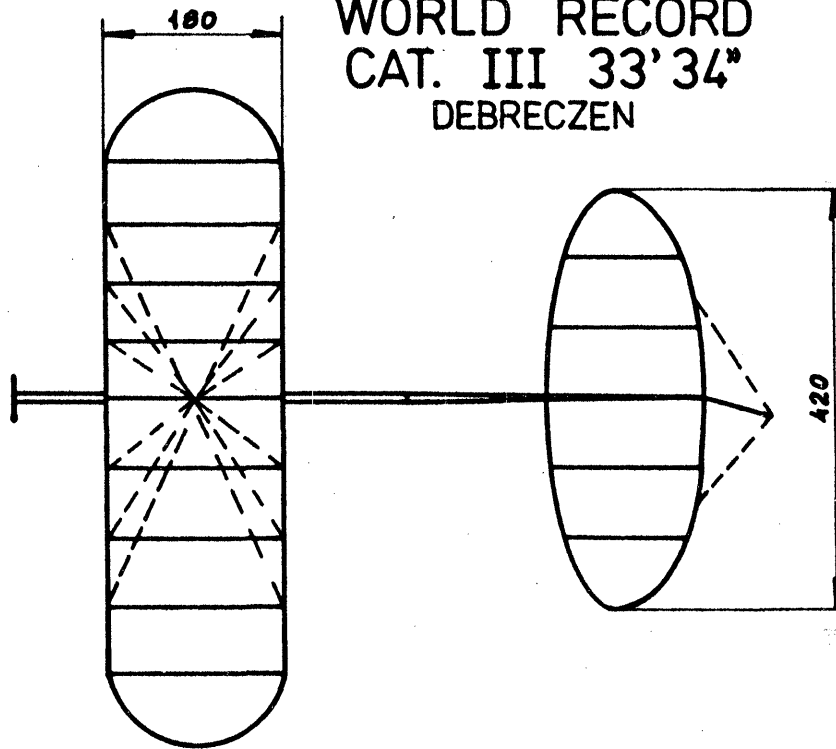
The Easy B event also started out for beginners, but it didn't last. Bracing is not allowed, and there is no minimum weight rule. This makes careful wood selection a must to get a light model that will stay together. Beginners usually don't have good wood available and don't know how to pick the wood for best results.

The one way to have a real beginner event is to restrict the competition to beginners. Let the experienced indoor fliers stay in the traditional classes of microfilm

FAI 1 GRAM
EDWARD CIAPAKA
POLAND



WORLD RECORD
CAT. III 33'34"
DEBRECZEN



TOTAL WEIGHS
1,04 g
RUBBER
440mm LOOP 1,3g

and paper covered models. There are enough indoor events now to keep most indoor modelers busy building and flying. If the beginners are able to fly and compete against other beginners they wouldn't be so unhappy after a contest when they compare their times with the winners.

Instead of looking for new events to encourage the beginners we just need to restructure our competition classes. We now use the contestant's age to classify the competition. If a system could be devised using skill levels it might provide a fairer form of competition and it could be used as an incentive for the newcomers to try to move out of the beginner class to one more advanced. If the RC Pattern flyers have been able to develop a workable system of competition for novice and expert flyers, I think that indoor flyers can do it too.

INDOOR MODEL TRIM PROCEDURES

by Clarence Mather

I was asked to describe procedures for preparing a model for competition in low and medium sites and for world championships. The first step is to build the model with the proper washin and offsets and to have the proper wing location. Beginners are urged to stick with proven designs such as are published here in INAV. The CMOS wing location method (Jan. '73 INAV), is recommended for original designers, and the balance chart furnished with INAV three-views should be used when building these designs.

Most indoor fliers have limited access to suitable indoor sites and there seldom is enough time for complete testing. Fortunately, a considerable amount of testing can be done in the home by releasing a fully wound model near the floor of a living room and catching it at head height a few seconds later. This sounds hazardous, but I cannot recall ever damaging a model this way, in spite of being somewhat clumsy. Generally, the testing room should be large, but freedom from drafts, cats, dogs, children, etc., is also important.

Indoor testing can be considered in two parts. First, determine if the model is strong enough, is balanced properly, and has the correct washin and offsets. The second involves selecting the best combination of propeller and rubber for the flying site.

Assemble the model and lube a motor slightly wider than that expected to be used in competition. Wind the motor to about 50% of full turns and launch the model slightly nose high. The model should climb slightly (the motor is oversize, remember) and show a definite turn. Even in a small room, the circle diameter can be estimated quite accurately. Circle size is somewhat a matter of choice, but 20'-30' is the common range. If the flying site narrows at the top a smaller circle is desirable. Adjust the rudder offset until the desired turn results. Stalls or dives can be cured by changing wing incidence.

Next, increase the number of turns in the motor about 80% of maximum and again fly the model. The circle should be as before but the climb should be very definite. Stalls can be removed by decreasing wing incidence, but if the turn is gone study the model carefully in flight. The wing may be twisting due to loose bracing wires or it may be too weak; the motor stick may be bending to the right. Joe Bilgri has remarked that a larger rudder helps keep a model in a turn under higher power; if turn problems persist try a larger rudder. Floppy wing tips may need bracing for rigidity. Additional wing spar brace wires can stiffen a wing, but sometimes a stronger wing must be built.

When the model flies well on 80% power, give it full turns or very nearly so. Many models that do well on partial turns develop all sorts of problems on high power. It is better to discover this at home and solve the problems than to have them show up at a contest!

A rough idea of how high a model will climb on a particular propeller-motor combination can also be found by home testing. Launch the fully wound model near the floor and catch it at a predetermined height. Stop the prop as you do so. Return to floor level and launch again; repeat this until the climb ends and add up the total height gained. The accuracy of this method depends upon how closely the home air matches the temperature and humidity of the air in the flying site. Cold air is more dense and harder to penetrate than warm air; the rubber will also develop less torque when cold. A larger motor or smaller prop will be required to produce the same altitude in cold air as in warm. Humid air is less dense than dry air but wood tends to absorb moisture so models gain weight in moist air. The rubber seems to develop less torque also, but this is probably an illusion since rubber is water-proof?? Anyhow, larger rubber is often needed in humid air. The air temperature usually changes as the day progresses; getting warmer from the roof down due to the sun

heating the roof. A motor that barely gets a model to the roof in the morning may cause the model to hang up late in the day. Sometimes there are air currents to compound the problem and the result is that experienced fliers choose where and when to launch as in outdoor competition!

For flying in low ceiling sites, use a smaller and shorter motor than was used in higher ceilings. Probably no two fliers will agree, but a motor weighing slightly more than the model works best for me in sites with cluttered roof so that ceiling bouncing is risky. If the roof is smooth a larger motor would be in order - I have never flown in such a site, but from all accounts this is so. Some fliers prefer a motor just able to take the model to the ceiling with full turns (speaking of cluttered ceiling again), but most of us use a heavier motor fully wound and then back off turns to the proper level before launching. Medium ceiling sites require more of the same - the motor will be slightly larger and longer than for the low ceiling site - only extensive testing can show which size of rubber is best for a given model and prop any given day. With extensive advance testing, it is possible to minimize the testing needed on contest day.

INDOOR ELSEWHERE

The Romanian Nats were held at Slanic of Feb. 8-10, 1974, with 42 competitors counting juniors and seniors. Conditions were reported as "normal" - probably good.

1. Aurel Pops	35:36	36:41	72:17
2. Eugen Holtier	34:31	36:25	70:56
3. Aurel Meararu	34:33	36:25	69:31
4. Gheorghe Sora	29:37	33:26	63:03
5. Tudor Lungu	31:20	29:35	60:55
6. Otto Hints	27:59	31:32	59:31
7. Mihai Teut	30:50	26:23	57:13
8. Dorel Pora	28:14	28:30	56:44
9. Vasile Nicocara	27:30	28:09	55:39
10. Nicu Bezman	28:50	26:25	55:15

A CHANGE OF PAGE

Dear Bud,

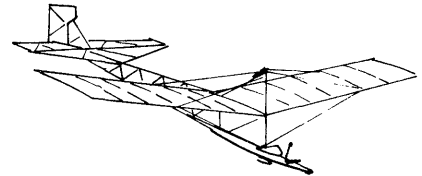
How do you feel about a new* indoor class? Indoor Towline!! The D C Maxcutors and several other clubs have flown the event recently. The ships have higher performance (if you count duration) than HLG, and they are easier to build and fly than scale or rubber models.

The rules we used were very simple - none - but we found that some wing loading rule is required. We have flown the event for four years, but last year Bill Bigge (who else?) did 2:30 in one flight in the 20' high school gym. So this year we have a rule that the model must carry a U.S. penny. I suspect this will be too much, and that one-half gram would be better for all ceilings.

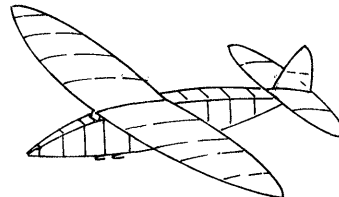
(signed) John Thornhill

*In point of fact, the event must date from about 1936.

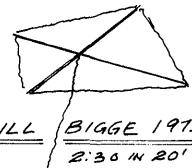
INDOOR
TOWLINE



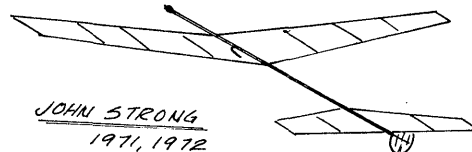
SEMI SCALE FRANKLIN
1970



DUKE FOX
1937 ZAIC4B



BILL BIGGE 1973
2:30 IN 20'

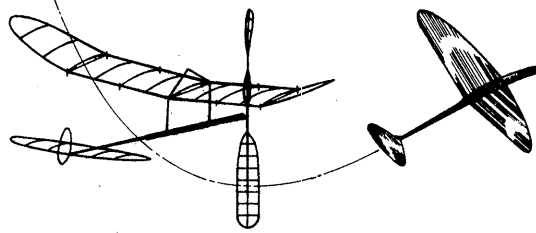


JOHN STRONG
1971, 1972

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



THE 1974 INDOOR WORLD CHAMPIONSHIP

Individual Standings

1. Ryszard Czechowski	Poland	34:27	34:50	29:01	<u>34:56</u>	<u>34:53</u>	33:34	69:49
2. Bucky Servaites	U.S.A.	<u>33:59</u>	6:56	33:40	<u>32:44</u>	<u>25:54</u>	<u>33:51</u>	67:50
3. Karol Rybecky	Czechoslovakia	21:51	<u>31:32</u>	14:49	19:39	<u>30:27</u>	<u>35:44</u>	67:16
4. Sylwester Kujawa	Poland	29:45	<u>32:34</u>	9:39	28:26	<u>34:32</u>	9:55	67:06
5. Edward Ciapala	Poland	27:52	31:01	<u>32:49</u>	17:43	<u>34:11</u>	30:25	67:00
6. Pete Andrews	1972 Champ	31:12	20:32	<u>33:56</u>	0:14	<u>32:03</u>	31:10	65:59
7. Eduard Chlubny	Czechoslovakia	22:38	<u>31:23</u>	<u>23:52</u>	28:55	26:47	<u>33:04</u>	64:27
8. Ed Stoll	U.S.A.	<u>30:56</u>	26:07	28:59	8:43	29:01	<u>33:08</u>	64:04
9. John Blount	England	10:41	12:14	0:36	<u>29:01</u>	28:25	<u>33:16</u>	62:17
10. Larry Cailliau	U.S.A.	6:54	8:02	<u>33:31</u>	26:19	13:24	<u>28:45</u>	62:16
11. Jack McGillivray	Canada	<u>29:36</u>	19:15	<u>32:22</u>	12:20	28:54	0:15	61:58
12. Laurie Barr	England	24:41	21:07	<u>28:48</u>	13:58	26:49	<u>32:22</u>	61:10
13. Jiri Kalina	Czechoslovakia	15:05	8:33	<u>33:02</u>	12:35	<u>27:15</u>	26:45	60:17
14. Pentti Nore	Finland	15:06	20:02	<u>28:08</u>	<u>31:43</u>	2:42	26:38	59:51
15. Reg Farham	England	23:48	0:20	21:32	<u>28:20</u>	28:11	29:30	57:50
16. Harri Raulio	Finland	22:00	23:17	<u>31:20</u>	<u>25:54</u>	24:24	25:17	57:14
17. Toshiaki Minagawa	Japan	21:15	<u>27:13</u>	<u>28:52</u>	15:58	21:41	19:13	56:05
18. Andy DeMello	Canada	0:14	6:33	<u>24:35</u>	<u>25:56</u>	15:51	<u>29:07</u>	55:03
19. Carlo Cotugno	Italy	25:29	0:05	17:40	<u>26:16</u>	26:06	<u>28:10</u>	54:26
20. Adalberto Frioli	Italy	7:48	<u>25:22</u>	12:30	15:42	19:32	<u>28:44</u>	54:06
21. Werner Wetzel	Germany	12:53	0:20	<u>27:30</u>	21:10	25:21	<u>26:24</u>	53:54
22. Kurt Vogler	Germany	21:51	22:07	<u>27:06</u>	<u>26:29</u>	8:51	23:55	53:35
23. Harro Erofejeff	Finland	14:48	18:51	19:54	24:16	<u>24:53</u>	<u>27:32</u>	52:25
24. Mike Thomas	Canada	23:01	6:34	13:22	<u>26:48</u>	11:29	<u>24:12</u>	51:00
25. Ferdinando Migani	Italy	19:45	18:54	<u>26:36</u>	7:48	<u>23:44</u>	9:19	50:20
26. Boyd Felstead	Australia	21:55	<u>25:45</u>	16:17	0:05	<u>22:51</u>	17:37	48:36
27. Horst Tlemann	Germany	21:07	<u>23:18</u>	21:35	21:48	<u>24:50</u>	8:38	48:08
28. Dieter Siebenmann	Switzerland	20:45	0:17	15:45	<u>22:00</u>	0:14	<u>22:07</u>	44:07
29. Cornelis Wolthoorn	Netherlands	21:15	21:31	16:17	16:58	12:04	9:26	42:46
30. Francois Taperoux	Switzerland	19:04	14:37	<u>19:29</u>	2:14	12:17	<u>22:29</u>	41:58
31. Junichi Sakoda	Japan	15:13	-	17:36	6:55	<u>20:12</u>	<u>21:37</u>	41:47
32. Shigeyoshi Nonaka	Japan	19:49	15:58	<u>20:16</u>	<u>20:31</u>	16:17	0:04	40:47
33. Werner Heise	Switzerland	6:32	1:19	<u>2:14</u>	<u>14:44</u>	5:46	10:17	25:01

Team Standings

1. Poland	203:55	8. Germany	155:37
2. U.S.A.	194:10	9. Japan	138:41
3. Czechoslovakia	192:00	10. Switzerland	111:06
4. England	181:17	11. Australia (1 man)	48:38
5. Finland	169:30	12. Netherlands (1 man)	42:46
6. Canada	168:01	1972 Champion (Andrews)	65:59
7. Italy	158:52		

The 1974 Aerolympics was a six-ring circus, but most indoor fliers didn't see much of the other events. During the Indoor WCh, spectators from Scale, Pylon and Soaring came in to see the indoor flying.

Most of the teams arrived on Monday or before, and an impromptu practice session was set up. Thanks to organization by Bob Hatschek and to Navy cooperation, model storage was possible at the hangar, thus relieving teams with marginal or no transportation of some problems.

During the practice sessions, not much comment was heard about times, and apparently no one was really pushing hard. The hangar doors were open slightly each day until Thursday, and tightly closed thru Sunday. Testing was also allowed each day until beginning of official flying, but the air was cleared at 1 pm for the beginning of each round. Each team was allowed only one set of timers at a time, so that thirteen models was the maximum number that could be flying at one time. Most of the time fewer models were up, and there were few collisions.

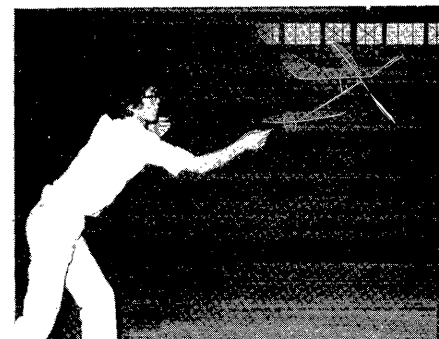
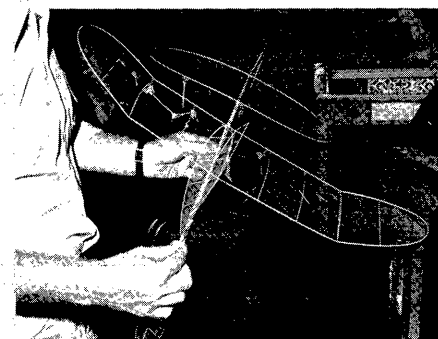
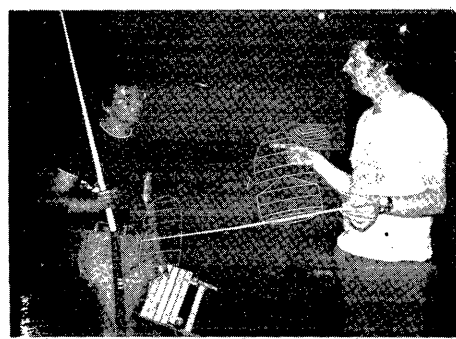
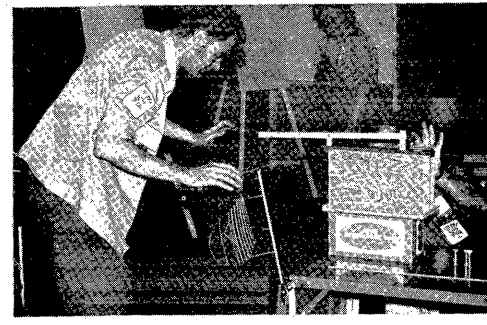
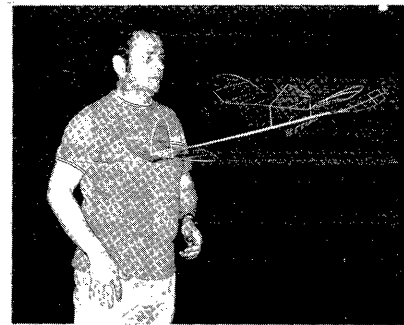
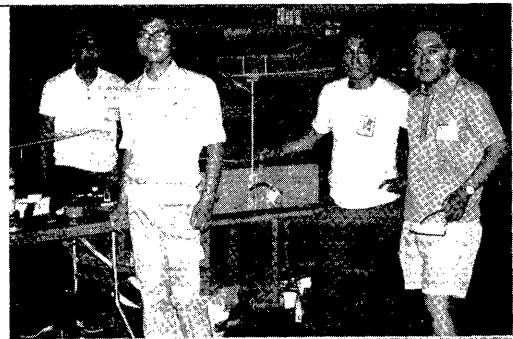
The results sheet speaks for itself - after Round 1, Poland had set a pace that was difficult to approach. Jiri Kalina's first round flight also became a sort of pace setter as it landed neatly and completely on the catwalk - totally non-retrievable except by someone on the catwalk. Navy riggers were available sporadically to get such models down, but mostly one had to depend on spare models until the riggers came. The cause of Jiri's misfortune - persistent side drift - affected many other models during the meet. Some landed cleanly on the cat-

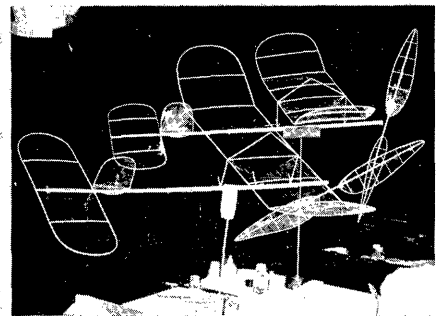
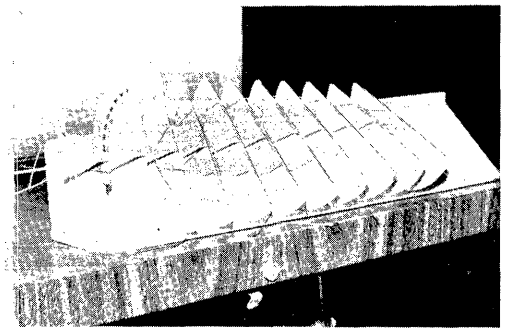
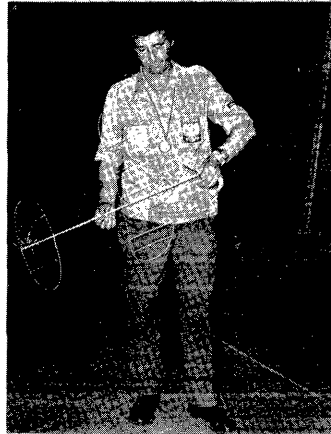
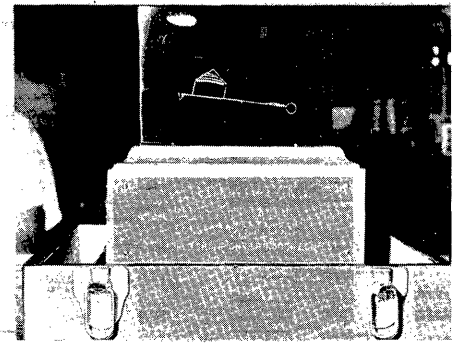
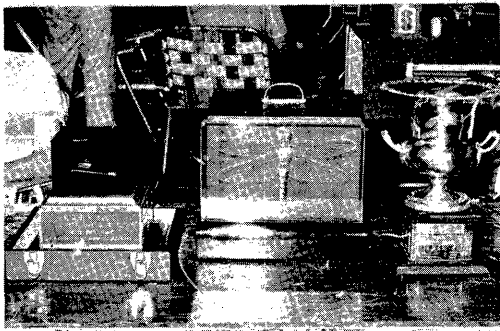
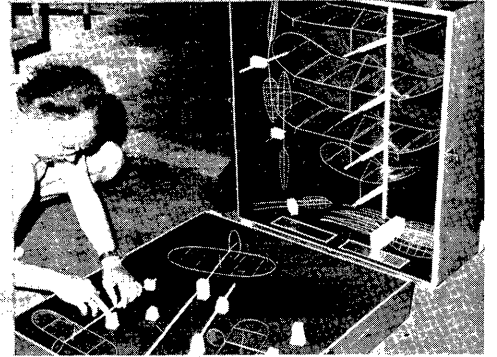
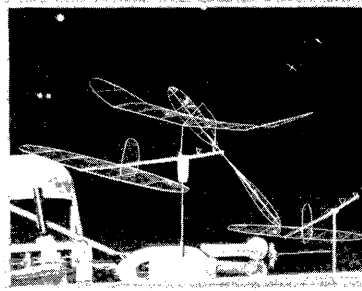
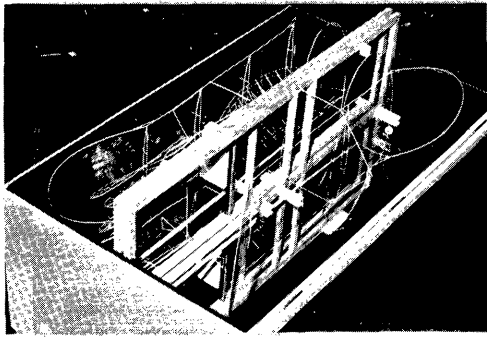
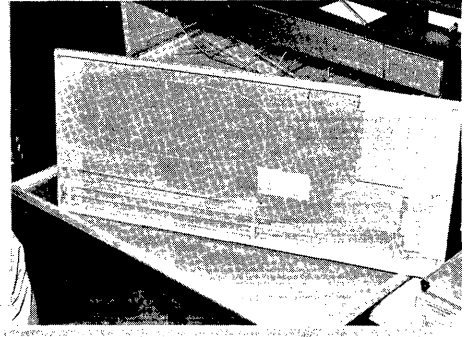
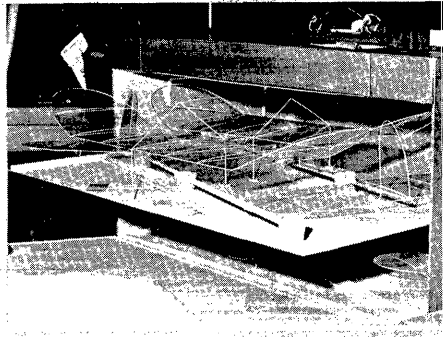
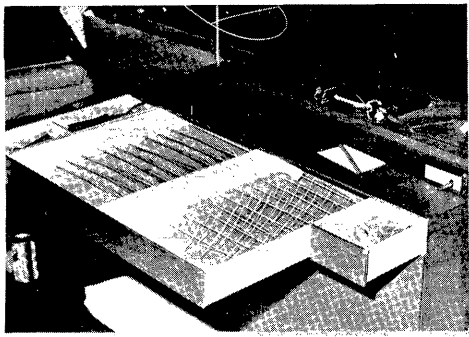
walk, others hung where they could be reached with a balloon and a few went into the side out of sight and out of reach.

At the end of Round 2, it was clear that Poland would be hard to catch; their score was about 6% less than their final total. As the meet went on, every other team added steadily to their score, some almost doubling their Round 2 total as they jockey for position. By Round 3, the U.S. had moved from 4th to 2nd and Canada went from 9th to 6th. Canada's Round 4 rally brought them briefly to 3rd and England's 5th round jumped them from 7th to 4th. Almost every team improved each round, but a few individuals did not get it sorted out until Round 6 or the international meet on Sunday.

The real cliff-hanger was Round 5. A fierce rain blew up 45 minutes before the end of the round, when eight models were up. Instead of isolated drips, the usual result of rain outside, the high winds forced torrents of water inside. Some areas ran like an upended bucket for a startlingly long time, and hundreds of gallons of water landed on the floor. Ed Stoll was lucky - his model got water splatters all over and it came down steeply without damage. Kalina (see photo p. 2) caught his with about 40% loss of film wing and tail, and Frioli had similar damage.

The real heartbreaker was Minigawa's model - it had been well on the way to an expected 30 minute flight. It caught a bucketfull of water right in the middle and came tumbling down all wrapped up and totally demolished. At 19, Toshiaki Minagawa was the youngest entrant; his per-





formance was better than almost half the entrants and the drenched flight could have bumped him much higher.

The International Sporting Code (FAI Rule Book) has a section dealing with rounds interrupted by inclement weather, but the language is totally inappropriate for a rained out indoor event! So, this is one meet where the FAI Jury really earned their way - their decision can be considered a precedent. After the deluge, rain fell intermittently outside and the hangar was dripping until about 11 am the next day. As a result, Round 5 was considered to have 90 minutes left, and was started at 1 pm on Saturday. This forced postponement of the Internats from 1 pm Saturday until 6 pm, and then returning to the original schedule on Sunday.

Another item of interest concerns Eduard Chlubny's Round 4 flight. He began his attempt with an hour to spare, but broke two motors and damaged the model before taking a break. Twenty minutes later, he began again only to lose three more motors before getting off a flight. The motors had been previously tested to full usable turns and were breaking at 50% or less. It was a harried and tense time for Eduard and Dagmar, but they stuck with it like the seasoned veterans they are.

The WCh ran on volunteer help - many dedicated and eager indoor fliers and family members. Thanks to each of these, and especial thanks to some of the visiting indoor supporters from other countries who filled in when things got thin. CD Bob Champine insisted on a thorough briefing for all timing personnel, and spent perhaps 30% of his time giving these briefings. Bob spent many hours in preparation for this event, and many more after the end of flying each day, insuring a successful event. Ray Harlan built the processing scales and span jig, and was assisted in processing by John Kukon and Bob Cowley. "Tex" Hartmangruber was assistant CD and spent hours verifying performance of stopwatches which apparently gave problems of non-agreement between two watches on a given flight. In many cases the trouble seemed to be the reset button on time-out type watches - a slight bump on this stem would cause an error hard to account for. Thanks to all the helpers - it was a good show.

The Internats

Beginning as soon as the last WCh official flight had landed on Saturday, the international event featured three events: 65 cm FAI, AMA Unlimited (300 sq. in. max) and FAI Unlimited - over 2000 sq. in. total supporting surface.

The meet itself was almost anticlimactical - almost too informal after the WCh - and the expected 40 minute one gram flight and 50 minute World Record didn't happen. Erv Rodemsky came in with a "coed coffin" containing two - not one, but two models approximately 600 sq. in. big. The first one, which actually was a slimmer, trimmer ship and #2 in the series, caused Czechowski to mutter something that roughly translated "fat cow". Erv gleefully adopted the name, but lost the ship in the wee hours when it cast loose the motor while it still had a lot of turns. The other model, dubbed "Monstro" from the start, flew better on less power even though it weighed well in excess of .1 ounces.

No other truly unlimited models appeared, but Ray Harlan, Dick Kowalski and Ron Plotzke had AMA 300's. Ray's model had showed exceptional promise at the May team practice session; it got caught in side drift on Sunday as did "Monstro". Dick Kowalski made a good 42:30 on Saturday evening, peaking about the time the air started to sink badly. Literally no one of the big ships did well on Sunday; if they were high enough to do good time drift got them. All of them did truly marvelous time for the altitude they reached on test flights - but close only counts in horseshoes!

Several excellent times were turned in in the one gram event, by both WCh fliers and those who came especially for the Internats. Even with the side drift, which was limited to the very top - catwalk and above - the air was clearly better on Sunday than before.

65 cm FAI

1. John Triolo	35:49
2. Dan Domina	35:36
3. Sal Cannizzo	35:31
4. Karol Rybecky	35:08
5. Edward Ciapala	35:01
6. Jiri Kalina	34:56
7. Ron Plotzke	32:44
8. Jack McGillvray	32:44
9. Dick Hardcastle	30:12
10. John Kukon	30:01
11. Werner Wetzel	25:51
12. Andy DeMello	25:44
13. Hal Crane	25:30
14. Dieter Siebermann	24:41

15. Francois Tapernoux	23:46
16. Butch Hadland	23:40
17. Cornelis Wolthoorn	21:31
18. Richard Whitten	20:49
19. Herbert Langner	19:35
20. Kurt Vogler	19:34
21. Bob Platt	18:37
22. Werner Heise	18:06
23. Horst Tiemann	17:08
24. Gunter Maibaum	12:22

AMA Unlimited (300 sq.in. max)

1. Dick Kowalski	42:30
2. Ray Harlan	35:36
3. Ron Plotzke	32:44
4. Hal Crane	28:30
5. Werner Wetzel	27:46
6. Bob Platt	25:07
7. Dick Hardcastle	24:35
8. Kurt Vogler	21:55
9. Herbert Langner	17:51
10. Horst Tiemann	17:14

FAI Unlimited (2000+ sq.in. max)

1. Erv Rodemsky	32:01
2. John Triolo	27:22
3. Hal Crane	26:25
4. Werner Wetzel	25:09
5. Kurt Vogler	21:46
6. Herbert Langner	20:44

THE PICTURE STORY

All photos by Bud Tenny with processing by Kyle Babick, except as noted.

Page 2 - Row 1

Left - The Japanese team (1 to r): Junichi Sakoda, Toshiaki Minigawa, Shigeyoshi Nonaka; interpreter Jim Kagawa, NIMAS member from Torrance, California.

Center - Hans Riefler (1), Swiss team manager and Dieter Siebenmann.

Right - (1 to r) Andy DeMello, Jack McGillvray and team manager Lou Leifer, all of Canada.

Page 2 - Row 2

Left - Bob Cowley (1) and Werner Heise watch Dieter Siebenmann process his model. Straightedge has vertical threads 65 cm apart; models were processed upside down.

Center - Hank DeKat, Toledo, Ohio, team manager and Cornelis Wolthoorn, Netherlands.

Right - The U.S. team helps Bucky Servaites get off a flight; Ed Stoll holds flashlight on rear hook while Dick Kowalski guards the stab and Larry Cailliau looks on.

Page 2 - Row 3

Left - (1 to r) Fernando Migani, Adalberto Frioli and Carlo Cotugno, all of Italy.

Center - Eduard Chlubny, Czechoslovakia, launches his third round flight.

Right - Sylwester Kujawa, Poland passes his test for one gram model weight. Both span and weight processing machinery built for AMA by Ray Harlan. Scale is over-center type, and processing official stabilizes the beam during attaching and removal of the model.

Page 2 - Row 4

Left - Andy DeMello and Jack McGillvray prepare to go out for a test flight; white pole held by Andy is one of five steering poles built by Bob Champine for AMA.

Center - Jiri Kalina holds his first round 5 model, washed out of the air by torrents of water. Note shattered film on wing and stab.

Right - Toshiaki Minagawa launches his round 5 flight; the next time he touched the model it was a sodden, tattered wreck as it was enveloped in a cascade of water.

Page 2 - Row 5

Left - Larry Cailliau's box top opens to a work table with tools and repair materials stored in top above model compartment; side doors to model compartment were clear to display models.

Center - The Australian team - John Triolo (1) was team manager, while Manny Radoff proxy flew the models sent by Boyd Felstead.

Right - Otaker Saffek (1), Czeck team manager, and Jiri Kalina process Jiri's model.

Page 3 - Row 1

Three photos of remarkable box by Eduard Chlubny; drawers in top hold tools, props and packaged motors. Two slide-out shelves each mount two complete models, with isolation between compartments preventing loose parts from one compartment from entering the other compartment. Two more covered models are stored flat inside false bottom and doubled door. Entire box was built from cardboard when plywood was unavailable, but with such careful engineering that it was light and rigid enough to deliver the models unscathed.

Page 3 - Row 2

Left - Removable frame in box by Ferdinando Migani mounts two models on each side, with props racked under the wings.

Center - Models by World Champ Ryszard Czechowski.

Right - Horst Tiemann of Germany replaced 35 cm model in his box. Entire German team brought both 35 cm and 65 cm models and flew for German records during late evening hours.

Page 3 - Row 3

Left - Lineup of WCh trophies. Moving left to right: Kopecky Trophy (longest single flight), Rushbrooke Trophy (individual champion) and Langley Trophy (champion team).

Center - Bob Champine (1) discusses meet procedures with Peter Freebry (England), member of FAI Jury.

Right - Closeup of Kopecky Trophy. Model made from plated wire, imbedded in cast plastic with reflecting back plane and bottom; multiple views of model are visible from several angles.

Page 3 - Row 4

Left - Bob Champine addresses preliminary meeting to announce time of team manager meeting. These meetings were necessary because of the rained-out fifth round.

Center - Ryszard Czechowski, immediately after his 34:50 flight. (Bucky Servaites photo)

Right - Ingenious universal prop jig by Pete Andrews. Build any size prop and any pitch distribution curve, all on same jig.

Page 3 - Row 5

Left - Frank Parykaza, Ryszard Czechowski and Bud Tenny, at Aerolympics banquet, approximate time - 11:50. Three hour translated interview/bull session followed, well worth the loss of sleep! (Bucky Servaites photo)

Center - Wing mounting system used by Czechowski. It allows three wings to be stored in space normally required by two wings.

Right - Models belonging to Sylwester Kujawa, Poland.

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

CRAIG CUBICK, 20134 Gresham St., Canoga Park CA 91306
KEVORK K. FAGS, 236 Thayer St., River-Vale NJ 07675
J. DOUGLAS McLEAN, 7004 S. 150th St., Seattle WA 98178

Honorary Members

S. NONAKA, 9-28, Honcho, Tanashi City, Tokyo, Japan 188
WERNER WETZEL, 433 Mulheim/Ruhr, Gottfried Keller-str 30, West Germany

Recent Publications

Is it possible to be both Fink and Benefactor of Mankind all in the same act? Bob Meuser manages this in the Sept. '74 AAM with "Supersweep, by Ron Wittman as told to Bob Meuser". This is the Supersweep story in glorious prose, profusely illustrated with photos and detailed full sized plans. It can well become a classic for serious indoor HLG fliers. So, where does the "Fink" part come in? Part of his closing remarks are, "The next step is the most difficult. Take all the finished components, put them in a safe place, and wait for the October issue of AAM." See what I mean?

Easy B Fly Off

The June '74 INAV announced a revised winner listing in a couple of events in the '74 NIMAS Postal. Since Hal Crane had been named winner in the May '74 INAV, he was a bit disappointed when Dick Hardcastle's time was announced in the next issue. So, at 3 am on July 7, in Hangar #5, it was Easy B at 10 paces. Dick Hardcastle flew first to 12:02. Hal logged 12:26, rebound for 12:28. Not content, Hal then suggested a two-flight match. So, Dick then put up one for 13:30 for a total of 25:32 against Hal's 24:54.

NIMAS Awards

GOLD CAT. II HLG AWARD - 0:56.4, Richard Doig

SILVER CAT. II RUBBER AWARD - 20:27.0, Richard Doig

Thanks To The Navy

All those who attended the Aerolympics realize it would have been almost impossible to find another site where the whole show could have been held at one place. It was such an outstanding event and the Navy such a good host, that we should send them a letter of thanks. Commander Jack Bolton was the liaison officer in charge of all contact with AMA, and the Capt. Will Nealon, our general host at the Aerolympics banquet, is Base Commander. Letters of thanks to each should be sent to Lakehurst NAS, Lakehurst, New Jersey.

CONTEST CALENDAR

NEW JERSEY - Lakehurst

Tentative flying dates at Lakehurst #5 hangar: Sept. 1, Sept. 22, Oct. 13, 1974. Call 609-737-3522 the Friday before to be sure hangar will be available.

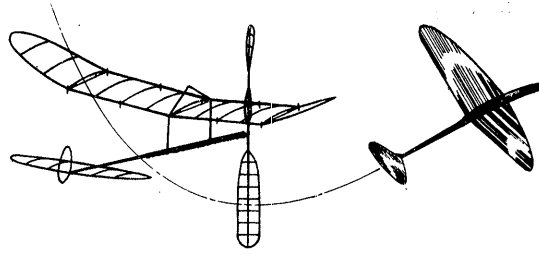
COMING SOON!

The August issue, with the Nats report, should soon (like two weeks??) be coming your way! Watch for it!

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



THE 1974 INDOOR NATS

HIGH CEILING HLG

Junior

1. Jimmy Clem	83.8
2. Matthew Simpson	87.2
3. James Bayly	83.8
4. Dan Brown	59.3
5. Tommy Giertz	53.2
6. William Langley	47.5
7. Joe Diraddo	40.0
8. Mike Clem	37.8
9. Jim St. Clair	26.8
10. Danielle St. Clair	20.5

Senior

1. Michael Stoy	121.0
2. Robert Dunham II	118.1
3. Robert Hayes	108.2
4. Jeffrey Nix	108.0
5. Larry McFarland	104.9
6. Keith Gordey	100.3
7. Ken Bauer	94.2
8. William Schlarb, Jr.	83.9
9. Joseph King	80.4
10. Ran St. Clair	72.2

Open

1. Rudy Kluber	126.7
2. Mike Fedor	121.1
3. Jim Haught	110.4
4. Mike Ransom	109.4
5. Phillip Sullivan	106.3
6. Charles Markos	104.5
7. Dan Belleff	103.8
8. Richard Doig	100.7
9. Jesse Shepherd	97.0
10. William Schlarb	95.3

Open

1. Rudy Kluber	126.7
2. Mike Fedor	121.1
3. Jim Haught	110.4
4. Mike Ransom	109.4
5. Phillip Sullivan	106.3
6. Charles Markos	104.5
7. Dan Belleff	103.8
8. Richard Doig	100.7
9. Jesse Shepherd	97.0
10. William Schlarb	95.3

LOW CEILING CABIN

Junior

1. Barry Pallet	5:35.5
2. Dan Brown	5:28.6

Senior

1. Robert Dunham II	9:31.7
2. William Shailor	8:08.8
3. Keith Gordey	5:56.7

Open

1. Bob Randolph	14:04.0
2. Tony Schott	10:40.2

EASY B (Low ceiling only)

Junior

1. Jimmy Clem	5:52.8
2. Danielle St. Clair	2:28.0
3. Jim St. Clair	1:28.9

Senior

1. Walter Lounsbury	8:09.0
2. William Schlarb, Jr.	6:32.7
3. Marguerite Valerius	6:00.0
4. Ran St. Clair	2:54.0

Open

1. Richard Hardcastle	11:37.2
2. Stan Chilton	10:28.5
3. Allan Vollmer	10:08.0
4. Mark Valerius	9:23.1
5. Rolfe Gregory	9:02.4
6. William Langley	7:05.6
7. Mike Fedor	6:54.8
8. Tony Schott	6:16.0
9. Jeffrey Annis	5:47.5
10. Verna St. Clair	3:25.0

HIGH CEILING INDOOR STICK

Junior

1. Jimmy Clem	14:44.6
2. Dan Brown	11:40.5
3. Carl Linstrum	2:59.0

Senior

1. William Shailor	19:18.9
2. Robert Dunham II	16:04.0
3. William Schlarb, Jr.	9:47.5
4. Keith Gordey	7:23.7
5. Walter Lounsbury	3:32.8

Open

1. Bud Tenny	19:16.2
2. Dan Domina	19:08.6
3. Stan Chilton	19:00.0
4. Steve Brown	18:39.9
5. Howard Haupt	16:34.0
6. Ronald Roberti	16:14.8
7. Richard Doig	15:39.0
8. Charlie Sotich	14:51.1
9. Bob Randolph	14:45.0
10. Roman Szymula	13:49.4

LOW CEILING INDOOR STICK

Junior

1. Dan Brown	15:37.8
2. Jimmy Clem	12:54.0

Senior

1. Robert Dunham II	14:12.2
2. William Shailor	11:39.0
3. Keith Gordey	8:36.7
4. Kevin Wehner	5:23.8
5. Walter Lounsbury	0:24.5

Open

1. Bob Randolph	20:02.8
2. Dan Domina	20:02.3
3. Steve Brown	17:51.1
4. Richard Hardcastle	17:26.1
5. Roman Szymula	16:15.1
6. Howard Haupt	15:32.5
7. Jeffrey Annis	15:21.8
8. Bud Tenny	12:11.4
9. Charlie Sotich	10:53.5
10. Richard Doig	10:07.8

LOW CEILING PAPER STICK

Junior

1. Dan Brown	15:32.2
2. Jimmy Clem	10:47.5
3. Barry Pallet	7:53.8

Senior

1. William Shailor	11:37.6
2. Ken Bauer	11:08.0
3. Robert Dunham II	9:16.0
4. William Schlarb, Jr.	9:08.2
5. Joe Carbone	4:16.5

Open

1. Bob Randolph	14:51.2
2. Dan Belleff	14:39.2
3. Dan Domina	14:31.0
4. Charlie Sotich	13:38.9
5. Charles Markos	13:30.0
6. Richard Doig	12:47.1
7. Stan Chilton	12:24.0
8. Steve Brown	10:53.2
9. Mike Fedor	9:16.0
10. Tony Schott	7:43.0

HIGH CEILING PAPER STICK

Junior

1. Dan Brown	13:28.9
2. Jimmy Clem	11:08.2
3. Danielle St. Clair	3:49.5
4. Jim St. Clair	1:38.5
5. Mike Clem	0:54.0

Senior

1. William Shailor	14:46.6
2. Robert Dunham II	13:08.7
3. Ken Bauer	12:12.5
4. Keith Gordey	11:19.8
5. William Schlarb, Jr.	5:13.9

Open

1. Bob Randolph	18:06.0
2. Stan Chilton	17:30.4
3. Richard Doig	16:51.5
4. Charles Markos	16:45.5
5. Howard Haupt	16:06.4
6. Dan Domina	14:45.8
7. Richard Hardcastle	14:01.5
8. Charlie Sotich	13:49.8
9. Dan Belleff	13:19.8
10. Mike Fedor	12:52.2

LOW CEILING HLG

Junior

1. Tommy Giertz	81.6
2. Guy Larsen	80.1
3. Barry Pallet	76.6
4. James Bayly	76.6
5. Douglas Marsh	66.2
6. William Langley	56.4
7. Joseph Damare	26.2
8. Jack Damare	10.5

Senior

1. Robert Dunham II	92.2
2. Michael Stoy	90.4
3. Ken Bauer	80.1
4. Robert Hayes	79.3
5. Brian Pardue	77.0
6. Peter Kazanjian	71.0
7. Bruce Johannessen	69.9
8. Steven Rak	63.4
9. William Schlarb, Jr.	62.2
10. Joseph King	56.4

Open

1. Rudy Kluber	100.6
2. Dan Domina	97.1
3. Paul Shailor	95.8
4. Richard Doig	92.6
5. Charles Markos	90.6
6. Phillip Sullivan	88.6
7. Allan Vollmer	86.0
8. William Schlarb	79.6
9. James Lewis	75.4
10. Glenn Lee	75.2

HIGH CEILING CABIN

Junior

1. Dan Brown	2:21.8
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Senior

1. Keith Gordey	12:11.3
2. William Shailor	9:30.4
3. Robert Dunham II	8:50.5

Open

1. Bob Randolph	19:33.6*
2. Tony Schott	8:37.8

*Model disallowed by FFCB

HIGH CEILING FAI STICK

Junior

1. Jimmy Clem	26:47
2. Dan Brown	26:04

Senior

1. William Shailor	45:39
2. Robert Dunham II	35:14
3. Ken Bauer	27:21
4. Keith Gordey	19:53
5. Walter Lounsbury	3:12

Open

1. Stan Chilton	47:34
2. Dan Domina	38:19
3. Charles Markos	38:01
4. Steve Brown	37:45
5. Jesse Shepherd	35:42
6. Richard Doig	34:17
7. Charlie Sotich	31:51
8. Richard Hardcastle	29:01
9. Jeffrey Annis	23:45
10. Bud Tenny	19:49

PENNYPLANE (High ceiling only)

Junior

1. Dan Brown	7:50.8
2. Carl Linstrum	2:48.4

Senior

1. Walter Lounsbury	10:49.5
2. Bill Shailor	6:55.0
3. Keith Gordey	6:42.0
4. Kevin Wehner	6:32.0
5. Steve Robbins	2:08.5
6. Ran St. Clair	0:38.0

Open

1. Steve Brown	10:10.8
2. Bud Tenny	9:16.0
3. Earl Hoffman	9:10.3
4. Mike Fedor	6:52.6
5. Gilbert Robbins	5:52.6
6. Bob Randolph	5:44.0
7. Al St. Clair	5:21.0
8. Richard Doig	4:45.0
9. Jeffrey Annis	4:12.0
10. Richard Hardcastle	4:03.0
11. Robert Hayes	3:57.2
12. Dave Linstrum	3:45.4
13. Lawrence Miller	3:16.6

LOW CEILING FAI STICK

Junior

1. Dan Brown	27:17
2. Jimmy Clem	21:37

Senior

1. Ken Bauer	28:28
2. Robert Dunham II	27:01
3. William Shailor	22:58
4. Keith Gordey	18:59
5. Walter Lounsbury	0:28

Open

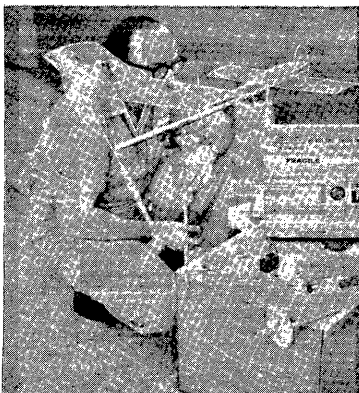
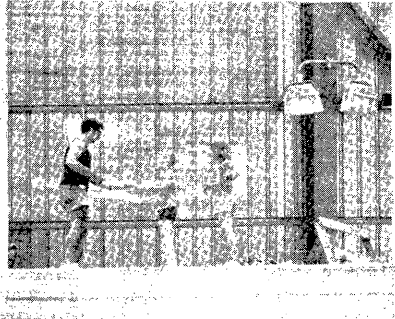
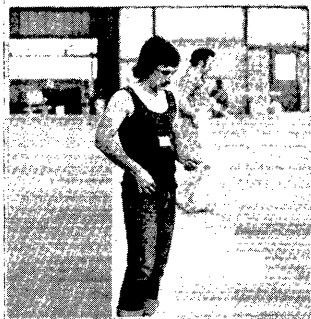
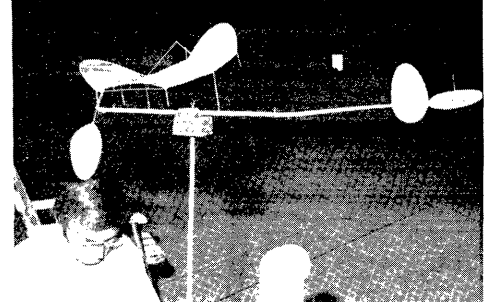
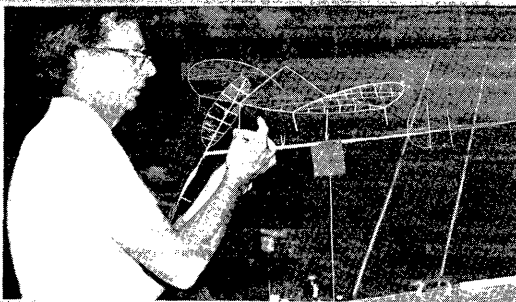
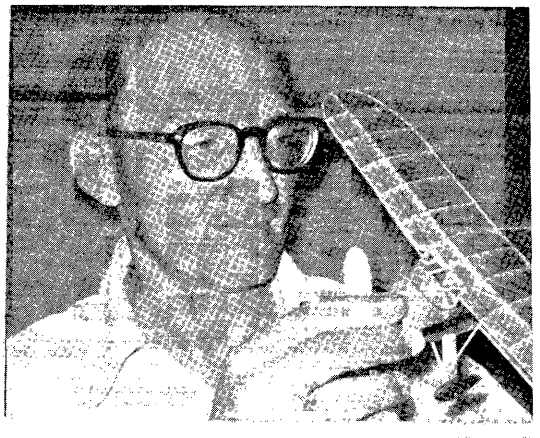
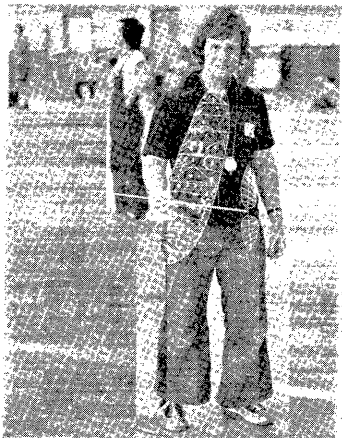
1. Dan Domina	44:27
2. Bob Dunham	33:29
3. Steve Brown	32:47
4. Charlie Sotich	29:56
5. Richard Hardcastle	29:38
6. Bud Tenny	29:33
7. Howard Haupt	28:56
8. Jeffrey Annis	28:13
9. Richard Doig	26:11
10. Robert Hayes	16:37

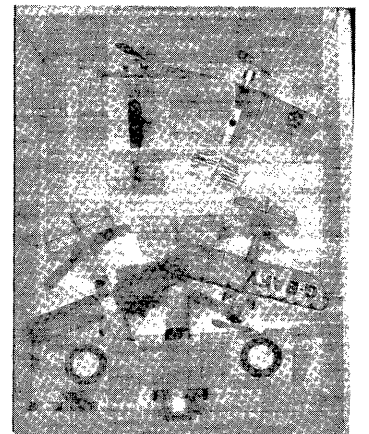
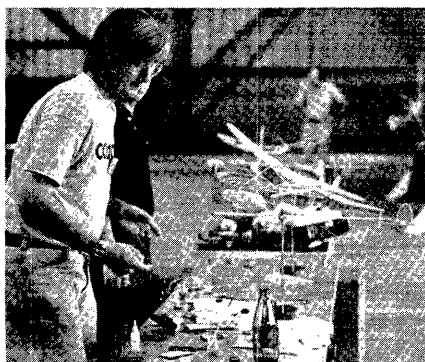
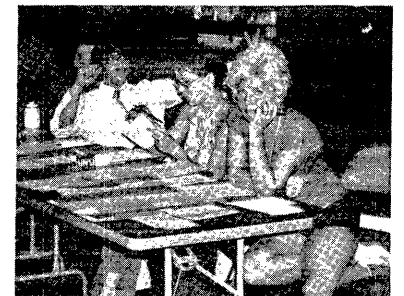
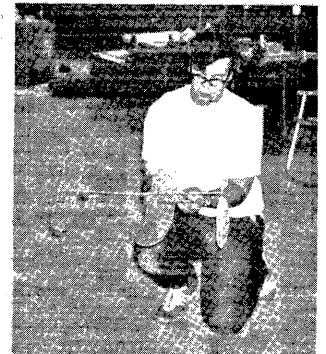
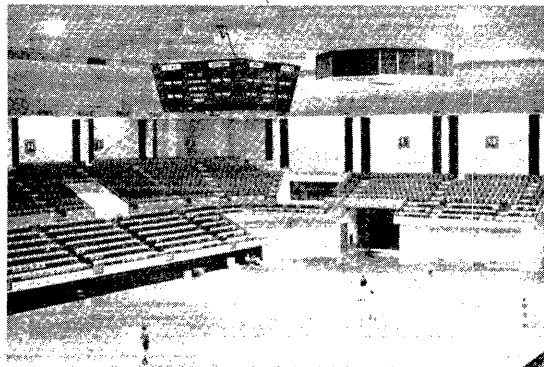
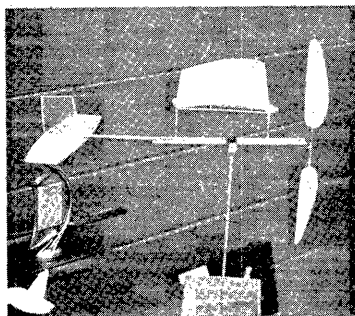
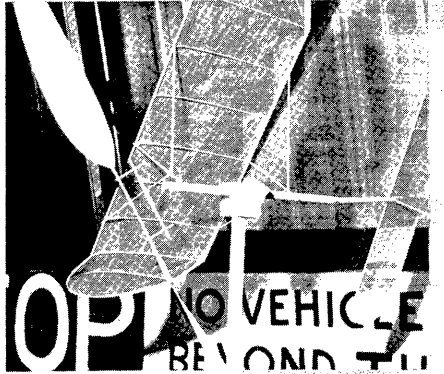
INDOOR CATEGORY CHAMPION - Chuck Markos
 Runner-up - Dan Domina
 STOUT CABIN TROPHY - Bob Randolph
 STOUT STICK TROPHY - Bob Randolph

SCALE RESULTS
 PAGE 4

THE PICTURE STORY

Photos by Tenny with processing by Kyle Babick unless otherwise noted.
 Page 2 - Row 1
 Left - Bob Randolph with biplane PennyPlane. All surfaces mite covered; good climbing model. (Linstrum)





AMA INDOOR SCALE Model		Static	Flight	Total
1. Fred Stark	Monocoupe 90AL	81.5	58.4	139.9
2. Chuck Markos	Westland Widgon	72.5	63.0	135.5
3. John Martin	Stahlwerke RII	65.0	55.4	120.4
4. Andy McIsaac	IYOH N-62 Eaglet	76.0	35.9	111.9
5. Charlie Sotich	Evans Volkplane	50.5	98.8	101.0
6. Rolfe Gregory	Stinson SR-5	57.0	31.1	88.1
7. Ted Dock	Wight Quadraplane	58.0	26.3	84.3
8. William Wargo	Westland Widgon	27.0	37.0	54.0
9. Paul Couture	Bucker Jungman	15.0	113.0	30.0

NAVY SCALE

1. Fred Stark	Brewster XS2B	71.0	63.1	134.4
2. Jeff Annis	Bellanca Skyrocket	68.0	48.2	116.2
3. Ralph Kuenz	Grumman Wildcat	72.0	31.9	103.9
4. John Martin	Bristol Scout	63.0	31.4	94.4
5. Rolfe Gregory	Stinson SR-5	55.0	30.0	85.0
6. Ted Dock	Wight Quadraplane	64.0	18.0	82.0

BIPLANE SCALE

1. George Meyer	AVRO 511	74.5	24	98.5
2. Ted Dock	Waco SRE	48.5	48.0	96.5
3. John Martin	Bristol Scout	63.0	31.0	94.0
4. Rolfe Gregory	Travelair	53.5	32.5	86.2
5. Norman Read	Fokker DVII	51.0	7.0	58.0

Center - Richard Doig with 90 cm Indoor Stick - Stoll/Crowley CS-1 design (Top Ten Model winner). (Linstrum)
 Right - Ted Dock with Piper Vagabond. (Martin)

Page 2 - Row 2

Left - Bob Dunham with FAI model. (Linstrum)
 Center - Barry Pallet, winner of Low Ceiling Cabin and runner-up Junior National Champ. ()
 Right - Al St. Clair winds for Donielle while Jim watches. The whole St. Clair family flew indoor models.

Page 2 - Row 3

Left - Mike Ransom, Pryor, Oklahoma; 4th place High Ceiling HLG.
 Center - Dick Hardcastle with Indoor Stick model; 4th in Low Ceiling event.
 Right - Stan Chilton with unusual "high thrust" Paper Stick model. Canted stick raises thrust line, which is at normal angle. Large angular difference between thrust line and motor stick requires rubber O-ring and wire O-ring to form U-joint. (Ganslen)

Page 2 - Row 4

Left - Jesse Shepherd - first Nats since 1964, when he placed in three Junior indoor events. Welcome back!
 Center left - Whole flock of kids on ledge in Goodyear hangar helped retrieve gliders.
 Center right - Donielle St. Clair prepares to launch HLG at hangar. (Ganslen)
 Right - Dan Domina with 65 cm model - impressive performance in both low and high ceilings.

Page 2 - Row 5

Left - Bud Tenny and FAI Penny (enlarged PennyPlane design with Rodemsky bracing - 1st High Ceiling Stick on trim from Tulsa Finals. (Linstrum)
 Center - Al St. Clair (background) watches Tony Schott wind for Paper Stick.
 Right - Vic Larsen with Halberstat Bipe; 3rd in California Peanut Scale. (Martin)

Page 3 - Row 1

Left - Robert Hayes (1) and Charlie Sotich set out PennyPlane trophies, donated from Chicago Aeronuts treasury. (Ganslen)
 Center - Larry McFarland, 5th Sr. High Ceiling HLG.
 Right - Charlie Sotich, Chicago Aeronuts, prepares PennyPlane flight. (Linstrum)

Page 3 - Row 2

Left - Torque-variable prop by Jeff Annis (see Feb. '74 INAV). Similar prop on Jeff's FAI also flew very well. (Ganslen)
 Center left - Mike Fedor, 4th in PennyPlane. (Ganslen)
 Center right - Tommy Glertz, 1st Low Ceiling Jr. HLG in foreground. Glenn Lee, AMA Dist. VII VP placed 10th in Open, passes behind.
 Right - Dan Brown, with his Paper Stick model which gave him four 1st places and two 2nd places, flying in FAI, Indoor Stick and Paper Stick.

Page 3 - Row 3

Left - PennyPlane by Robert Hayes, Chicago Aeronuts. He was event director on condition that other Aeronuts would cover for him while he flew.
 Center - Beautiful Sports Arena in Lake Charles new Civic Center. An excellent site, in spite of the scoreboard in the center, which was lowered to retrieve models.
 Right - Ken Bauer, with Paper Stick model which got him two trophies.

Page 3 - Row 4

Left - Guy Larsen, 2nd in Jr. Low Ceiling HLG.
 Center - Fred Stark, with his Brewster XS2B, Navy Scale winner for the third time. (Martin)

INDOOR PEANUT #2 Model		Static	Flight	Total
1. Charlie Sotich	Evans Volkplane	56.0	108.0	156.0
2. John Martin	Martin MO-1	65.0	64.8	129.8
3. Ted Dock	Piper Vagabond	52.0	64.8	116.8
4. Walt Mooney*	DH Sparrowhawk	73.0	34.0	107.0
5. Ted Dock	Waco E Bipe	63.0	40.2	103.2
6. Andy McIsaac	PT-19	79.0	22.2	101.2
7. Mike Ransom	Pietenpol	60.0	34.1	94.1
8. Rolfe Gregory	Travelaire 2000	62.0	32.0	94.0
9. Jerry Murphy	Pietenpol	58.0	10.5	68.5
10. Guy Larsen**	Druine Turbulent	42.0	17.5	59.5
11. Norman Read	Piper Vagabond	19.0	17.2	36.2
12. Norman Read**	Piper Vagabond	12.0	17.0	29.0

*Proxy flown **Highest placing Juniors

INDOOR PEANUT #1

		Flight time	Flight place	Looks place	Total
1. Dan Domina	J-3 Cub	132.0	1	5	6
2. John Martin	Martin MO-1	65.5	5	3	8
3. Vic Larsen	Halberstadt Bipe	11.0	11	1	12
4. Bill Caldwell	Culver Cadet	13.0	10	2	12
5. John Martin	Luton Minor	92.0	2	10	12
6. Lois Dock	J-3 Cub	29.0	9	6	13
7. Guy Larsen	J-3 Cub	31.0	7	6	13
8. Ted Dock	Piper Vagabond	70.0	4	9	13
9. Rolfe Gregory	Bellanca Bipe	33.0	6	8	14
10. Fred Stark	Daimler L-15	80.0	3	11	14
11. Gar Larsen	Pietenpol	31.0	8	7	15

Right - (1. to r.) Sandy Frank, Asst. CD, Janie Parris, who did almost all the contest paperwork, and Sandy Martin, who timed many flights.

Page 3 - Row 5

Left - Bill Shailor with his Indoor Stick model, high time Indoor Stick at the hangar. The Stout Stick trophy went to Randolph, winner of Low Ceiling Stick.
 Center - Chuck Markos, Indoor Category Champion, with his Westland Widgon. His score in Scale gave him the few points margin needed to pull ahead of Dan Domina for the championship. (Linstrum)
 Right - Dr. John Martin's five scale models. (Martin)

NATIONAL INDOOR MODEL AIRPLANE SOCIETY*

New Members!

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 ANDREW FAYKUN, 9410 Dayton Way, Beverly Hills CA 90210
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 BILL SCHLARB, Jr., 4116 York Rd., South Bend IN 46614

Honorary Members

BUTCH HADLAND, 19 Greenway Close, Nythe, Swindon, Wiltshire, England

CONTEST CALENDAR

CANADA - British Columbia
 Fall Indoor Meet, Oct. 27, 1974, Agrodome, Port Coquitlam, B.C. 10 am to 4 pm; Indoor Scale, FAI Stick, PennyPlane, HLG. Alan Riches, 1568 Celeste Cres., Port Coquitlam, B.C., Canada V3C 1E2.

CONNECTICUT - Glastonbury
 Club meetings/flying sessions of the Glastonbury Modelers, Oct. 8, Nov. 5, 7 pm to 9:30 pm; Oct. 27, 8 am to 12:30 pm. George Armstead, 89 Harvest Lane, Glastonbury, CT 06033, 203-633-7836.

NEW JERSEY - Lakehurst

Tentative indoor sessions at Hangar #5, Sept. 22, Oct. 13, 1974. Call 609-737-3522 the Friday before to be sure hangar is still available.

THIS ISSUE

This issue has been abbreviated by one page; it was a profound shock to get the printing bill for the July '74 WCH issue after an 18% increase in printing cost! An immediate resolve to eliminate page 5 of this issue led to a rather jammed format, plus deferring all of Dr. John Martin's Scale commentary and various comments regarding the rest of the Nats. So now I'm a fink/benefactor too!

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

ART WHITE, 12507 Honeywood Trail, Houston TX 77077

Honorary Members

DIETER SIEBENMANN, Aemtlerstr 4, 8003 Zurich, Switzerland
KOEI TSUDA, 1-19-9 Higashi-Motomachi, Kokubunji City,
Tokyo, Japan

NIMAS Decals

At long last, after many moons, and all that stuff, there are NIMAS Decals available. They are 30¢ each or four for \$1. Send a stamped, return addressed envelope with your order, please.

Mr. and Mrs. Bob Leishman, P O Box 902, Levittown PA 19054, made the new NIMAS Decals. They also made special decals for the 1974 Indoor World Championship and donated all proceeds in excess of expenses to the Inboard Travel Fund. They do excellent work, at a reasonable price, and on a good delivery schedule. If your club needs decals, you can only lose by not checking with them.

Sympo Report

The National Free Flight Society has published the 7th annual Sympo - Report of The Seventh Annual Symposium, held at Chenault Field, Lake Charles Louisiana. This Sympo was dedicated to Frank Zaic, and the cover bears a reproduction of an oil painting of Frank. The painting was given to Frank a couple of weeks before the Mats, at a banquet in his honor. Part of the dedication has this to say, "This Free Flight Symposium is dedicated to Frank Zaic. Truly a living legend, our teacher of Free Flight. No other person has contributed so much to our knowledge, our comradeship, our spirit of Free Flight. We make this dedication to our friend, our leader, for his appreciation."

This report has about the same balance of technical, semi-technical and whimsical articles as in past years. This one is lacking in indoor coverage, except for plans of the CS-1 90 cm indoor model, designed by Ed Stoll and Paul Crowley, and chosen as one of the Top Ten Models. The reports are available from NFFS, P O Box 322, Dallas OR 97338; the price is \$5 each to U.S. members of NFFS and AMA or \$6 to non-members in the U.S. Postage rate (surface mail) in the U.S. is 50¢ for any number of copies.

Renewal Reminder

Since this is the September issue (never mind when it came out!), those with 09 as a part of their address block received a renewal notice with this issue. If you have a 10, 11 or 12, your subscription expires in October, November or December respectively. As usual, and particularly during the Fall and Winter months, advance renewal saves a lot of time here on Newsletter Night. About 25% of the membership is now paying before renewal is due, and it is deeply appreciated. (Membership currently \$3.25/year.)

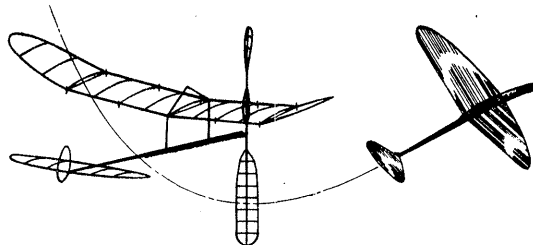
Thanks For Mats Sites

Even though it is late, it isn't too late to send a note of thanks to the people who furnished sites for the Indoor Mats.

Mr. Hoyt Tolleson	Lake Charles Chamber of
Goodyear Blimp Hangar	Commerce
Box 626	Lake Charles, Louisiana
Spring, Texas	

New Products

Ray Harlan's specialty shop now has the following items: Indoor Scale, \$30; Micrometer Balsa Stripper, \$18, Pigtail Thrust Bearings, 75¢ each. The quoted prices are for the items; postage extra. Send a stamped, self-addressed envelope to Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778 for catalog sheet and postage info.



FAI INDOOR REPORT

FAI Indoor Committee Meets

On Sept. 14-15, 1974, the recently elected FAI Indoor Committee met in Detroit and transacted an amazingly large amount of business in what seemed to be a short weekend. The delegates spent almost 200 man-hours making a detailed examination of their assigned tasks and creating thoroughly developed solutions. Similar results could have taken months to achieve by mail. In short, the meeting style developed and perfected by AMA's Executive Council - face-to-face, in-depth discussions - produces results almost unmatched by any other possible interchange.

Briefly, the committee established its own operating protocol and guidelines, and made far-reaching plans for future team selection programs. Then they detailed a program for selecting the 1976 Indoor Team, with the selection to begin early in 1975. By now, most U.S. readers of INAV should have received an opinion poll which discusses the program provisions. The poll will be followed shortly by a ballot for eligible participants to approve or disapprove the new program. Ballots will automatically be sent to participants in the most recent Indoor team program, and to all others who register for the upcoming program. Program registration is made by making advance payment of the entry fee in the first contest of the program.

It is interesting to note that, in spite of numerous local entertainment possibilities, most of the delegates never left the hotel complex where the meeting was held. There was one exception - the Detroit Balsa Bugs held a pool party and weiner roast for the delegates. The Friday evening bash was hosted by Don Roberts, a well-known scale modeler. It was a very enjoyable interlude, and a welcome contrast to the coming hours of detail work. Many thanks to Joan Rodemsky, who typed all the various reports in time for copies to return to AMA HQ in finished form, hand carried by Frank Ehling.

Program Comments

Feedback from many people who received the opinion poll mentioned above shows that the proposed point system is only partially understood. First, some background. A study of past WCh meets showed that in almost every case, teams could be ranked by consistency or time with the same results. In addition, although there is pressure to win a team berth, even the U.S. Finals are low-key compared to a WCh. Earlier in the programs, team selection has always been more a ritual than competition. Finally, most all meets have about two "good" rounds that tend to dominate the scoring and help pick fair weather fliers.

So, briefly, rank a guy on how well he does in every round, but let him drop the two lowest. Make him do well (80% of the winning score) at three widely spaced meets. Set up conditions favoring cross-zone competition which makes him work harder and learn from others outside his own area.

Cross-zone competition, besides furnishing new ideas, is also expected to prevent sandbagging (tame competition which allows as many as possible to qualify). At any meet where there has been sandbagging, no one really does his best, and may even fall into sloppy flying habits that will hurt his performance under pressure.

The business of carrying points through two zone meets into the Finals gives a good measure of consistency. It requires a flier to do well in Zone meets in order to help his score in the Finals - keeps him on his peak.

Scoring each round requires a flier to do well each round - after all, each round may, due to weather change, be the best one that day, and you won't know until too late! If you blow more than two rounds, you've had it for that meet! After all, we now have the standard as set by Czechowski - five excellent flights and one good one in a WCh, regardless of the conditions. Can we expect less if we are to win a World Championship?

The actual round scoring mechanism is simple - just like Mats championship scoring, but figured on each round and add the four best. You don't have to win any rounds, but you better be close for a better points score.

MORE WCh NOTES

Since the WCh issue came out, some more things have come to mind and should be reported. In the rush to meet various deadlines, prepare for the Nats and catch up at work, these items at least were overlooked.

Besides the midair destruction derby occasioned by the massive hangar leak, an almost-simultaneous hard draft on the north edge of the flight area caught Boyd Felstead's model and some American models on stands; many were badly damaged. However, Pete Andrews was prepared - at the first sound of thunder, long before the storm hit - he packed away his models.

Not enough stress was placed on the performance of the Polish Team, and that of Ryszard Czechowski, the new World Champion. Those who read the results sheet closely have noted that the Poles were remarkably consistent. In fact, their consistency score - 84% - exceeded that of any previous World Champion, and Czechowski scored 96%. Consistency is computed by dividing the six-flight total by 3, to get the average two-flight total. This figure is then divided by the best two-flight total. To put a 96% consistency score in perspective, Czechowski could have won with any two flights of his best five! It has also been reported that none of Czechowski's flights touched the top of the hangar. From the times, it is apparent that they didn't miss very far, either! This performance of the Poles is a triumph of advance preparation at the work bench, since they had only four chances to fly in 1974. All of these sessions were at major European contests, where practice flying is sparse.

The matter of volunteer timing was incredibly important to a successful WCh, and perhaps 30% of this work was handled by the ladies. Cathy Learoyd, Betty Barr, Betty Farham (wives of English Team members), Sandy Martin and Mrs. Bob Leishman are some of the most faithful timers. Gloria Alto worked long and hard assigning timers, filing and recording flight cards, and typing results after each day's flying was done.

A very interesting model flew exceptionally well at the International meet, but won no prizes. This was Doug McLean's biplane PennyPlane Tandem. The model flew for 16:03 on its longest flight, and Doug thinks a better prop will yield even more time in the hangar.

NATS COMMENTARY

The 1974 Indoor Nats was a busy scene - as the results layout in the Aug. '74 issue showed. Instead of five events counting Scale, it was five events (FAI Stick added to the usual Stick, Cabin, HLG and Paper Stick) in each of two sites, plus Easy B and Scale in Low Ceiling. Add PennyPlane and the four extra Scale events sponsored by outside groups, and there was a whole bunch of flying!

The two sites were the Goodyear Hangar in Spring, Texas, and the Sports Arena of the new and beautiful Civic Center in Lake Charles, La. Both sites appeared to be ideal, and each site had moments of good conditions. For the first time ever, there were no "home town boys" who knew the peculiarities of the sites. Also, as sometimes happens, the conditions did not improve late in the day. As a consequence, those who were ready when the air was good got the good times, but those who waited couldn't quite catch up.

A rainstorm on Sunday afternoon helped mess up the air for HLG, and vastly hindered Rudy Klumber's efforts to catch up with Fedor, Haight and Ransom. Their times had been posted earlier, and they expected their times to be beaten handily. The rain also encouraged early use of the hangar lights, which generated hot spots on the floor. The resulting air circulation patterns had to be experienced to be believed!

About 8 pm, during PennyPlane, the odd conditions became more pronounced. PennyPlane models would struggle vainly to climb, drift toward the wall and lose altitude. Just before contacting the side, the models would drift out and catch upward moving air. Thus, spectators were treated to the sight of PennyPlane models slowly rising, long after the power burst was gone. If you refer to the results, it is possible to note a large gap between the top times and the other times. If a model had lots of torque and turns as it came away from the wall, it would easily ride the rising air; if not, it would dribble off to the side.

During the indoor rubber events on Monday, those who waited for the hangar to settle, or get better, or whatever, were out of luck. There probably is a key to good times in such a beautiful site; it may be that Spring and Fall sessions there would be more stable. This was suggested on the basis that the mid-summer sun at the lower

latitude (compared to Lakehurst, for example) simply requires more rapid heat transfer than the relatively small volume of air can handle. Late in the day, a definite inversion layer formed, which is not common in all-metal hangars.

On Tuesday at the Civic Center, the air was really good about 2:30, with times in the 55' flat ceiling rivalling those in the hangar. Then it rained. By 4 pm, a definite cooling trend was apparent, and those who hadn't "done it" by then, didn't. On Wednesday the HLG times were quite good for the ceiling, in contrast to the fairly low hangar times.

If any event place or Indoor trophy is in dispute after the meet, it usually is the Stout Cabin trophy. Although Bob Randolph's high ceiling Cabin model, which featured a removable pod/landing gear section, was not allowed (an appeal to the Contest Board is in progress), Bob's low ceiling flight (using the retractable gear model which he flew in the past) also won that event. However, the Stout Trophy for Indoor Stick is "up in the air", with Stan Chilton (FAI Stick winner) and Bob Randolph (Indoor Stick winner) claiming the trophy.

Speaking of FAI, the addition of this event to the Nats insured the presence of a lot of FAI models. Very few Indoor Stick flights were made with models other than one gram FAI models.

The great abundance of indoor events didn't seem to dilute the overall participation as might have been expected, since nearly everyone entered almost everything it was possible to enter with the models they had. All the Junior events were low in participation, but if only two of the families that entered and didn't make it had flown, the participation would have doubled to almost normal. Indoor Cabin was more of an attendance disaster than ever. It is apparent that this event is still around only because there is a Nats perpetual trophy available. These super-critical, super-fragile models seem to dilute the effort of anyone who builds them except the died-in-the-wool purists. The only others who build Cabin are those in search of extra points toward Nats Championship. If the event is worth saving, it seems that only a drastic rules change would do it. Certainly, most people find no reason to build a model that can usually make only five official flights a year!

INDOOR SCALE AT THE NATS

by John and Sandy Martin

It was Christmas, Fourth of July and Circus Day all in one for the indoor scale fan at the '74 Nats. No less five events were scheduled - one official and four unofficial. Besides the usual AMA Indoor Scale event were added the Miami Indoor Club's Navy Scale event, the California Flightmasters' Peanut Scale event, the Chicago Aeronuts' Peanut Scale event and the Biplane Scale event. All the clubs contributed their own very distinctive trophies and there was no entry fee charged. As a side note, there were at least a dozen AMA scale entries flying at the Lake Charles Civic Center that were not part of the 20 official entries. I discovered that the cost to enter late, plus the regular AMA fee amounted to \$25. This is big money for a club member to pay his own club for an event, even in these inflated times. I don't know the solution, but I feel this matter needs some attention. This story will probably be the only acknowledgement of these clubs' efforts that will appear in print.

AMA Indoor Scale results; Ralph Kuenz judge: Here is the official biggie - a reduced field of 20 craft - 14 in AMA and 6 in Navy Scale. This total was enhanced by the dozen fringe flyers who flew for their own amusement for the large crowd of spectators. The crowd was very appreciative and applauded not only good flights, but some mediocre ones as well. (Results tabulated page 1.)

The winning planes: (1) Fred Stark - 3/4" to the foot, 24" span. It was the best looking of the entries and was copied after a real craft owned by a friend. It was a heavy 33 grams in weight and powered with 4 strands of .075 pirelli in a 36" loop. Fred has great success with small, fast-running low pitch props on long loops of rubber - three times the nose-to-rear-hook distance. The prop was 6" diameter with 35° angle at the tip of the plywood blades. His best flight of 58.4 seconds was achieved on 1920 turns. This highly detailed model appeared in the July '74 MAN.

(2) Chuck Markos had considerable success with the Wigdon and made a new version this year. He used condenser paper instead of the usual jap tissue, and hand carved a 7" dia., 5 1/2" pitch prop. Although he had previously done 1:22, and 1:08 would have won, the best he could manage was 1:03 and he broke many motors.

(3) Dr. John Martin - When the biplane he intended to enter proved disappointing, he built a little (15") Stahlwerke RII from Walt Mooney plans. It was finished in one week and came to the Nats untrimmed. It was more detailed than Walt's version, weighed 1/3 oz., and was powered by a 22" loop of brown rubber. The cut-down Midwest plastic prop gave 55.4 seconds on 1850 turns, but it would only fly with 5° of upthrust.

(4) Andy McIsaac - His Itch, at 1 oz., was the heaviest of the winners. The 24" loop of 1/4" pirelli gave flights near 50 seconds on 1500 turns. He carved his own 7 3/4" prop and used clear-doped jap tissue for covering.

(5) Charlie Sotich's little Volksplane also won the Scalemasters Peanut Scale event.

MIAMA's Navy Scale Event was judged by Andy McIsaac. Fred Stark, who won almost everything else, won the Navy Scale event for the third time in four years with the same airplane! His Brewster XS2B had a 6 1/2" prop with 35° pitch turned by a 30" loop of 1/8" pirelli. It had 19 1/2" span and was light at 20 grams. Although it was a fat and unlikely looking flyer, it did 1:03 on 1850 turns after having trouble taking off all evening.

FLIGHTMASTERS Biplane Scale was judged by Ralph Kuenz and Russ Barerra. Believe it or not, this was the most closely contested of all the indoor scale events. Even though there were only seven entrants, all were in the running and only 4 seconds separated 1st and 3rd. George Meyer, of "Little Toot" fame, flew a beautiful jap tissue covered yellow and black Avro 511 biplane to win.

Peanut Scale has stirred much interest in both indoor and outdoor free flight circles. There were two indoor Peanut events - one using the Flightmasters' Walt Mooney rules and one using the Chicago Scalemasters rules. Both clubs donated fine trophies for their event. The Mooney rules are as follows:

1. Any number of flights - best one counts.
2. Any number of entries per contestant - only the best one counts.
3. Hand launch or ROG - no bonus for ROG.
4. After flying, line up the models, ranking them from best to worst for static/scale position points.
5. Combine flight score placing with static position for final results - low score wins.
6. Tie breaker - best static (scale) score wins.

Chicago Scalemaster rules:

1. Maximum 100 points static score; workmanship - 40, accuracy - 30, finish, color and markings - 30.
2. Maximum 100 points flight score at 1 point per second; flight score can exceed static score.
3. All flights ROG - best flight of four counts.

Judge Ralph Kuenz was using these rules himself for the first time and said he had trouble applying the 40 points for workmanship.

Both sets of Indoor Peanut rules are a vast improvement over the current ones intended for outdoor flying. The Chicago rules require longer to apply and need more documentation and scrutiny. Their ROG requirement is a plus. Perhaps the flying score should be limited to equal to static score but then this becomes too much like AMA Indoor Scale. Perhaps these rules already are too much like Indoor Scale for a fun event. By contrast, the Mooney rules are quick and easy to fly and maximize both the number of planes and the flying they do. Since you fly "against the field" of entrants and are not judged to some 100 point perfect plane, the man with the best chance builds to the local philosophy. In a field of five good flying planes and two good looking ones, the "flyers" have the best chance. The opposite is true in a field dominated by super scale modelers. These rules can't be used in a postal contest unless the model is sent for proxy flying.

Just for kicks - score the Chicago contest with the Mooney rules - look at the surprising results: the 1st place plane would be 5th, 2nd place moves to 1st and the 3rd place model ends up 7th!

The reason I'm going into all this is that we'll soon be asked to OK a new set of Peanut rules, and there is considerable world-wide interest in them. Keep your eyes peeled for the MIAMA rules which combine some of the features of both sets of rules plus some emphasis on reducing documentation requirements. Also MIAMA gives some bonus static points to the heavy or hard-to-trim ships such as autogyros and helicopters, float planes and flying boats, and craft with two or three operating props (we get some nutty looking entries here in Miami!)

The winners: (1) Charles Sotich - The only deviations from scale were enlarged dihedral, stab, and landing gear. He's been winning all the Chicago contests with this ship for the last four years. Scratch built, it was ultralight (under 3 grams) and covered with microlite. The 4 1/2" prop has 7 1/2" pitch in the bent 1/32" sheet blades. 1500 turns on a 15" loop of .042 pirelli gave its best flight of 1:48.8. (1) Dan Domina got away before I could interview him, but his J-3 Cub looked like a stock Micro-X kit built very light and capable of flights over two minutes.

John Martin - 2nd in both contests - flew his MO-1 that was 3rd in the '62 Nats. 4 1/2" bent sheet prop with 45° angle at the tips. A 20" loop of .060 pirelli with 1800 turns produced a 1:05.5 flight. The model was covered with yellow jap tissue and silver microlite, weighed four grams and had many details such as radiators, exhaust stacks, pilot and observer, Lewis gun and sight, etc.

Ted Dock - His Piper Vagabond, a stock Ken Johnson designed Micro-X kit, was 3rd in the Chicago contest, 7th under the Mooney rules and 2nd outdoors on a windless morning!

Col. Randolph did not enter this year although he won last year. He told me he had built a new Peanut (just over one gram) capable of over five minute flights, but it didn't have a chance under either set of rules. I must say that this year the field did look like little airplanes and not Stout Trophy miniatures.

DESIGN FOOTNOTES

The model on page 4 is unusual, to say the least! It is the latest in a similar series by Bill Hannan, who is well known for more than his scale model activity!

SQUARE DEAL

by Bill Hannan

Watching the ever-increasing wing chords in PennyPlane design inspired me to pull out all the stops, and go to an all-wing configuration in order to obtain the maximum possible area within the limits of the rules.

In a sense, SQUARE DEAL is also sort of a flying social commentary on the intent of the rules. My personal opinion is that while some build model aircraft as a hobby, others look for rule loopholes as their hobby! If viewed with a sense of humor, this sort of "gamesmanship" may be OK, but traditionally those who invent and enforce the rules seldom see the fun involved.

SQUARE DEAL is the latest in a series of very low aspect ratio models developed by the author, after having studied the engineering reports by Lockheed regarding their politically stillborn SST design. Of particular interest to me as a modeler, were the figures relating to the phenomenal low speed, high angle of attack characteristics of the planform. These were carefully documented, based on both wind tunnel tests plus actual experience gained from the Lockheed YF-12A and SR-71, which feature certain similarities in planform.

In somewhat over-simplified terms, the findings indicate a sort of "pumping" action that takes place between the lower and upper wing surfaces, permitting operation at angles which would produce catastrophic stall in a conventional wing planform.

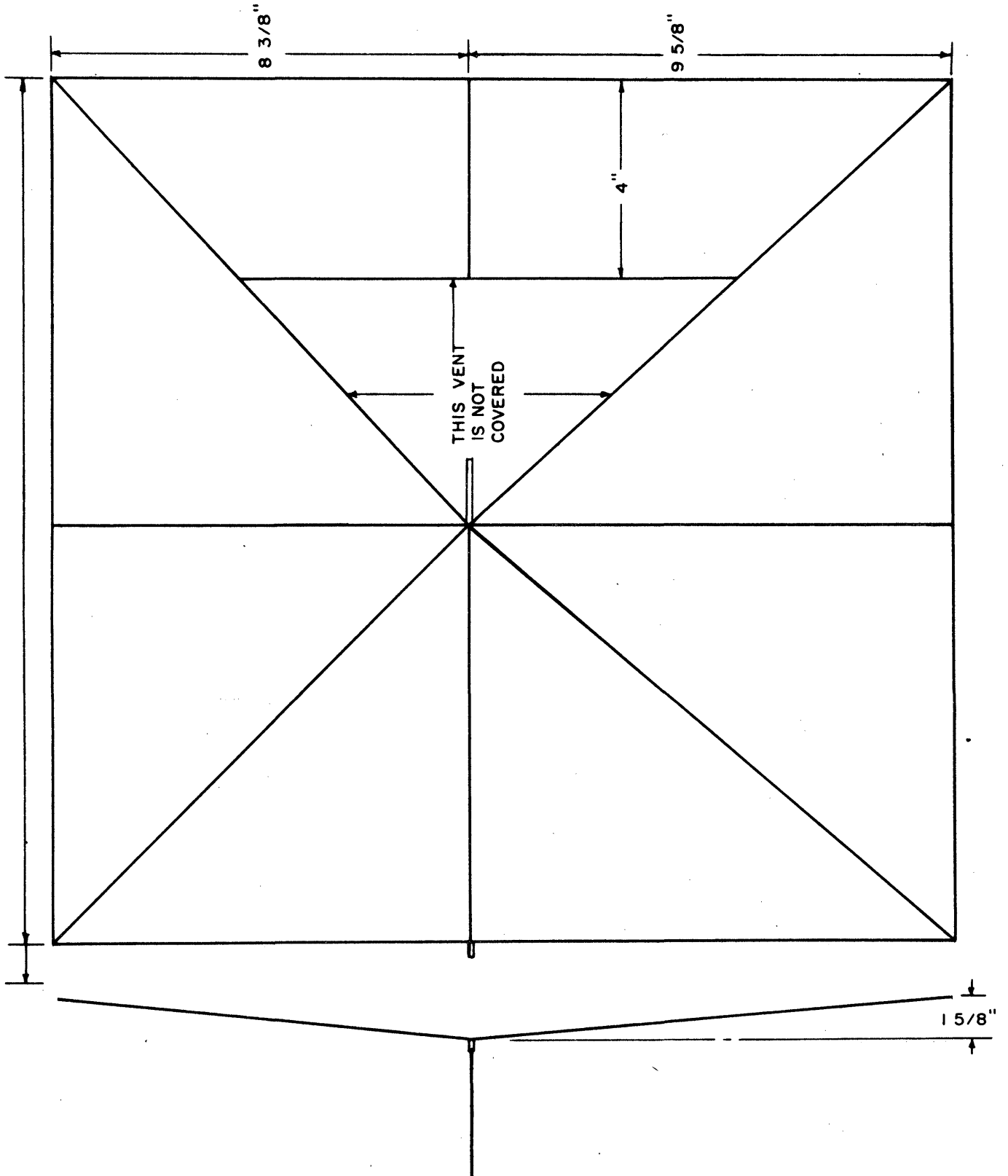
Similar phenomena can be exhibited by Rogallo configurations, and in fact, the author constructed a PennyPlane of that type, but with disappointing results.

My first success with a very low aspect ratio wing was with FUSHER GALORE, an outdoor rubber-powered model, based directly on the Lockheed SST planform. Later experiments led to vents, which permitted still greater angle of attack attitudes without stall. STRINGLESS WONDER and STAINED GLASS WINDOW were published examples of this type, which resembled common kites.

SQUARE DEAL is merely a spin-off from these earlier outdoor experiments, and has not been developed to any great degree. The prototype required nose ballast, and was fitted with a very primitive propeller, left over from TWO CENTS WORTH, a PennyPlane proxy flown by Bill Bigge at the 1970 Nats. It does prove the feasibility of the basic planform, which can take advantage of virtually all the area possible under present PennyPlane rules.

As one who is primarily a scale modeler with altogether too many projects already, the author has not pursued the development of SQUARE DEAL any further. So, it is presented here as food for thought.

18" OVERALL (EVIDENTLY SOME CLUB RULES
EXCLUDE PROPELLER)
PROTOTYPE DESIGN ASSUMED "WORST CASE"



BALANCE POINT APPROX. 30%

SLIGHT REFLEX AT REAR

3° DOWN

MOTOR STICK 10" x 3/16" x 1/8"

ALL WING AND FIN STRUCTURE IS 1/16" SQUARE

SQUARE DEAL

BY BILL HANNAN

3"

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

RONALD ROBERTI, 2502 W. Brooks, Apt. 3, Norman OK 73069
 GEORGE HILLIARD, 2 Bedford Circle, Longview TX 75601
 BILL HARTILL, 7513 Sausalito Ave., Canoga Park CA 91307
 JIM VLIET, 12 Cooper Blvd., Red Bank NJ 07701

AMA Election

All of us who are AMA members recently received a ballot from AMA Hq., giving us an opportunity to elect a new president or re-elect John Clemens; all VP's in the even-numbered AMA Districts are also being selected. The '74 presidential race certainly offers a choice; John Clemens has made the AMA presidency a highly visible and active post by stressing communication and by communicating - he got people to working to solve problems instead of just griping. The overall result is a stronger, more active organization which is standing on its own feet. His opposition, C/L Stunt expert Al Rabe, has openly down-played many of the innovations and activities of John Clemens and really offers little in concrete suggestions to fill the void.

From a historical standpoint, less than 20% of all AMA members eligible to vote actually return a ballot. Remember that the bill for 1975 dues was sent with the ballot to save postage - renewal is not a condition for voting! So, please inform yourself and vote!

Fink/Benefactor Speaks!

Dear Bud

Thanks for the compliment about the Supersweep article, and if I forget, remind me to poke you in the snoot the next time we meet. Fink, indeed!

The Supersweep article is undoubtedly the longest 100% Free Flight article anyone has had the unmitigated gall to submit to a 90% RC magazine in modern times. When AAM made (perhaps justifiable) noises about editing it down to conform to the available space I suggested splitting it. Pat Potega replied that he had done just that. The last paragraph was written by Potega. Considering the problem, I think the split was nicely done.

Keep up the great work on INAV. You will be interested to know that whenever I go to a contest, I wear Tenny-shoes in your honor.

Good Air!

Bal

Robertfink Meuserbenefactor

Where Are They Now?

Stephen Vosa, who joined NIMAS in March, '74, was an active member of the Trenton Model Airplane Engineers in the late 1930's. He has asked for information about any of these modeling pioneers. Send him a note at 59 Ethel Dr., Portsmouth RI 02871 if you have any info.

CONTEST CALENDAR

CALIFORNIA - Santa Ana

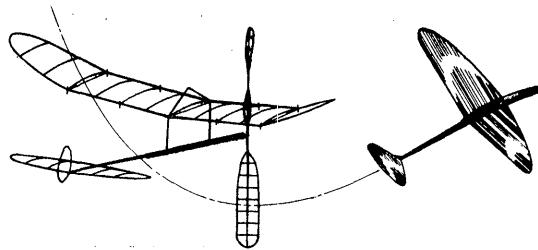
Record Trials at Santa Ana, Nov. 23-24, 1974. Call Bob Randolph at 714-796-9706 on the Thursday before to check on hangar availability.

CONNECTICUT - Glastonbury

Indoor sessions on Sundays, 8 am -12:30 pm, Dec. 8, 1974 and Jan. 12, 1975 at Glastonbury High Gym. Tuesday sessions, 7 pm 9:30 pm, in Dec. '74 and Jan. and Feb. '75 on dates available from George Armstead, 89 Harvest Lane, Glastonbury CT 06033, 203-633-7836.

FLORIDA - Miami

Indoor sessions 9 am-2 pm at Miami Dade North College, Sundays, Dec. 1, 1974 and Jan. 5, Feb. 2, Mar. 2, Apr. 6, 1975. Contests at Goodyear Hangar, Opa Locka Airport, 10 am - 6 pm, Nov. 24, Dec. 15, 1974 and Jan. 19, Feb. 16, Mar. 16, Apr. 20, and May 25, 1975. Contest events: Peanut Scale, Indoor Scale, Easy B, Indoor Stick, PennyPlane, Paper Stick, HLG. For confirmation of hangar dates, call



858-6363 to be sure a last minute cancellation didn't happen. Dr. John Martin, 3327 Darwin St., Miami FL 33133.

NEW YORK - Locust Valley

Indoor Record Trials Jan. 4, Mar. 29, 1975, 11 am - 5 pm; Boy's Gym at Friends Academy, Locust Valley, L.I., New York. Cat. I site with 33' peak and floor area about 60' x 72'. J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, NY 11545.

FAI INDOOR REPORT

Program Ballot Due

About the time you receive this issue, those of you who are eligible will receive a ballot with which you can register your approval or disapproval of the proposed program to select the 1976 Indoor WCh Team.

If you participated in the 1973-74 program, or if you did not participate but registered for the new program, you should receive the ballot. Please return the ballot to AMA HQ by Nov. 15, 1974.

Program Highlights

Basically, the upcoming program stresses top level, consistent performance by requiring entrants to get a minimum of 80% of the top score at each of two Zone contests in order to qualify for entry into the Finals.

A point system awards points for ranking in each round of the contest, then summarizes points for each flier's best three rounds. This computation is made for each contestant's performance in each Zone meet and the Finals. The Finals score is multiplied by 3 and added to the two-meet Zone total to give a grand total. Thus, each Zone performance counts 20% of the grand total and the Finals score counts 60%. The Team will be those fliers with the top three grand totals.

The contestants with the top three Zone contest totals will each receive full airline fare to the Finals. The contestants ranked 4th, 5th and 6th will receive half fares, and 7th, 8th and 9th places will receive quarter fares. Although this is contingent upon sufficient funds being raised by entry fees, it is expected that funds will be sufficient. Otherwise, travel funds will be scaled to the available resources.

Zone contests in the usual four Zones (East, West, North and South Central) will be coordinated to permit and encourage cross-zone entry; fliers who enter more than two Zone contests will be scored on the best two totals. The Finals will rotate from Santa Ana in 1975, to the East in 1977, to the Central Zone in 1979.

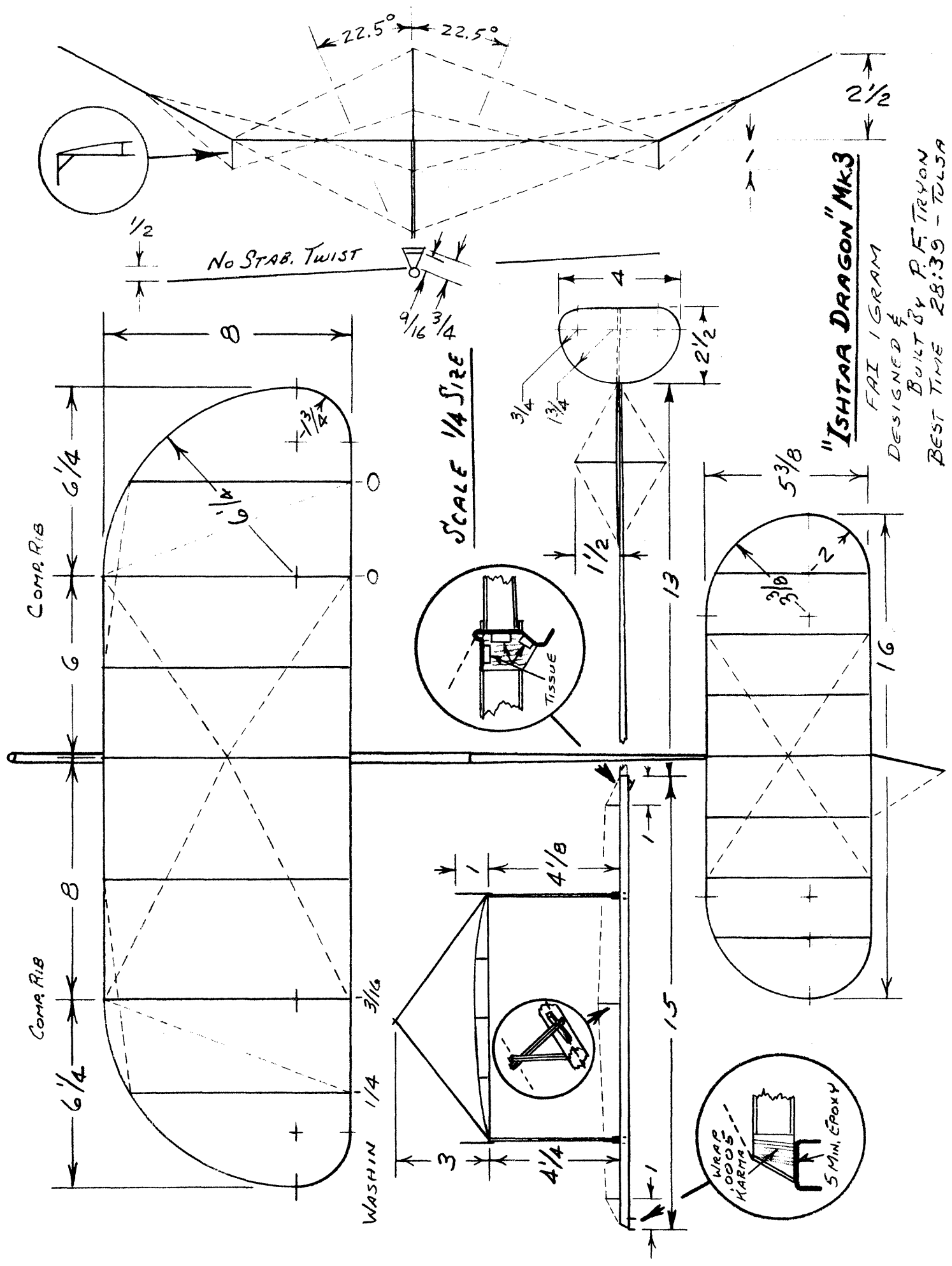
The final program submitted for approval contains a few changes from the one presented on the opinion poll of last month; mostly, the changes were in response to comments generated by local discussions and poll responses. Note there are now four Zones instead of three, scoring is on three flights instead of four, and grand total computation was changed to somewhat reduce the effect of points carried over to the Finals.

In spite of the changes, the program remains one which will require the fliers to get the best out of their models in each round of each meet, regardless of conditions. One flier opined that this method of scoring would make us all into ultra-conservative fliers, incapable of pushing a model when it was necessary. Jim Richmond, when he still had time for intensive practice and rubber testing, appeared to the casual observer to be a very conservative flier. That is, he didn't rafter-bang a lot and often logged a strong lead without ever coming really close to the top. If this program will push us all into this kind of preparation and development, we can't lose at the next World Championship!

STATE OF THE ART

Paul Tryon's ISHTAR DRAGON placed 6th at the Tulsa Team Finals, with one flight (28:39) only 7% less than the meet high time, on a no-tough flight. While this isn't a particular distinction, the model clearly has much potential yet undeveloped. Paul's comments on the model are:

(cont. p.3)



"ISHTAR DRAGON" MK3
 FAI 1 GRAM
 DESIGNED &
 BUILT BY P.F. TRYON
 BEST TIME 28:39 - TOLSA

I have been using the aft camber airfoil for several years. I know of no theories or test data that would dictate such an airfoil, and I arrived at it through a series of observations.

1. Bilgri's articles of a few years ago in MAN showed several photos where the film could be seen to be away from the ribs in the aft portion of the wing, developing a natural aft camber.
2. Around 1949 I bent the TE down about 20° to improve the glide on my HLG's. It seemed to improve the glide but it killed the launch.
3. The TE "kicker" or fence seen on some models in recent years is nothing but a form of aft camber.
4. What little test data I've seen indicate that at low Reynolds Numbers the center of pressure moves aft - perhaps to 50% or 75%.

From the above, I decided that the high point should be aft of 50% and just started sketching until I got an airfoil I liked. Tail camber is almost 0 - I fail to see what good camber does in the tail, and I think it does add drag. The prop pitches shown (note sketch on p. 4, and that the tip is progressively washed out - Ed.) are the average of both blades on the prop used at Tulsa. It also might be worth noting that I form the wing and stab tips on reduced-radius jigs in an attempt to avoid spring back; it still has been necessary to use the internal diagonal brace wire in the tips. Wood sizes below & p. 4, CMOS below; model flown at about 0%.

Wing			
LE & TE	.030 x .030	5-5.5#	B grain
Tips	.030 x .030	5.5#	A grain
Ribs	.023 x .030	4-4.5#	C grain
Comp. ribs	.027 x .027	5-5.5#	B grain
Wing posts	.0625 x .0625	.0625 x .030	Outdoor
Cabane	.030 x .030	5-5.5#	B grain
Secondary			
Bracing posts	.023 x .023	5-6#	B grain
Bracing	Primary & tip diagonals - .0007 Karma Secondary - dacron		

Stab			
LE & LE	.025 x .023	.024 x .023	5-6#
Tips	.024 x .023	4.5#	A grain
Ribs	.023 x .017	4-4.5#	C grain
Comp. ribs	.023 x .023	5-6#	B grain
Bracing	Dacron		

Fin			
Outline	.023 x .023	4.5#	A grain
Bracing	Dacron		

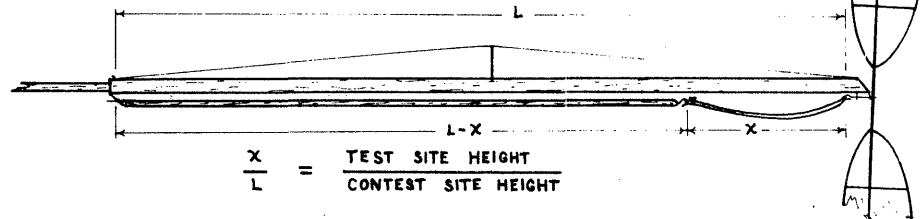
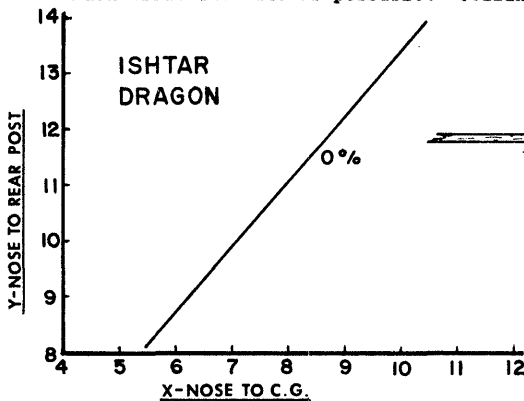
Motor Stick Assembly			
Stick	.0135 x .83	4#	C grain
Webs & cap	.0135	4#	C grain
Bracing posts			
Center	.029 x .029	5.5#	B grain
Fore & aft	.025 x .025	5-6#	BC grain
Tops	.020 x .020	5-6#	B grain
Bracing	.001 tungsten (2 wires)		
Tail hook	.015 wire		
Thrust bearing	commercial		
Tail boom	.009 x .75	.0065 x .20	4#
Bracing post	.030 x .030	.025 x .025	5-6#

HIGH CEILING TRIM IN LOW CEILINGS

By Clarence Mather

My test flying site is a city rec center gym with 22' ceiling, seemingly inadequate for preparing to fly in a World Championship held in sites over 100' high. Test flying in a small site with full length motor requires using much less than maximum turns, so not much can be learned. Instead, the short-motor weighted-stick method of testing has served me well at two WCh's.

The first step in preparing for a WCh is to find out as much about the site as possible. Ceiling height, type



$$\frac{X}{L} = \frac{\text{TEST SITE HEIGHT}}{\text{CONTEST SITE HEIGHT}}$$

STICK MADE FROM 1/8" SPRUCE SAND IF HEAVY
DOPE IF LIGHT UNTIL IT WEIGHS $\frac{L-X}{L}$ X FULL MOTOR WEIGHT

and shape (narrow and pointed or wide and flat) of ceiling and air conditions are the most important factors, and this information usually is available to U.S. teams. For the 1968 WCh at Rome, we knew that the Sports Palace was 115' high with rather large area at the top. In October, moderate temperatures were expected and Bud Romak's previous experience there led us to expect lots of drift.

The 22' ceiling available to me was only one-fifth the ceiling in the Sports Palace, so motors one-fifth as long as those needed for 115' ceilings were made from the same size rubber as would be used in the high ceiling. A stick with hooks at each end (see sketch) were made to fill four-fifths the distance from prop hook to rear hook. The model can then be flown with the short motor and the stick and the model weighs the same as it will in competition. Now, prop speed, sink rate and other parameters can be reliably measured in the small site. The power burst can have full torque so the model can be trimmed for competition. However, the burst only lasts one-fifth as long as with the full motor, and this can give false assurances. If a model is trimmed almost to a stall when using the short motor, it may actually stall with the long motor; this happened with full turns on my last flight at Rome. On the short motor, the burst may die off before the model has time to rotate to a full stall, but with the longer burst from a long motor, the model has time to reach a stall angle.

A model with the weighted stick and short motor has one-fifth the climb and one-fifth the maximum duration of the same model with full motor. Thus it can be wound to the maximum turns possible for the short motor and flown in the smaller site. But, how many turns is that? As always, it depends upon the rubber used. Turns/inch charts are available and are useful as a rough guide, but rubber still varies in turns capability. The only sure way is to test short loops (to avoid wasting rubber). A 4" loop is suitable. Wind it lightly the first time, then repeatedly increase the turns each time. Wind slowly, feeling the rubber frequently so that a sense of breaking hardness is acquired. Continue until the loop breaks, and note the number of turns per inch required to break it. The "feel" of hardness is more important than the turns - different temperature and humidity will change the breaking turns!

When flying, I hook the rubber to the stick and put the "eye" end of the stick on the stooage. After the rubber is wound, the rubber is hooked to the prop in the normal fashion. Then the stick is hooked to the rear hook. No difficulties are caused by the stick except that it feels different at first - as is usual with new items.

If the air in the test site is the same as in the competition site, flight duration will be in about the same ratio as the ceiling heights - one to five in the example used. In Rome the first two nights had warm air and duration was about as predicted from low ceiling tests. The air was cooler the last two nights, so larger motors were required. Obviously, the closer conditions agree, the closer predictions will agree. It is very important to be precise when making the stick length and weight, along with the motor length. Properly done, this method is much better than testing with full motors, partially wound.

Sketches of the Romanian salt mine ('70 WCh) showed it was about 180' high, temperature 50° and no drift expected. So, test motors were 2 1/2" long from both normal and oversize rubber, and tests were made at 5 am when the gym was about 60°. The extra tests were expected to allow for not having salt mine conditions, but the actual conditions were much different than expected. The air seemed to be cold all the way up, and the cold air slowed the models' descent so most of them deadsticked quite high. We really needed props that turned very fast for about six minutes, then would slow way down for cruise. Many extra people and large lamps generated a lot of heat that made turbulent air, so even models properly adjusted went astray.

So, the best preparation is to fly as much as possible in many different sites - contest conditions often are much different than you are used to having!

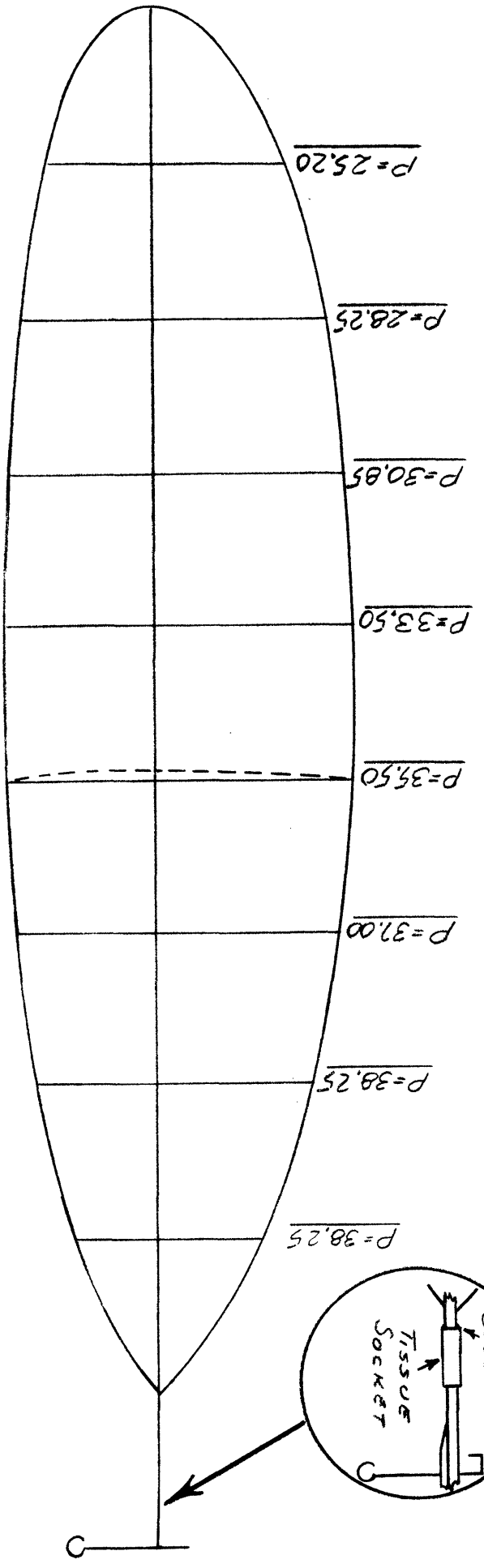
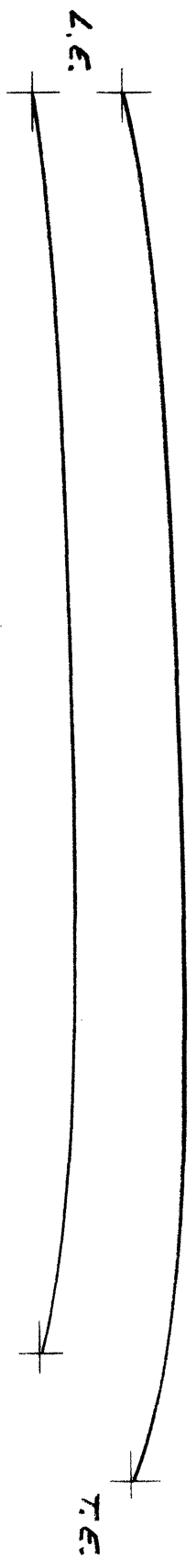
<u>Model Weights</u>	
Wing	.0107
Stick-tail asy	.0173
Prop	.0076
Total	.0356
Rubber	.0450
Flying wt.	.0806

Rubber
 17" Loop .040 x .057
 (measured new)
Turns
 On 28: 39 flight:
 1720 t; .35 # oz torque
 Max. altitude - approx. 88'

<u>Prop</u>	
Spar	.058 x .058-- .030 x .030 5#
Outline	.023 x .023 4.5#
Ribs	.020 x .022 4-4.5#
Shaft	.015 wire

Full Size

WING AIRFOILS



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

KEN BAUER, 627 E. Monroe, Orange CA 92667
 JOHN J. COFFEY, 638 Elizabeth St., Salt Lake City UT 84102
 JAMES McDANIEL, 452 Catherine St., Elizabeth NJ 07201
 JIM WHELAN, 9110 SW 77 Ave., Apt. B-12, Miami FL 33156
 PETER WHITE, 27630 Northwind, Euclid OH 44132
 THOMAS L. WOODS, 3726 S. Hereford Lane, Philadelphia PA 19114

Honorary Members

SVEN PONTAN, Idunvagen 33, S-136 42 Handen, Sweden
 R. S. WHYBRAY, 31 Dunstal Field, Cottenham, Cambridge CB4 4UH England

Special International Issue

As usual, the November issue is dedicated to all indoor fliers outside of the North American continent - friends from all over the world. I am pleased to salute all these fliers. Their activity serves as counterpoint to our own, besides often being a spur to improvement in our own state of the art.

NFFS Call For Papers

Hewitt Phillips, well-known NASA aero engineer and long-time NIMAS and NFFS member, is the 1975 editor of the NFFS Sympo. He issues this call for papers:

The National Free Flight Society is soliciting papers for the 1975 Symposium to be held at the 1975 Nats. Papers will be published in the 1975 Symposium whether or not the author is able to present his paper personally at the Nats. Papers should cover some aspect of the science and art of free-flight models, including technical studies, practical design and engineering as applied to models, or historical items. Both Indoor and Outdoor free flight modeling developments are to be included. Please send proposed papers to:

W. Hewitt Phillips
 310 Manteo Ave.
 Hampton VA 23661

Send title of proposed paper together with an abstract of 200 words or more, or a complete paper if it is available. To be considered, abstracts should be submitted by March 15, 1975.

Editorial comment: Just as INAV absolutely depends upon your contributions, the NFFS Sympo must have input from indoor fliers in order to use indoor material. The most recent Sympo journals have had little indoor coverage; there are many indoor fliers who conduct suitable investigations for their own benefit. Why not report them?

MERRY CHRISTMAS!

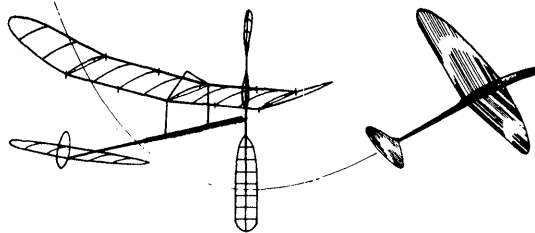
With the time of year being what it is, the Nov. '74 INAV should reach you just before Christmas. Thank you all very much for the greetings we are already receiving, and we wish you all the best now and in the year to come.

Thanks For Corresponding!

With so many of you waiting for me to return a letter, it is gratifying to note that most of you have continued to send news, ideas and information. It simply has not been possible for me to correspond, except sporadically, and without your support it would be impossible to build a newsletter. I have not given up hope of answering most of the backlog, but part of the problem is related to the necessity of supplementing income via free-lance writing. Keep writing, and I'll do my best!

SCATTER Lives Again!

For a number of years, the Southern California Aero Team published a top-notch newsletter especially for FAI FF fliers; predictably, the newsletter was called SCATTER. It is now being revived; for a short time the subscription rate is \$3/year anywhere in the world. After a bit of operation, costs will be evaluated and new rates set. If it is like the original, it would be a bargain at \$5!



NIMAS Awards

Silver Cat. I Rubber Award - 13:29.9, Richard Whitten

Gold Cat. I Rubber Award - 13:44.6, Richard Whitten

Financial Report

This issue begins the 14th year of publication of INAV and, except for editorial tardiness, all seems to be well. Income covered outgo, growth slumped in mid-year and then picked up again, and reader support continues. Net growth is 1.4%, and in spite of both a postal rate increase and an increase in printing charges, some money was left over. The breakdown is as follows:

Printing costs (INAV only)	\$456.29
INAV Postage	452.13
Correspondence postage	77.52
Office supply, misc.	255.65
	<u>1241.59</u>

With income amounting to \$1255.64, this leaves \$24.05 to carry forward to 1975. 1974 expenses were projected to be \$1116, expecting an immediate postal increase. The postal rate increase was delayed, but there was a healthy increase in printing costs. With 1974 as an example, it seems prudent to increase membership rates 25%/year, to \$3.50/year. For subscribers outside the North American continent, first class delivery is \$3.50 and air mail is \$4.50/year.

On the services side, incoming letters totalled 497, and outgoing mail amounted to 508 pieces. Average circulation moved from 345 to 350 copies per month, with an average of six new members per month since the July issue. A large number in queries are awaiting answer now, so perhaps the growth will continue.

FAI INDOOR REPORT

Team Selection Program

Although these numbers are unofficial, they indicate the high degree of acceptance granted the new program: 71 ballots sent; 64 responses with 58 "yes" votes and only 6 "no" votes. This seems to indicate a strong success for the FAI Committee concept. As a reminder, the program (see Oct. '74 issue for program highlights) was conceived and modified, discussed and dissected and refined by a face-to-face meeting of the Committee members. A subsequent opinion poll gave opportunity for participant opinion feedback which further refined the program to the form which was so overwhelmingly approved.

C.I.A.M. Meeting

Although the exact wording will be available sometime in 1975, two changes in FAI indoor flight rules can be summarized roughly thus: For any flight which terminates within 30 seconds, another attempt may be made. If a model touches the floor after launch and does not come to rest (continues the flight), the timing will continue.

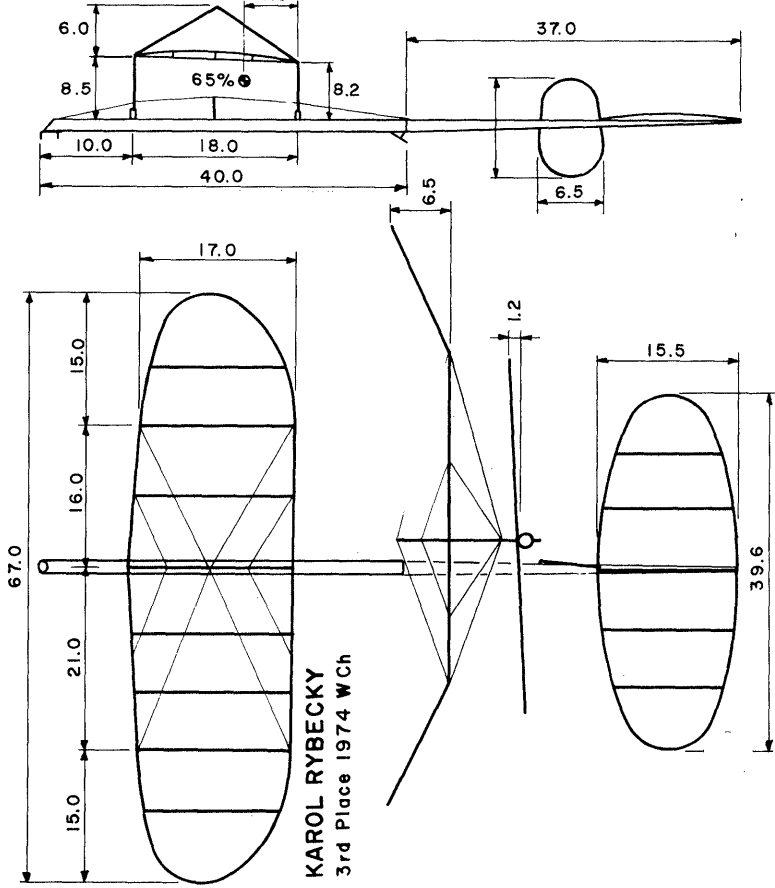
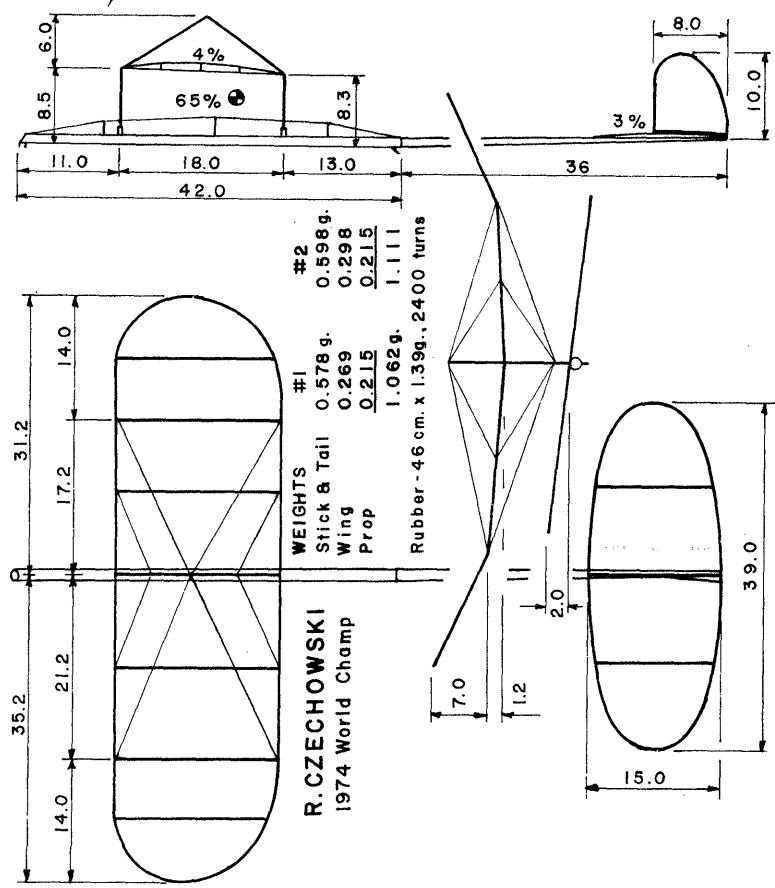
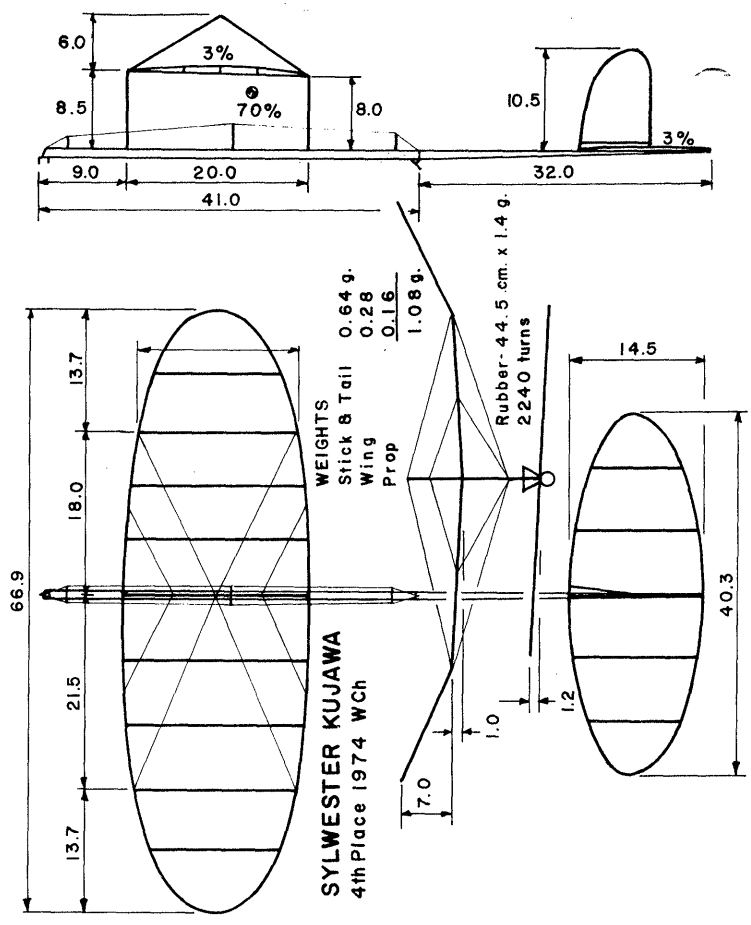
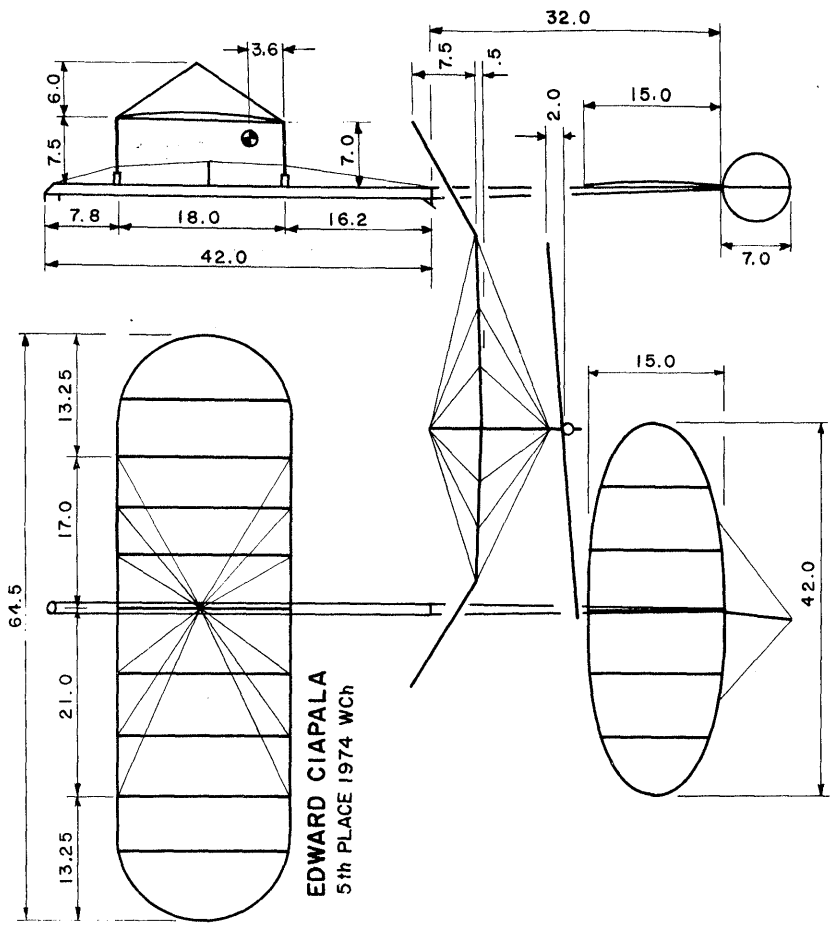
A Hungarian proposal for a smaller model with many restrictions, to be substituted for the existing 65 cm, one gram model was defeated; instead, the proposed model specification was instituted as a provisional class to be used to help promote indoor flying.

Finally, the Kopecky Trophy (awarded for the longest single flight in a WCh) has been approved by the C.I.A.M. to continue as an official perpetual award. This trophy was sponsored and donated by the East Coast Indoor Modelers, the club which was fortunate to have Ernie Kopecky as a member until his death in July, 1973.

CONTEST CALENDAR

CONNECTICUT - Glastonbury

Indoor sessions at Glastonbury High Gym: Tuesdays, 7 pm-9:30 pm, Jan. 14, Feb. 18, Mar. 18, Apr. 3, May 6, June 3, 1975; Sundays, 8 am-12:30 pm, Jan. 12, Mar. 9, May 11, 1975. Indoor contests Feb. 9, Apr. 13, 1975. For details, contact George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.



FLORIDA - Miami

Indoor Fly-ins at JFK Gym, Miami Dade North College, 9 am-2 pm (confirm by calling 858-6363), Jan. 5, Feb. 2, Mar. 2, Apr. 6, May 4, 1975. Indoor contests at Goodyear Blimp Hangar, Opa Locka Airport, 10 am-6 pm, Jan. 19, Feb. 16, Mar. 16, Apr. 20, May 25, 1975. Confirm hangar dates. Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

Indoor contest at the Drill Hall, Glenview Naval Air Station, Glenview, Ill., Dec. 29, 1974; Delta Dart and 90 Minute HLG. For those who haven't heard, you get 90 minutes to build the glider - not have to fly it 90 minutes! Indoor contest at Madison Street Armory in Chicago, Jan. 26, 1975; HLG, PennyPlane, Peanut Scale and Paper Stick. Pete Sotich, 3851 W. 62nd Pl., Chicago IL 60629.

OREGON - Albany

Indoor contest at South Albany High School Gym, 3705 S. Columbus St., Albany; PennyPlane, Easy B, HLG, Kit Peanut Scale, AMA Indoor Scale, Earl Moorhead Event, and Ready-To-Fly (models furnished at door), Jan. 12, 1975. Contest same site on Feb. 23, 1975; AMA Scale, Unmodified Kit Peanut, Open Peanut, Popularity Scale, Keyhole Scale, and Scale Old Timer. Both contests 10:30 am-3:30 pm, site open 9:30 am. Contact CD Bob Stallok, 1120 Shady Lane, Albany OR 97321, ph. 928-8101 for more details and special rules.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Blvd., Union, N.J., on the 2nd Thursday of each month thru May, 1975. Contact Dan Domina, 47-01 Fox Run Dr., Plainsboro NJ 08536 for time and details.

NEW YORK - Locust Valley

Indoor Record Trials Jan 4, Mar. 29, 1975, 11 am-5 pm, Boy's Gym at Friends Academy, Locust Valley, L.I., New York. Cat. I site with 33' peak and floor area about 60' x 72'. J. G. Pallet, 30 Emerson Rd., Brookville, Glen Head, NY 11545.

TOP TEN EASY B

Name	Time	Ceiling	Fudge	Score
1. Bob Platt	657.0	19.6'	1.336	877.8
2. Hal Crane	608.0	19.6'	1.336	812.3
3. Dick Hardcastle	634.0	22.0'	1.261	779.5
4. Clarence Mather	531.0	22.3'	1.253	715.5
5. Kevin Wehner	431.4	20.5'	1.307	563.8
6. Fudo Takagi	445.0	22.3'	1.253	557.6
7. Alan Riches	422.2	20.2'	1.314	554.8
8. Bill Langley	418.0	20.5'	1.307	546.3
9. Michael Thompson	347.0	20.0'	1.323	459.1
10. Ted Katsanis	338.0	20.0'	1.323	447.2

INDOOR ELSEWHERE

International Indoor Contest at Slanic - Prahova, Romania, May 9-12, 1974.

1. Aurel Popa	Romania I	37:50	38:25	76:15
2. Eugen Holtier	Romania I	35:21	34:53	70:14
3. Sylwester Kujawa	Poland	33:13	34:45	67:58
4. Jiri Kalina	Czech.	33:43	33:40	67:23
5. Edward Ciapala	Poland	32:54	33:56	66:50
6. Karol Rybecky	Czech.	32:42	33:55	66:37
7. Andras Ree	Hungary	32:04	31:25	63:29
8. Eduard Chlubny	Czech.	32:20	31:00	63:20
9. Ryszard Czechowski	Poland	31:48	31:26	63:14
10. Aurel Moraru	Romania I	29:57	31:05	61:02
11. Antal Egri	Hungary	29:24	29:49	59:13
12. Ghorgho Sora	Romania II	27:17	28:25	55:42
13. Daniel Fratesanu	CSU Galati	27:47	26:30	54:17
14. Piotr Bombol	Poland	26:04	25:29	51:33
15. Zoltan Ocsody	Hungary	25:36	25:13	50:49
16. Gyorgy Buzady	Hungary	22:57	26:33	49:50
17. Vasile Niccoara	CSU Galati	22:35	27:07	49:52
18. Gh. Chinga	CSU Galati	22:50	25:37	48:27
19. Tudorel Lungu	Romania II	25:32	21:47	47:19
20. Eugen Curea	Romania II	19:51	20:25	40:16
21. Pees Nikola	Bulgaria	16:11	16:01	32:12
22. Slakov Georgi	Bulgaria	15:03	12:36	27:39

Team Results

Romania I	207:31
Poland	198:02
Czechoslovakia	197:20
Hungary	172:32
CSU Galati	152:26
Romania II	143:17
Bulgaria	59:51

The Canadian Team Selection meet was held May 5, 1974, at a 30' site in Ontario. The results:

1. Andy DeMello	20:33	18:28	39:01
2. Jack McGillivray	20:08	17:03	37:11
3. Mike Thomas	13:08	13:30	26:38
4. Paul Roberts	11:59	14:36	26:35

British Indoor Nats, Aug. 17-18, 1974, held at Cardington Hangar.

EASY B - Best 2 flights of 6 (16 entries)

1. Laurie Barr	15:18	14:20	29:38
2. John Blount	14:05	14:47	28:52
3. Butch Hadland	12:54	12:45	25:41
4. R. Bauley	13:07	11:42	24:49
5. N. Zotov	12:46	11:43	24:29
6. Marty Shepherd	11:57	11:48	23:45
7. Reg Parham	11:14	11:11	22:25
8. M. Page	10:01	11:20	21:21

PennyPlane - Best 2 of 6 (3 entries)

1. Reg Parham	9:15	9:16	18:31
2. N. Zotov	5:50	5:10	11:00
3. John O'Donnell	3:32	3:58	7:30

FAI Indoor - Best 2 of 6 (9 entries)

1. John Blount	35:21	30:56	66:17
2. Reg Parham	31:24	32:34	63:58
3. Laurie Barr	31:42	29:50	61:32
4. Paul Masterman	31:06	27:34	58:35

Open Microfilm - Best 2 of 6 (5 entries)

1. John Blount	32:34	32:58	67:32
2. Bruce Edwards	29:39	26:33	56:12
3. Paul Masterman	27:29	26:09	53:38

HLG - Best 2 of 10 (5 entries)

1. P. Bayram	57	58	115
2. M. Fantham	48	48	96
3. A. Slater	27	45	72

STATE OF THE ART

Four of the winners of the 1974 Indoor WCh made their model details available, and these are summarized below and in two drawings. All three of the Polish Team models are shown, along with Karol Rybecky's model, which won the Kopecky Trophy for longest single WCh flight. All available info has been presented, except for some small detail info on Czechowski's model. This additional info will be loaned upon request. I have a half-size drawing from Czechowski; send 24¢ postage with your request to Box 545, Richardson TX 75080.

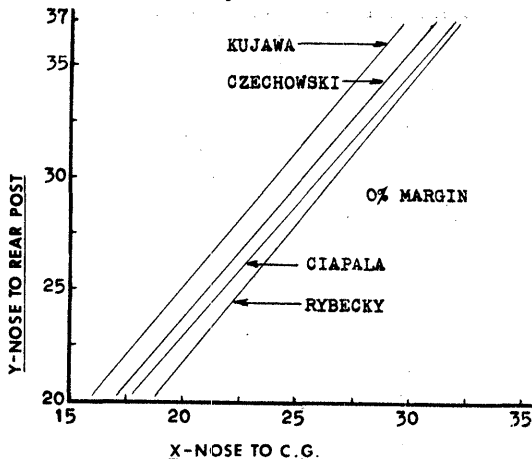
All info on the plans is in metric, prop info and wood sizes below are in inches; the CMOS chart below is metric. It might be instructive to compare these four models:

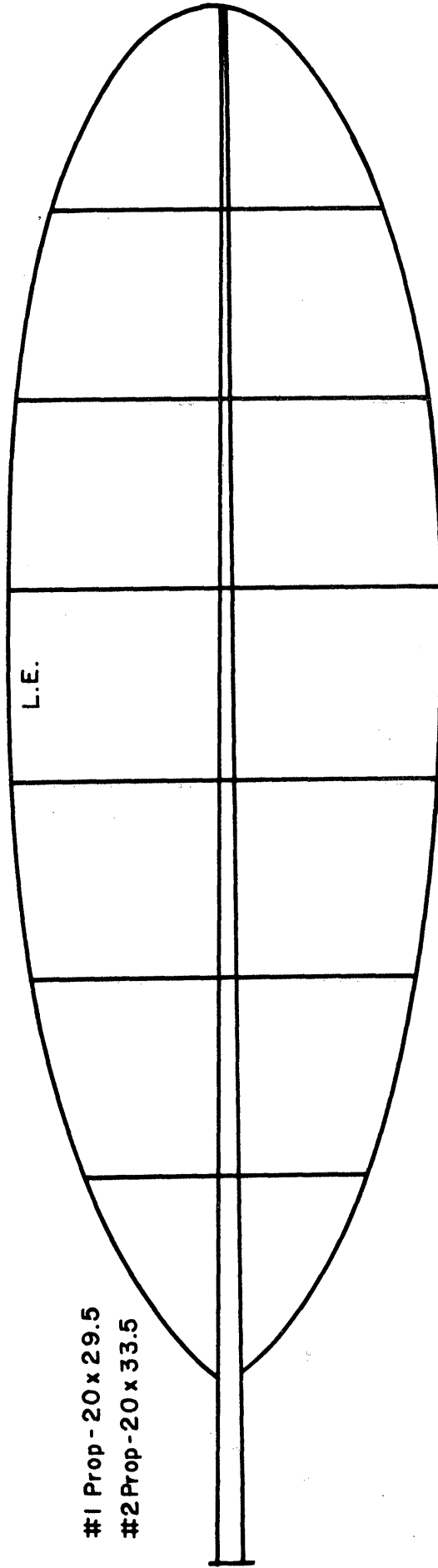
	Wing Area (cm ²)	Avg. Chord (cm)	Tail Area (cm ²)	Trim CMOS	INP
Czechowski	1100	17.05	487	+9.8%	+29%
Rybecky	995	15.55	511	+21%	+63%
Kujawa	1074	16.7	546	+0.8%	+15%
Ciapala	1090	16.9	548	+0.2%	+43%

The average wing area is 1064 cm² (165 in.²) and the average chord is 6.5 inches. At a time when some fliers are planning ever larger wing chords, the performance of these four models suggests that these chords are close to optimum. This is not to say that the "perfect air" model would be this small - just that WCh's seldom have consistent good conditions! Incidentally, comparison of Czechowski's model to Pete Andrews' Time Machine shows a close similarity in area, trim, moments and weight.

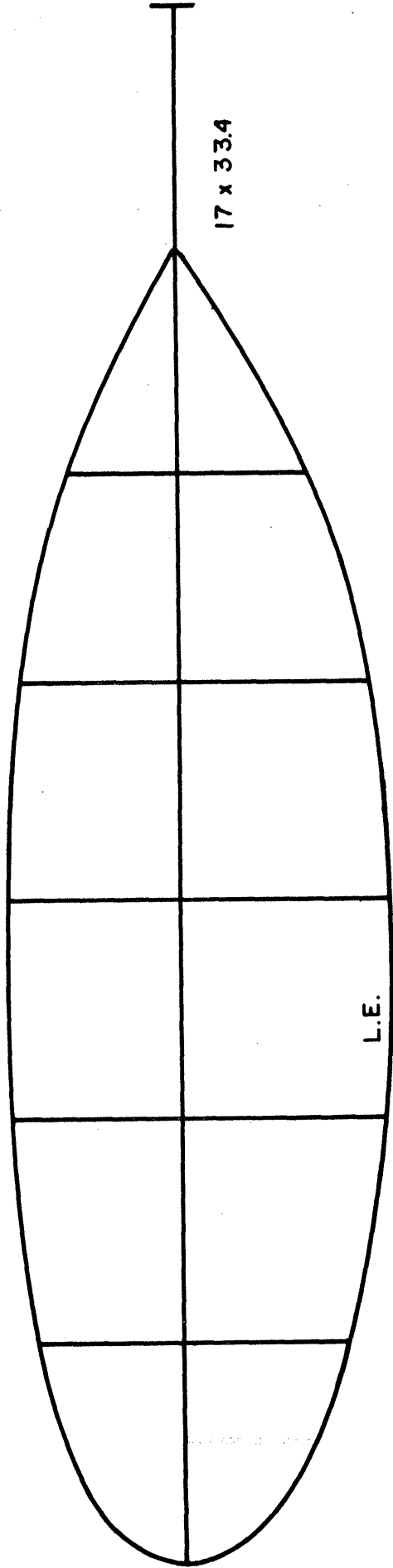
Wood sizes on Czechowski's model:

Wing Spar	.035" x .039"	Stab Spars	.039" x .031"
Tips	.028" x .024"	Tips	.024" sq.
Comp. Ribs	.028" x .039"	Ribs	.024" sq.
Other Ribs	.024" sq.	Rudder Outline	.024" sq.
Prop Spar	.108" dia. @ hub	Prop Outline	.020" sq.
Ribs	.020" sq.		





CZECHOWSKI



KUJAWA



E.

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

JON BJORNSTAD, 1411 Nova Ave. #101, Hillside MD 20027
 RICHARD IVERS, 454 Walnut St., Newtonville MA 02160
 J. B. NUSZER, 61-28 82nd Place, Middle Village NY 11379
 JON ROGERS, 20 Sylvia Lane, Naperville IL 60540
 GUIDO C. SPEEDY, 1005 Melrose Dr., Anderson IN 46011
 RANDY WALLINGFORD, 14430 Clayton Rd., San Jose CA 95127
 RONALD WILLIAMS, 1364 Lexington Ave., New York NY 10028

Family Memberships

RICHARD A. IVERS, 454 Walnut St., Newtonville MA 02160
 BRIAN SPEEDY, 1005 Melrose Dr., Anderson IN 46011

Honorary Members

BOB BAILEY, 162 York Rd., Stevenage, Herts, SG1 4HQ
 England
 DIMITRIS NIKOLAOU, Skogsbaken 14, S 172 41, Sundbyberg,
 Sweden

Financial Report - Feedback

It is heartening to note that some of you read the Financial Report closely enough to catch an error - the surplus is \$14.05 instead of \$24.05 as printed. It is a foul canard and a terrible slur to blame my Texas Instruments calculator for the error as one of you did! This typewriter don't add no better than ut spells!

NIMAS POSTAL MEET

Even though this is the December '74 issue, the time is ripe to announce the 10th Annual NIMAS Postal Meet. It will be for anyone, with regular classes in PennyPlane, HLG and Easy B. Any flights made in sanctioned competition between Jan. 1 and Apr. 28, 1975, plus flights made in indoor sessions between now and Apr. 28 are eligible for entry. Flights made at indoor sessions should be made under conditions conforming to AMA rules. More details will be presented in the Jan. '75 INAV.

FAI INDOOR REPORT

Tentative Wch Site

At the recent CIAM meeting, England was selected to host the 1976 Indoor World Championship, with Romania as an alternate. Final selection will be made at the next Fall meeting (Nov. or Dec., 1975) of the CIAM.

Team Qualification Schedule

The Jan. '75 Competition News contains an announcement listing a tentative schedule for the Team Selection Contests to be held this year. These dates are:

West (Santa Ana) Apr. 26-27	West (Santa Ana) Jul. 4-6
South (Tulsa) May 24-25	East (Lakehurst) Jul. 19-20
North (Akron?)* Jun. 7-8	South (Nats) approx Aug. 2-3
East (Lakehurst) Jun. 21-22	North (Akron) Aug. 16-17

Finals (Santa Ana) - Aug. 30-31-Sep. 1, 1975

*This early, Akron may be unsuitable and it is possible that a Chicago Aronomy may be used instead.

Provisional Indoor Event

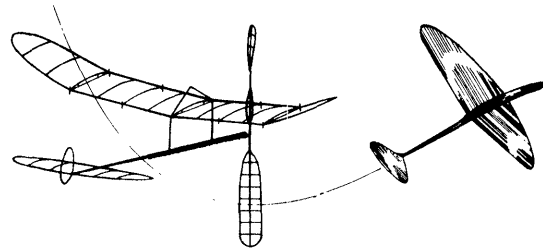
The recent CIAM meeting adopted a provisional indoor model class which calls for models of the following specifications:

The maximum span of the lifting surfaces is 50 cm and the maximum chord is 15 cm.

The maximum distance between the hooks holding the motor is 25 cm. The minimum weight of the model without rubber is 1 gram.

CONTEST CALENDAR

CONNECTICUT - Glastonbury
 Indoor sessions at Glastonbury High Gym; Tuesdays,
 7 pm-9:30 pm, Feb. 18, Mar. 18, Apr. 8, May 6, June 3,



1975; Sundays, 8 am-12:30 pm, Mar. 9, May 11, 1975. Indoor contests Feb. 9, Apr. 13, 1975. For details, contact George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-ins at JFK Gym, Miami Dade North College, 9 am-2 pm (confirm by calling 858-6363), Feb. 2, Mar. 2, Apr. 6, May 4, 1975. Indoor contests at Goodyear Hangar, Opa Locka Airport, 10 am-6 pm, Feb. 16, Mar. 16, Apr. 20, May 25, 1975. Confirm hangar dates. Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

Indoor contest at Madison St. Armory in Chicago on Jan. 26, 1975; HLG, PennyPlane, Peanut Scale and Paper Stick. Charlie Sotich, 3851 W. 62nd. Pl., Chicago 60629.

MARYLAND - Silver Spring

Indoor sessions at JFK High School on Randolph Rd. in Silver Spring, MD, by D. C. Maxcuters, 7 pm-11 pm, Feb. 14, 21, 28, Mar. 14, 21, Apr. 4, 18, 25, May 9, 16, 30, 1975. Rolfe Gregory, 11603 Milbern Dr., Potomac MD 20854.

MISSOURI - Kansas City Area

Indoor contest Feb. 15, 1975 at Park Hill North Jr. High, 8300 N. Congress, Indoor Scale, Peanut Scale, Jr. Peanut, HLG. Indoor contest Mar. 8, 1975 at Park Hill South Jr. High, 6501 NW Linden Rd., Easy B, Indoor Stick. Both contests 12:30 pm-4:30 pm. Contact Roger Schroeder, 4111 W. 98 St., Overland Park KS 66207, ph. 913-648-4265 for details and city location of sites.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Blvd., Union NJ, on the second Thursday each month thru May, 1975 Contact Dan Domina, 47-01 Fox Run Dr., Plainsboro NJ 08536 for time and details.

OHIO - Euclid

Cleveland Free Flight Society Indoor Contest, Euclid Arena, Euclid OH, May 17-18, 1975, HLG, Indoor Stick, FAI Stick, Paper Stick, Peanut Scale, Indoor Scale, Easy B, Jetco ROG, Delta Dart, Scraps. Site has 30' ceiling and 85' x 160' floor. Contact Jim Hyka, 19411 Preston Rd., Warrensville Hts. OH 44128, ph. 475-2381 or Vern Hacker, 25599 Breckenridge, Euclid 44117, ph. 486-3388.

OREGON - Albany

Indoor contest at South Albany High School Gym, 3705 S. Columbus St., Albany; Feb. 23, 1975; AMA Scale, Unmodified Kit Peanut, Open Peanut, Popularity Scale, Keyhole Scale, and Scale Old Timer. Contest time 10:30 am-3:30 pm, site open 9:30 am. CD Bob Stalick, 1120 Shady Lane, Albany OR 97321, ph. 928-8101 for more details and special rules.

TEXAS - Ft. Worth/Dallas Area

Cliff Cloud Climbers Annual Indoor Model Airplane Contest, Feb. 9, 1975, Meadowbrook Rec. Hall, Arlington TX. HLG, Easy B, PennyPlane, Peanut Scale, Jr. Rubber, 10:30 am-4:45 pm. Contact Mike Fedor, 817-265-0601, for flying schedule and site location. Open contestants must donate \$2 toward site rental.

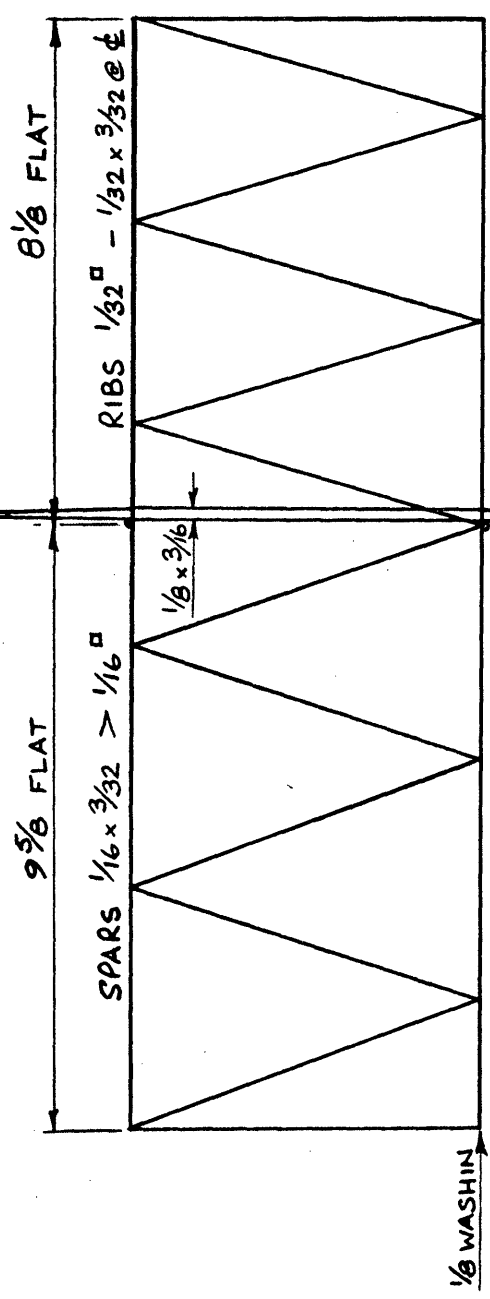
TOP TEN CEILING DODGERS

I hope that the lack of activity in Ceiling Dodgers in recent months is soon remedied. For those who haven't seen or heard of this event, it is a fun way to improve the models and have an informal, on-going contest at the same time. Basically, the idea is to fly any class of model in any given site while trying to get the best time possible without rafterbanging or ceiling scrubbing. The times are fudged to 35' using the standard NIMAS Fudge Factors, then ranked as below. Flights can be made at a contest or Record Trials, or at a flying session where the timing and general conditions conform to standards of an AMA contest (no steering, etc.). Make the flight before a C.D. or other witnesses and send the flight time, ceiling measure (FAI type measurement), and an estimate of the maximum altitude achieved. Anyone may apply.

Name	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.1
3. Robert Dunham II	1454	89'	.627	911.7
4. Hal Crane	682	20'	1.323	902.3

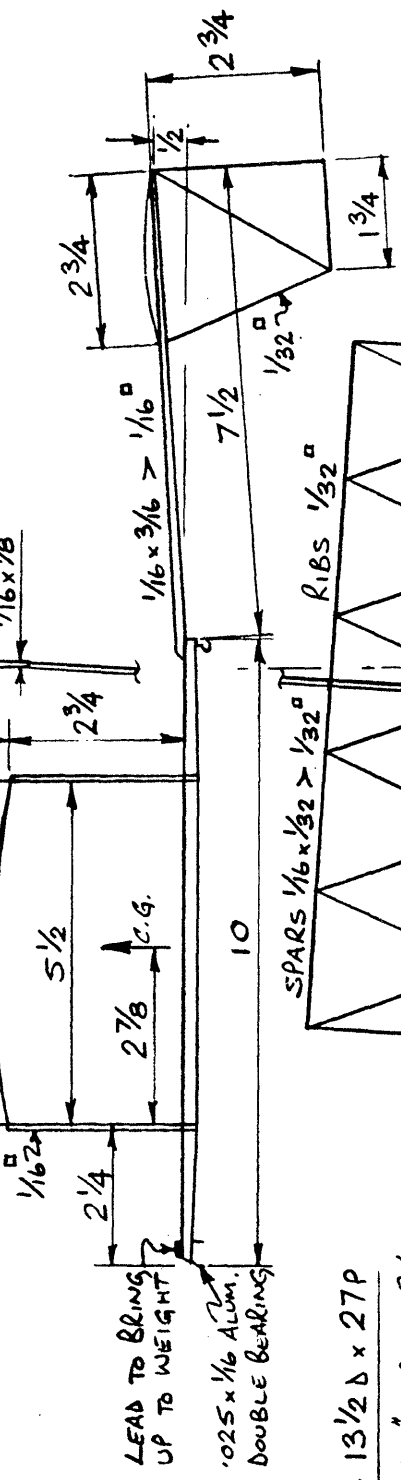
COVERING - LIGHT CONDENSER PAPER APPLIED WITH THINNED POLYSTYRENE CEMENT.

$\frac{1}{16} \times \frac{1}{8}$



$\frac{1}{8}$ WASHIN

7" RAD ARC WING + STAB



LEAD TO BRING UP TO WEIGHT

0.25 x 1/16 ALUM. DOUBLE BEARING

PROP - 13 1/2 D x 27P

POWER - 15" LOOP OF 3/32

CONTEST RECORD

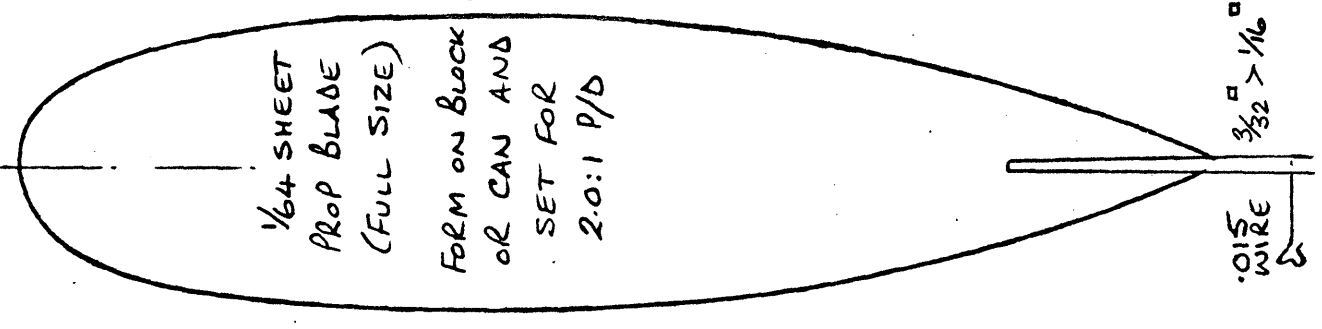
- 2ND-VGMC '73 SPRING CAT III - 8:40.4
- 1ST-VGMC '73 INTERNATS CAT III - 7:15.6
- 1ST-NIMAS '73 POSTAL - 20.2' - 410.4 x 1.314 - 8:59.3
- VGMC CAT I RECORD - FEB 4 '73 - 6:50.4
- VGMC CAT III RECORD - MAY 5 '73 - 8:59.2

SCALE 1/3

'POCO-P' PENNY PLANE

BY AL RICHES NOV '73

WEIGHTS - WING .0.920
 PROP 0.640
 STICK + STAB INC. WEIGHT 1.610
TOTAL 3.170



0.015 WIRE

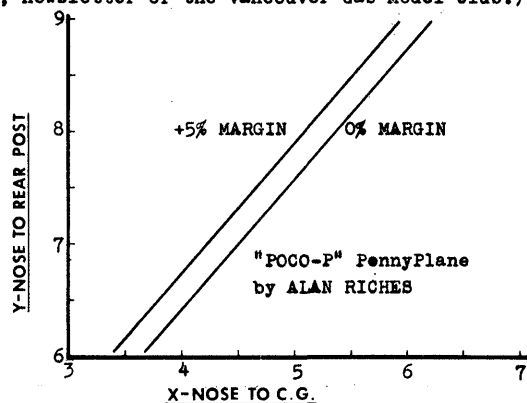
5. Bob Dunham	1357	89'	.627	850.8
6. Bud Tenny	1275	89'	.627	742.9
7. Dick Hardcastle	602	23'	1.234	742.9
8. Hewitt Phillips	528.2	20'	1.323	698.8
9. Howard Haupt	456	22'	1.261	566.2
10. Steve Lovens	433.2	20.5'	1.307	566.2

Both Top Ten Ceiling Dodgers and Top Ten Easy B have been going a number of years. To date, the only recognition anyone gets is the listing in INAV. Would it be fun to have some sort of award that is passed around? Such an award could be a plaque listing past Top Ten fliers, or a gag trophy that each owner has to add something to. Drop a line and make some suggestions!

STATE OF THE ART

Alan Riches' PennyPlane, "POCO-P", has compiled an impressive record of performance in Canadian competition, as well as winning the last NIMAS Postal which had P-P as an event. As shown, the model is a solid, conservative design which should do well for anyone. The flight times listed as slightly lower than present U. S. standards, in almost direct proportion to the motor weight and prop size shown (in comparison to U. S. practice). Therefore, a simple increase in rubber weight and enlarging the prop to handle the increased power should boost times directly.

Al's trim was just about 0% margin by CMOS and +9.7% by the INP method. This margin, in both cases, may be a bit small for severe conditions. (Plans copied from HOT HEAD, newsletter of the Vancouver Gas Model Club.)



PROP FORUM

The layout on page 4 shows three prop outlines, all of which illustrate theoretical ideas used at the 1972 Indoor WCh.

The prop design used by Vilim Knoch utilizes a swept-back spar which, according to his design theory, should improve power burst performance in two ways. First, consider the small details "A", "B" and "C". "A" shows a normal, non-deflecting prop and the airflow patterns past the blade. In "B", the usual indoor prop is shown as it flares forward under peak torque loads. The effect is to slightly reduce the prop diameter, and to spill air off the blade tips. In "C", Vilim's design serves to increase diameter slightly while causing the blade centerlines to become perpendicular to the air flow while under load. In theory, then, prop efficiency during the climb is greater.

The second point of Vilim's theory is that the blade twist part of the flare should take place around the center line drawn across the blade. If that is so, then the blade area distribution inboard of the third rib is such that positive flare (increased blade angle) will help the center portion of the blade work better during the burst. In the same fashion, the outer blade sections should have negative flare, which should help minimize forward deflection of the type illustrated in "B". Vilim admits extreme disappointment in the prop's performance, noting that too much rubber was required to climb in Cardington and that the RPM was too high. In my opinion, both these problems could be caused by the prop's low diameter. Almost all those who flew at the '72 WCh had larger diameter or more blade area, or both. Simply expressed, a heavier model (one gram) takes more rubber; more rubber requires a large prop to absorb the peak torque without blowing off a lot of the climb energy in excess RPM.

The 1972 (and 1974) German teams used skewed blade area as illustrated in the two Easy B props on page 4. The theory is that the blade will flare positively in the center and negatively at the tips - as expected by Vilim. The weight and stiffness of the props actually built probably minimize any such effect; however, the props and the model easily handle .085 oz. of rubber (four strands of approx. .065" pirelli) in a clean climb. This is more

rubber than anyone I've heard about uses, except possibly Dennis Jaacks. At the 1973 Mats, when TennyPenny placed 8th, that much rubber clearly overpowered the 17 x 27 all-balsa prop, but it flew well. The model still has not been fully adjusted for the 17 x 34 built-up prop, and the 2nd place at the 1974 Mats is inconclusive due to the extreme air disturbance and a rubbing knot. However, the model and prop show every indication that even more rubber can be used as soon as techniques are worked out to cram a fully-wound, high weight (over .09 oz.) motor between hooks on a 10" fuselage.

An additional note - a similar prop layout was used on FAI Penny (won High Ceiling Indoor Stick at '74 Mats). Obviously, I believe in the idea, and expect that when my building skill catches up the the design idea (originated by Gunter Maibaum, German Team Manager), I will have much better props than before. I believe that these props track better, but they are stiff and overweight, which can give exactly the same results! I urge that anyone who tries this concept try to make comparative test flights to help prove the idea.

CONTEST RESULTS

LIAMAC Indoor Championships, Hicksville NY, 4/28/74

Jr.-Sr. HLG		Open HLG	
1. Adam Minassian	83.6	1. Dan Domina	80.0
2. Bruce Paillet	75.6	2. Al Vollmer	78.3
3. Barry Paillet	75.2	3. Jack Minassian	76.4
4. Joe Nuszer, Jr.	62.8	4. George Rivers	72.1
		5. Ed Franklin	70.3

Jr.-Sr. Easy B		Open Easy B	
1. Richard Whitten	8:06.0	1. Pete Andrews	10:35.2
2. Barry Paillet	5:04.0	2. John Kukon	9:52.2
3. Mitchell Stewart	4:32.0	3. Al Vollmer	9:28.6
4. Jerry Haynes	1:46.4	4. Frank Haynes	8:47.4
		5. Joe Nuszer	8:34.2

Indoor Stick		Indoor Scale	
1. Pete Andrews	17:59.0	1. Don Garofalov	135
2. Dan Domina	11:06.4	2. Dan Domina	112.2
3. John Kukon	10:41.0	3. Joe Nuszer	108
4. Joe Nuszer	10:11.2	4. Barry Paillet	104.8
5. Richard Whitten	6:06.0	5. Ed Franklin	87.5

Jr.-Sr. Peanut Scale		Open Peanut Scale	
1. Jerry Haynes	54	1. Dan Domina	120
2. Barry Paillet	52.55	2. Don Garofalov	98.7
3. Bruce Paillet	52.50	3. Ed Franklin	71
4. Richard Whitten	13	4. Robert Bender	70.7
		5. Frank Hanyes	70.5

Tech Model Aircrafters' 9th Annual Indoor Meet, 5/4/74
M.I.T. Army

Indoor Stick		Peanut Scale	
1. John Kukon	19:06.5	1. Dan Domina	349.6
2. Dan Domina	15:15.0	2. Fred Hall, Jr.	256.0
3. Bill Tyler	14:05.2	3. Charles Learoyd	193.1
4. James Fiorello	9:25.7	4. Bruce Paillet	79.1
5. Charles Learoyd	8:22.0	5. James Fiorello	75.1

Jr.-Sr. HLG		Open HLG	
1. Barry Paillet	72.5	1. Dan Domina	71.2
2. Joe King	62.2	2. Allan Vollmer	71.0
3. Bruce Paillet	62.1	3. Kevin Barrett	68.6
4. James Fiorello	46.9	4. Jean Paillet	67.8
		5. G. W. Donahue	64.8

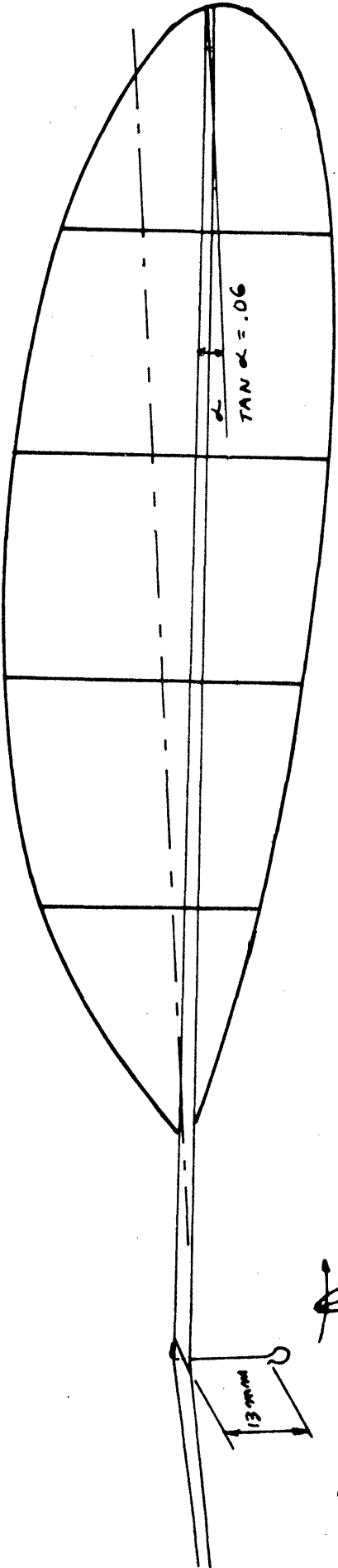
Novice PennyPlane		PennyPlane	
1. Cathy Learoyd	6:05.0	1. John Kukon	9:53.4
2. Henry Hill	5:08.8	2. Charles Learoyd	8:55.5
3. Rhoda Iorger	5:03.8	3. Allan Vollmer	7:55.5
4. Tom Iorger	4:35.0	4. Fred Hall, Jr.	6:37.5
5. Eddie Dowski	2:50.2		

INDOOR ELSEWHERE

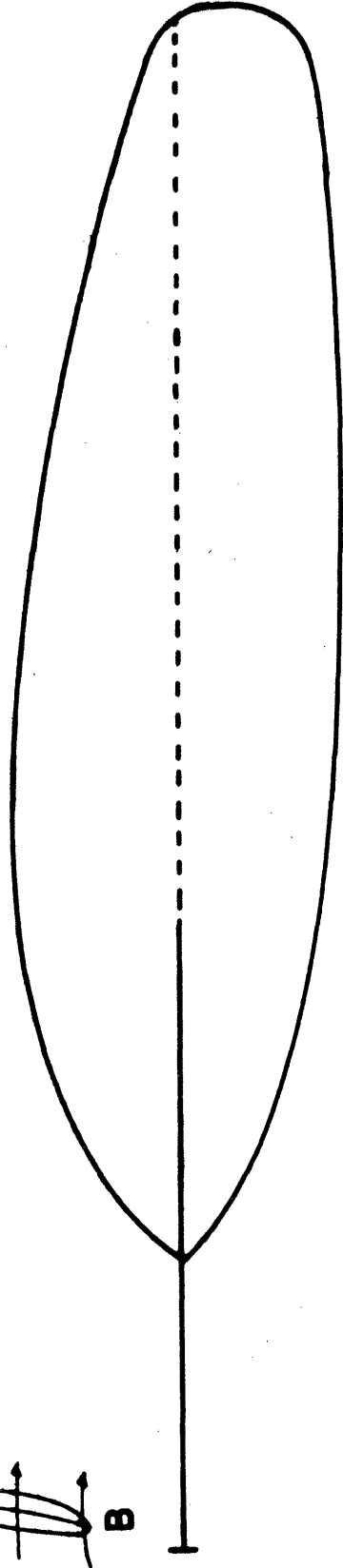
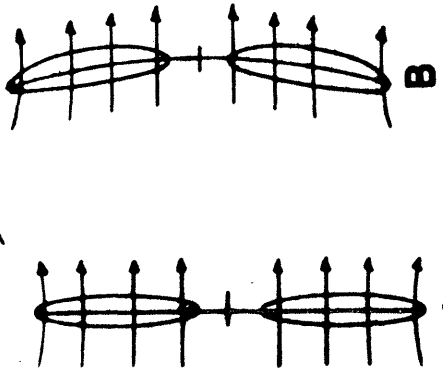
JELCZ CUP Contest, Wroclaw, Poland, Sept. 28-29, 1974

Senior FAI Indoor			
1. Sylwester Kujawa	26:34	27:25	53:59
2. Edward Ciapala	24:27	24:47	49:14
3. Stefan Bombol	23:05	24:29	47:34
4. Zbigniew Szymanski	22:20	22:17	44:37
5. Ryszard Czechowski	21:56	20:35	42:31
6. Jozef Kapusniak	20:00	20:26	40:26
7. Stanislaw Sierko	20:35	18:25	39:00
8. Jan Ochman	20:36	17:00	37:36

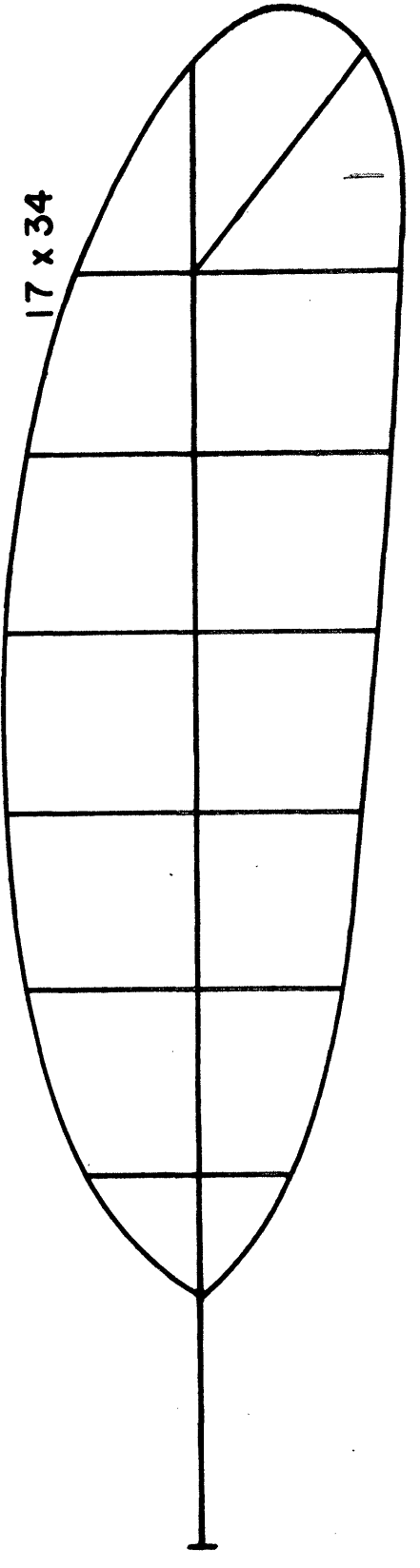
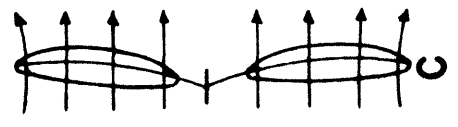
Junior FAI Indoor			
1. Jan Zieba	19:25	20:09	39:34
2. Pawel Frackiewicz	19:10	16:48	35:58
3. Zdzislaw Stepien	14:56	10:12	25:08
4. Dariusz Jaszczak	15:21	9:25	24:46



1972 FAI Prop - Vilim Knoch 17.5 x 33.5



Two for Tenny Penny 17 x 27



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

WILLIAM A. BELL, 1062 Green Hills Dr., Ann Arbor MI 48105
 J. D. CRIPPS, 9 Stonehedge Lane, E. Northport NY 11731
 PHIL HAINER, 11020 Kent-Kangley Rd., Kent WA 98031
 CATHY LEAROLD, 58 Colonial Village, Amherst MA 01002
 RONALD LECISTON, 858 Paulison Ave., Clifton NJ 07011
 PAUL ORTMAN, 8950 E. Emerson Pl. Rosemead CA 91770
 JAMES TORAN, 1013 Old Ford Rd., Huntington Valley PA 19006

Honorary Members

DAVE TONGWAY, P O Box 491, Denilquin 2710 Australia
 F. G. TOWER, 14 Westborne Rd., Roleystone 6111,
 Western Australia
 NICK ZOTOV, 7 Holland Court, Dereham, Norfolk NR19 1NW
 England

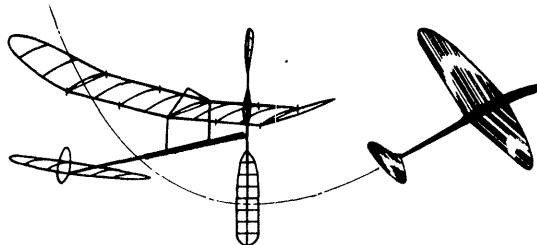
Contest Board Actions

Present FF Contest Board activity includes consideration of three Indoor rules proposals which have gained tentative approval. FF-76-3 proposes that the FAI model steering rule be adopted for U.S. flying. FF-76-10 would modify Easy B rules to eliminate the "local option" parts of the existing rules plus changing the model characteristics drastically; increase max chord to 4", limit stab to no more than 50% wing area, limit prop diameter to 12", limit motor stick length to 10", allow wood bracing at wing/post joint, set minimum weight of 1.5 grams (.053 oz.), and specify paper covering only. Further, this proposal would create a Junior Easy B event identical in specifications except to require 3 gram weight, and a Novice Easy B event requiring use of a plastic prop and certain specifications on wood sizes for a 3 gram model. Finally, FF-76-12 would establish official rules for PennyPlane and Novice PennyPlane; no change to PennyPlane specifications except to make them official and thus eligible for National Record status. Novice PennyPlane is to be limited to 5" max wing chord, 4" x 12" stab and 12" prop diameter, solid motor stick and boom.

An Editorial

Of the three rules proposals cited above, FF-76-3 and FF-76-12 essentially change no model specifications and will make no waves (essentially, except for individual opinions). However, FF-76-10, which was justified on the basis of the statement, "present rules frequently become a hardship both to the contest organizer and the entrant because of the local option aspects". Originally, the local option aspects of the existing rules served a useful purpose in allowing CD's to tailor contests to fit Easy B sized models then in use as beginner projects. Since that time, the AMA Cub/Delta Dart series has probably fulfilled that purpose admirably; perhaps the time has come to set down firm rules.

However, the proposal goes far beyond this worthwhile goal and totally obsoletes all existing Easy B's on one or more points. Further, the rule expands points that must be checked by the CD from wing span and chord only (can be quickly checked via go-no-go gauges) to a massive total of eight measurements, three of which can be made with gauges. The weight requirement calls for a different scale than those required for either FAI or PennyPlane; the wing area and stab area must be computed after making a minimum of four measurements (non-rectangular surfaces could require many measurements), and then the wing area/stab area ratio must be computed. It seems likely that the author of this proposal is not and never has been a Contest Director! From a purely selfish viewpoint, I strongly resent any rule proposal which would outlaw one of my few viable models. From an esthetic viewpoint, it is totally pointless to spend development time on a new event so closely resembling a current popular event - PennyPlane. As a CD, I simply would refuse to schedule an event which could reasonably take up to 10 minutes or more per model to process! Many indoor contests are limited to three hours or less by site availability, and it would be pointless to so drastically delay the flying with needless processing.



Aero Modeller Annual

Once again, the Aeromodeller Annual has been published. The 1974-75 issue contains an extensive section on ducted fan models and another on Peanut Scale models. In addition, articles on model aerodynamics, variable incidence tails, and numerous model plans continue the strong tradition of excellence this publication has built up in 27 years of continuous publication.

'75 Nats Preliminary - Indoor Center

AMA has announced that the '75 Nats will again be held at Lake Charles, Louisiana. The dates will be Aug. 3-10, 1975. The tentative schedule placed Indoor activity on Aug. 3-4, 1975, at the Civic Center in downtown Lake Charles. Our NIMAS man-on-the-scene, Ted Sachs, at the behest of Dr. John Martin, made some initial contacts. As a result, suggests that all indoor fliers who plan to fly at the '75 Nats try to make reservations at the Downtowner Motor Lodge in Lake Charles. Reservations should be made early, c/o Max Jones, P O Box 3023, Lake Charles LA 70601. Prices: singles - \$15, doubles - \$22.

In addition to a common gathering place, Dr. Martin envisions the possibility of a separate Indoor Awards Banquet, and/or a party immediately after the end of flying. If you favor this idea, drop a line to Dr. John Martin, 3227 Darwin St., Miami FL 33133 and encourage him!

Renewal Reminder

Many INAV subscribers have already renewed their subscriptions in advance, and this is greatly appreciated. It requires about an hour to prepare renewal notices each winter month, unless a substantial number of advance renewals has been received. So, if your label has a "2", "3", or "4" in the corner, your subscription will expire in February, March or April. Please renew early!

Local Records - Why Not!

"The Hangar Pilot" is the well-done newsletter of the Miami Indoor Aircraft Model Association. Editor John Martin often lists Florida records as established by members of N.I.A.M.A. The question might arise "Why Florida records?" Why not? For any area that is just beginning to develop indoor activity, national records may well seem to be totally impossible. By stressing local efforts in comparison to other local activity, the emphasis is shifted to activity which everyone can see as it happens. Any new records, seen first-hand, tend to act as a catalyst to improve one's own performance rather than a discouragement. It might well be worth the trouble for each state or center of indoor activity to keep their own records!

FAI INDOOR REPORT

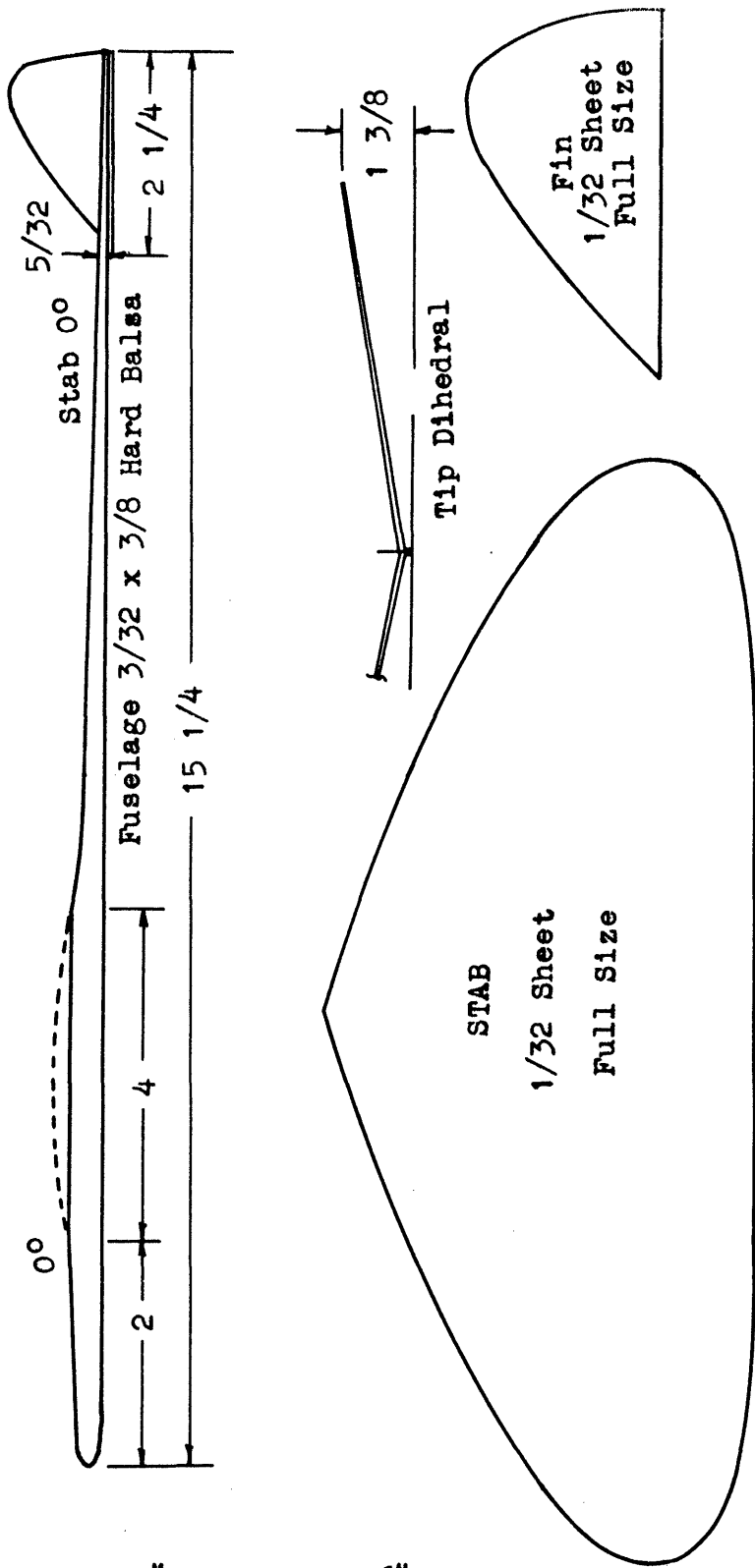
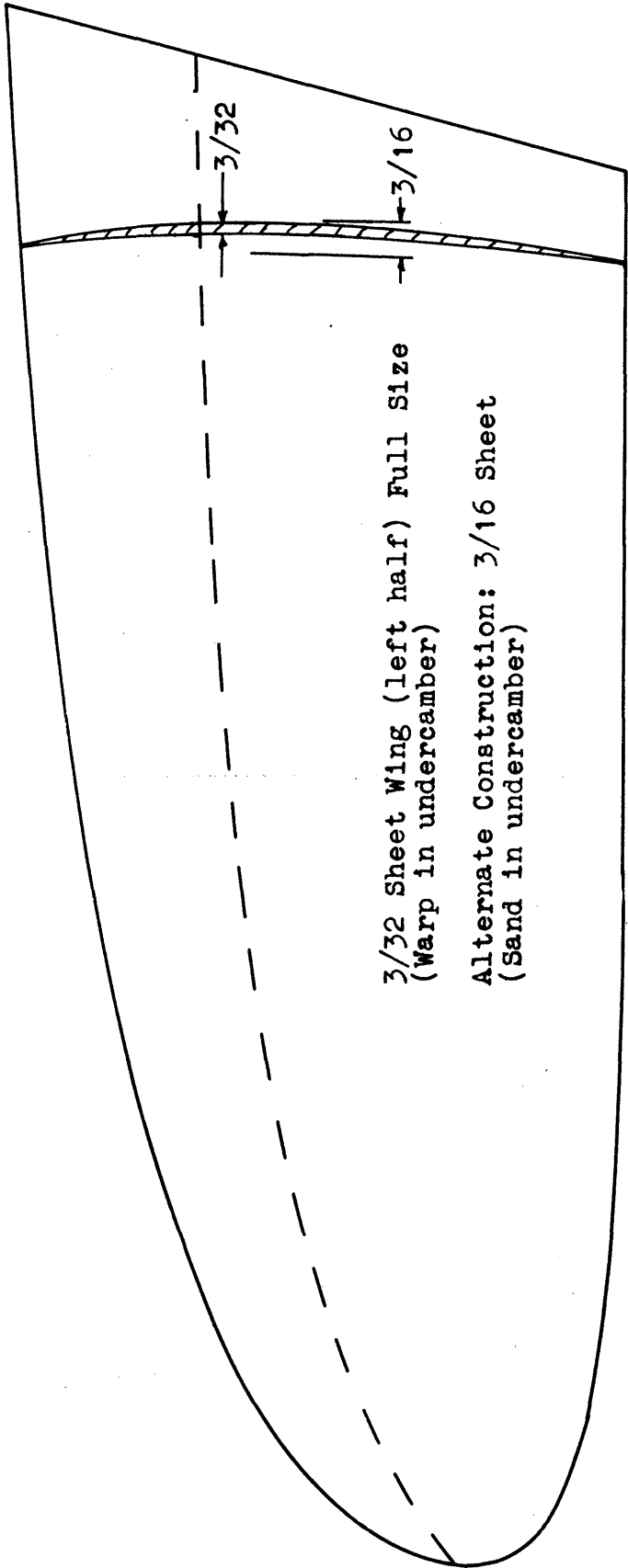
Program Setback

Recently, the failure of an attempted cross-country balloon flight was widely televised. The visible involvement of personnel from Santa Ana MCAF, and the use of the hangar for balloon storage caused a TV commentator to begin an investigation. As a result, local use of the hangar by civilians has been forbidden. This, of course will force rescheduling and relocation of Team Selection Regional meets which had been scheduled there. It is anticipated that the Finals will be permitted; the distinction seems to be that the Finals will be a national meet. At present, this principle has not spread to any other military installations; let us pray that it does not.

NIMAS POSTAL MEET

The 10th Annual NIMAS Postal Meet will be open for entry through April 28, 1975. All flights made as part of a sanctioned indoor meet from Jan. 1 through April 27 (entry must be postmarked by April 28) are eligible. Also, flights made in informal sessions since receipt of the Dec. '74 INAV (early Feb. '75) are eligible, provided the flights are made in accord with AMA rules.

Events: Easy B, paper covered only, all-wood prop, solid motor stick and boom, no bracing.



"STOMPETTE 16"
 Designed by Meredith Chamberlain
 Bloomington, Ind.
 Best Time: 0:44.0 Bunker Hill A.F.B.

HLG: AMA Rules except two ceiling classes. Class I - 18' to 25'; Class II - 25' to 35'.

PennyPlane: Chicago Aeronuts rules except ceiling contact permitted.

General Rules: Free entry. Separate events may be flown at different sessions, but all flights for a given event must be flown on a given day. Please note ceiling height for each entry, using FAI ceiling measure. Ceiling height is used to compute fudge factors to equalize ceiling heights. Separate classes for Junior entrants in each event. Anyone may enter. Send entries to Box 545, Richardson TX 75080.

TOP TEN EASY B

Name	Time	Ceiling	Fudge	Score
1. Bob Platt	657.0	19.6'	1.336	877.8
2. Hal Crane	608.0	19.6'	1.336	812.3
3. Dick Hardcastle	634.0	22.0'	1.261	779.5
4. Clarence Mather	531.0	22.3'	1.253	715.5
5. Bill Langley	438.0	20.5'	1.307	572.3
6. Kevin Wehner	431.4	20.5'	1.307	563.8
7. Fudo Takagi	445.0	22.3'	1.253	557.6
8. Alan Riches	422.2	20.2'	1.314	554.8
9. Michael Thompson	347.0	20.0'	1.323	459.1
10. Ted Katsanis	338.0	20.0'	1.323	447.2

DOUBLE NIMAS ACE

In an accumulation of flights, which I've just now had time to recognize, Dan Domina logged 13:04 and 16:57.7 in Cat. I Rubber for his Gold and Diamond NIMAS Awards. In Cat. I HLG he logged 36.4 sec. for Diamond Award. With these flights Dan qualifies for Ace in both Cat. I Rubber and Cat. I HLG. In addition, his 23:47 at the '74 Nats at Lake Charles Civic Center qualifies him for Cat. II Silver Rubber Award. In reviewing Dan's total performances, he has reached Gold in Cat. II and Cat. III HLG, and in Cat. III Rubber. That's a lot of very good flying!

STATE OF THE ART

The glider shown on the plan page is a reprint from the Dec. '65 INAV as is the commentary to follow. This repeat is spurred by the upcoming low ceiling Nats ('75 Nats at the approx. 55' Civic Center in Lake Charles), in recognition of the special problems of preparing for competition in sites between 45' and 60'.

The model of the month has never set a national record and probably never will; nonetheless it represents state-of-the-art development in a special area. Many sites, both in the U. S. and around the world, are about 45' high. This is well above Cat. I and uncomfortably low for direct competition against Cat. II record marks. In a very real sense, gliders developed in 45' sites are in a class by themselves, since this ceiling height is still low enough that rate of sink doesn't have to be traded off for altitude. The site this model was developed for is a maximum of 45' high, with obstructions at 30', and the maximum width is only 70'. Truly, 44 seconds is excellent time in this site, since the ceiling curves sharply enough that not all the altitude can be used. If you have a 45' site, this may be a good glider for you to try.

PERFORMANCE YARDSTICKS

In view of the new (and hopefully, more conducive to model development) Team Selection methods, this column has been envisioned as a forum on techniques related to maximizing model performance. Any technique which helps improve model performance, improve consistency of performance, or helps the flier be sure his model is doing as well as it should on any given flight is appropriate material for this column. Therefore, contributions in any of these areas will be welcome.

Flight Profiles

For any flier who really knows his models, the RPM at any given point in the flight is the most solid yardstick of performance available to him. A flight profile, altitude vs. flight time, can be added to the prop data and can yield data for planning strategy. To begin this discussion, examine the two flight profiles on page 4. These profiles were taken by Dan Domina at the 1974 WCh, and enable several conclusions to be made about model capability and about external influences on the flight. Each of the profiles has an anomaly (compared to the "perfect" no-touch flight), and we will examine these first. The profile on Kujawa's 29:45 flight shows an odd shape on the RPM curve. This can probably be explained after examining data on the model (Nov. '74 INAV). The prop is higher than normal pitch (33°) and quite light (.0057 oz.). It is quite likely that the prop flared substantially until the torque dropped off; the remainder of the curve is very normal in shape.

Next, consider the flattened top of the altitude curve from Czechowski's flight. One could guess, without Dan's

comment to that effect, that the model had touched the top lightly.

Under different circumstances, each of these anomalies could have been caused by a different influence. The slow RPM right at launch could have been a rubbing knot that cleared itself out; the flattened altitude curve might have been caused if the model had failed to penetrate an inversion layer.

The shape of the Kujawa altitude curve is close to optimum for a no-touch flight; a similar curve which peaked at the 155' ceiling should have approached 34 minutes. On the Czechowski profile, the RPM curve shape is classical. This emphasis on curve shape is intentional; the absolute values associated with the RPM curve of a given model in ideal trim will differ from those of other models. In similar fashion, the shape of the altitude profiles of any given model will vary drastically with the ratio of rubber length to cross-section, assuming the weight of rubber is constant.

The lone flier may find it difficult to make altitude profiles, particularly in higher ceilings. Extensive experience in a particular site, along with detailed knowledge of the height of various building features, will ease the problem. With practice, it is possible to note when the model is the same height as the hangar catwalk, for example. In this fashion enough points can be taken to define the curve shape. After the data are plotted, two uses can be made of the curves. In ideal air, any altitude profile will give a check of rubber length/cross-section. A profile taken in poor air will help determine the need for a different prop or rubber, or aid in planning flight strategy for the next round.

Regarding rubber choice via altitude profiles: in general, the rubber should be shortened and/or increased in cross-section as much as possible to minimize the rate of descent. Of course, the limit is set when the loop won't take enough turns to keep from dead-sticking, or when too many turns have to be backed off to keep off the ceiling.

Anyone with normal vision and reasonable reflexes can make RPM plots, assuming the site has sufficient light to keep the model visible. Even in poor light, it is sometimes possible to count RPM by watching light flashes from the turning prop. Unlike the altitude profile, an RPM curve is useful when taken in poor conditions. All that is necessary is to watch the model carefully, and avoid taking data during turbulence or strong drift. Simply let the model settle out before starting the count, then note the count and flight time. The standard method of counting RPM is to time how long it takes for the prop to make 10 revolutions. Divide the time by 10 to get average time and divide this average into 60. (For example, if the time for 10 revs was 7.5 seconds, divide 60 by .75 to get 80 RPM.)

The most important feature of the RPM curve is prominent in both the curves shown on page 4. This is the almost level part of the curve during the descent. Failure of the RPM to level off indicates serious trim problems or very poor match between prop and model or very poor choice of rubber length/cross-section. A very steep RPM slope in the climb may indicate excessive cross-section or low prop diameter. Even before a model has gone dead-stick, the drop in torque will cause two changes: The model's nose will drop slightly from the ideal nose-up cruise position, and the RPM will increase slightly. When the torque falls below that required for level flight, the props quit pulling and the model then pushes the prop to keep RPM up.

Once the model has been adjusted, even poor air will not significantly alter the RPM/flight time curve shape. Once the flier knows his model's RPM curve, any change can quickly be spotted. A very subtle change in incidence can increase RPM by 3% or more. 3% of 30 minutes is 54 seconds - a healthy margin at many contests! Thus, it pays off when one has the habit of checking RPM each flight.

CONTEST RESULTS

Cleveland Free Flight Society Indoor Contest, 5/12/74
Euclid, Ohio

Jr.-Sr. Easy B

1. Tom Mzik	5:54
2. Tom Sova	5:05
3. Chris Clemens	4:26
4. Joe Mekina	2:37
5. Pete White	2:36

Open Easy B

1. Joe Sova	8:04
2. Mike Thompson	7:05
3. Gerald Skrjanc	6:41
4. Robert Mullins	5:43
5. Vern Hacker	5:38

Paper Stick

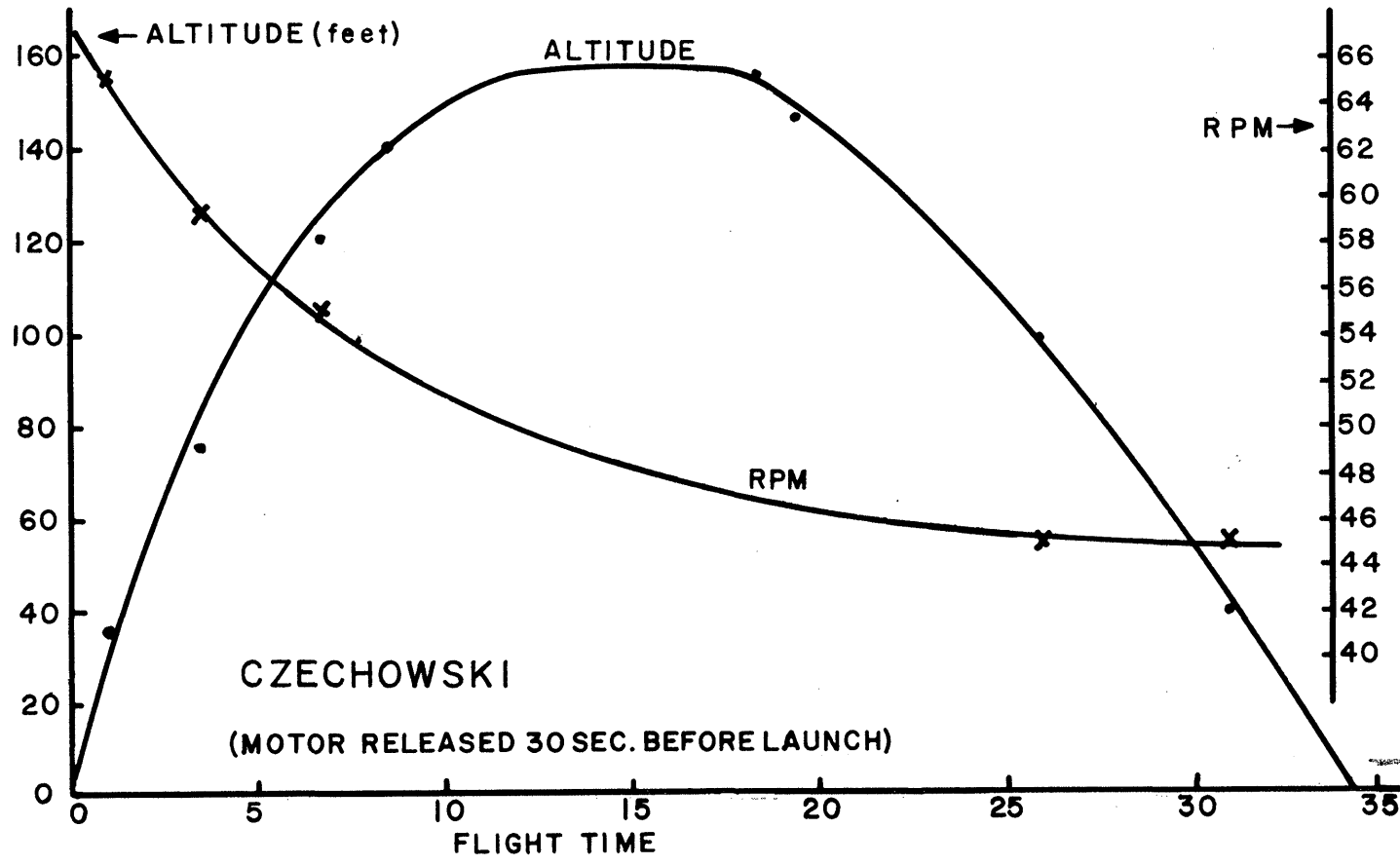
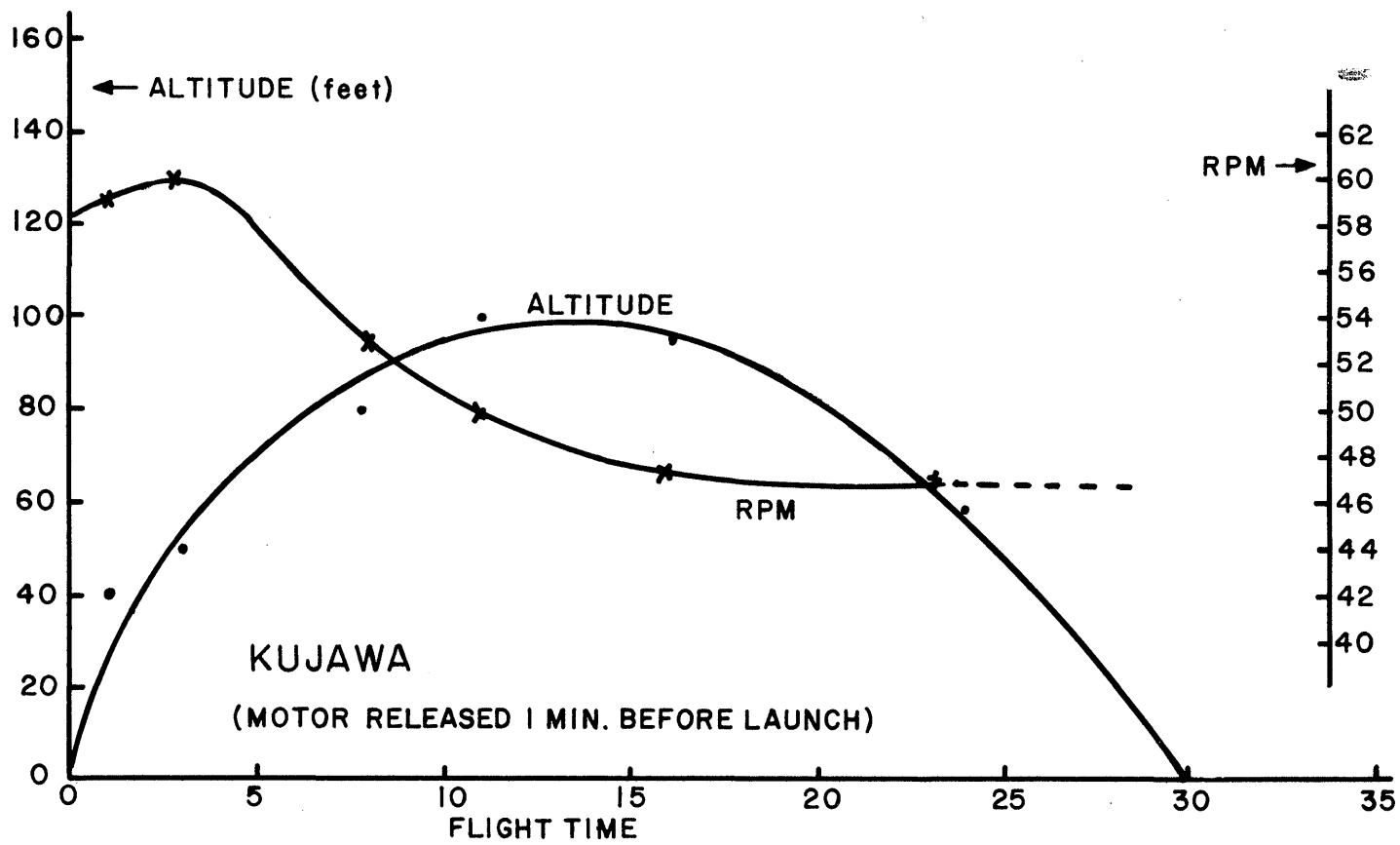
1. Gerald Skrjanc	8:41
2. Larry Mzik	6:56
3. Joe Sova	6:33
4. Vern Hacker	6:24
5. Tom Sova	5:55

Indoor Stick

1. Gerald Skrjanc	11:36
2. Tom Sova	10:03
3. Vern Hacker	9:35
4. Mike Thompson	8:40
5. Peter White	6:31

Peanut Scale

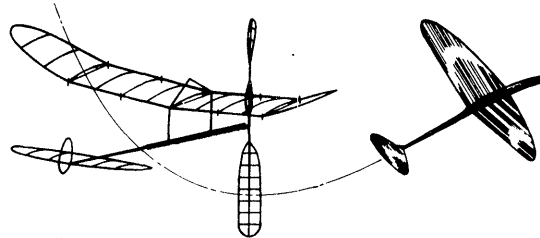
1. Gerald Skrjanc	363
2. Robert Masters	249
3. James Hyka	173
4. Mike Thompson	161



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

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 TERRY CRONBURG, 11 Highland Terr., Marblehead MA 01945
 GERALD W. DONAHUE, 44 Topsfield Circle, Shrewsbury MA 01545
 GEORGE A. HUME, 26359 Eshelman Ave., Lomita CA 90717
 DAVE LUDKE, 525-B Hilliard St., Manchester CT 06040
 KENNETH F. MACDONALD, 74 Russell St., Bath ME 04530
 ELMER D. MILLER, 2438 Tracy Ave., Kansas City MO 64108
 DAN O. O'MALLEY, 835 Gayer Dr., Medina OH 44256
 LIGON SMITH, Jr., 6800 E. Mockingbird, Dallas TX 75214
 PHIL SULLIVAN, 3021 Spring Valley Ct. Anderson CT 46011
 DALE WANGEMAN, PSC 1, Box 2485, McChord AFB WA 98438

Change of Address

Bucky Servaites has moved to a new home at 7660 Duffield Circle, Centerville OH 45459.

Dave Linstrum has returned from Beirut, and is back at home: 2023 Woodleigh Dr. W, Jacksonville FL 32211.

Recent Publications

The May '75 MODEL AIRPLANE NEWS has published "Big D" by Al Rohrbaugh. This is Al's story of his 50+ wingerspan AMA "300" which placed 3rd at the '73 Nats and won the Stout trophy at the '74 Nats. Both flights were at the Jones Armory in Chicago, and demonstrated the low ceiling potential of this design. Thanks to Al and MAN for this coverage!

Model Museum

Those who know Dick Sherman know him as an avid booster of model aviation. In the past few years, he has set up a model museum at his home. In order to increase his coverage, he would like to have indoor models for display. That includes both old and new style indoor models, and he hopes to create a display on the history of indoor modeling. Anyone who can help him with either models or historical data please drop Dick a line at 408 River Road, Tewsbury MA 01876, ph. 617-851-6355.

Oldtimer Catalog

Oldtimer Models, P O Box 18002, Milwaukee WI 53218, has issued a new catalog. It is a fascinating potpourri of oldtimer, scale, and modern items; for example, a twin pusher kit, compressed air motors, Korda's 1939 Wakefield winner and a PennyPlane kit. Many specialty items at a fair price - send stamped, self-addressed envelope for your very own catalog!

Postal Reminder

Some entries have been received for the 10th Annual NIMAS Postal Contest; entry deadline (postmark) is April 28, 1975.

Postal Fudge Factors

The following fudge factors will be used for the NIMAS Postal; multiply the flight time by the appropriate factor to obtain postal scores.

Ceiling (feet)	Class I HLG (fudge to 25')	Class II HLG (fudge to 35')	Rubber (fudge to 35')
18	1.39		1.394
19	1.316		1.357
20	1.25		1.323
21	1.19		1.29
22	1.136		1.261
23	1.087		1.234
24	1.042		1.207
25	1.0	1.4	1.183
26		1.346	1.16
27		1.296	1.139
28		1.25	1.118
29		1.207	1.098
30		1.167	1.08

31	1.129	1.063
32	1.094	1.046
33	1.061	1.03
34	1.029	1.014
35	1.0	1.0

Use straight-line interpolation for ceilings between listings; convert inches to decimal fractions of an inch.

FAI INDOOR REPORT

FAI Contests Set

Word has been received from John Kukon that the two East Coast FAI Qualification Trials have been set for June 21-21 and July 19-20, 1975. Call 609-737-3522 Thursday or Friday evening before the meet to confirm hangar availability.

CONTEST CALENDAR

CANADA - Port Coquitlam, B.C.

Indoor contest at the Agradome, Apr. 26, 1975, 10 am to 4 pm, PennyPlane, Open Stick, Scale, HLG. Alan Riches, 1568 Celeste Cres., Port Coquitlam, B.C., Canada.

CONNECTICUT - Glastonbury

Indoor sessions at Glastonbury High Gym; Tuesdays, 7 pm-9:30 pm, May 6, June 3, 1975; Sundays, 8 am-12:30 pm, May 11, 1975. George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-in at JFK Gym, Miami Dade North College, 9 am-2 pm (confirm by calling 858-6363), May 4, 1975. Indoor contest at Goodyear Hangar, Opa Locka Airport, 10 am-6 pm, May 25, 1975. Confirm hangar date, Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

2nd Annual Midwestern States Indoor Championships, May 17-18, 1975 at the Madison St. Armory, 2653 W. Madison St., Chicago. Paper Stick, Indoor Stick, Cabin, FAI Stick, HLG, PennyPlane, Peanut Scale, AMA Scale. CD's: George Gordy, 2901 Prairie, Brookfield IL 60513 and Buddy Equitz, 4543 N. Keystone Ave., Chicago IL 60630.

MARYLAND - Silver Spring

Indoor sessions at JFK High School on Randolph Rd. in Silver Spring, MD, 7 pm-11pm, April 25, May 9, 16, 30, 1975. Rolfe Gregory, 11603 Milbern Dr., Potomac MD 20854. FAI Cat. I Record Trials, National Guard Armory, 2831 East Randolph Rd., Silver Spring, Apr. 27, May 11, June 29, 1975. Tom Vallee, 444 Henryton So., Laurel MD 20810, ph. 301-498-0790.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Blvd., Union NJ, on the second Thursday each month thru May, '75. Dan Domina, 47-01 Fox Run Dr., Plainsboro NJ 08536.

NEW JERSEY - Lakehurst

Indoor sessions at Lakehurst #5, Apr. 20, May 10, 25, July 4-5, 1975. Confirm hangar availability by calling 609-737-3522 on Thursday or Friday pm before meet.

OHIO - Cincinnati

SWOFF 4th Annual Indoor Contest, May 4, 1975, Univ. of Cincinnati Fieldhouse, AMA Stick, Paper Stick, Peanut Scale, HLG. Don Wright, 3349 Morrison Ave., Cincinnati OH 45220.

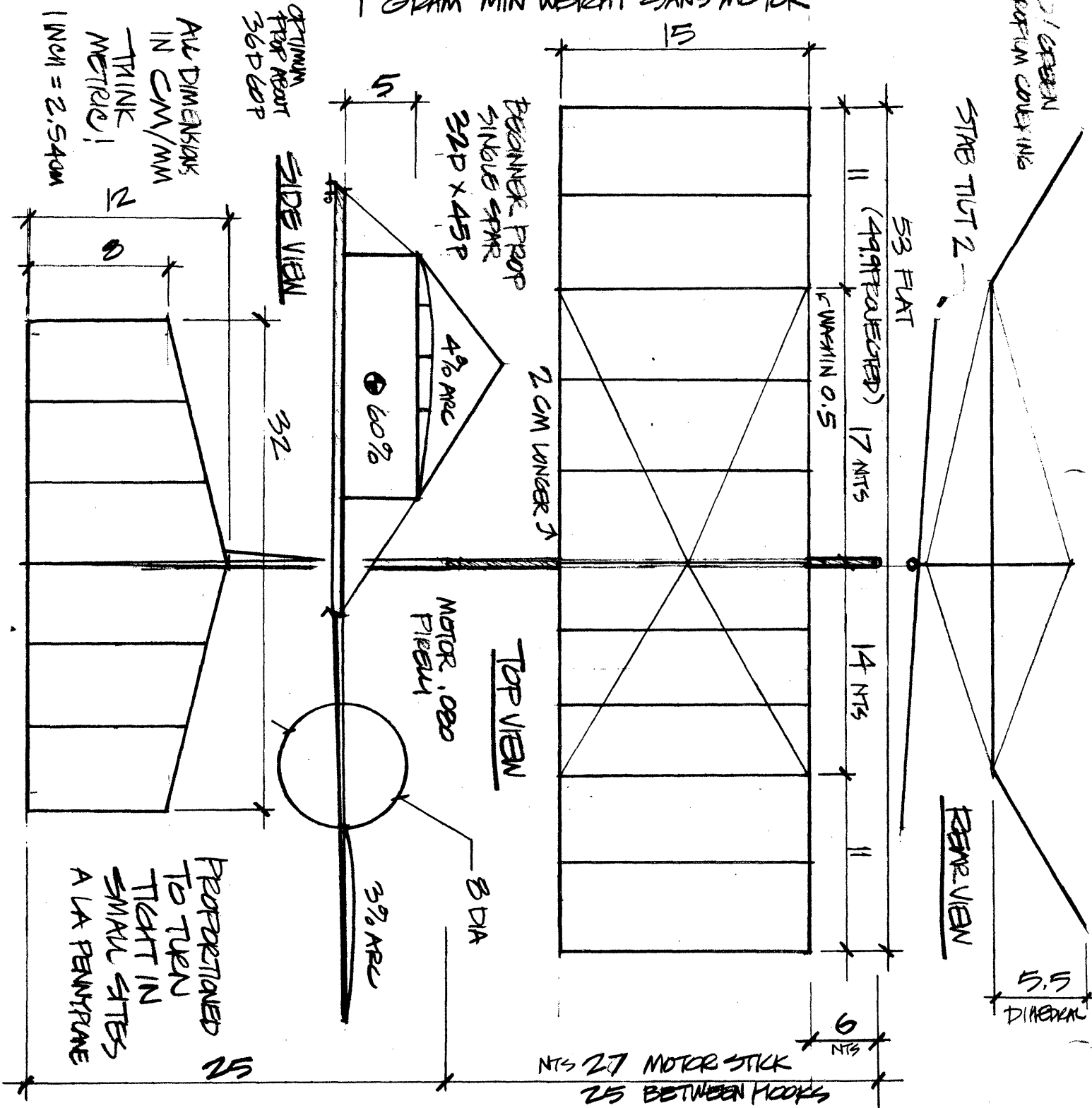
OHIO - Euclid

Cleveland Free Flight Society Indoor Contest, Euclid Arena, Euclid OH, May 17-18, 1975; HLG, Indoor Stick, FAI Stick, Paper Stick, Peanut Scale, Indoor Scale, Easy B, Jetco ROG, Delta Dart, Scraps. Site has 30' ceiling and 85' x 160' floor. Contact Jim Hyka, 19411 Preston Rd., Warrensville Hts. OH 44128, ph. 475-2381 or Vern Hacker, 25599 Breckenridge, Euclid OH 44117, ph. 486-3388.

PERFORMANCE YARDSTICKS

The information presented below represents one of the most comprehensive approaches to choice of rubber motor size we have seen. It is presented by Dennis Jaecks, and he acknowledges other important contributions. The method

SPECIFICATIONS: 50 CM MAX PROJECTED SPAN 15 CM MAX CHORD
 25 CM MAX DISTANCE BETWEEN HOOKS
 1 GRAM MIN WEIGHT SANS MOTOR



"HUNGARIAN GOULASH" INDOOR
 FOR EVALUATION OF FAI PROVISIONAL EVENT CIAM 12/74

FOR INDOOR BEGINNERS

may seem cumbersome at first, and referring to the chart will perhaps be a bother. Nonetheless, the method of rubber selection presented here has the capability of almost totally eliminating model performance variations due to inappropriate rubber choice. It does require detailed record keeping and consistent application of the method; such is the price of the consistency presently needed to excel in FAI Indoor.

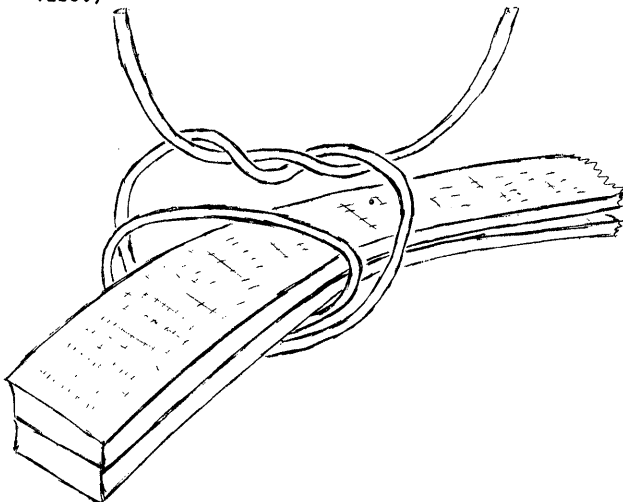
CHOICE AND PREPARATION OF INDOOR RUBBER MOTORS

By Dennis Jaecks

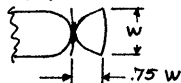
Let's begin with the knot I use; it was suggested by Jim Richmond and has worked very well for me. Please understand: if your own knot is satisfactory, use it. It has been my experience that it is easier to make the motor length consistently accurate with this knot. It will soon be clear that accurate rubber length is the foundation of this system, so whatever knot you use, the important factors are rubber length and rubber weight.

Steps in Tying Rubber Motors

1. Cut motor to size: select rubber thickness and measure a length exactly twice the motor length + one inch. (I spend much effort doing this exactly since the whole method depends upon accuracy at this point.)
2. Apply Pliobond cement to 3/4" of both ends of the motor in this manner: I take care to line up the ends and eliminate ribbon twists in the loop; apply cement to one end then run the whole strip between my fingers to the other end and cement the rubber face-to-face. It takes just one coat of cement, then push together.
3. Tie thread around the motor exactly 1/2" from the end, using the knot pictured below: one full turn of thread around and again with a double twist knot. The knot is made with a two-turn half hitch pulled snug. Now grasp both sides of the rubber, stretch it, pull the thread tight and add one half hitch and pull tight. Apply a light coat of Pliobond to the knot and let it dry. Note that most of the Pliobond will rub off the motor during break-in but the knot retains enough to hold very well. At first, this tying procedure requires four hands, but it is possible to develop a technique for solo tying. My method is to hold one end of the thread in my teeth and wrap the loose end of thread around the third and fourth fingers of my right hand. The motor is held with the thumb and index finger of my right hand and I stretch the knot by pulling with my left hand. I stretch the rubber and tighten the thread at the same time; the double twist half hitch holds long enough to release tension on the rubber and tie another half hitch to complete the knot properly. (Ed. note: Pete Andrews clamps the glued end of the motor in a miniature vise, stretches the rubber, and ties the knot flush with the jaws of the vise.)



4. Trim off the rubber and excess thread; leave about .06" of thread and cut the rubber to about 75% of the rubber width as shown below.



5. The proper thread is important. J. & F. Coats cotton covered polyester thread or Lilly brand spun polyester thread. Test other brands by breaking - threads vary in strength. For PennyPlane I use a heavier linen thread.

Rubber Selection Guide

The chart on page 4 is the result of reducing avail-

able rubber information to a working overview so that motor selection can be most effectively made. All data presented has been generated from two basic formulas by Charlie Sotich:

1. $W = .046 T \times L$

2. $N = 6.35L \sqrt{L/W}$

where W = weight in ounces, N = turns, L = length of motor loop in inches and T = thickness (width of strip). From (1) I derived (3): $T_{std} = W / (.046 \times L)$. Using (3) I began plotting turns, weight, etc. and found some interesting trends. The result is the rubber selection chart.

On the chart, the top line shows a relative safe torque value for each thickness of rubber. The next line is rubber thickness (width). Since I use 13" and 14 1/2" motor sticks, the % value is indicated in the left-hand and right-hand vertical columns. This value is used to plan rubber selection (see Triple Whammy For Rubber, Jan. '74 INAV). A typical range of motor sizes are listed. Motor turns can be found at the intersection of the horizontal line from motor length (column "L") and the vertical line from motor weight (second line "W"). For example, a 16 1/2" loop of .056 rubber should take 2034 turns. NOTE: the value .056 is computed from (3) above - do not rely on physical measurement of strip width! By moving on the diagonal from 2034 (either up to the right or down to the left), the rubber weight of .042 oz. is found. If you would like a heavier motor with the same number of turns capability, select one .002" thicker and 1/4" longer for approximately 5% increase in weight. It is helpful to color the squares on the diagonal with map color pencils to speed up rubber selection and minimize chances for error in the heat of the battle.

I make up several motors in a given range based on the model weight and Triple Whammy theory and record all pertinent data on the envelopes which are preprinted with a form as shown below:

LOT# 3-7211-1B m=.0420 16 1/4 X .056

TURN	TORQUE (37 RATED)	STRETCH	DATE	TIME
1	1500	.3	5X	3/21/74 BREAKIN
2	1825	.35	5X	3/21/74 "
3	2025	.40	5.5X	3/21/74 "
4	2030	.42	5.6X	7/2/74 25:12
5				
6				
7				
8				
9				
10				

The data is decoded thus: Lot# - a code to identify the original batch of rubber, m = weight of motor in ounces, 16 1/4 - length of loop, .056 - calculated from (3), 2034 - turns from selection chart, (.37) - estimated torque. The rest of the data makes a record of the use of the motor during and after break-in. Incidentally, all these data apply to new, unstretched motors.

Obviously, one will not create identical motors from the same batch. However, motors made this way can be compared to others of the same batch with great predictability. Some fliers use weight only as a guide, but when changing length for some reason, the standard width guide will enable one to pick motors with better results. Also, the guide can be used to plan what motor size to make up if one is not available.

The chart does more for me than nomographs in terms of picturing the same information. The relationships between rubber size, turns and weight are clearer and this makes rubber selection easier, particularly to some formula such as Triple Whammy guidelines of 1.2 power/weight ratio and length 15% longer than the motorstick. One can quickly spot the motor size to start with, and what direction to go in making a new motor if the test motor didn't work out. In particular, until I worked out the numbers for the guide, it was not obvious what the various relationships were between length, weight and turns for small changes.

This whole approach is obviously an oversimplification of the total problem, but I feel it is a step toward improving performance and a definite aid in motor selection.

A CHANGE OF PACE

As will become increasingly apparent, Dave Linstrum's creativity doesn't turn off even when he is separated from model activity by thousands of miles. During his sojourn in Beirut, he pondered the CIAM approval of a 50 cm provisional indoor class. The plan page this month shows Dave's idea of what to build for the new class; he also drew a full-size plan. If enough people are interested, some blue-line reproductions of Dave's plan will be made available at cost and a CMCS balance chart will also be furnished. Incidentally, this may be the first 50 cm design worked up outside of Hungary - be the first in your neighborhood with a 50 cm provisional FAI model!

RUBBER SELECTION GUIDE

		T	.35	.36	.37	.38	.39	.40	.41	.42	.43	.44	.45	.46	.47		
	L	W	.054	.055	.056	.057	.058	.059	.060	.061	.062	.063	.064	.065	.066	L	% 13
				.0347	.0354	.0360	.0367	.0373	.0380	.0386	.0393	.0400	.0407	.0413	.0420		
96	114		1781	1767	1753	1736	1722	1706	1693	1680	1666	1654	1641	1627	1615	114	107
98	114	.0347	1813	1800	1783	1769	1752	1737	1723	1710	1696	1683	1670	1656	1644	114	109
100	114	.0354	1845	1830	1815	1800	1783	1768	1754	1740	1726	1713	1699	1685	1673	114	111
102	114	.0360	1876	1861	1847	1831	1813	1798	1794	1770	1756	1744	1728	1714	1701	114	113
103	15	.0367	1908	1893	1878	1862	1844	1829	1814	1800	1785	1772	1758	1744	1730	15	115
105	15	.0373	1940	1924	1909	1893	1875	1859	1844	1830	1815	1801	1787	1772	1759	15	117
107	15	.0380	1972	1956	1940	1924	1905	1890	1874	1860	1845	1831	1816	1801	1788	15	119
108	15	.0386	2004	1987	1972	1955	1936	1920	1905	1890	1875	1860	1846	1830	1817	15	121
110	16	.0393	2035	2019	2003	1986	1967	1951	1935	1920	1905	1890	1875	1859	1846	16	123
112	16	.0400	2067	2050	2034	2017	1998	1981	1965	1950	1934	1919	1904	1888	1875	16	125
113	16	.0407	2100	2082	2066	2048	2028	2012	1995	1980	1964	1949	1934	1918	1903	16	127
115	16	.0413	2131	2114	2097	2079	2059	2042	2026	2010	1994	1978	1963	1947	1932	16	128
117	17	.0420	2163	2145	2128	2110	2090	2073	2056	2040	2024	2008	1992	1976	1961	17	130
119	17	.0427	2195	2177	2160	2141	2121	2103	2086	2070	2053	2038	2022	2005	1990	17	132
120	17	.0434	2226	2208	2191	2172	2151	2134	2116	2100	2083	2067	2051	2034	2019	17	134
122	17	.0441	2258	2240	2222	2203	2182	2164	2147	2130	2113	2097	2080	2063	2048	17	136
124	18	.0448	2290	2270	2253	2234	2212	2194	2177	2160	2143	2126	2109	2092	2076	18	138
		.0455	.0462	.0470	.0477	.0484	.0492	.0499	.0507	.0515	.0523	.0530	.0538	.0546			

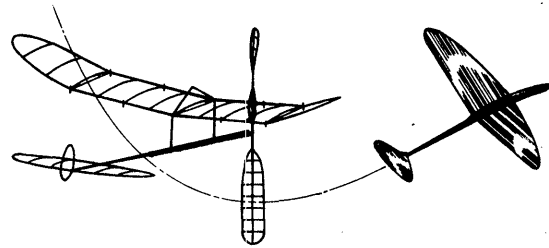
AMA & FAI PAPER & CABIN

P/W	.0320	.0353	P/W	.0420
0.95	.0304	.0335	0.95	.0399
1.00	.0320	.0353	1.00	.0420
1.05	.0336	.0370	1.05	.0440
1.10	.0352	.0388	1.10	.0462
1.15	.0368	.0405	1.15	.0483
1.20	.0384	.0423	1.20	.0504
1.25	.0400	.0441	1.25	.0525
1.30	.0416	?	1.30	.0546

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

CHARLIE SAUTER, 2249 Delaware, Ann Arbor MI 48103

Honorary Members

BRUCE EDWARDS, 31 Avenue Rd., Leamington Spa, Warwickshire
England
DAVE GOODWIN, 33 The Fosters, High Green, Sheffield
S30 4NB England

This Issue

Since there have been queries about missing issues, etc., please note that this issue is abbreviated in order to get it out a bit sooner. It is, of course, at least six weeks late, so every little bit helps. The next issue may be a combined issue, as unsatisfactory as that is to me. However, that would put things mostly on schedule, so don't be surprised!

Correspondence

Another thing which is lagging around here is answering the mail. Only the absolute minimum of this has been going on, as many of you have discovered. It has gotten so bad that some contest notices and other dated info have been covered up or lost, and thus missed the issue they should have been in. I deeply regret this lack of personal time; if I owe you an answer about a really important matter, please send a second letter or card and mark it "second notice". I will try to give those priority, and will try to eventually answer all mail not hopelessly outdated when I get to it. Thanks for your patience!

New Hangars Coming?

The Mar. '74 issue of TECHNOLOGY FORECASTS contains an article which suggests that monster airships, with displacements larger than the dirigibles of the 1930's, may be in operation by the 1980's. This concept has surfaced periodically in the past few years, with experts citing the airship's capability for lifting massive weights and transporting them long distances. The airship is faster than barge and approximately competitive with water transport, without being limited to waterways. Delivery times are predicted as 100 hours to any place on earth. Another advantage cited is the lack of airfield requirements; one scheme postulated that cargo off-loading would be done by helicopter so that the airship need never land except for major maintenance. While studies are under way in England and Germany, it is reported that Russia is making the most serious plans. Lack of waterways and high maintenance cost of highways in Siberia make the airship very competitive economically. This may not be as true in other parts of the world.

The above paragraph was prepared several months ago. A more recent issue of TF underscored the unlikelihood of development of dirigibles in this continent.

FAI INDOOR REPORT

Zone Qualification Trials

<u>Western Zone</u>	May 24-25, 1975, Edwards AFB* July 4-5, 1975, Edwards AFB*
<u>North Central Zone</u>	June 6-7, 1975, Pompeian Court, West Baden, Indiana Aug. 16-17, 1975, Goodyear Aerospace Hangar, Akron Ohio
<u>South Central Zone</u>	June 15, 1975, American Airlines Hangar, Tulsa, Oklahoma* Aug. 2, 1975 - site to be selected*
<u>Eastern Zone</u>	June 21-22, 1975, Lakehurst July 19-20, 1975, Lakehurst

*Tentative information

Contact personnel: Western Bob Randolph
25145 Lawton Ave.
Loma Linda CA 92354

North Central Bucky Servaites
7660 Duffield Circle
Centerville OH 45459
513-433-0975

South Central Bob Dunham
4730 S. Yorktown Ave.
Tulsa OK 74105

Bud Tenny
P O Box 545
Richardson TX 75080

Eastern John Kukon
14 Brandon Rd.
Trenton NJ 08638
609-737-3522

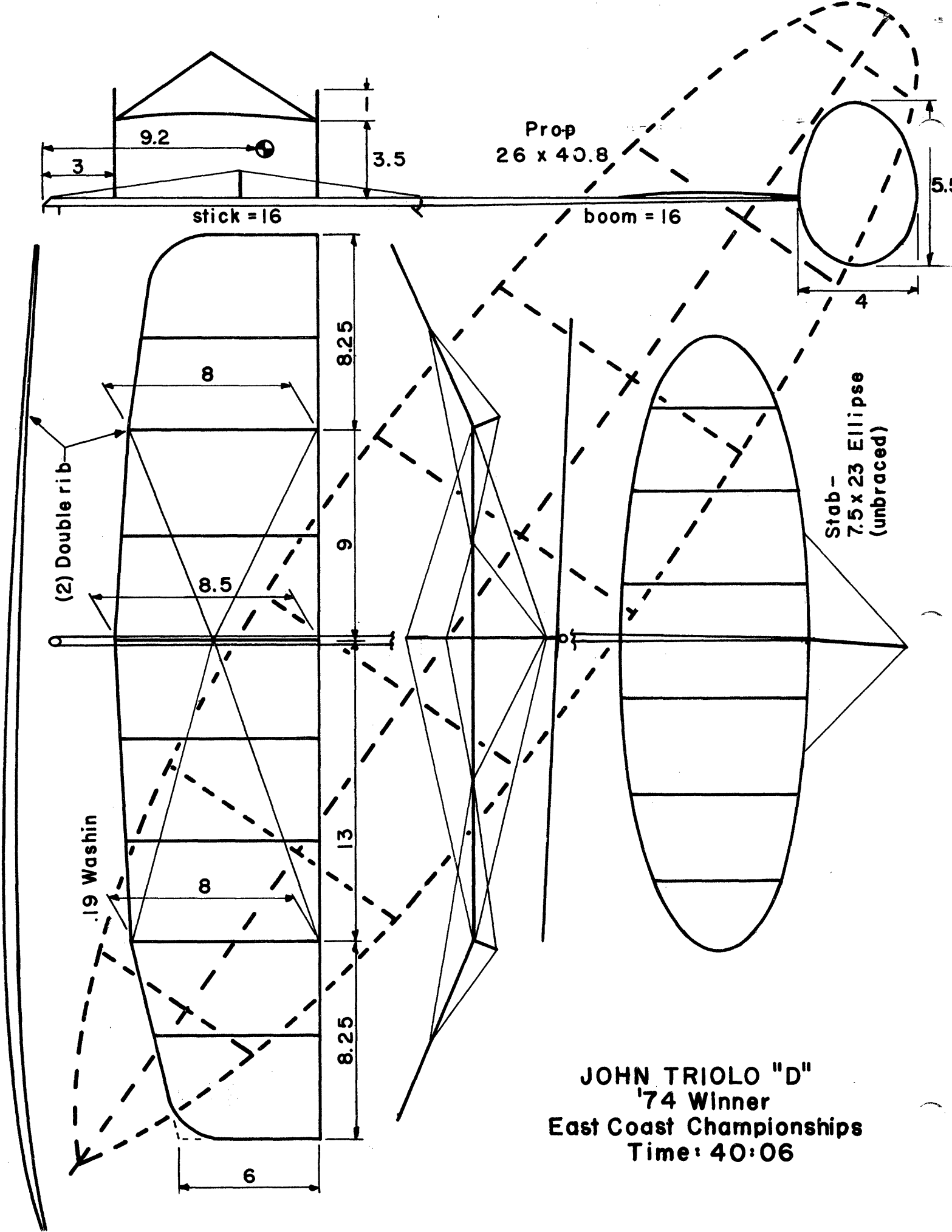
Team Selection Commentary

A number of people do not understand parts of the new Team Selection Program, or do not realize what personal benefits accrue from various choices. Let's review the Program briefly:

1. Eight Zone contests will be held. Each Program entrant may enter any or all these contests, but only his two best scores will count. At each contest, each of six rounds will be scored. An entrant's score is the total of his best three rounds. All entrants who score at least 80% of the winning score for each of two Zone contests are eligible to enter the Finals.
2. The Finals will be scored round-by-round just as in Zone meets, and each entrant's score will be computed from his best three of six round scores. This total will then be multiplied by three and added to the cumulative score from Zone contests. The 1976 U. S. Indoor Team will be those qualifiers who have the top three scores.
3. A major portion of entry fees from the Program will go toward refunding qualifier's travel expenses to the Finals meet. These funds will be awarded on the basis of Zone contest score totals in this way: assuming funds are sufficient, the top three scores will receive full airline fare to the Finals, the next three scores earn one-half fare, and the next three receive one-quarter fare. If the funds are insufficient, the awards will be scaled to the available funds.
4. The intent of the program designers has been to attack the major weaknesses of past programs: lack of determined competition during qualification phases of the programs; the effect of two or three "good" rounds on Finals scores; and the discouraging effect of travel costs on entry. In past programs, there was no reason to risk models by flying hard to qualify for the Finals. As a result, few qualifiers had experience under pressure, and those who might have had flawed models or poor flying strategy did not find this out until the Finals - too late to help develop better competition for those soon to be the Team. Further, round scoring will help develop better all-weather fliers - needed for effective WCh participation. The expense grants should encourage fliers who might not enter because of possible travel expenses.

With this background, consider these questions:

1. Is there an advantage to flying one or both qualifying rounds in another Zone? This depends upon many factors. Central Zone fliers with a good first round score might benefit from high ceiling practice. Those fliers who are surrounded by many very good fliers may gain a higher total score by flying in another Zone.
2. What can I lose by flying only in my own Zone? Nothing. Anyone who wins both Zone contests in his Zone is assured of financial help in reaching the Finals and has exactly the same points advantage in the Finals as someone who flew cross-zone exclusively.
3. What can be gained by entering more than two Zone contests? The two most obvious reasons for entering an extra contest are: less competition in another Zone, or to recoup a poor showing in one local contest. However, suppose a flier has a score qualifying him for travel assistance, and then gets a good score in another Zone. He may improve his present score, but more important to his Finals score, a good score in another Zone will reduce the



JOHN TRIOLO "D"
'74 Winner
East Coast Championships
Time: 40:06

number of points competitors from that Zone carry into the Finals.

4. Can there be more than one full fare awarded in any Zone? Yes. If the fliers in any one Zone were all very good, and flew cross-zone a lot, and fliers from other Zones were inconsistent fliers, it is possible that fliers from one Zone could pick up all the marbles. So, get ready and hold your own!

CONTEST CALENDAR

CONNECTICUT - Glastonbury

Indoor sessions at Glastonbury High Gym; Tuesdays, 7 pm-9:30 pm, May 6, June 3, 1975; Sundays, 8 am-12:30 pm, May 11, 1975. George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-in at JFK Gym, Miami Dade North College, 9 am-2 pm (confirm by calling 858-6363), May 4, 1975. Indoor contest at Goodyear Hangar, Opa Locka Airport, 10 am-6 pm, May 25, 1975. Confirm hangar date, Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

2nd Annual Midwestern States Indoor Championships, May 17-18, 1975 at the Madison St. Armory, 2653 W. Madison St., Chicago. Paper Stick, Indoor Stick, Cabin, FAI Stick, HLG, PennyPlane, Peanut Scale, AMA Scale. CD's: George Gordy, 2901 Prairie, Brookfield IL 60513 and Buddy Equitz, 4543 N. Keystone Ave., Chicago IL 60630.

MARYLAND - Silver Spring

Indoor sessions at JFK High School on Randolph Rd. in Silver Spring, MD, 7 pm-11pm, April 25, May 9, 16, 30, 1975. Rolfe Gregory, 11603 Milbern Dr., Potomac MD 20854. FAI Cat. I Record Trials, National Guard Armory, 2831 East Randolph Rd., Silver Spring, Apr. 27, May 11, June 29, 1975. Tom Vallee, 444 Henryton So., Laurel MD 20810, ph. 301-498-0790.

NEW JERSEY - Union

Indoor sessions at Livingston School on Midland Blvd., Union NJ, on the second Thursday each month thru May, '75. Dan Domina, 47-01 Fox Run Dr., Plainsboro NJ 08536.

NEW JERSEY - Lakehurst

Indoor sessions at Lakehurst #5, Apr. 20, May 10, 25, July 4-5, 1975. Confirm hangar availability by calling 609-737-3522 on Thursday or Friday pm before meet.

NEW YORK - Long Island

LIAMAC Indoor Contest, May 4, 1975, Cantiague Park, Hicksville, L.I. NY, 8 am to 5 pm, Cat I site. AMA Stick, HLG, Easy B, Peanut Scale, AMA Scale. J. G. Paillet 30 Emerson Rd., Brookville NY 11545.

OHIO - Cincinnati

SWOFF 4th Annual Indoor Contest, May 4, 1975, Univ. of Cincinnati Fieldhouse, AMA Stick, Paper Stick, Peanut Scale, HLG. Don Wright, 3349 Morrison Ave., Cincinnati OH 45220.

OHIO - Euclid

Cleveland Free Flight Society Indoor Contest, Euclid Arena, Euclid OH, May 17-18, 1975; HLG, Indoor Stick, FAI Stick, Paper Stick, Peanut Scale, Indoor Scale, Easy B, Jetco ROG, Delta Dart, Seraps. Site has 30' ceiling and 85' x 160' floor. Contact Jim Hyka, 19411 Preston Rd., Warrensville Hts. OH 44128, ph. 475-2381 or Vern Hacker, 25599 Breckenridge, Euclid OH 44117, ph. 486-3388.

STATE OF THE ART

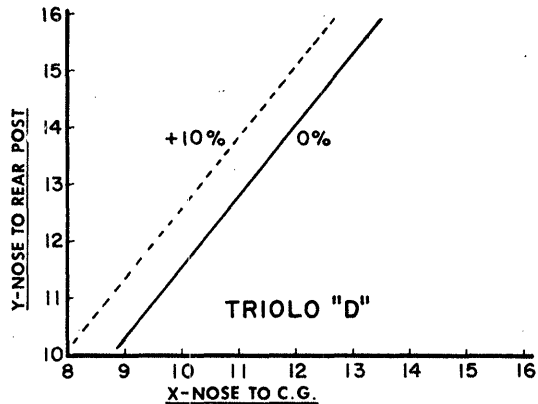
John Triolo won the 1974 East Coast Championships with his "300"; it appears on the plan page. The model is of mostly conventional design, except that it is somewhat more close-coupled than is usual for "300's". As such, it permits a more compact carrying box; the performance has certainly not suffered by such a departure from usual design practice. John's first comments were:

I consider my "D" to have very good potential for a 47 minute flight once I learn to fly it. It's only the second D I ever built so it's new ground for me. My next step is to increase prop pitch if and when I get to fly it again.

In view of the already high pitch, I questioned John about increasing prop pitch. John replied, "The model deadsticked on the 40:06 flight, and the last thing I want to do is add more rubber weight. If I add more turns with the present prop, the model will climb for more than 20 minutes and will get too high in the rafters. The present weight of rubber delivers the torque needed for using up turns, and the model doesn't sustain well with less power. By increasing pitch I can add turns (more torque to compensate for higher pitch) without going through the roof (hopefully). In other words, I adjust prop pitch to the rubber torque that gave me the best time for altitude gained (just over the catwalk with the old prop), so long

as I can add turns. Without extra turns, there is no pay-off from increasing pitch. I realize there are several approaches to this problem, but this works best for me.

Other details about the model: the weight was .058 oz. and rubber weight was approximately .062 oz., for a power to weight ratio of 1.07:1. Turns on the winning flight were 1350, giving an average RPM of 33. John flew the model at a CMOS margin of just over +9%, and the balance chart is shown below.



PERFORMANCE YARDSTICKS

The material presented below is intended as additional information to use with "Choice And Preparation of Indoor Rubber Motors", by Dennis Jaacks (Feb. '75 INAV).

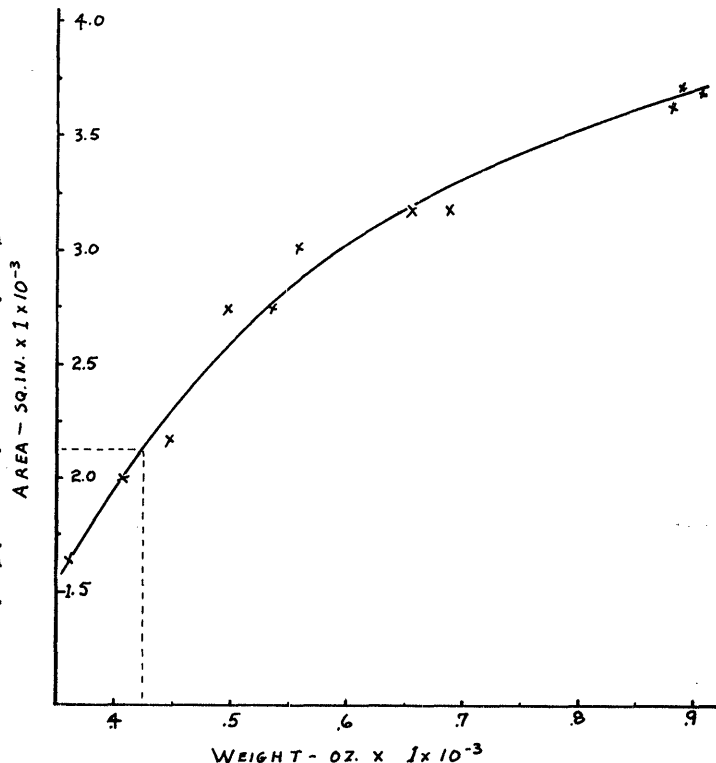
Appendix I

This material is reprinted from the Jun. '72 INAV, as a suggestion on handling knots other than the Richmond knot in the rubber selection method.

Knot Correction Chart

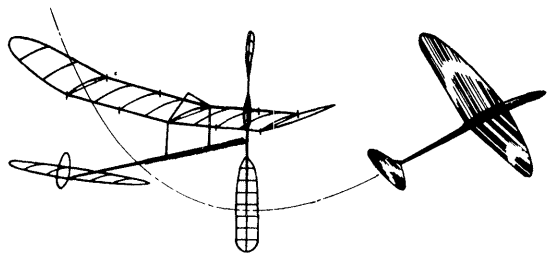
In the process of making extensive torque tests on pirelli, some method of correcting for the weight of the knot was needed. The solution to the problem was to tie many standard knots in rubber, cut them loose, then weigh the knots and average the results. The graph below gives the correction at a glance. Each point on the graph is an average of at least three knots, and the accuracy of correction factors from the chart should be about 1%.

Use the graph this way: measure the rubber cross-section with standard (not spring-loaded) micrometers, and compute the area. Locate this area along the left side of the graph, move across to the curve, then down to the bottom line and read the weight of the knot. For example, .042 x .051 rubber has an area of .00213 sq. in. Following the dashed line, this equates to .000425 oz.



INDOOR

NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

- DAN HERTZSON, 19 Dougal Lane, E. Northport, NY 11731
 JOE H. HURDLE, 1400 S. Nova Rd., Apt. 229, Daytona Beach, FL 32014
 JOSEPH N. LEWIS III, 4727 Arlington Blvd., Arlington VA 22203
 MAX W. MARTIN, 139 S. Rena St., Arroyo Grande CA 93420
 TOM RUTTER, Rt. 7, Box 270, Bremerton WA 98310
 BILL SMEAD, 1494 Valencia Ave., Holly Hill FL 32017

Honorary Members

DAN POOLE, 45 Stanley Rd., Radcliffe, Manchester M26 0HG
 England

NFFS Top Ten Models

Erv Rodemsky's "Monster", perhaps the largest indoor model anyone has seen recently, was chosen as the indoor model in the NFFS Model Of The Year program for 1975. Plans and other details about this model and the other Top Ten models will be in 1975 NFFS Symposium Report.

'75 Nats

On behalf of the Miami Indoor Aircraft Model Association, Dr. John Martin announces that Peanut Scale and Navy Scale will be sponsored by MIAMA at the Nats. No entry fee, nice trophies thru third, and entry to be made at the same time as models are presented for AMA Scale. The same models can be used for Navy Scale as for AMA Scale, and the only requirement for the Navy Scale model is that it be a replica of some aircraft used by the Navy of any nation. Peanut Scale will use the MIAMA proposed rules - SC 76-37 is the number assigned to the proposal and it has been published in Competition News.

Nats Entry Blanks Coming

Nats entry blanks are in the mail, with entry deadline July 1, 1975 (postmark). Indoor HLG is 9 am-5 pm, and AMA Scale 5 pm-9 pm on Aug. 3, 1975. On Monday, Aug. 4, all AMA indoor rubber events run from 9 am-9 pm. The site is the same as for the 1974 Nats - the Lake Charles Civic Center Sports Arena. The open scoreboard, which caught many models last year, will be skirted to prevent models from entering. Indoor Category Championship will be computed on the basis of three declared events - the contestant's choice from Scale, Stick, Paper Stick, FAI Stick and HLG. Easy B will be included in the agenda, and is shown scheduled with the other rubber events.

It is not clear what group of people are receiving the entry blanks, but if you have not received one by June 10, and desire one, send a stamped, self-addressed envelope to AMA HQ and request one.

Nats Banquet

The Jan. '75 INAV announced that Ted Seahs and John Martin had made arrangements for Nats Indoor entrants to make reservations at the Downtowner Motor Lodge at Lake Charles - sort of an Indoor "convention". Now, John has completed arrangements for a buffet supper after the close of Indoor Rubber on Monday, Aug. 3 - 9:30 pm. Cost is to be \$3.50 per person.

Please Segregate Easy B!

Dan Domina, 4701 Fox Run Dr., Plainboro NJ 08536, has requested that Easy B models not be flown concurrently with the rest of Indoor Rubber. This is an extremely reasonable request, due to the relatively high airspeed and penetration power of the average Easy B in comparison to the average microfilm model. In other words, an Easy B can clobber a mike ship and probably sustain minimal damage. Dan has requested that all who agree with his request contact AMA HQ and support his request.

FAI INDOOR REPORT

Zone Qualification Trials

Western Zone July 4-5, 1975, Moffett Field,

North Central Zone

Aug. 16-17, 1975, Goodyear Aerospace Hangar, Akron Ohio

South Central Zone

June 15, 1975, OFE Building, Tulsa, Oklahoma

Aug. 3-4, 1975, Lake Charles, La. Civic Auditorium (Nats site)

Eastern Zone

June 21-22, 1975, Lakehurst
 July 19-20, 1975, Lakehurst

Footnotes:

1. Trials moved to settling chamber of the wind tunnel at Moffett Field; 200' x 350' with 132' ceiling. Preliminary tests indicate good conditions. Contact Erv Rodemsky, 1624 St. David Dr., Danville CA 94526
2. All contestants and potential contestants must give their name to Bill Hulbert, 174 Castle Blvd., Akron OH 44313 well in advance of meet - security is strict!
3. Contact man - Bob Dunham, 4730 S. Yorktown Ave., Tulsa OK 74105, ph. 918-743-5424. Site has 300' x 400' floor with 65' ceiling at peak, tapering to 45' at the side, no internal supports. Site open 8 am-6 pm, six rounds beginning at 9 am, 10:30 am, noon, 1:20 pm, 2:40 pm and 4 pm with last launch at 5:20 pm. No lunch break; eating places close by. Site located on State Fair Grounds in Tulsa, total building is 1000' long and 300' wide with a portion having 35' ceiling available for testing.
4. The Civic Auditorium proved to be the only site available within the required time span. Flying of FAI Qual. Trials will be in 6 one-hour rounds between 9 pm and 12 pm on Aug. 3 and Aug. 4 (after Nats flying has finished). The alternative of using the site at any other time was rejected due to cost of rental. The stated time is already paid for. Contact Bud Tenny, Box 545, Richardson TX 75080, ph. 214-235-4035.
5. Contact for Lakehurst: John Kukon, 14 Brandon Rd., Trenton NJ 08638, ph. 609-737-3522.

Qualification Trial Results

Western Zone, May 24-25, 1975, Weight & Balance Hangar, Edwards AFB, Calif. (Time & points by round)

	1	2	3	4	5	6	Total
1. B. Randolph	11:56	19:10	22:03	10:05	23:12	21:40	
	59.32	80.70	100.0	49.96	97.34	96.23	293.57
2. E. Rodemsky	20:07	22:30	18:29	10:02	5:38	20:39	
	100.0	94.74	83.82	49.71	23.64	91.71	286.45
3. P. Allen	20:01	6:57	11:18	11:17	23:00	20:13	
	99.50	29.26	51.25	55.90	96.50	89.79	285.79
4. K. Bauer	-	-	17:35	20:11	19:46	22:31	
	0	0	79.74	100.0	82.94	100.0	282.94
5. B. Gibbs	12:57	19:02	19:47	19:02	17:50	22:07	
	64.37	80.14	89.72	94.30	74.83	98.22	282.24
6. L. Cailliau	6:43	14:28	18:47	17:17	22:11	22:18	
	33.39	60.91	85.19	85.63	93.08	99.04	277.75
7. C. Mather	9:42	23:45	9:46	14:48	23:50	9:44	
	48.22	100.0	44.29	73.33	100.0	43.23	273.33
8. G. Rambo	17:44	15:06	18:19	10:29	17:38	20:25	
	87.90	63.58	83.07	51.94	73.99	90.67	261.64
9. B. Romak	-	18:50	14:55	13:38	19:23	20:49	
	0	79.30	67.65	67.55	81.33	92.45	253.08
10. J. Magnus	13:29	12:26	5:20	15:57	11:14	13:14	
	67.03	52.35	24.19	79.03	47.13	58.77	204.83
11. F. Takagi	10:12	10:21	10:10	10:08	10:55	13:14	
	50.70	43.58	46.11	50.24	45.80	58.77	159.68

RECORDS? MAYBE!

LIAMAC Cat. I Indoor Meet, May 18, 1975, Long Beach NY

AMA Cat. I FAI - 23:48.5, Dan Domina
 FAI Cat. II FAI - 23:48.5, Dan Domina

CONTEST CALENDAR

MARYLAND - Silver Spring

FAI Cat. I Record Trials, National Guard Armory, 2831 E. Randolph Rd., Silver Spring, June 29, 1975. Tom Vallee 444 Henryton So., Laurel MD 20610, ph. 301-498-0790.

MICHIGAN - Detroit

The Detroit Indoor Model Aviation Contest will be held at the Michigan State Fair Coliseum, 9 am to 6:30 pm, June 15, 1975. Delta Dart, HLG, AMA Scale, Peanut Scale, Paper Stick, Indoor Stick. Walter Hartung, 14759 Kilbourne, Detroit, ph. 527-7620.

NEW JERSEY - Lakehurst

Indoor sessions at Lakehurst #5, July 4-5, 1975. Confirm hangar availability by calling 609-737-3522 on Thursday or Friday pm before meet.

NIMAS POSTAL MEET

Due to the problem last year with two or three Postal entries being misplaced until the next issue after the one announcing the results, extra care has been taken this year to keep the results together. However, if anyone "out there" sent an entry not reflected in the listing below, drop us a line immediately. Meanwhile, until the next issue, the listings below will be provisional.

Name	Time	Ceiling	Fudge	Score
<u>Junior Easy B</u>				
1. Mark Rader	227.1	23'	1.234	233.9
2. Amy Hancy	225.8	23'	1.234	232.6
3. Ray Baughman	196.1	23'	1.234	202.0
4. Susie Herr	181.5	23'	1.234	186.9
5. Chris Carroll	169.8	23'	1.234	175.0
6. Margie Minut	150.0	23'	1.234	154.5
7. Vicky Matusicky	137.0	23'	1.234	141.1
8. Teri Hartman	136.0	23'	1.234	140.0
9. David Tracy	126.0	23'	1.234	129.8
10. David Majesky	124.0	23'	1.234	127.7

<u>Open Easy B</u>				
1. Dick Hardcastle	653.0	23'	1.234	805.8
2. Bob Platt	580.6	21'	1.291	749.5
3. Clarence Mather	579.0	22.3'	1.253	725.5
4. Hal Crane	526.8	21'	1.291	679.8
5. Fudo Takagi	413.0	22.3'	1.253	517.5
6. Richard Whitten*	380.8	33'	1.03	392.2

<u>Junior PennyPlane</u>				
1. Margie Minut	160.9	23'	1.234	198.6
2. Mike Avins	125.5	23'	1.234	154.9

<u>Open PennyPlane</u>				
1. Clarence Mather	400.0	22.3'	1.253	501.2
2. Richard Whitten*	403.1	33'	1.03	415.2
3. John Magnus*	270.0	22.3'	1.253	338.3

*Senior

<u>Junior Cat. I HLG</u>				
1. Mark Drela	43.4	18'	1.39	60.3
2. Mark Rader	39.5	23'	1.087	42.9
3. David Tracy	32.5	23'	1.087	35.3
4. Amy Hancy	30.1	23'	1.087	32.7
5. Susie Herr	29.3	23'	1.087	31.8

<u>Open Cat. I HLG</u>				
1. Dick Hardcastle	65.0	23'	1.087	70.6

TOP TEN CEILING DODGERS

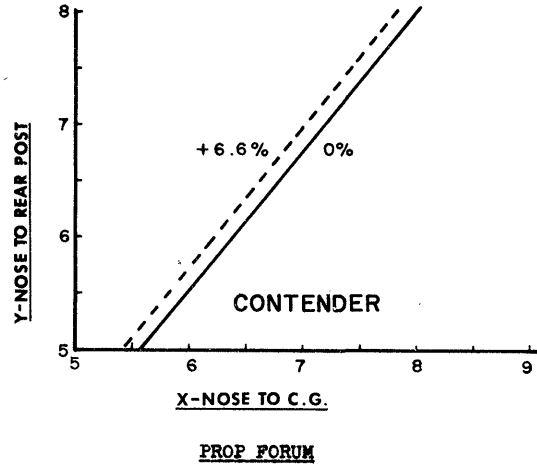
Name	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Robert Dunham II	1454	89'	.627	911.7
4. Hal Crane	682	20'	1.323	902.3
5. Bob Dunham	1357	89'	.627	850.8
6. Dick Hardcastle	653*	23'	1.234	805.8
7. Bud Tenny	1275	89'	.627	742.9
8. Hewitt Phillips	528.2	20'	1.323	698.8
9. Howard Haupt	456	22'	1.261	575.0
10. Steve Lovens	433.2	20.5'	1.307	566.2

STATE OF THE ART

The Cleveland Free Flight Society's newsletter "CROSS-WINDS", edited by NIMAS member Dave Fishery, does an excellent job of communicating with both their club members and with others privileged to receive the newsletter. One of the many plans carried by CROSSWINDS in recent times is reproduced on the plan page. This model, "Contender", by Larry and Tom Mzik, should be an excellent model in competition. An unusual feature of the model is sliding wing sockets, which makes the model adaptable to variable air conditions. For those who might opt for the slightly low-

er weight of fixed wing installation, the CMOS balance chart below will show where to mount the wing for good-to-average conditions. The drawing shows a wing location and a rearward CG location ".050 oz."; this trim gives a balance margin of +6.6%. A similar Easy B, "Easy '72", appeared in the Jan. '72 INAV and proved to be docile, even with a rearward CG. Don't knock it until you've tried it!

Two other design features on this model stand out; few Easy B's have polyhedral (in case the drawing doesn't reproduce, the dihedral is 7/16" at the first break and 1 1/4" at the tip), and the rudder is adjustable without bending the boom. Also, 1 1/4° negative incidence in the boom means to raise the boom about 1/4".



The Feb. '74 INAV featured an adjustable pitch prop by Jeff Annis. Jeff flew PennyPlane and FAI Indoor Stick models at the '74 Nats using adjustable pitch props, and placed in the top ten. This article presents a graphical design approach for adjustable pitch props.

VARIABLE PITCH PROP DESIGN

by Jeff Annis

The accompanying three graphs summarize computer calculated data and are intended to simplify variable pitch prop design.

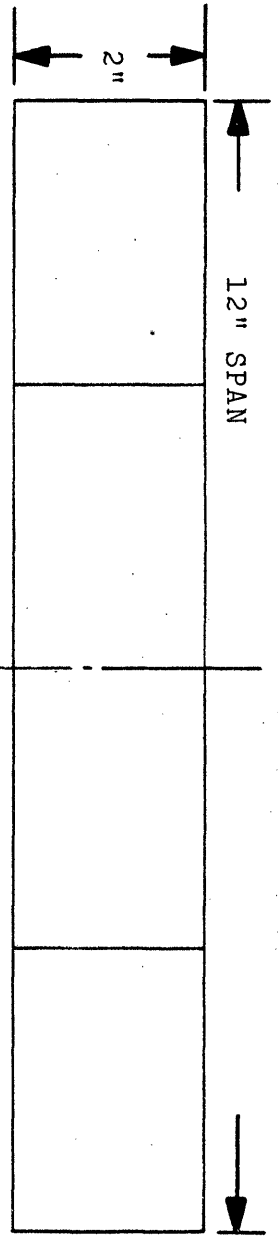
The first graph (Angular Displacement vs Pitch) is a plot showing how the mean pitch changes as a true pitch prop blade is rotated. The second graph (Angle vs Torque) applies to the parameters which can be changed on the variable pitch prop to match it to various torque ranges. Refer to the prop sketch to find "A" and "B". Computation shows that "A" has little effect on displacement, and "A" is assumed to be fixed at .5". This graph has curves with alphanumeric designations referring to the chart below. Note that the variable is "B".

Curve	Music wire dia.	Dim. B
14-A	.014"	0.88"
14-B	.014"	1.0"
14-C	.014"	1.25"
15-A	.015"	0.88"
15-B	.015"	1.0"
15-C	.015"	1.25"
16-A	.016"	0.88"
16-B	.016"	1.0"
16-C	.016"	1.25"

The third graph (Pitch vs Ref. Angle) is used to set the prop blades in the proper position once the other parameters have been chosen. As indicated on the graph, the reference angle is to be applied at 5" radius.

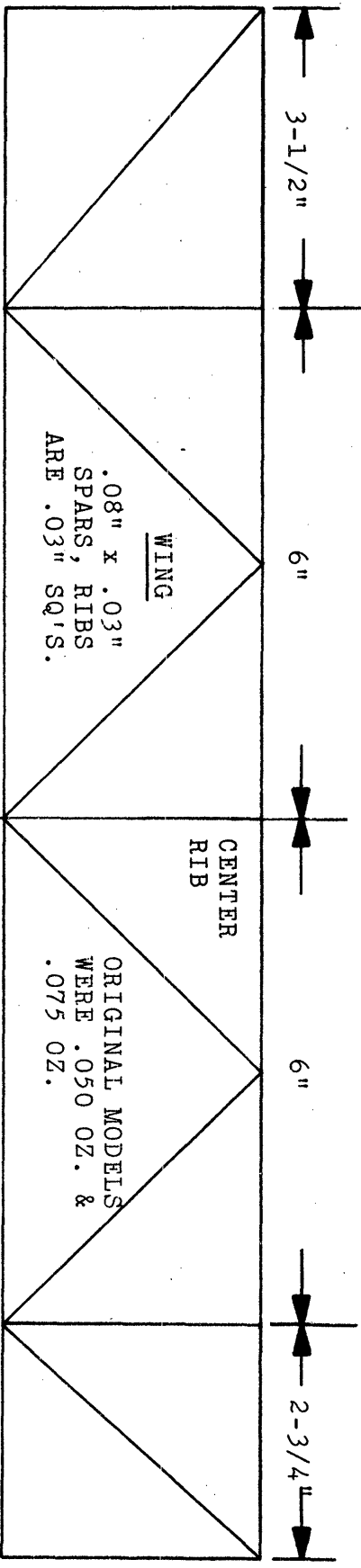
Here is an example of how to use the graphs to design the variable pitch mechanism for the conditions of torque ranging from .1 in.oz. to .5 in.oz. and pitch ranging from 20" to 45". To clarify, the problem is to find a combination where the pitch will be 20" with .1 in.oz. torque and will increase to 45" with .5 in.oz. torque.

- From graph #1 choose any stock pitch which will give the required range of 20" to 45" pitch. For this example, any of the stock pitches except 25" pitch can be used. I will choose to use 45" stock pitch. Therefore, the blades will have to be constructed on a 45" pitch block.
- From graph #1, when $\theta = 0^\circ$, pitch = 45". Following the 45" stock pitch line down to 20", then across to θ , the answer is -20° . Thus, the blade angle will decrease from normal by 20° as it covers the design range.



12" SPAN

STAB
.030" SQ. SPARS
AND RIBS. NO
CENTER RIB.



3-1/2"

6"

6"

2-3/4"

WING
.08" x .03"
SPARS, RIBS
ARE .03" SQ'S.

CENTER
RIB

ORIGINAL MODELS
WERE .050 OZ. &
.075 OZ.

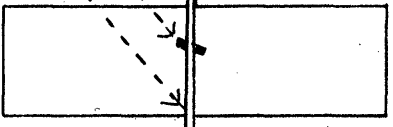
3"

1-1/2" DIHED.

7/16" DIHED.

1 1/2" DIHED.

-1-1/20 TO 30
INCIDENCE IN
BOOM

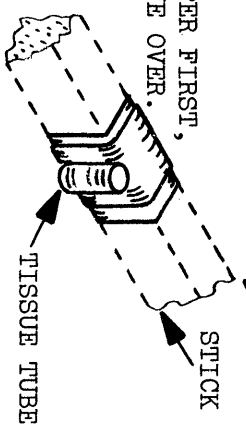


RUDDER

4" x 1-3/16",
.030" SQ'S.

.10" x .08" >
.030" SQ. x 8-1/4"

WRAP C-PAPER FIRST,
THEN TISSUE OVER.
ADD TUBE.



STICK

TISSUE TUBE

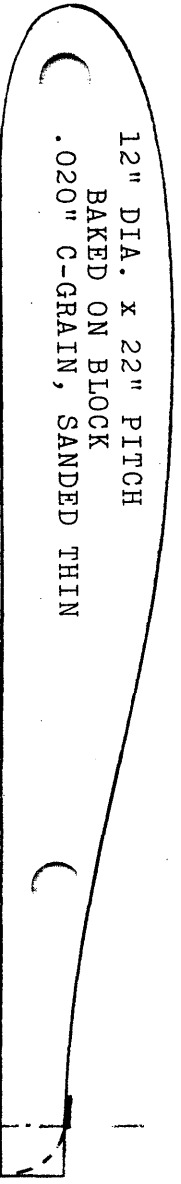
1/16" DIA.
POST.
2-1/2" LG.
CG .050oz

.10" x .187" x 9" STICK

SLIDING
CG WING
POSTS

2-1/2"

DUAL THRUST
BEARING



FULL SIZE AIRFOIL
FOR WING & STAB

12" DIA. x 22" PITCH
BAKED ON BLOCK
.020" C-GRAIN, SANDED THIN

THE "CONTENDER"

AN EZB BY
LARRY & TOM MZIK
DRAWN BY DAVE PISHNERY

1/4" EXCESS FOR OVERLAP
ALL WIRE .015" DIA.

3. Refer to graph #2. Since the angular displacement is 20° (from step #2), find a combination where a change in angular displacement is 20° for a torque change between .1 in.oz. and .5 in.oz. The closest combination is curve 16-C, 15-A. before leaving graph #2, note that at .5 in.oz., the actual angular displacement is 23.5° . Refer to the chart above and note that for .016" wire, "B" is 1.12" and for .015" wire, "B" is .88"; either can be used.

4. To find the reference angle used to mount the blades, remember that the total angular displacement (step #3) is 23.5° (when torque = 0). Refer again to graph #1 and note that when $\theta = -23.5^\circ$, (use the 45° pitch line), the mean pitch is about 17° .

5. Refer to graph #3; for 17° pitch, the reference angle is about 27.5° . Therefore, mount the blades at 27.5° (measured at 5° radius) when torque is 0. That's all!

A LOOK AT YESTERYEAR

Where did postal meets come from? An article on page 27 of the Aug. '41 MAN shows that a letter from Pete Andrews caused "The Instructor" (apparently a staff writer, or else Bill Winter in masquerade) to suggest a mail or "telegraph" contest format almost identical to the postal meets of today. Even then, the basic idea was not new, but had been used in similar format not long before!

HINTS AND KINKS

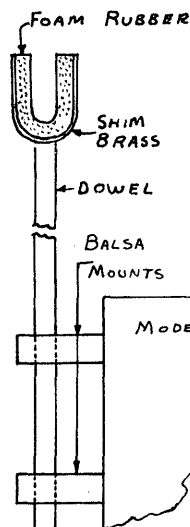
This particular column has not appeared often in the past couple of years, partly because of lack of material, and partly because many excellent ideas come in with missing or inadequate sketches, or even with really artistic sketches done in low-contrast pencil. Consequently, such sketches must be copied or enhanced in some fashion before they can be used. Quite often, there isn't time for me to do over the sketches, and even sometimes not even time for a letter requesting the author to do it.

Just to remind all you clever people out there that your ideas are welcome, the ideas below have been reprinted from earlier INAV's. Don't be so modest!

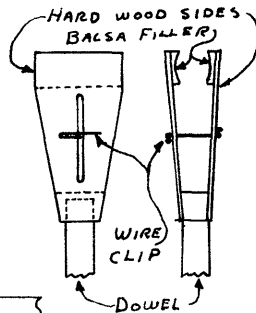
Run-Down Stands

One of the handiest things on the flying field is a run-down stand. As the two sketches show, this is a rod or post fastened to the model box and topped off by a clamp or whatever to hold the model. Both the designs shown will hold a model firmly enough for repair or to let the motor run down, yet the model can be removed easily to hook up a wound-up motor.

KOWALSKI

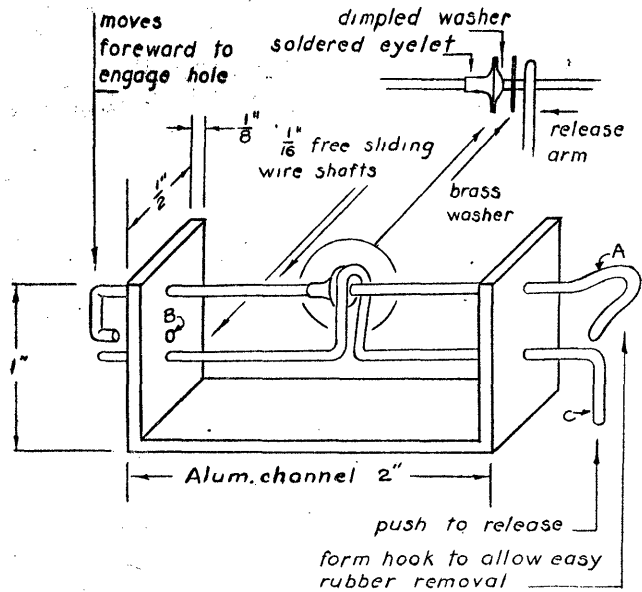


CUMMINGS



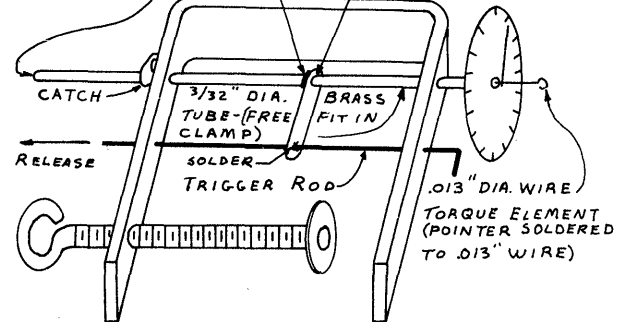
Model Stoooges

Indoor stoooges are frequently seen in recent years, as more and more filers appreciate the advantages of winding the motor unaided. The sketch below shows the basic idea; hook "A" holds the knot end of the motor and is slid forward until the rear end locks in hole "B". After the winding is complete, dis-engage the winder from the front end of the motor, hook the motor to the prop, and grasp the prop shaft and motor firmly to prevent unwinding. Next, grasp the rear end of the motor next to the knot and use lever "C" to disengage the top shaft from hole "B". The top shaft will then spin out a few turns and leave an open loop adequate to engage the rear hook of the model.



Jim Richmond's stoooge goes two steps further; it is built into a "0" clamp, and the shaft which holds the motor is a torque meter. With these adaptations, Jim can more easily mount the stoooge, and can wind up on a torque meter. Both Jim's stoooge, and the one above, can be used to run out unused turns at the end of a flight. Also, Jim can lock the shaft, hook up the motor after a flight, and check how much torque is left over after the flight.

.013" TORQUE WIRE
ANCHORED TO REAR
OF 3/32" TUBE



INDOOR ELSEWHERE

The Argentine National Indoor Contest was held April 13, 1974 in a drafty cinema which had a 9 meter ceiling. The location was Rafaela Town in Santa Fe Province.

1. Eduardo Grippo	8:59	11:43	20:42
2. Nereo Beggiato	9:29	9:55	19:24
3. Miguel Leone	9:51	9:22	19:13
4. Alberto Barilari	8:47	10:12	18:59

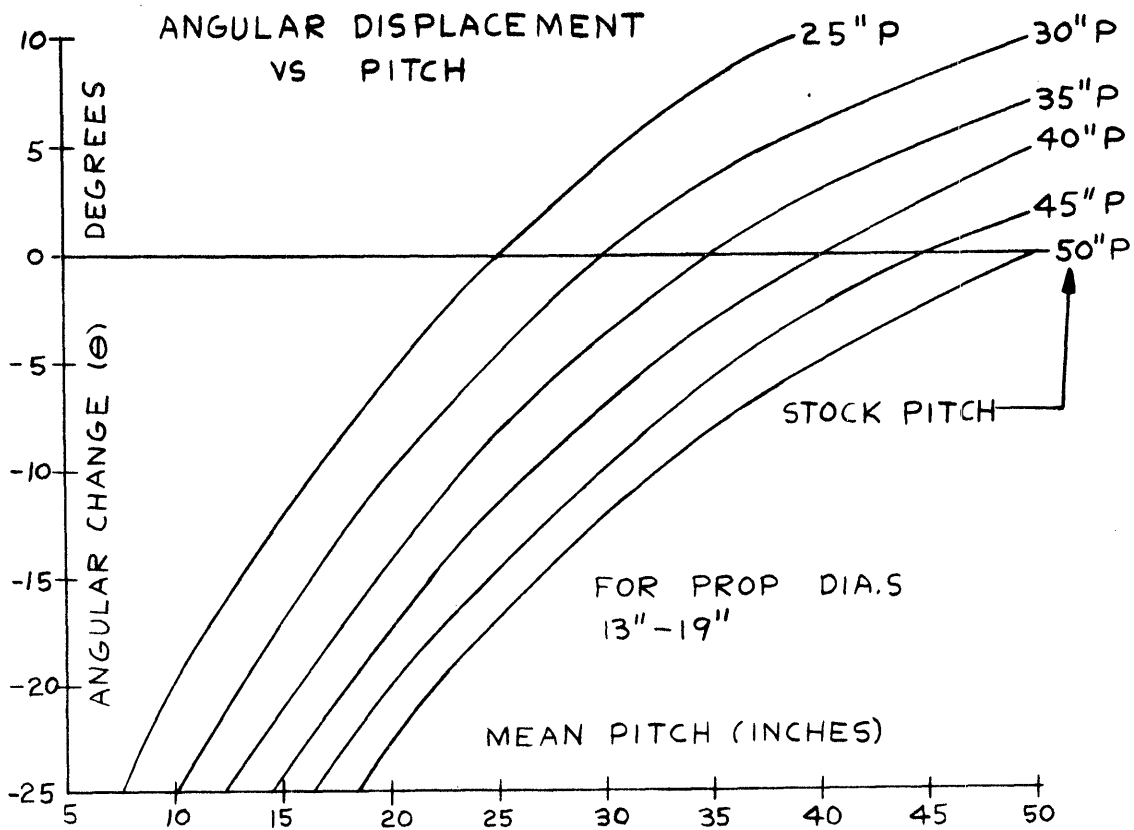
Polish National Indoor Contest, held at the 44 meter site in Wroclaw on June 13-16, 1974:

Juniors

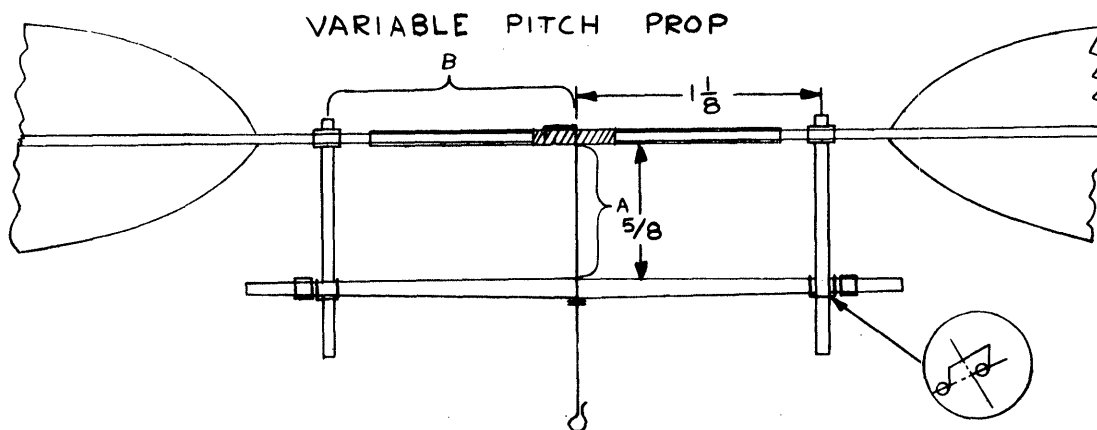
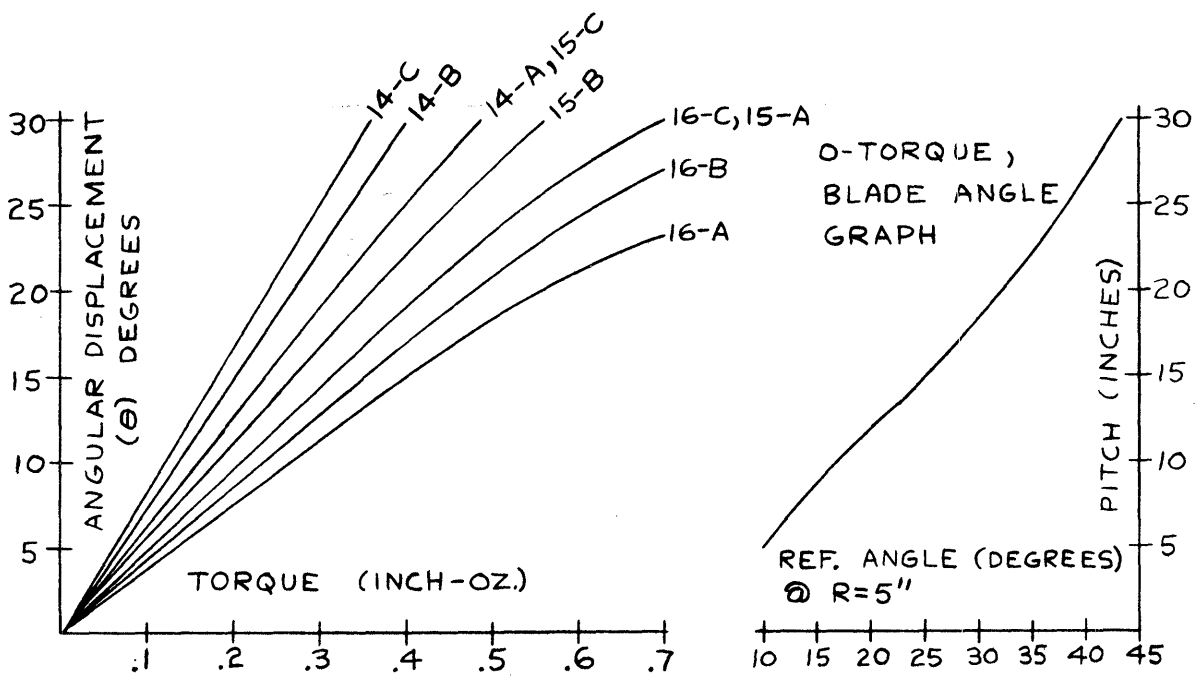
1. F. Pawel	Wroclaw	20:02	22:21	42:23
2. G. Stanislaw	Krakow	19:35	21:04	40:39
3. S. Zdzislaw	Wroclaw	19:10	20:43	39:55
4. W. Maciej	Bydgoszcz	20:52	17:23	38:15
5. Z. Jan	Wroclaw	19:00	18:44	37:44
6. J. Dariusz	Wroclaw	17:43	16:55	34:38
7. L. Jacek	Bydgoszcz	15:27	16:22	31:49
8. J. Janusz	Bydgoszcz	12:53	17:09	30:02
9. P. Wlodzimierz	Bydgoszcz	15:02	12:37	27:39
10. D. Jaroslaw	Bydgoszcz	5:00	5:25	10:25

Open

1. E. Ciapala	Slask	29:35	29:29	59:04
2. R. Czechowski	Krakow	29:03	27:52	56:55
3. S. Kujawa	Poznan	24:30	27:54	52:24
4. S. Bombol	Wroclaw	25:22	26:52	52:14
5. S. Slewko	Bydgoszcz	24:37	23:02	47:39
6. Z. Szymanski	Wroclaw	23:36	22:02	45:38
7. B. Peretykiewicz	Ziel. Gora	21:48	20:54	42:42
8. J. Nawrocki	Wroclaw	19:04	23:31	42:35
9. I. Pudelko	Krakow	15:29	20:56	35:25
10. K. Muchowski	Ziel. Gora	15:44	15:55	31:39
11. S. Rozycska	Wroclaw	15:26	15:02	30:28
12. J. Kapusniak	Bydgoszcz	12:34	17:24	29:58
13. L. Kuzniak	Bydgoszcz	11:12	17:43	27:57
14. G. Deczkow	Bulgaria	10:19	7:42	18:01
15. N. P. Nikolov	Bulgaria	4:24	8:16	12:40



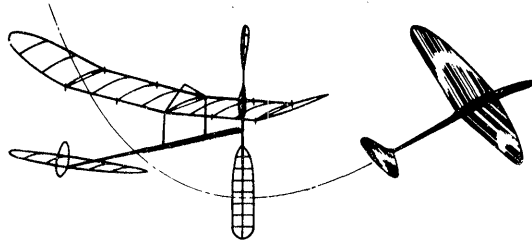
ANGLE (Θ) vs TORQUE



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members:

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 JOHN T. HODGKIN, 42 Benton St., Winsted CT 06098
 TOM KREIGER, 7406 Currin Dr., Dallas TX 75230
 GEOFFREY LEFEVER,

GERALD LESAK, 7447 Kirk Dr., Niles IL 60648
 ROBERT LIEFELD, 1960 Gladys Dr., Las Cruces NM 88001
 JERALD MILLER, 457 Brainard, Apt. 207, Detroit MI 48201
 RICHARD O. PAUL, 225 North St. #16, New Britain CT 06051
 JAMES W. THORTON, 1427 N. Glenwood Apt. B, Griffith IN 46319

Honorary Members

GEOFFREY LEFEVER, Delft Cottage, Guestwick, Dereham, Norfolk, England

NIMAS Postal Meet

The results from the 1975 NIMAS Postal, printed in the Apr/May '75 INAV, were declared provisional due to the possibility of some results being misplaced in the chaotic NIMAS office. Now that no one claims to be left out, the published results are declared official.

NIMAS International?

Dear Bud:

During the time of the June 7th and 8th North Central FAI Indoor Regionals at the Pompeian Court in West Bend, Indiana, I had the opportunity to visit at great length with Mr. Ray Semmons, Director of Student Personnel at Northwood Institute. Mr. Semmons informed me that Northwood would be very happy to allow us the use of their facilities for any other indoor meets that we desired either this year or next year; and that as long as he, Mr. Semmons, was at the Institute we would always be welcome.

The hospitality shown us by the Northwood Institute - and Mr. Semmons in particular - was far above what was expected and it appeared that Mr. Semmons was going "all out" to roll out the red carpet treatment for us. As long as I can remember, Indoor Fliers have never had such an opportunity as presented at Northwood Institute. The Northwood Institute even ran Xerox copies of our results of the Regionals within minutes of the close of our contest -- this type of enthusiasm and hospitality and cooperation comes along sometimes just once in a lifetime. To this add the availability of low cost lodging and on-site food service (the cost approximately \$8 per day for both.)

You may be busy flying all the rest of the summer; but I feel that now is the time to start seriously thinking of holding a "NIMAS International" Meet at West Baden, Indiana at the Northwood Institute sometime next June or July, 1976. I envision a prestigious indoor championships with emphasis on the social aspects, all in the setting of the historic site and surroundings.

Wives of contestants could be encouraged to attend. With such scenery and historic points and quaint shops in the area, I am sure they would have a good time. The French Lick Sheraton, (one mile away) works closely with Northwood Institute and could furnish facilities for wives' use such as swimming, horseback riding, tennis, etc.

Because there would be many that would travel a great distance to attend the "NIMAS International", I would like to see a three-day meet with perhaps record trials on Friday, microfilm covered models on Saturday, paper covered models on Sunday. With the record trials on Friday, we could have a more relaxed style competition on Saturday and Sunday; perhaps with special awards for original designs, etc. rather than awards only for total time.

By arriving at the site early we could get a cherry-picker inside the atrium and cut down all the strings and loose wires in the girders and put an inverted ice cream cone of sheet plastic over over the inverted mushroom. By doing these two things we could eliminate perhaps 75% of the total hang-ups.

I suggest that those of you who are interested in promoting such a "NIMAS International" Meet at West Baden next year correspond with me and with other interested modelers. Let's see if we can form a steering committee to formulate plans and ideas for this contest.

I guess the smell of the morning-glories each evening as we came out the back door from flying just got to me.

(signed) Stan Chilton
 1401-A S, Hydraulic
 Wichita KS 67211
 316-265-7153 or
 316-262-4181

Become An Author

Most INAV readers are aware that AMA is now publishing MODEL AVIATION, which is now being sent to AMA members as a membership benefit instead of AAM, which went bankrupt earlier in the year. Mr. Bill Winter, perhaps the most accomplished aviation editor of all time, is editor of MA. AMA is soliciting a wide variety of model designs for publication in MA. Anyone interested should send a brief description and picture of the model or project to AMA Hq. If the material fits their requirements and does not overlap material on hand, you will be given requirement for the article. Payment will be made within 30 days for all accepted projects, at very fair rates.

FAI INDOOR REPORT

Zone Qualification Trials

- North Central Zone Aug. 16-17, 1975, Goodyear Aerospace Hangar, Akron, Ohio₁
- South Central Zone Aug. 3-4, 1975, Lake Charles, La. Civic Auditorium (Nats site)₂
- Eastern Zone July 19-20, 1975, Lakehurst₃

Footnotes:

1. All contestants and potential contestants must give their names to Bill Hulbert, 174 Castle Blvd., Akron OH 44313 well in advance of the meet - security is strict!
2. Flying of FAI Qual Trials will be in six one-hour rounds; three rounds between 9 pm and 12 pm Aug. 3, and three rounds between 9 pm and 12 pm Aug. 4, 1975. Contact Bud Tenny, Box 545, Richardson TX 75080, ph. 214-235-4035.
3. Contact for Lakehurst: John Kukon, 14 Brandon Rd., Trenton NJ 08638, ph. 609-737-3522.

Qualification Trial Results

North Central Zone, June 7-8, 1975, West Baden, Indiana Pompeian Court, Northwood Institute

1. B. Servaites	4:42	28:40	26:37	32:21	30:40		
1. B. Servaites	4:42	28:40	26:37	32:21	30:40	-	Total
	16.78	100.0	88.87	100.0	100.0	0	300.0
2. A. Rohrbaugh	15:59	25:21	7:08	10:30	29:40	29:26	
	57.05	88.43	23.82	32.46	96.74	100.0	285.17
3. R. Kowalski	25:25	25:46	29:57	19:15	7:35	0:46	
	90.72	89.88	100.0	59.51	24.73	2.60	280.60
4. R. Hardcastle	26:41	10:49	24:24	19:48	25:08	29:05*	
	95.24	37.73	81.47	61.21	81.96	98.81	276.01
5. E. Rodensky	28:01	9:05	28:13	21:57	10:49	23:08	
	100.0	31.69	94.21	67.85	35.27	78.60	272.81
6. R. Champine	5:04	27:32	25:23	13:39	21:31	25:07	
	18.08	96.05	84.75	42.19	70.16	85.33	266.13
7. R. Ganser	22:33	27:21	23:31	25:42	26:20	10:04	
	80.49	95.41	78.52	79.44	85.87	34.20	261.77
8. J. Richmond	8:43	28:33	22:12	21:50	10:28	23:27	
	31.11	99.59	74.12	67.49	34.13	79.67	253.38

9. P. Tryon	22:26	27:55	22:21	19:20	21:39	20:13	
	80.07	97.38	74.62	59.76	70.60	68.69	252.07
10. H. Crane	24:47	22:55	24:01	9:14	18:00	19:40	
	88.46	79.94	80.19	28.54	58.70	66.82	248.59
11. H. Brodersen	24:58	25:16	16:16	22:55	12:15	18:10	
	89.11	88.14	54.31	70.84	39.95	61.72	248.09
12. E. Stoll	18:51	4:01	24:24	7:59	28:25	13:34	
	67.28	14.01	81.47	24.68	92.66	46.09	241.41
13. S. Brown	24:27	22:45	22:11	18:12	7:09	16:46	
	87.27	79.36	74.07	56.26	23.32	56.96	240.70
14. W. Shailor	9:35	21:38	22:39	24:46	7:43	-	
	34.21	75.47	75.63	76.56	25.16	0	227.66
15. R. Doig	19:06	22:46	21:32	14:52	23:02	5:00	
	68.17	79.42	71.90	45.96	75.11	16.99	226.43
16. S. Chilton	21:52	25:38	10:30	17:03	6:55	-	
	78.05	89.42	35.06	52.70	22.55	0	220.17
17. R. Obarski	21:16	22:20	10:22	20:32	2:42	-	
	75.91	77.91	34.61	63.47	8.80	0	217.29
18. K. Gordey	17:59	18:52	5:23	17:39	14:21	20:40	
	64.19	65.81	17.97	54.56	46.79	70.22	200.22
19. R. Plotzke	11:19	7:29	14:50	16:47	23:54	5:20	
	40.39	26.10	49.53	51.88	77.93	18.12	179.34
20. H. Haupt	17:16	15:20	14:45	12:55	17:03	-	
	61.63	53.49	49.25	39.93	55.60	0	170.78
21. K. Johnson	12:36	5:47	14:32	-	-	-	
	44.97	20.17	48.53				113.67

South Central Zone - June 15, 1975, Tulsa, Oklahoma
O.P.E. Building, State Fair Grounds, Tulsa

	1	2	3	4	5	6	Total
1. J. Richmond	19:11	23:36	26:20	9:13	24:44	-	
	97.62	100.0	100.0	40.9	100.0	0	300.0
2. R. Hardcastle	19:39	14:04	18:23	22:32	11:20	21:09	
	100.0	59.60	69.80	100.0	45.82	93.79	293.79
3. S. Chilton	18:50	5:37	24:14	21:22	14:31	22:33	
	95.85	23.80	92.02	94.83	58.69	100.0	290.69
4. R. Dunham	16:16	18:45	5:26	17:30	15:52	16:46	
	82.78	79.44	20.63	77.66	64.15	74.32	239.88
5. P. Tryon	12:34	13:02	15:35	16:59	7:07	20:08	
	63.95	55.22	59.17	75.37	28.78	89.28	228.60
6. E. Rodemsky	17:39	12:12	18:01	4:01	-	-	
	89.82	51.69	68.42	17.83	0	0	209.93
7. L. Cailliau	11:26	18:44	18:55	9:27	-	-	
	58.18	79.37	71.83	41.94	0	0	209.38
8. B. Tenny	5:03	4:50	16:16	13:09	16:13	12:00	
	25.69	20.48	61.77	58.36	65.57	53.21	185.70
9. J. Shepherd	10:03	6:10	4:55	5:22	-	-	
	51.14	26.12	18.67	23.82	0	0	110.08
10. R. Roberti	0	0	0	2:49	-	-	
	0	0	0	10.69	0	0	10.69

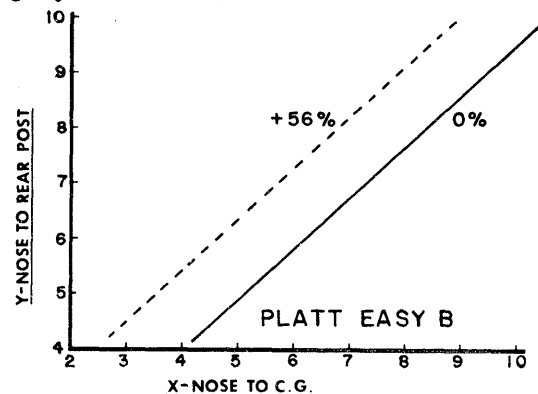
Eastern Zone, June 20-21, 1975, Lakehurst, New Jersey

	1	2	3	4	5	6	Total
1. R. Harlan	39:20	36:18	32:12	32:45	38:09	36:57	
	100.0	100.0	87.98	98.40	100.0	100.0	300.0
2. S. Cannizzo	32:00	35:51	34:11	31:02	31:26	34:16	
	81.36	98.76	93.40	93.24	82.39	92.74	285.40
3. D. Kowalski	33:56	35:12	36:36	-	32:42	21:54	
	86.27	96.97	100.0	0	85.71	59.27	283.24
4. J. Kukon	32:41	33:33	11:03	14:36	35:37	28:52	
	83.09	92.42	30.19	43.87	93.36	78.12	268.87
5. J. Richmond	34:23	31:04	34:50	25:55	30:56	24:49	
	87.42	85.58	95.17	77.87	81.08	67.16	268.17
6. J. Triolo	28:39	30:30	26:53	28:24	33:08	35:00	
	72.84	84.02	73.45	85.33	86.85	94.72	266.90
7. P. Andrews	32:05	32:40	33:54	25:25	31:13	30:28	
	81.57	89.99	92.62	76.36	81.83	82.45	265.06
8. R. Platt	33:16	9:54	30:50	30:15	30:59	9:09	
	84.58	27.27	84.24	90.89	81.21	24.76	259.71

9. R. Champine	31:09	30:27	25:39	27:07	32:17	32:26	
	79.19	83.88	70.08	81.47	84.62	87.78	256.28
10. D. Domina	9:46	8:56	28:27	33:17	22:47	24:53	
	24.83	24.61	77.73	100.0	59.72	67.34	245.07
11. W. Hulbert	19:20	29:34	29:03	25:13	28:02	30:43	
	49.15	81.45	79.37	75.76	73.47	83.13	243.95
12. R. Whitten	8:14	29:29	28:32	25:34	26:45	25:00	
	20.92	81.22	77.96	76.82	70.12	67.66	236.12
13. E. Stoll	28:16	10:00	29:58	17:06	30:33	24:28	
	71.86	27.55	81.88	51.38	80.08	66.22	233.82
14. H. Crane	26:32	22:48	28:55	25:34	29:05	22:18	
	62.46	62.81	79.01	76.82	76.23	60.35	232.06
15. W. Tyler	15:51	22:04	8:51	22:38	25:57	31:31	
	40.30	60.79	24.18	68.00	68.02	85.30	221.32
16. E. Radoff	13:10	29:07	5:58	17:37	22:21	29:50	
	33.47	80.21	16.30	52.93	58.58	80.74	219.53
17. C. V. Russo	8:40	18:01	15:15	21:04	26:24	31:46	
	22.03	49.63	41.67	63.29	69.20	85.97	218.46
18. D. Belleff	22:40	22:37	18:18	24:17	24:55	26:19	
	57.63	62.30	50.00	72.96	65.31	71.22	209.49
19. T. Vallee	23:15	0:27	25:07	22:23	14:23	25:02	
	59.11	1.23	25.07	67.25	37.70	67.75	203.62
20. E. Whitten	9:25	21:02	23:12	4:39	23:29	19:56	
	23.90	57.94	63.39	13.97	61.56	53.95	182.89
21. R. Williams	10:32	15:39	5:09	21:03	23:26	25:30	
	26.78	43.11	14.07	63.24	61.42	69.01	163.67
22. T. Cronburg	15:19	-	-	5:00	8:02	-	
	38.94	0	0	15.02	21.06	-	75.02

STATE OF THE ART

Bob Platt's Easy B finished the year 1974 at the top of the Easy B Top Ten and currently is in second place. In Hampton, Va., where Bob lives, the sites are small and somewhat difficult. This implies that the design and flying skill of Bob Platt is quite good, and the model is a good choice. The CMOS graph below is shown with both 0% and +56% - Bob's trim was quite far forward! Note also the "can" on the fuselage - newcomers to the sport like your editor have seldom seen a "can" used. However, thanks to the efforts of various NIMAS historians, we find that the "can" is a wire loop which restrains the rubber motor somewhat and minimizes motor stick deflection due to tightly wound motors.



INDOOR CONSTRUCTION TECHNIQUES

Now that Easy B seems to be a regular event at the Nats, it is particularly timely that this article became available recently. Make it available to beginners!

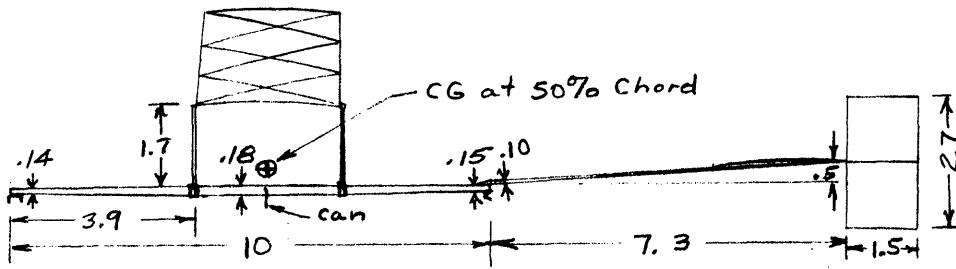
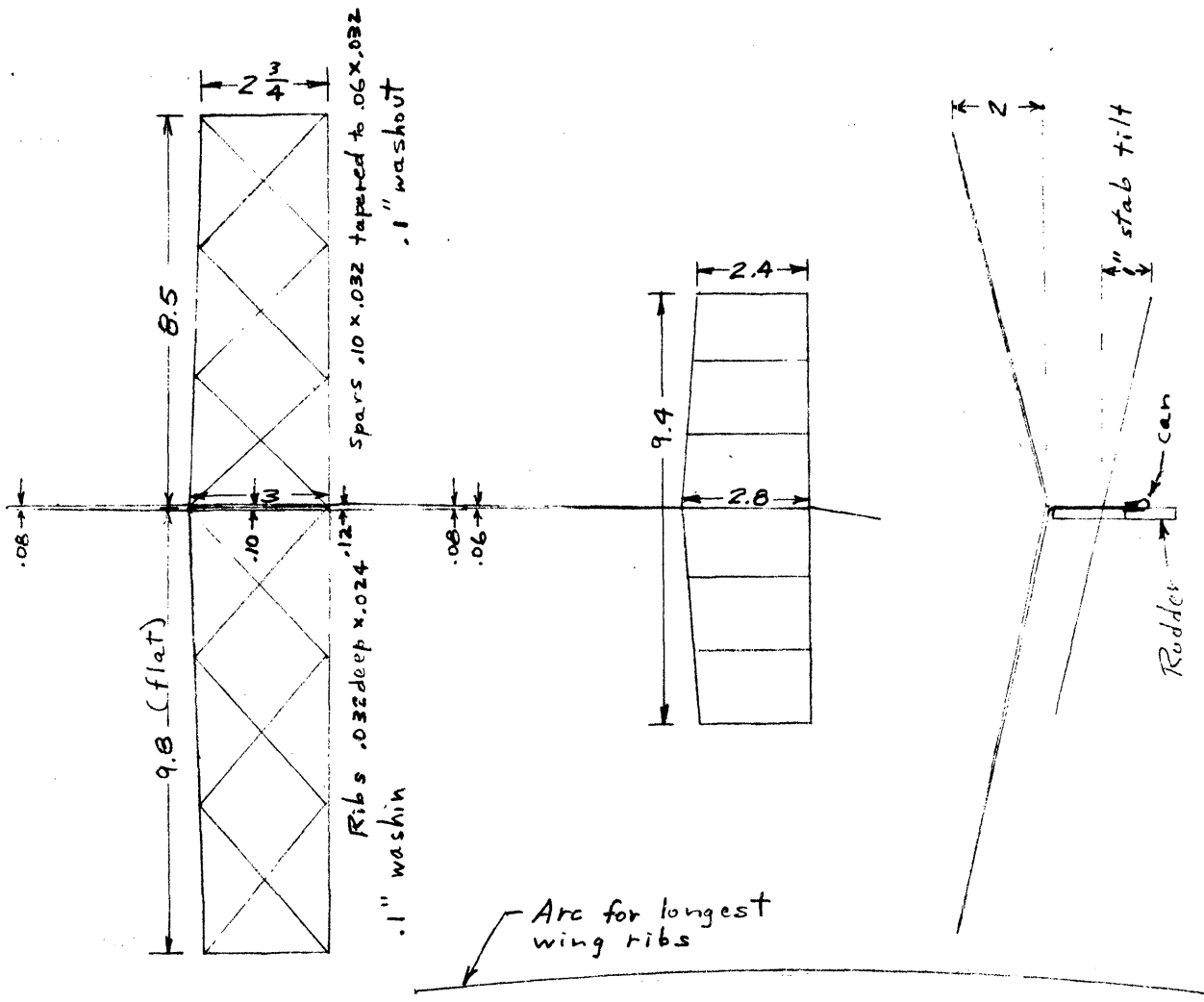
BUILDING WOOD INDOOR PROPELLERS

by Ray Harlan

The biggest bottleneck for a novice indoor builder is constructing a good propeller. This paper is written to illustrate some of the techniques and to emphasize the critical factors in making an efficient propeller.

Theory

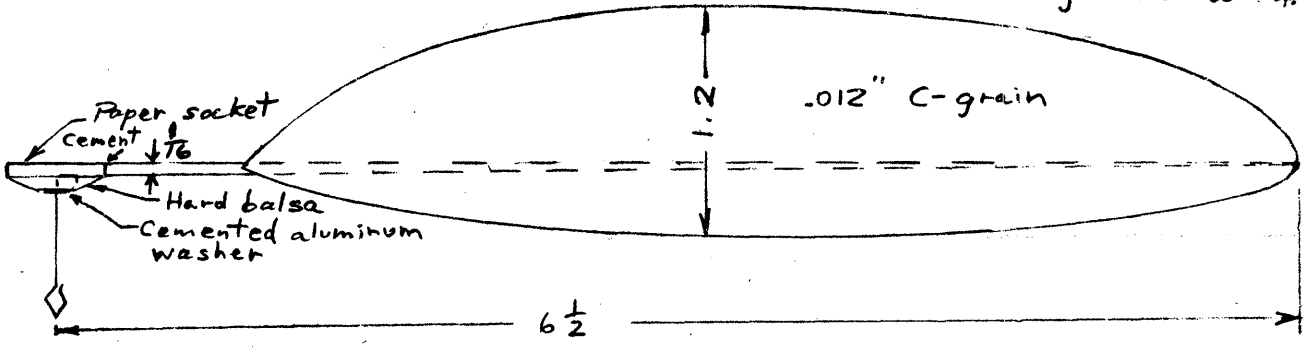
Most propellers are intended to have "true pitch"; that is, excluding any slippage, all blade elements would travel the same distance forward in one turn so that no portions of the blade fight one another. The geometry of



Wing .014 oz.
 Stick + tail .017
 Prop .010
 Total .041 oz.

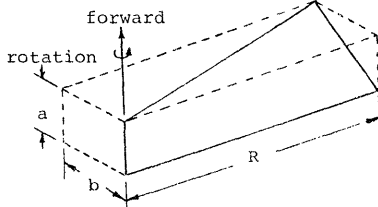
Rubber .069 x .042 x 14 1/2
 Balsa 4 1/2 - 5 lb. stock
 (except prop hub)

Blade angle 45° at 4.9" radius



Easy B Bob Platt
 11-10-74

such a blade is very simple. The blade lies on the twisted surface shown below:



A form on which to build the propeller can be made from a rectangular block of length R, width b and height a. The formula for the pitch is:

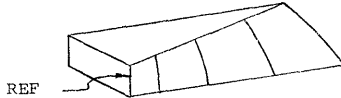
$$P = \frac{2Ra}{b}$$

As an example of using this formula, we can find the ratio b/a for a given pitch to diameter (P/2R) ratio. For a P/D of 2, b/a = 1.57. Indoor propellers usually have P/D ranging between 1.5 and 2.0. If P/d is made too large, the model is easily upset by disturbances in the air.

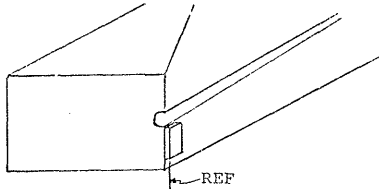
Block

Choosing a or b is simply a matter of making it large enough so that the blade fits within the surface shown above. A simple rule of thumb is to make b at least $4c_m/3$, where c_m is the maximum blade width. The a can be computed from the formula given above.

The block should be carved with a little camber in the twisted surface. Five or six percent of the chord is plenty. Keep the percentage constant over the whole blade area. The block should be shaped as shown below.



The line marked REF above is the basic reference line for the propeller. The shaft must be exactly parallel to it in order to build the intended pitch in each blade. Because the spar is thickest at the hub and may not be tapered perfectly straight, it is necessary to cut a groove in the block in which to set the spar, and perhaps even to glue a small balsa plate on the face of the block to support the shaft when assembling the propeller. Cut the groove deep enough to completely submerge the spar. The groove and plate would appear as shown below.



Remember, the block is fixed in pitch, but any size propeller, within the limit of the block, can be built on it.

Blades

The blade thickness depends upon the size and weight of the model. As examples, for Easy B's, they can be about .015" thick; for PennyPlanes, about .025" is more appropriate. Cut them from fully quarter grained stock of about 5 lb/ou.ft. density.

The shape depends upon the ceiling height. For low ceilings, some flare is desirable and the leading edge can be well ahead of the spar. For high ceilings the spar should be near the mid-chord. The blades should be widest at about 2/3 of R. Appropriate values for this width are 1" for Easy B and 1 1/2" for PennyPlane. There should be very little area near the hub and the blades should terminate at least 1/2" from the hub.

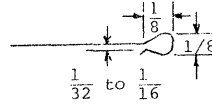
Soak the blades in hot water for about 10 minutes, place together so they match, and place in the proper position on the form, with the tips at the full radius. Wrap firmly with a 1" to 2" width strip of bedsheet and bake in a 250° oven for about 15 minutes. Let it cool, remove the strip and carefully pry the blades from the block and apart from each other with a knife. They will maintain their shape for years.

Spar

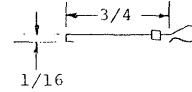
The spar carries the full load on the propeller and must be strong but light. It should be cut from 6 to 7 lb/ou.ft. density stock and tapered from the hub. For Easy B the size should be about .06" square tapered to .03" square; for PennyPlane, .08" square to .03" square should work. The spar need not extend the full propel-

ler diameter; however it should be at least 2/3 of the diameter. When tapering, cut the spar oversize in length, as the end always sands away faster than the rest of the wood. Carefully sand straight tapers with 320 grit paper, finishing with 400. Both halves should have equal flexure under load.

The shaft should be bent from .014" to .016" music wire. The hook should appear as shown below.



Sharpen the other end of the shaft and push it through the center of the spar. Pull it through up to the hook and bend it 90° 3/4" from the hook and in the plane of the hook. Then bend it again 1/16" from the last bend so it appears as below. Cut off all but 1/32" of the turned-



back end, apply glue to this square "U" and slide the spar into it. Don't let the end of the "U" pierce the spar, but rather, twist the hook clockwise lightly (as the wound motor would try to do) until the free leg of the "U" rests against the spar. Add a little more glue over the wire and just a bit where the shaft exits the spar. Make sure the shaft is perpendicular to the spar and let it dry.

Assembly

Lay the spar in the groove on the block and hold the shaft against the reference line with pins or tape. Spread a thin line of glue along the spar where the blade is to be joined. Place the blade in position, making sure it rests firmly on the block. When dry, remove the propeller, rotate it and repeat the steps to complete the assembly. For indoor models, weight balance of the two sides of the prop is not nearly so important as matching the pitch of the two blades.

HINTS AND KINKS

The ideas below are more reprints from earlier INAV's. This column is still open for more ideas from "out there"; please furnish high contrast sketches if possible.

Slick Tissue Sockets

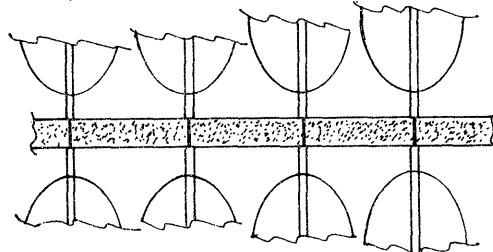
Dick Ganslen suggests that teflon tubing can be used as a no-stick form to roll wing sockets on. Just slip the tubing over thin wire to hold it stiff, and roll the sockets as usual. It is not necessary to remove the sockets before the glue is dry, as the teflon is slick enough to allow the finished socket to slide off.

Wing Reinforcement

Bob Platt reinforces his FAI wings with a length of monofilament dacron glued to the leading edge and trailing edges of the wing where the steering pole makes contact. This is intended to hold the wing together if it breaks, thus preventing the film from tearing. Similarly, Bob Randolph puts dacron across the top of the dihedral joint area before installing the dihedral. If the spar should break while he installs the dihedral, the film won't tear. In either case, the film must be dry enough to not stick and tear as it folds over.

Prop Storage

At the 1966 WCh, Hans Beck carried all his props in a briefcase-style wooden box. Inside, each wing of the box carried a wide strip of foam rubber slotted to hold props as shown below. This is excellent packing; the props are shock mounted firmly, yet easily removed. Unlike some similar arrangements, careless handling of the props has to be really rough before props are damaged.



FOAM MUST BE DEEP ENOUGH FOR PROP TO CLEAR



INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

H. R. SANDERS, 9009 Alton Pkwy., Silver Spring MD 20910
 LARRY L. VANCE, 5096 Morris, Las Vegas NV 89120
 CARL WILSON, 720 N. Merrill, Apt. 220, Duncanville TX
 75116

Attention All Northeastern Flyers

Some of the guys in the Northeast are trying to get a little more cooperation among the clubs there by publishing a new newsletter, FLASHBACK, with all contest results, contest photos and comments.

This is a cooperative effort, meaning.... CD's send in results, completely typed ready to Xerox, preferably. Subscriptions are only available by sending in as many self-addressed and 10¢ stamped envelopes as you want. Subscription runs out with the last envelope. No charge for subscriptions....just you do the work of addressing.

Send typed contest results, photos, commentary...and those envelopes...to Ed Whitten, Box 176, Wall Street Station, New York NY 10005.

(Ed. note) Ed's first two issues are exactly what he promised - and seem to be an excellent mode of communication for contest flyers. I recommend the newsletter!

All Right! Let's Move

In the June '75 INAV Stan Chilton proposed a new and very significant contest - a NIMAS "Internats" - to be held at the Pompeian Court of Northwood Institute in West Baden, Indiana sometime in June or July, 1976. He asked for letters of support and comment from all who are interested, with copies to Bud Tenny.

Already, there have been significant numbers of letters from places close to and far from the proposed site. All have been enthusiastically supportive, and no doubt there are many more who like the idea.

So, what goes next? Obviously, we need ideas to build on Stan's original dream. We need people willing to do a lot of work, and to commit themselves to attend and participate. Maybe we even need people 'way out west and east to help arrange some sort of cooperative transportation. Who knows what all is needed? We won't, until the ideas come in! One thing I think - we need this contest! For years, NIMAS has been held together mostly by virtue of INAV, with some contact and camaraderie sponsored by postal meets and informal competitions. The only face-to-face NIMAS meeting took place at the '62 Nats, and that was mostly a business meeting. It was jammed into the very busy Nats meeting schedule, with no real opportunity for social activity or just plain bull sessions.

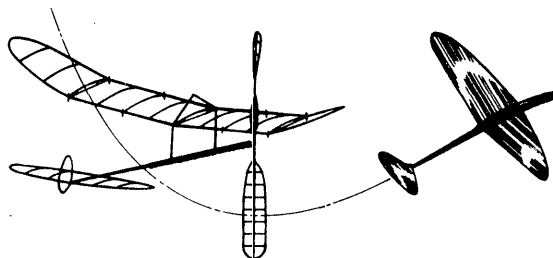
Picture this, if you will: a totally self-contained indoor site, food and lodging almost within arm's reach. If the site isn't the world's best, it is much better than average. Stan's proposal to "clean up" the ceiling will measurably improve the site. Best of all, we would have three days of leisurely (or maybe fierce) competition, in surroundings very conducive to friendship. In such an atmosphere, NIMAS membership and friendship will take on a new meaning. From a purely personal standpoint, I will place a high priority on this unprecedented opportunity!

Salute Our CD's!

Thanks to CD's and newsletter editors and interested flyers, there is a large backlog on contest results on hand. In reviewing this material, it occurred to me that we (indoor flyers) owe our CD's a vote of thanks for their hard work which often begins with the task of finding a site for us to fly. So, this issue is dedicated to indoor CD's, and much of the issue will be reports of these many competitions they held for us.

NIMAS Awards

Rubber Cat. II Diamond Award - 43:58, Paul Allen

FAI INDOOR REPORTZone Qualification Trials

North Central Zone Aug. 16-17, 1975, Goodyear Aerospace Hangar, Akron, Ohio

South Central Zone Aug. 3-4, 1975, Lake Charles, La. Civic Auditorium (Nats site)²

Footnotes:

1. All contestants and potential contestants must give their names to Bill Hulbert, 174 Castle Blvd., Akron OH 44313 well in advance of the meet - security is strict!
2. Flying of FAI Qual Trials will be in six one-hour rounds; three rounds between 9 am and 12 pm Aug. 3, and three rounds between 9 pm and 12 pm Aug. 4, 1975. Contact Bud Tenny, Box 545, Richardson TX 75080, ph. 214-235-4035.

Qualification Trial Results

Western Zone, July 5-6, 1975, Moffett Field, California

	1	2	3	4	5	6	Total
1. Bud Romak	30:05 99.89	19:12 57.60	34:58 100.0	27:16 97.50	32:11 100.0	23:34 73.57	299.89
2. Bob Gibbs	29:59 99.56	26:38 79.90	30:53 88.32	27:38 98.81	26:17 81.67	13:39 46.21	286.69
3. Bob Randolph	30:07 100.0	33:20 100.0	27:31 78.69	13:33 48.45	25:38 79.65	27:45 86.63	286.63
4. Erv Rodemsky	14:45 48.98	16:53 50.65	14:31 41.51	26:46 95.71	22:51 71.0	32:01 100.0	266.71
5. C. Mather	24:31 81.41	27:30 82.50	13:50 34.56	27:58 100.0	25:25 78.97	20:24 63.68	263.91
6. L. Cailliau	10:15 34.03	27:58 83.90	22:20 63.87	15:00 53.64	26:03 80.94	30:10 94.17	259.01
7. Paul Allen	23:51 79.19	26:47 80.35	28:06 80.36	9:54 35.40	25:10 78.20	27:26 85.64	246.35
8. John Magnus	24:37 81.74	28:02 84.10	12:27 35.60	16:00 57.21	24:58 77.58	21:22 66.70	243.42
9. Carl Rambo	18:47 62.37	21:45 65.25	10:14 29.26	26:46 95.71	21:03 65.41	- 0	226.37
10. Ken Bauer	25:21 84.17	17:39 52.95	- 0	11:19 40.46	5:17 16.42	13:23 41.78	178.90

STATE OF THE ART

The TARA 18, designed some years ago by Ron Wittman, keeps popping up. The version shown on page 3 is taken from the Vancouver GMC newsletter "Hothead", and has been a consistent winner in the hands of Rick Lim in the Agrodome in Vancouver, BC, Canada

CHANGE OF PACE

It's been a long time since this column appeared, and that's probably a bad thing. A change of pace is often what we all need, and "Scraps" is a fun model that has been very popular in the Cleveland area. Vern Hacker tells more: (Plan on page 4.)

Enclosed is the Scraps plan I told you I would send. I find from Laddy Plachy that it came from a 1960 Model Aircraft Magazine, the British publication. We have had quite a bit of fun with this design at club contests.

Our recent contest was held in a garage. The best time was 1:51, 2nd was 1:39 and 3rd over a minute. If there is enough room to bang it around on the ceiling without it hanging up, times are good. I have done 2:36 in my 7' 9" high basement.

Most of us are not using that much dihedral. It will fly well with about 3/4" under each wing tip. Try one for yourself. It is a fun deal for a club.

CONTEST RESULTS

Winged Motors Indoor Contests, Park Hill North Jr. High, Kansas City, Mo. Feb. 15, 1975

Indoor Scale

- 1. Carl Perkins - Fiesler Storch
- 2. Dick Stamm - Curtis Robin
- 3. Carl Perkins III - Dehaviland Moth

Jr. Peanut Scale

- 1. Charlie Krekovich - Nesmith Cougar
- 2. Bill Langley, Jr. - Nesmith Cougar
- 3. Don Cory - Nesmith Cougar

Open Peanut Scale

- 1. John Krekovich - Andraesson Biplane
- 2. Carl Perkins - 1911 Cessna
- 3. Bill Langley - Nesmith Cougar

HL Glider

- 1. Charlie Krekovich 55.8
- 2. Bill Langley 49.7
- 3. Bruce Perkins 46.4

March 8, 1975

Easy B

- 1. Dick Hardcastle 9:42
- 2. Stan Chilton 8:21
- 3. Bill Langley 6:51

Indoor Stick

- 1. Dick Hardcastle 9:21
- 2. Stan Chilton 9:08
- 3. Bill Langley 8:59

Highest No Touch time - 3:44, Roger Schroeder

C. I. A. 2nd Annual Indoor Meet, Anderson, Indiana
March 9, 1975, Anderson High School Gym, 42' ceiling
331 official flights by 54 fliers from Milwaukee, Cincinnati, Indianapolis, Toledo, Bloomington, Ft. Wayne, Chicago, St. Louis, Cleveland, Dayton and others from Kentucky and Michigan.

Jr.-Sr. HLG

- 1. Mike Stoy 76.3
- 2. Ran St. Clair 61.2
- 3. Steve Robbins 53.2
- 4. Bob Perkins 40.8
- 5. Curtis Zink 34.0
- 6. John Andras 32.2
- 7. Jim St. Clair 30.3
- 8. Roger Wheeler 29.5
- 9. Danielle St. Clair 28.2
- 10. Carmen Zink 26.0

Open HLG

- 1. Bucky Servaites 85.0
- 2. Phil Sullivan 84.7
- 3. Stan Stoy 82.4
- 4. Bob Larsh 81.5
- 5. Chuck Markos 76.0
- 6. Denny Dock 75.6
- 7. Jim Miller 72.0
- 8. Bob Klipp 70.3
- 9. Chris Matsuno 70.2
- 10. George Pharr 69.8

Jr.-Sr. PennyPlane

- 1. Bob Perkins 6:28.9
- 2. Ran St. Clair 5:25.0
- 3. Tom Kastner 3:25.6
- 4. John Ferrara 2:13.2
- 5. Jim St. Clair 2:03.0
- 6. Steve Robbins 1:55.9
- 7. Roger Wheeler 0:56.0

Open PennyPlane

- 1. Marty Richardson 9:40.2
- 2. Bucky Servaites 8:57.0
- 3. Charlie Sotich 8:54.0
- 4. Rollo Anderson 8:09.5
- 5. Robert Mullins 7:51.3
- 6. Gordon Wisniewski 7:13.1
- 7. Jim Miller 7:07.8
- 8. Bob Larsh 6:58.5
- 9. George Pharr 6:43.2
- 10. Chris Matsuno 6:24.5

Peanut Scale

- 1. Jim Gerz 8
- 2. Jim Miller 10
- 3. Jim Pulley 13
- 4. Ted Dock 14
- 5. Ken Johnson 17
- 6. Chuck Markos 17
- 7. Charlie Sotich 18
- 8. Ron St. Clair 23
- 9. Don Wright 23
- 10. Danny Dock 24

AMA Scale

- 1. Chuck Markos 150.6
- 2. Bill Naylor 139.5
- 3. Jim Gerz 118.3
- 4. Dave Bloom 110.7
- 5. Ken Johnson 110.4
- 6. Jim Bair 108.0
- 7. Jack Fike 107.9
- 8. Charlie Sotich 102.0
- 9. Ted Dock 91.4
- 10. Bill Pinnell 86.0

LIAMAC Indoor Championships, May 4, 1975, Cantiague Park, Hicksville, NY., 50' domed site.

Jr.-Sr. HLG

- 1. Adam Minissian 77.2
- 2. Barry Paillet 75.9
- 3. Darius Kaufman 75.7
- 4. Bruce Paillet 72.9
- 5. Noel Kaufman 66.2

Open HLG

- 1. Dan Domina 85.8
- 2. John Kaufman 81.0
- 3. Jack Minissian 80.5
- 4. Ron Williams 79.2
- 5. Al Vollmer 78.3

Jr.-Sr. Easy B

- 1. Richard Whitten 9:07.0
- 2. Leonard Garrick 8:51.4
- 3. Adam Minissian 6:46.0
- 4. Barry Paillet 6:44.1
- 5. Bruce Paillet 4:49.5

Open Easy B

- 1. Frank Hannes 9:14.0
- 2. Al Vollmer 8:11.5
- 3. Ron Williams 7:22.8
- 4. Joe Nuszer 5:07.0

Jr.-Sr. Peanut Scale

- 1. Richard Whitten 105

Open Peanut Scale

- 1. Don Garofalow 162

- 2. Adam Minissian 97.5
- 3. Bruce Paillet 95.5
- 4. Barry Paillet 84
- 5. Leonard Garrick 70

- 2. Jack Minissian 132.5
- 3. Joe Nuszer 102
- 4. Ed Franklin 101
- 5. Jean Paillet 100

Indoor Stick

- 1. Richard Whitten 11:38.8
- 2. Dan Domina 10:37.5
- 3. Frank Haynes 10:21.5
- 4. Ed Franklin 9:13.5
- 5. Joe Nuszer 8:55.0

Indoor Scale

- 1. Jack Minissian 179
- 2. Adam Minissia 148
- 3. Joe Nuszer 143
- 4. Bob Bender 140
- 5. S. Panleczk 136

LIAMAC CAT. I INDOOR MEET, May 18, 1975, Long Beach NY Cat. I site

Jr.-Sr. Peanut Scale

- 1. Richard Whitten 92
- 2. Mark Trubowitsch 36.5
- 3. Greg Lavardera 32.5
- 4. Greg Trubowitsch 27.25

Open Peanut Scale

- 1. Dan Domina 143
- 2. Don Garofalow 137
- 3. Jack Minissian 117.5
- 4. Carrill Allen 108.5
- 5. Frank Haynes 93

Jr.-Sr. HLG

- 1. Darius Kaufman 59.6
- 2. Joe Nuszer, Jr. 59.2
- 3. Bruce Paillet 57.5
- 4. Noel Kaufman 54.8
- 5. Greg Techuk 52.0

Open HLG

- 1. Jack Minissian 67.2
- 2. Dan Domina 65.7
- 3. Joe Nuszer 61.2
- 4. John Kaufman 59.6
- 5. George Rivers 58.9

Jr.-Sr. Easy B

- 1. Richard Whitten 9:23.4
- 2. Greg Techuk 5:19.0
- 3. Joe Nuszer, Jr. 4:05.0
- 4. Barry Paillet 1:29.6

Open Easy B

- 1. Pete Andrews 11:06.0
- 2. Jack Minissian 10:44.3
- 3. Frank Haynes 9:46.5
- 4. Carroll Allen 8:23.0
- 5. Al Vollmer 7:57.3

Indoor Stick

- 1. Dan Domina 19:10.7
- 2. Pete Andrews 17:45.0
- 3. Richard Whitten 13:01.0
- 4. Ron Williams 12:16.5
- 5. Joe Nuszer 10:46.0

Indoor Scale

- 1. Don Garofalow 123.3
- 2. Bob Bender 123
- 3. Jack Minissian 116
- 4. Jean Paillet 113.5
- 5. Dan Domina 101

2ND ANNUAL MIDWESTERN STATES INDOOR CHAMPIONSHIPS, May 17-18, 1975, Madison St. Armory, Chicago

FAI Stick

- 1. Dennis Jaecks 41:30
- 2. Charlie Sotich 35:53
- 3. D. Brown 29:05
- 4. J. Rogers 21:11
- 5. Dick Hardcastle 20:30.8

Indoor Stick

- 1. Charlie Sotich 22:31.0
- 2. Dennis Jaecks 19:30.8
- 3. Dick Hardcastle 16:50.8
- 4. Richard Doig 16:11.6
- 5. D. Brown 14:28.0

Indoor Cabin

- 1. Dennis Jaecks 9:35.4
- 2. D. Brown 3:31.6

Jr. Paper Stick

- 1. Bill Schuh 3:49.4
- 2. D. Stevens 3:08.0
- 3. G. Stevens 2:29.0
- 4. M. Morantz 1:24.0

Sr. Paper Stick

- 1. D. Brown 15:28.0

Jr. PennyPlane

- 1. R. Mate 4:49.0
- 2. Bill Schuh 3:30.0
- 3. M. Morantz 3:28.8
- 4. D. Stevens 3:27.0
- 5. G. Stevens 3:15.0

Open Paper Stick

- 1. Dennis Jaecks 17:26.0
- 2. G. Wisniewski 16:42.4
- 3. Chuck Markos 16:11.2
- 4. Richard Doig 15:36.2
- 5. Charlie Sotich 14:50.8

Open PennyPlane

- 1. Dick Hardcastle 9:58.2
- 2. Bob Larsh 9:36.4
- 3. G. Wisniewski 8:50.4
- 4. Charlie Sotich 8:42.8
- 5. R. Hayes 8:25.6

Sr. PennyPlane

- 1. D. Brown 9:51.2
- 2. Keith Gordey 4:59.0

Jr. HLG

- 1. D. Stevens 88.2
- 1. G. Stevens 88.2
- 2. Bill Schuh 75.2
- 3. D. Jones 29.4
- 4. M. Morantz 14.8

Open HLG

- 1. Chuck Markos 112.4
- 2. Bob Larsh 110.4
- 3. J. Jensen 104.8
- 4. Dick Swenson 90.8
- 5. Richard Doig 85.0

Sr. HLG

- 1. M. Stoy 107.8
- 2. Keith Gordey 104.0
- 3. R. Hayes, Jr. 103.6
- 4. A. Schmidt 93.2

Indoor Scale

- 1. K. Ward 174.5
- 2. J. Gerz 171.6
- 3. Chuck Markos 160.0
- 4. B. Naylor 151.4
- 5. D. Bloom 147.6

Peanut Scale

- 1. Charlie Sotich 151
- 2. D. Bloom 149
- 3. R. Hardcastle 146
- 4. K. Ward 145.6
- 5. Chuck Markos 142.6

Open Champion

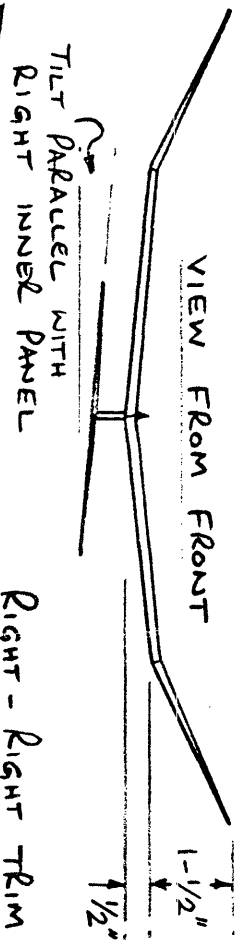
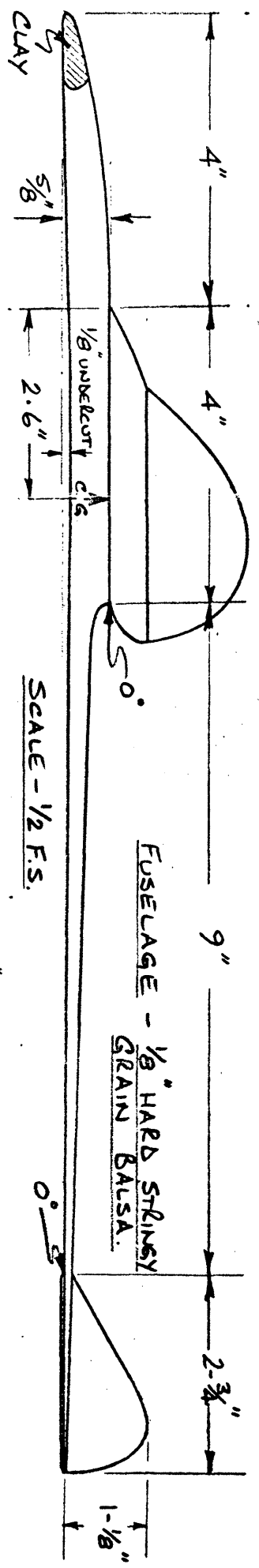
- Dennis Jaecks 386 pts.

Jr. Champion

- Bill Schuh 358 pts.

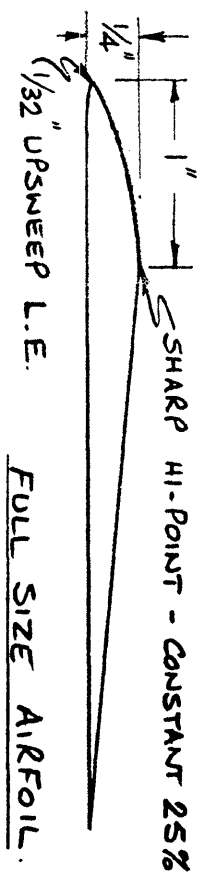
Sr. Champion

- D. Brown 400 pts.



RIGHT - RIGHT TRIM

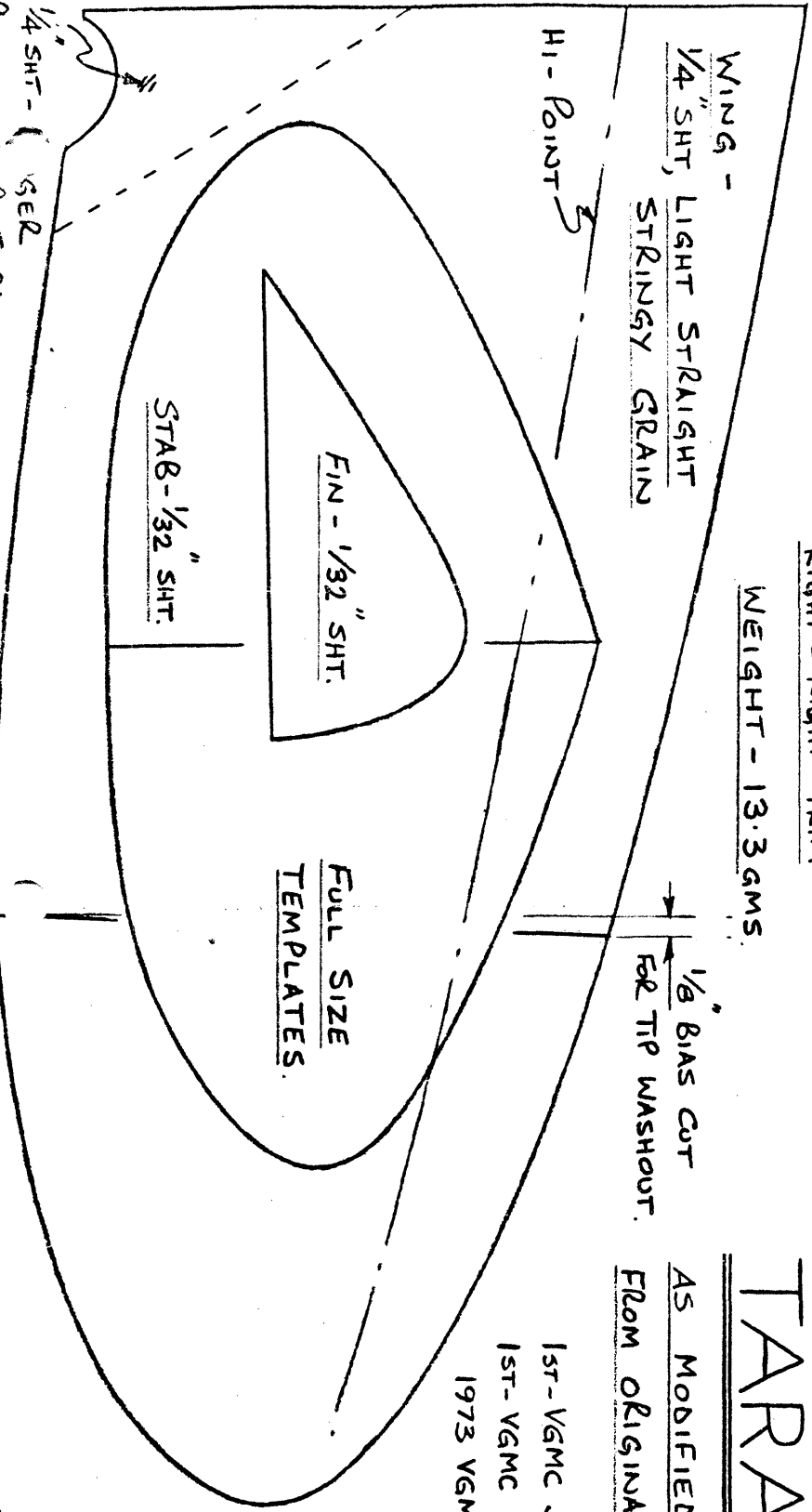
WEIGHT - 13.3 GMS.



TARA-18

AS MODIFIED BY RICK LIM
FROM ORIGINAL BY RON WITTMAN.

1ST - VGMC JUNE '73 CAT III - 111.6 SECS
1ST - VGMC OCT '73 CAT III - 93.8 SECS
1973 VGMC IHLG CHAMPION.

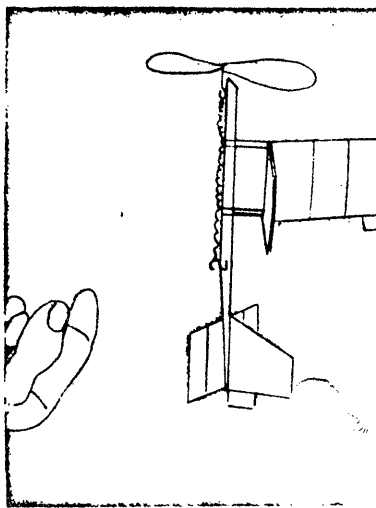


1/4 SHT - 1/8" GER
REST UNDER STAB WING.

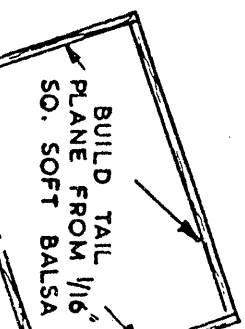
Drawn by JAS 74.

"Scraps"

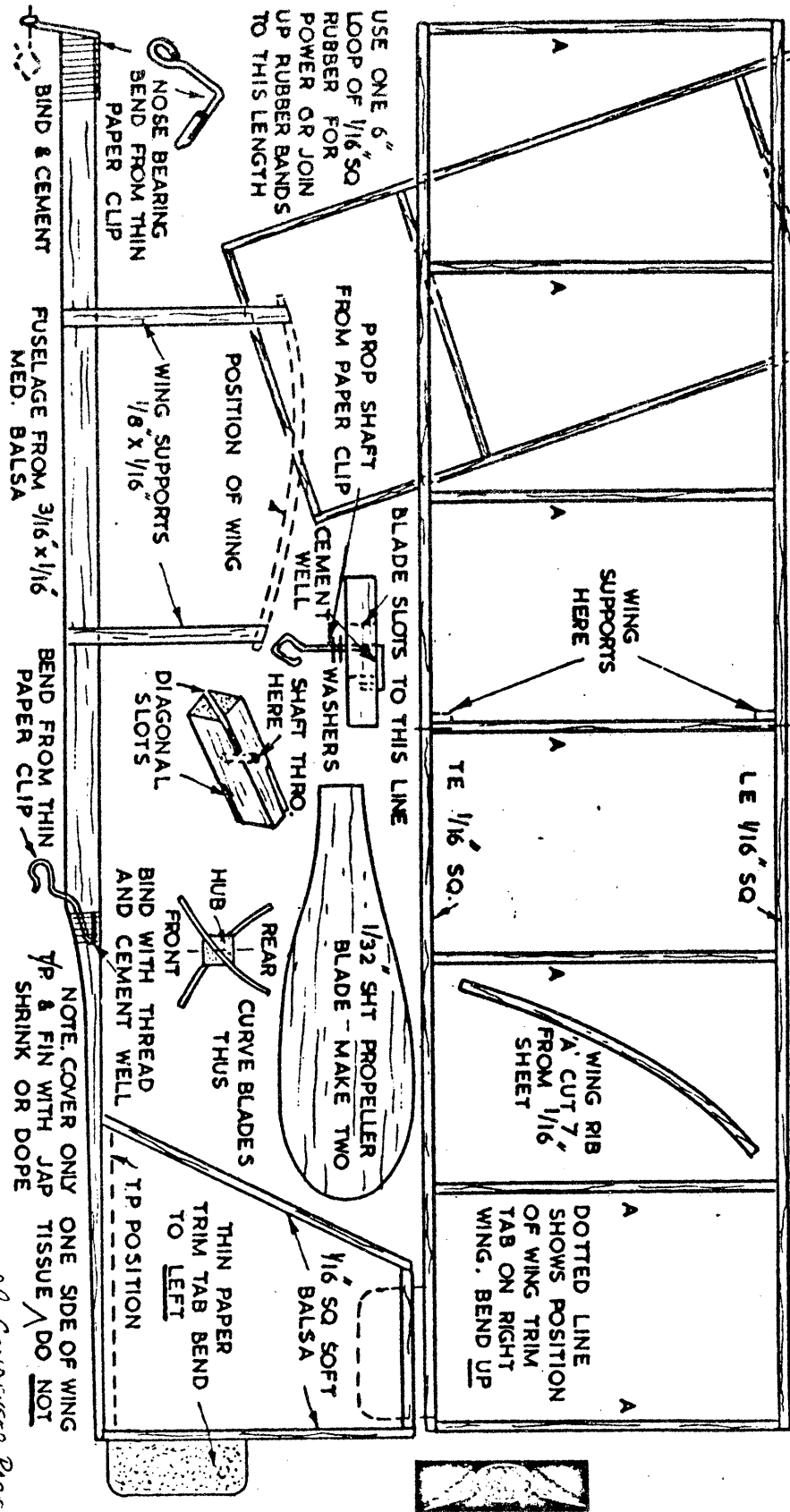
A "dive" in the scrap box and burms "round the parlour to add to Christmas fun.



- Building Sequence**
1. Remove this page from the magazine and place it over a flat building board.
 2. Pin fuselage to plan and cement wing supports in place. Trim them accurately to length. Remove from plan and bind wire parts in place.
 3. Build fin onto rear fuselage boom.
 4. Pin down wing L.E. and T.E. (pins beside the wood, not through it).
 5. Cement ribs in place.
 6. Build tailplane and cement to top of fuselage boom.
 7. Make propeller and prop shaft.
 8. Cover wing, tailplane and fin with waterproof or dope.
 9. Adjust trim tabs, fit rubber motor, lubricate prop bearing.
 10. Wind on 100 turns and launch model at its flying speed. It will turn left in about 8 ft. circles.



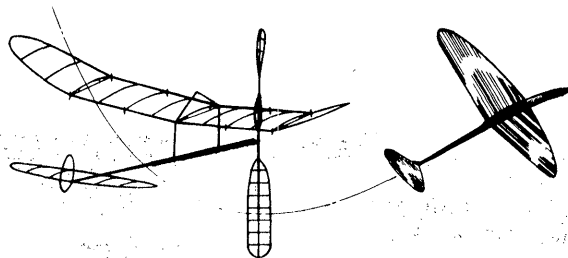
RECOMMENDED DIHEDRAL: CRACK LE & TE HERE! REINFORCEMENT WITH 2" DIHEDRAL AT EACH WING TIP



RULES.

1. YOU MUST KEEP ALL OUTLINES THE SAME, BUT YOU CAN CHANGE THE WOOD SIZES.
2. YOU MAY USE A INDOOR THRUST BEARING.
3. NO MICROFILM OR MICROLITE.
4. 1 FLIGHT COUNTS FROM 3 OFFICIALS.
5. NO BRACING OR HOLLOW STICKS ALLOWED.
6. 2 INCH DIHEDRAL IS OPTIONAL.

INDOOR



NEWS and VIEWS Editor: Bud Tennv · Box 545 · Richardson, Texas · 75080

Jr. Indoor HLG

1. Jimmy Clem	80.6
2. Barry Pallet	79.2
3. Bill Schuh	74.6
4. Guy Larsen	72.4
5. John Arthur	65.6
6. Steve Calhoun	53.0
7. Tommy Giertz	51.6
8. John McCully	49.8
9. Mike Clem	49.4
10. Christopher Moore	43.0
11. Peter Brown	42.6
12. Brian Petty	36.0
13. Tom Kreiger	32.6
14. Brian White	22.8
15. Bradley McGuire	14.6

Sr. Indoor HLG

1. Mike Langlois	92.0
2. Michael Stoy	90.0
3. Greg Simon	86.8
4. Brian Pardue	85.6
5. Arnie Schmidt	83.8
6. Larry McFarland	77.2
7. Stephen Robbins	70.6
8. Jon Rogers	68.0
9. James Bayley	66.8
10. Daniel Barry	66.6
11. Dale Elder	62.6
12. Allen Honey	

Open Indoor HLG

1. Paul Shallor	101.6
2. Chuck Markos	97.2
3. Mike Fedor	94.0
4. Dan Domina	92.4
5. Mike Ransom	90.8
6. Phillip Sullivan	88.8
7. Richard Doig	87.4
8. Dan Belieff	86.2
9. Ray Harper	85.0
10. Stanley Stoy	84.8
11. Anthony Vaughan	84.4
12. Glenn Lee	83.5
13. William Hutchins	81.4
14. Phillip Bayly	81.4
15. Frank Sharpton	81.2
16. Robert Dunham II	80.6
17. Grady Turner	79.2
18. Gilbert Robbins	76.4
19. Rol Anderson	74.6
20. Denny Dock	69.6
21. Dick Swenson	67.0
22. Jim Stewart	67.0
23. Robert Dunham	66.6
24. Arthur White	66.0
25. Gene Simpson	65.4
26. James Bradley II	65.2
27. Robert Isaacs	65.2
28. John Arthur	59.8
29. Ronald Robert1	59.8
30. Rudolph Schuh	59.4
31. Terry Rinert	12.8

Jr.-Sr.-Op. Indoor Cabin

1. Richard Whitten	13:53.9
2. Keith Gordey	13:37.3
3. Paul Shallor	12:36.7
4. Robert Dunham II	11:47.0
5. Dan Domina	11:22.0
6. Tony Schott	11:09.0
7. Dan Belieff	11:08.4
8. Greg Simon	9:59.3
9. Louis Sutter	8:17.8
10. Barry Pallet	5:37.2

Jr.-Sr.-Op. FAI Stick

1. Dan Domina	39:14
2. Richard Doig	38:52
3. Roman Szymula	33:37
4. Keith Gordey	32:13
5. Dan Belieff	30:08
6. Robert Dunham	29:24
7. Robert Dunham II	29:22
8. Charlie Sotich	29:13
9. Bill Shallor	27:14
10. Richard Whitten	24:51
11. Jimmy Clem	23:46
12. Rudy Schuh	15:42
13. Bill Schuh	12:33
14. Jon Rogers	7:34

Jr. Indoor Stick

1. Jimmy Clem	13:33.8
2. Bill Schuh	8:40.8

Sr. Indoor Stick

1. Richard Whitten	19:20.9
2. Keith Gordey	16:32.6
3. Greg Simon	14:33.2
4. Jon Rogers	5:28.0

Jr. Easy B

1. Mike Clem	5:36.0
2. John McCully	5:32.3
3. Peter Brown	1:37.2

Sr. Easy B

1. Richard Whitten	9:22.5
2. Allen Honey	2:18.5
3. Linda Brown	1:27.1

Open Easy B

1. Rolfe Gregory	11:10.1
2. Stan Chilton	10:43.6
3. Louis Sutter	9:49.0
4. Earl Hoffman	8:54.5
5. Mike Fedor	8:06.7
6. Mark Valerius	8:02.1
7. Gordon Wisniewski	7:44.2
8. Roman Szymula	7:41.5
9. Jim Stewart	7:30.9
10. Tony Schott	6:51.6
11. Tommy Hepler	4:27.6
12. Richard Doig	0:24.4

INDOOR CATEGORY CHAMPION

Dan Domina 287.12 pts.

Open Indoor Stick

1. Stan Chilton	20:34.4
2. Richard Doig	19:50.0
3. Dan Domina	17:55.2
4. Earl Hoffman	15:23.9
5. Bill Shallor	15:15.5
6. Charlie Sotich	14:53.6
7. Roman Szymula	14:42.8
8. Dan Belieff	14:20.0
9. Robert Dunham II	13:07.0
10. Robert Dunham	12:57.0
11. Ronald Rboert1	12:49.0
12. Rudy Schuh	5:42.3

Jr.-Sr. Indoor Scale

1. Barry Pallet	112 pts.
2. Allen Honey	76
3. Guy Larsen	65
4. Richard Whitten	56

Open Indoor Scale

1. Chuck Markos	164 pts.
2. John Martin	154.2
3. Mike Fedor	104.6
4. Winfred Frazier	101
5. Mike Ransom	100.6
6. Rolfe Gregory	100
7. Charlie Sotich	94
8. Jerry Murphy	89
9. Dan Domina	86
10. Vic Lareen	79
11. Ted Dock	79

Jr. Paper Stick

1. Jimmy Clem	9:38.7
2. Bill Schuh	9:26.4
3. Barry Pallet	8:48.2
4. Mike Clem	5:26.0
5. John McCully	5:10.4

Sr. Paper Stick

1. Greg Simon	14:06.2
2. Keith Gordey	13:35.3
3. Richard Whitten	12:00.8
4. Allen Honey	3:17.0

Open Paper Stick

1. Dan Domina	17:16.5
2. Charlie Sotich	13:43.5
3. Paul Shallor	13:34.2
4. Richard Doig	13:09.0
5. Robert Dunham II	13:02.5
6. Chuck Markos	12:59.2
7. Bob Dunham	12:15.8
8. Mark Valerius	11:53.8
9. Mike Fedor	11:25.2
10. Rol Anderson	11:17.8
11. Bill Shallor	11:00.0
12. Louis Sutter	10:15.4
13. Rudolph Schuh	8:37.6
14. Dan Belieff	8:00.0
15. Roman Szymula	7:37.5
16. Gordon Wisniewski	7:30.6

Nats Picture Story - Photos by Carl Wheeley unless noted otherwise; photo printing by Kyle Babick.

Page 2, Row 1:

Left - Jimmy Clem with 1st place Indoor Stick.
Center - Rubber foam HLG rack.
Right - Mike Ransom, Grand National Champ, rests while holding for Mike Fedor. (Tenny)

Row 2:

Left: Sandy Frank, Indoor CD, and Janie Parris kept a tight rein on the activity.
Center: Chuck Markos, 1974 Indoor Champ, with Paper Stick
Right: Keith Gordey, 2nd place Indoor Stick.

Row 3:

Left: Dan Belieff with his FAI model.
Center: Amazingly light and detailed Cessna by Butch Hadland. (Tenny)
Right: Charlie Sotich with 90 cm Dram Dip.

Row 4:

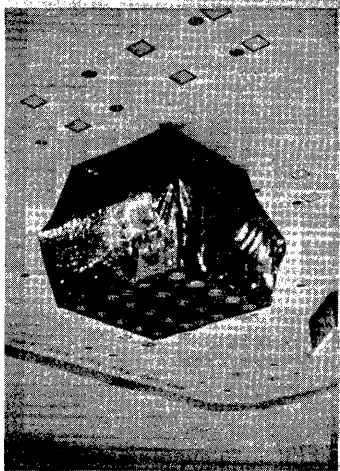
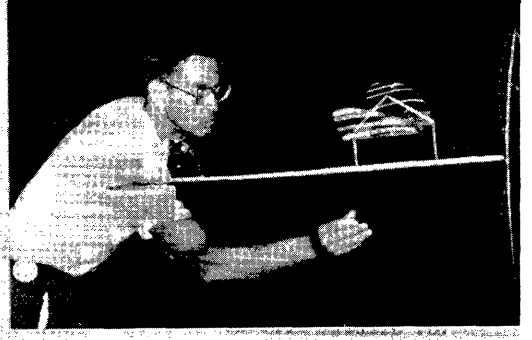
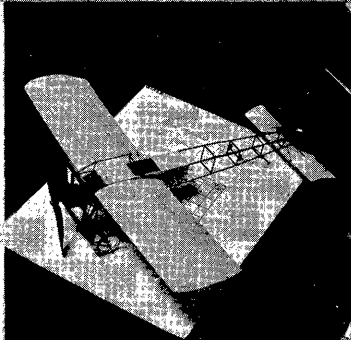
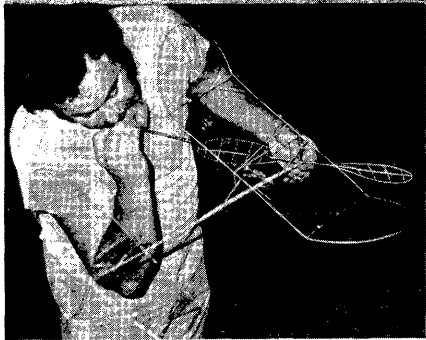
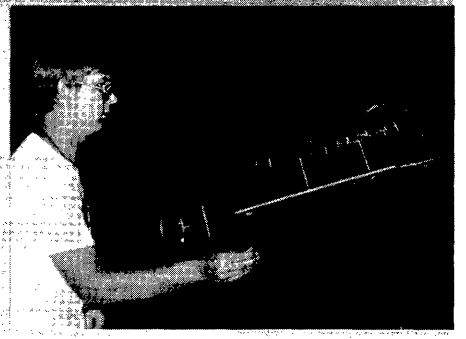
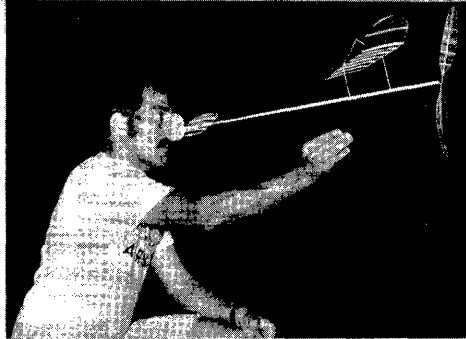
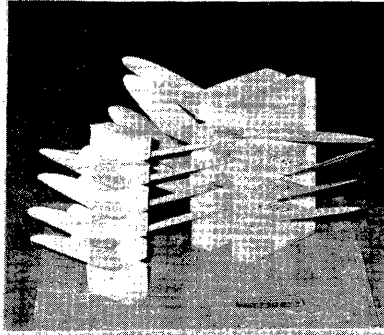
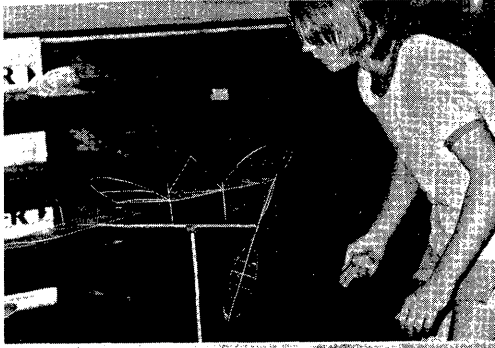
Left: The jaws of death were shrouded! (Tenny)
Left center: Charlie Sotich discusses the fine points of his Volksplane.
Right center: Dan Domina, 1975 Indoor Champ, winds up to fire off 4th place HLG.
Right: Dunham Dynamic Duo.

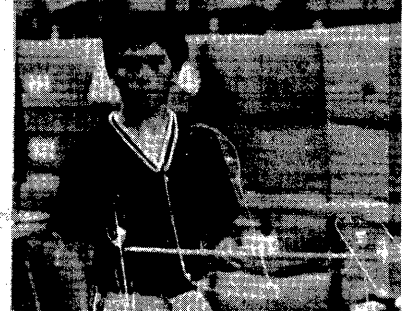
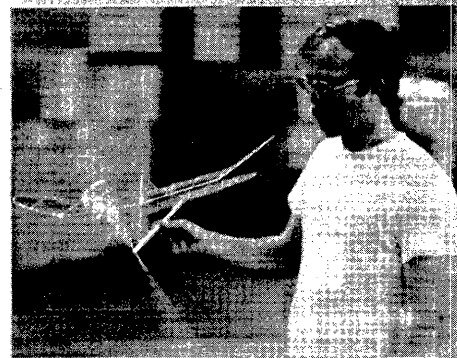
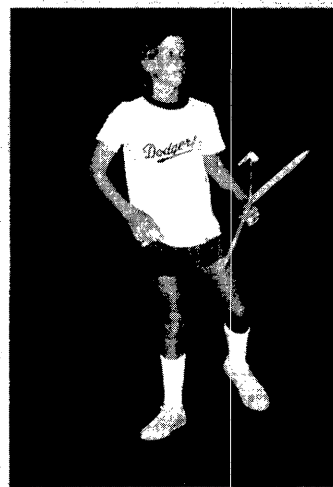
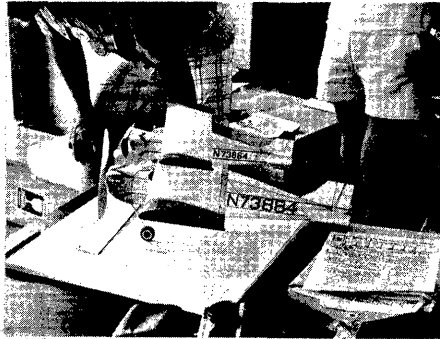
Page 3, Row 1:

Left: John Martin with one of many scale models.
Center: Butch Hadland's Lacey M-10 piggy-backs John Martin's M-10. (Tenny)
Right: AMA Scale Judges - Chuck Dial (l), D. B. Mathews and Butch Hadland (r).

Row 2:

Left: Jerry Murphy performs delicate surgery.
Center left: Jimmy Clem (l) and John McCully with coach Jim Clem in foreground.
Center right: Guy Larsen with 4th place HLG.
Right: George Meyer adjusts American Flyer.

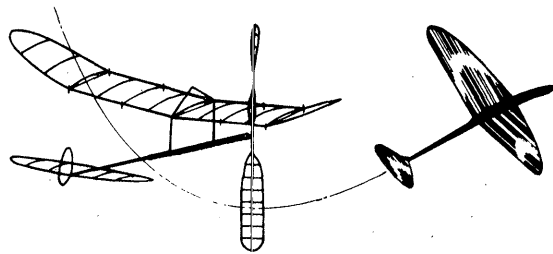




INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



THE 1975 TEAM SELECTION FINALS

	1	2	3	4	5	6	Regional/Total
1. Bucky Servaites	34:11 100.0	7:57 21.76	33:58 100.0	33:25 100.0	38:00 100.0	0	595/1495
2. Jim Richmond	32:52 96:17	34:28 94:36	23:42 69:77	36:05 100.0	0	0	600/1472
3. Bud Romak	29:29 86.24	36:32 100.0	20:32 60.45	29:32 81.85	35:25 93.21	37:53 100.0	553/1433
4. Pete Andrews	13:10 38.52	0	33:48 99.50	31:40 87.78	36:44 96.66	33:07 87.43	532/1384
5. John Triolo	22:02 64.45	26:16 71.91	8:51 26.05	32:47 90.85	34:40 91.24	35:55 94.83	551/1382
6. Dan Domina	32:40 95.58	20:34 56.30	12:00 35.33	30:27 84.40	29:48 78.42	32:48 86.59	564/1384
7. Paul Allen	28:15 82.65	24:52 68.07	29:02 85.86	32:51 91.05	34:45 91.45	28:21 74.84	532/1336
8. John Kukon	25:55 75.83	33:38 92.06	25:22 74.68	28:05 77.83	23:56 62.98	28:59 76.50	568/1307
9. Dick Kowalski	24:39 72.12	24:48 67.89	23:10 68.21	0:43 1.99	31:41 83.37	33:45 89.10	564/1298
10. Ray Harlan	25:04 73.34	11:56 32.67	10:07 29.78	27:46 76.97	31:06 81.84	29:12 77.09	587/1295
11. Erv Rodemsky	25:46 75:39	3:41 10:08	28:04 82:63	29:58 83:07	9:03 23.82	29:35 78.09	560/1291
12. Ed Stoll	19:42 57.63	16:40 45.62	19:33 57.56	30:16 83.90	30:54 81.32	28:07 74.23	570/1288
13. Bob Randolph	28:03 82.07	26:49 73.42	23:08 68.09	24:55 69.07	30:30 80.26	7:07 18.79	580.5/1287.5
14. Al Rohrbaugh	20:57 61.27	29:40 81.22	24:09 71.10	28:10 78.08	31:32 82.97	28:50 76.11	554.7/1287.7
15. Ron Ganser	23:23 68:40	31:24 85.96	19:02 56.03	29:32 81.85	33:19 87.68	28:32 75.32	505/1271
16. Larry Cailliau	26:50 78.50	30:38 83.85	17:46 52.31	26:04 72.26	26:46 70.45	28:19 74.76	537/1248
17. Sal Cannizzo	26:46 72.47	11:46 32.21	9:45 28.70	26:29 73.39	10:57 28.82	29:43 78.46	574/1247
18. Stan Chilton	20:14 59.19	22:39 62.00	0	21:48 60.42	31:50 83.76	28:00 73.92	587/1246
19. Bob Champine	16:45 49.00	29:00 79.39	9:37 28.31	10:26 28.91	27:32 72.45	28:45 75.90	542/1225
20. Dick Hardcastle	24:02 70.30	27:22 74.92	0:05 0.24	1:14 3.42	23:30 61.84	24:45 65.34	569/1201
21. Richard Whitten	19:07 55.92	2:48 7.66	7:21 21.64	20:13 56.04	26:26 69.55	32:12 85.01	530/1162
22. Bob Platt	24:47 72.50	17:12 47.08	6:14 18.35	5:52 16.26	30:57 81.45	12:20 32.56	531/1134
23. Hal Crane	9:44 28.47	16:31 45.21	18:02 53.08	26:50 74.36	21:46 57.29	26:42 70.49	525/1131
24. Bob Gibbs	12:28 36.47	19:47 54.15	21:43 63.94	19:06 52.94	18:21 48.29	0	569/1082

The Picture Story

The photo pages are oriented lengthwise this time, and we are indebted to Bucky Servaites and Ed Whitten for them. Photos by Whitten except as noted by (S).

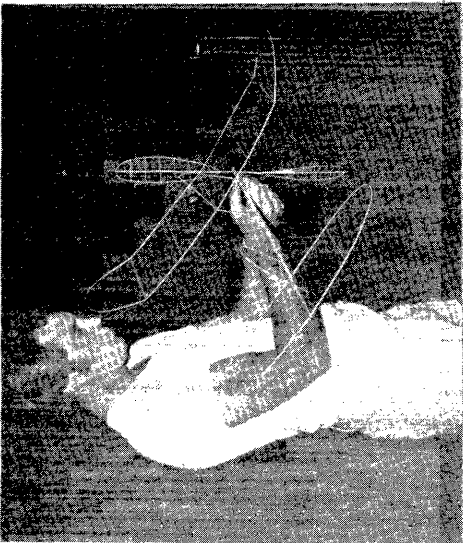
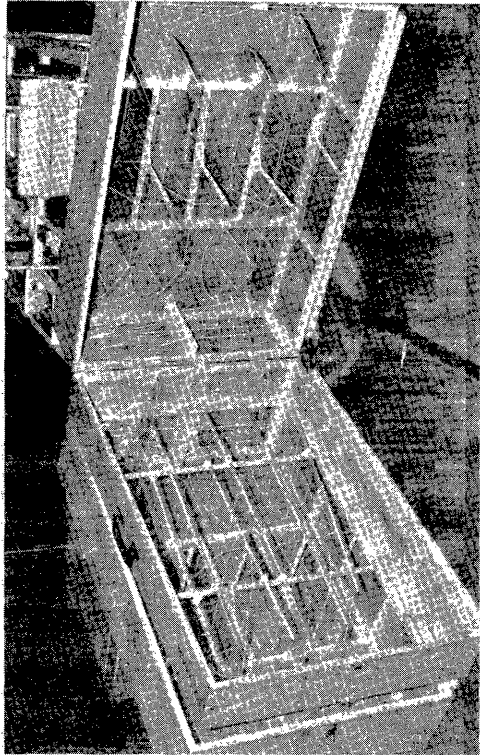
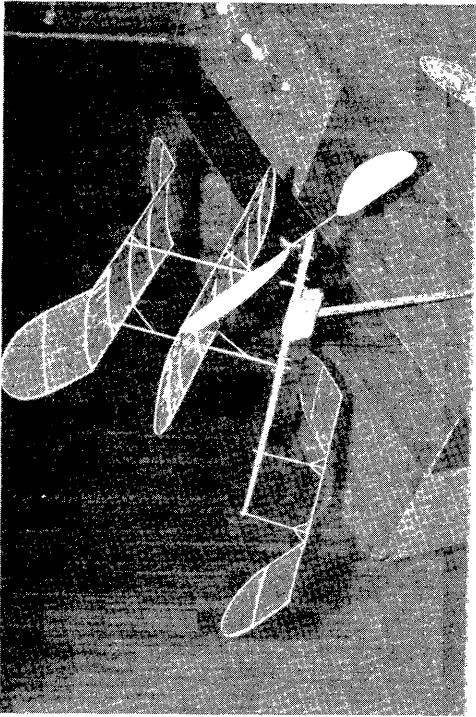
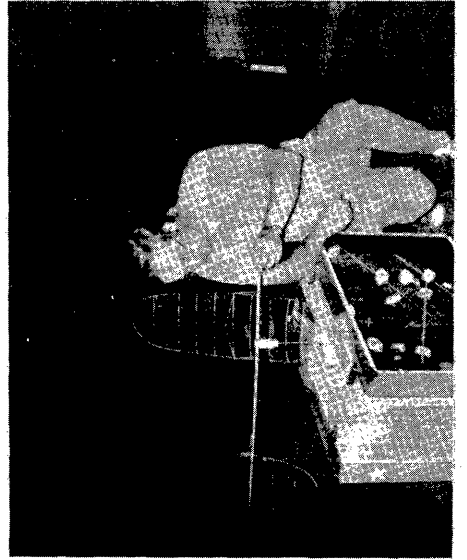
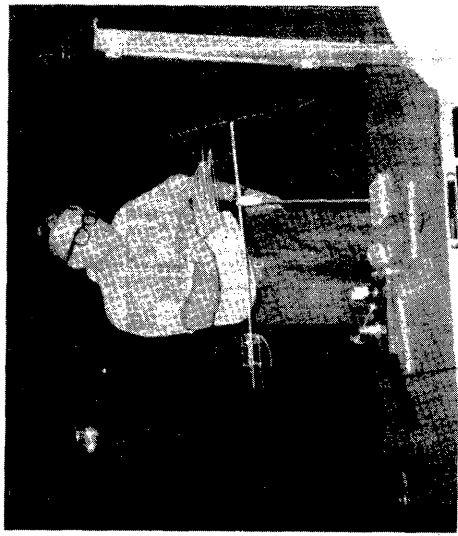
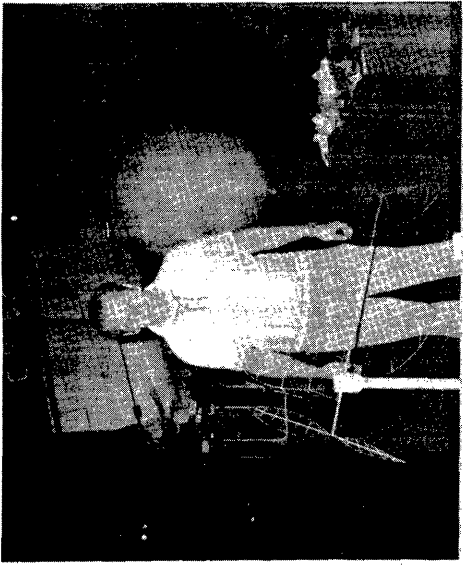
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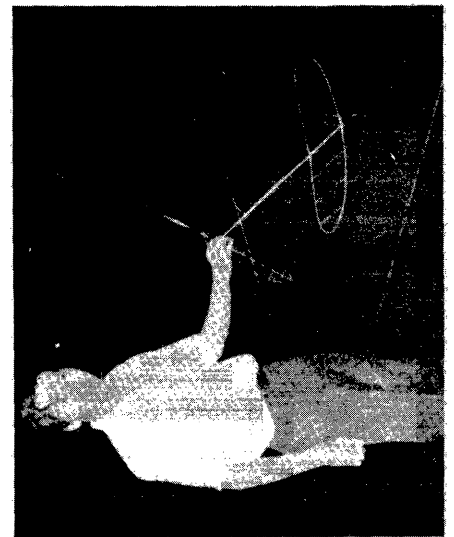
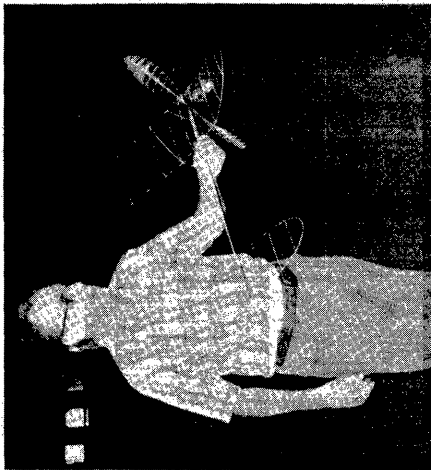
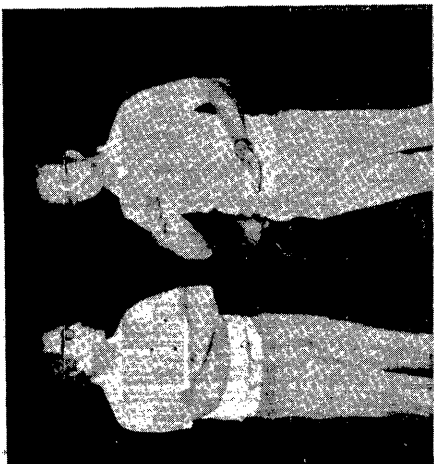
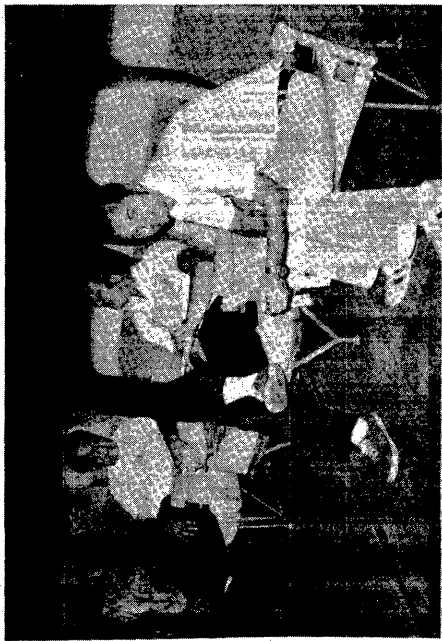
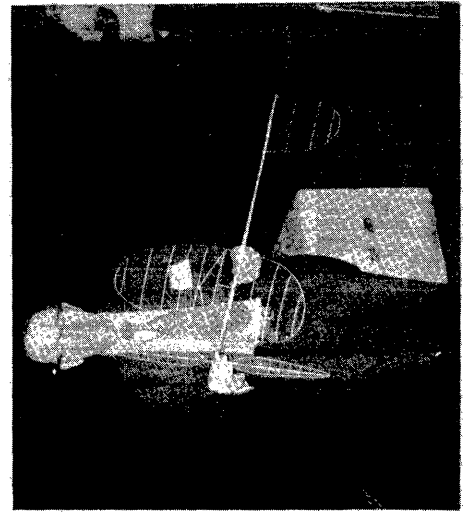
Left - Larry Cailliau with repaired model - all his models required almost total recovering after the trip! (S)
 Center - John Kukon's PennyPlane - a tandem design worked up in collaboration with Doug McLean - was used to test the air during extreme turbulence. (S)

Right - Erv Rodemsky's models were very light, yet big. His special bracing scheme uses "V" wing posts and no cabane; model is very rigid. Fast climb put one in the top in 3 minutes.

Row 2

Left - Bud Romak made a strong drive and made the team in the 6th round.
 Center - Romak's box is a compact "hangar" for 8 models; three WCh teach the value of one box if possible! (S)
 Right - Ron Ganser adds a patch. (cont. P. 4)





Row 3

Left - Bob Champine and Bob Gibbs take a timing turn.
Center - Dan Domina counts out turns for Ray Harlan. (S)
Right - Bucky Servaites with see-thru box. This type of box construction is invaluable at a foreign customs office - otherwise you might have to open the box.!

Page 3 Row 1

Left - Bucky Servaites and Jim Richmond discuss the score needed by 6th round fliers to join them on the team.
Center - Al Rohrbaugh, Larry Gailliau and Bud Romak take a rest break.
Right - Contest Hq. under firm and capable control of Gloria Alt, who did fine job. Bob Champine, Hank deKat, Ed Stoll and Ron Ganser check in.

Row 2

Left - Dick Kowalski ponders his next move.
Center - Stan Chilton checks in John Triolo's model.
Right - Dan Domina and model. Large, unbraced parabolic stabs were popular.

Row 3

Left - Richard Whitten with modified Kalina design.
Center - Bob Champine processed his model under careful scrutiny of Stan Chilton.
Right - Pete Andrews and Time Machine - note extremely large prop. Pete lost 4 wings to wind in the hangar before Round 2; skipped Round 2 and finished meet on one wing.

FAI "Indoor Masters"

The following is a capsule summary, from info furnished by Hal Crane. Hal was a last-minute volunteer to CD the Finals, and gives high praise to Gloria Alt for her hard work and dedication in managing the meet for him.

The practice day, Sat. Aug. 30, had good conditions which allowed Richard Whitten to post 33:32 to up his record (AMA Cat. III FAI). The previous time of 31:45 was set at the Akron regional trials.

On Sunday the hangar had strong shear layers and downdrafts which finally went away in time to start Round 1 at 3 pm. A test flight at noon reached 100' before it encountered a downdraft which put it on the floor two minutes later!

Conditions on Monday ranged from fair to good; Hal rates the conditions round-by-round by noting the number of 30 minute flights per round. However, he noted that part of the flights over 30 were strongly dependent upon where the models were launched. Strong westward drift at floor level coupled with an eastward "jet stream" and an updraft at the door made for really strange flights! For an excellent "in-depth" report - see Dick Kowalski's comments in the Dec. '75 MODEL AVIATION.

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

New member listing was omitted from the August issue, and this issue is late. Therefore, new memberships are listed by month received.

August

DONALD C. ABBOTT, 924 Liberty Lane, Stillwater OK 74074
EDWIN J. BERGMAN, 1044 W. 131st St., Chicago IL 60608
EARL N. HOFFMAN, 5945 Birch St. #2, Carpinteria CA 93013
DON W. McNEILL, 5632 Kawaikni St., Honolulu HI 96821
GEORGE W. MEYER, 5706 Abby Dr., Corpus Christi TX 78413
ROBERT A. PECK, 6274 Lake Arago Av., San Diego CA 92119
LOUIS C. SUTTER, 4633 Mt. Vernon Dr., Corpus Christi TX
ERWIN R. WAGNER, 114 Morse St., Whitmore SC 29178
ROY WHITE, 928 Linn, Sikeston MO 63801

September

CLIFFORD McBAINE, 2430 W. Cajon Dr., La Habra CA 90631
ROBERT MULLINS, 15478 Prospect, Strongsville OH 44136

October

GEZAR BANKS, 4841 La Perla Way, La Mesa CA 92041
EUGENE E. PIERRE, 76 Linden Ln., Princeton NJ 08540
LEONARD WIECZOREK, 14 Ribbon St., Franklin Square Long Island NY 11010

Honorary Members

Dr. MAX HACKLINGER, Zugsplatzstrasse 15, 8035 Gauting, West Germany
SVEN-OLOV LINDEN, Hovstavagen 15, S-703 63 Orebro, Sweden
W. H. McGARVEY, 63 Ngatiawa St., One Tree Hill, Auckland 6, New Zealand

How Old Do You Feel?

Jody and I are now proud grandparents! Our son Kevin Brock and his lovely wife Lynn, who married in January, have a new son, Michael Alan, born Halloween morning.

This Issue

Every so often, each of us is confronted by an opportunity for service which dovetails completely with our talents, interests and inclinations. Thus it was that virtually all my time since the last issue was spent in creating a custom stage lighting control system for my church. Once the task was committed, it had to be completed within a specific time frame. As a result, newspapers and mail went unread and considerable sleep was lost. In a very real sense, each of you has contributed to the project by your patience. Thank you.

EASY B Lives!

Shortly after the Dec. '75 MODEL AVIATION arrived, a letter from Carl Wheeley indicated that an error had been made in reporting Contest Board final votes. Easy B was not changed as had been announced. Thus, our models can still be flown instead of being junked.

Note also that PennyPlane is now an official event in two classes: PennyPlane and Novice PennyPlane. The AMA P/P rules are essentially the Aeronut rules, but Novice P/P is limited to 5" max wing chord, stab max 4" x 12", solid stick and boom and no special gadgets such as variable pitch prop allows. Finally, all indoor models may be steered, using FAI steering rules.

Possible World Record!

Tom Vallee has been notified that his 22:45 flight in Cat. I is being considered as a new record. If this flight is allowed, the next mark has to be 23:13. Good flying, Tom!

Chicago Aeronuts Indoor Tournament

An interesting idea being discussed by the Aeronuts is a tournament: man vs man instead of man vs time. Winners are determined by elimination. For example, in Rubber, all classes (PennyPlane thru Stick) are combined. Contestants are divided into a number (four for example) of groups by random draw. Contestants in each group have five minute preparation time and a two minute launch time. The longest single flight determines a semi-finalist, and a similar "round" chooses the event winner.

In HLG, contestants fly a number of rounds equal to the number of contestants in his group. Each round is two consecutive launches by each contestant with all contestants launching within a count-down 10 second period. The best single flight of each round determines round winner; group winner is the winner of the most rounds. Group winners fly two-by-two with simultaneous launch. Semi-final scoring based on best two of three simultaneous launches, and the finals winner determined by best three of five simultaneous launches.

Renewal Reminder

Those who have a number like 10 or 11 in the corner of their label on this issue are due (were due) renewal in October or November respectively. Since I hope to condense the publication schedule, it will save me time if I don't have to send you a renewal notice. Thanks!

RECORDS? MAYBE!

FAI "Indoor Masters" (practice session) Aug. 30, 1975
Lakehurst #5, Lakehurst NAS, NJ.
Jr. Cat. III R.O.G. Stick - 9:17.2, Mark Dreia
Sr. AMA Cat. III FAI Stick - 33:30, Richard Whitten

CONTEST CALENDAR

CONNECTICUT - Glastonbury

Indoor sessions 7:30-9 pm at Glastonbury High Gym on dates to be announced in Dec. '75 and Jan., Feb. and Mar. 1976. Evening dates set on Apr. 13, May 11 and June 8, 1976. Sessions on Sundays, 8:30 am-1:30 pm, Jan. 11, Mar. 14 and May 2, 1975. Indoor contests, 8 am-5 pm, Dec. 7, 1975 and Feb. 8 and Mar. 4, 1976. George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-Ins at Miami Dade North College, 9 am-2 pm, Dec. 14, 1975 and Jan. 11, Feb. 8, Mar. 7, Apr. 11 and May 9, 1975. Indoor contests at Goodyear Hangar, Opa Locka Airport, 9 am-5 pm, Nov. 30, Dec. 28, 1975 and Jan. 25, Feb. 22, Mar. 21, Apr. 25 and May 23, 1976. Confirm Hangar dates by calling 858-6363. Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

Delta Dart and 90 Minute Glider (90 min, to build HLG from scratch) contest set for Dec. 28, 1975, and Glenview NAS Drill Hall, Glenview, Ill. Otto Curth, 2107 Center Ave., Northbrook IL 60060.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gymnasium, (Vassar St. and Mass. Ave., Cambridge MA; use Vassar St. entrance), Nov. 22 and Dec. 13, 1975 and Jan. 17, Feb. 14, Mar. 20 and Apr. 17, 1976, 6 pm - 10 pm. Contest May 8, 1976, 10 am - 8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 617-358-4013.

NEW JERSEY - Livingston

The Union Model Airplane Club is again sponsoring indoor sessions at the Livingston School Gym & Auditorium, 7 pm - 10 pm, on Dec. 11, 1975 and Jan. 8, Feb. 12, Mar. 11, Apr. 8 and May 13, 1976. Dan Domina, 4701 Fox Run Dr. Plainboro NJ 08536.

Call For Papers

The National Free Flight Society is soliciting papers for the 1976 NFFS Symposium to be held at the 1976 Nats. Papers will be published in the 1976 Symposium volume whether or not the author is able to present his paper personally at the Nats. Papers should cover some aspect of science or art of free flight models, including technical studies, practical design and engineering as applied to models, new or unusual model aircraft developments, or historical items. Both indoor and outdoor free-flight modeling developments are to be included. Please send proposed papers to:

Ray Harlan
15 Happy Hollow Rd.
Wayland MA 01778

Send title of proposed paper together with an abstract of 200 words, or more, or a complete paper if it is available. To be considered, abstracts should be submitted by Feb. 15, 1976.

AEROMODELLER Annual

The 1975-76 AEROMODELLER Annual has been published and has even more than usual to offer the indoor flier. Indoor plans include a Cat. I HLG, an FAI indoor model and a beginner PennyPlane; Dave Linstrum's "PennyPlane Pot-pourri" completes the indoor offering in definitive style. Whatever your modeling interests, this book helps keep you up to date on the broad range of aeromodeling all around the world.

FAI INDOOR REPORT

Hot Stuff! CIAM Proposals

The material immediately below is extremely time-critical in that AMA Hq. needs written inputs no later than Nov. 24, 1975. Note that FAI Indoor Committee is a normal channel for such communications, but that there is not time for that in this case. The information arrived at AMA Hq. Nov. 10, with the real deadline for return being the departure of the U.S. delegation to the CIAM. Therefore, feed pro or con opinions to Hq. immediately!

Indoor (U.S.) Definition of an official flight; substitute 60 seconds for 30 seconds in 1st and 2nd sentences of Sec. 3.4.4. Reason: experience has shown 30 sec. is too short a time to determine if model trim is OK; the change will eliminate wasted competition time and help all models realize their full potential.

Indoor (England) - Proposes provisional status for Easy B, with rules essentially the same as common U.S. practice.

Indoor (England) - Steering of Model - Change 3.4.7 to: To prevent a model from colliding with the structure of the building or its contents, or other models, a balloon (s) with its line attached, or a rod 2 to 8 meters in length, may be used to alter the course of the model, or to re-position it in another part of the flying space. There will be no time limit or restriction to the number of steering attempts, except that all steering shall be done from the front end of the model and never from behind.

During the steering the propeller may get caught by the line/balloon(s)/rod and stop revolving. As soon as the propeller stops, a 3rd watch should be used (preferably a double button watch, that records accumulative time) to determine the total of propeller stopped time, which is deducted from the running total shown on the other two watches. While the line is in actual contact with the model during steering, any attempt to pay out line (to artificially gain height) will disqualify that flight. If the steerer cannot disengage the propeller after steering, all 3 watches are to be stopped together, and the total prop-stopped time deducted as is detailed

above. No re-flight is allowed other than if fouled by another model, during steering. The decision to steer is the responsibility of the competitor, and must be done by him, other than for physically handicapped or poor sighted persons, who may nominate someone else to do it for him. It is the timekeeper's responsibility to observe the use of the steering equipment, and to warn the competitor if he is likely to endanger other models. If other models are fouled by the steerer, the fouled competitor has the choice of a substitute flight, which, if taken, is his score for that round.

General Procedures (Canada) Re: Voting at the Plenary Meeting. It is recommended that only countries with Teams at the previous World Championships in the class concerned be able to vote on technical subjects.

-----CONTACT AMA HQ-----

Program Wrapup

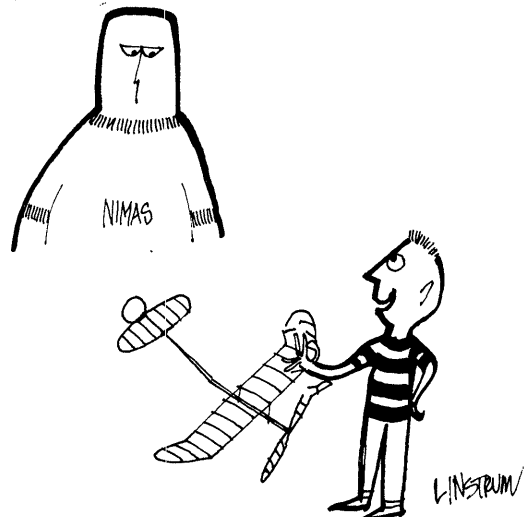
For better or worse, the 1975 Indoor Team Selection Finals are history. Very shortly, we will be asked to approve a new program which will select a Team to compete in the 1978 Indoor World Championships. The 1975 program was controversial, at least for some people. One might reflect on several prognostications and concerns of those who opposed the program; some of those concerns were:

1. "Cheap points" from lower ceiling sites and/or lower participation events.
2. Rich guys and airline pilots will keep flying until they get the points they need.
3. Fliers have to cross-zone fly to make it.
4. Regional points count too much at the Finals.
5. What if someone posts high time at the Finals but loses a team slot due to a low regional score?

So: no airline pilots made it, regardless of how many trips they made. Only Jim Richmond benefitted from a lot of cross-zone flying, and he would still have made the team without his "easy" Tulsa points (surely no one would consider his 300 points at Akron easy!). Two of the team made it after flying in only two meets in their own Zone. And, no one with only "easy" points (if there was such a thing!) came even close. No one with a high regional score "bumped" anyone off the team. In fact, the only bug-a-boo left really untested was #5 - and no one came even close. It could happen - maybe.

One "hindsight" concern has been expressed over the fact that someone in 15th place before the Finals made it on the team - they contend that if this is possible, the point system proves nothing. Let's put that in perspective! The Aug. '75 INAV listed point standings through 16th place - but the 16th place flier had almost 92% of a perfect score. If anyone is that close, placings are almost meaningless.

In other words, the only real problem with the 1975 program was that it was lots of work to compute points round-by-round. Perhaps that would be profitable to change; this writer can see no other reason to change!



"GEE, MISTER, THIS STUFF ISN'T AS STRONG AS MOM'S SARAN WRAP!"

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

November

STEVEN R. BACOM, R.R. #2, 301 Burgoyne Rd., Port Orange, FL 32019

EDWIN GIFFORD, 57 Fern Rd., Bridgeton NJ 08302

NATHAN POLK, 320 S. Harrison St. Apt. 2k, E. Orange NJ 07018

R. REYNOLDS, P O Box 254, Hornell NY 14843

ROGER H. SEDRAN, 155 Kiwanis Dr., Wayne NJ 07470

December

Bill Dolack, 24 Crosby St., Springfield MA 01105

Honorary Members

PER SODERSTEN, Slepneravagen 3, S-136 43 Handen, Sweden

Family Memberships

STEVEN R. BACOM, Jr., R.R. #2, 301 Burgoyne Rd., Port Orange FL 32019

Airship News

The Sept. '75 issue of AEROSPACE EDUCATION (official publication of NAA) contains a brief commentary on the current status of MAV's (Modern Airship Vehicles). Good-year, the only U. S. firm with extensive airship experience, has identified useful airship missions for NASA. Three missions recommended for further study are:

1. Short-haul VTOL rigid craft for passengers and cargo.
2. Short-haul heavy lifter for outsize military and commercial cargo.
3. Conventional heavy lifting, long-range rigid airships.

It is encouraging that airships continue to be considered in future transportation and cargo schemes. It may well be that airship docks will be more available in years to come, instead of being less so as present hangars wear out.

'76 Nats - Where?

It has been announced that, subject to final confirmation by the Air Force, the 1976 Nats will be at Wright Field, adjacent to the Air Force Museum in Dayton, Ohio. At present, no site has been chosen for the Indoor Nats, but several have been investigated. One strong possibility is the the '76 Indoor Nats could follow immediately after the NIMAS Internats, if the NIMAS meet is conveniently scheduled for July 30-31, 1976.

Another Nats Indoor site possibility is the Univ. of Cincinnati Fieldhouse, used by the Southwest Ohio Free Flight Club for their indoor contests. Dan Domina has written, strongly expressing the desire to avoid a 600 mile round trip to West Baden. Please drop Dan a line to express support for his view, or try to convince him that a joint event would be better. Dan's address is 4701 Fox Run Dr., Plainsboro NJ 08536.

NIMAS Internats

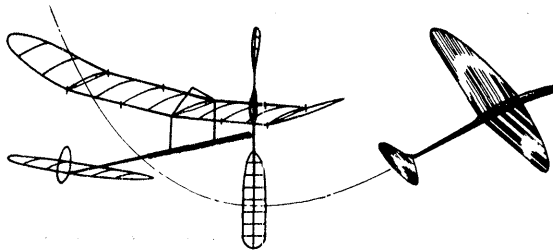
It has been suggested that (see above) the Indoor Nats be held in the Northwood Institute Atrium (West Baden), if this should be suitable with both the Nats Executive Committee and the management of Northwood Institute. Assuming that the Nats events were flown at West Baden, the present thinking supports this schedule for the NIMAS Internats:

Friday, July 30 - Fun Fly, original design competition.

Saturday, July 31 - Record Trials all day, with HLG flown in the morning and other events later. Also, the Saturday session could serve as Nats practice.

Saturday night - NIMAS banquet in the excellent Northwood facilities.

Please send your comments on the above schedule to



Stan Chilton, 1401-A S. Hydraulic, Wichita KS 67211. Be sure to include comments on whether the NIMAS Internats should be (essentially) combined with the Nats in this fashion, or whether you think the events should be separated in time and/or location from the Nats.

FAI INDOOR REPORT

A Questionnaire Is Coming!

The FAI Indoor Committee is now working on a questionnaire to be sent to all participants in the 1975 Team Selection Program. The questionnaire will cover both details of the next program and certain items of budget concern which must also be approved by participant vote.

The questionnaire is being prepared by Bucky Servaites, who recently became Committee Chairman, replacing Erv Rodemsky. Questionnaire inputs came from concerns expressed by participants via their district Committee member, plus ideas and comments by Committee members.

CONTEST CALENDAR

POSTAL MEET - Star Skippers

The Star Skippers, sponsored by Ed and Richard Whitten in New York, are organizing two indoor postal meets for NFFS and open to modelers everywhere through age fifteen. FLY PAPER runs Dec. '75-Jan. '76, and BAITED BREATH runs Mar./Apr. '76. The events can be flown under any ceiling under 50', and results will be fudged to 35'. Events are HLG, Class A ROG and H.L. Stick (all classes combined). For full contest rules, write for the Aug. '74 issue of STAR SKIPPER newsletter; write to: Star Skippers, P O Box 176, Wall St. Station, New York NY 10005.

CONNECTICUT - Glastonbury

Indoor sessions 7:30-9 pm at Glastonbury High Gym, Jan. 30, Feb. 20, Mar. 19, Apr. 13, May 11 and June 8, 1976. Sessions on Sunday, 8:30 am-1:30 pm, Jan. 11, Feb. 8, Mar. 14, Apr. 4 and May 2, 1975. George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-Ins at Miami Dade North College, 9 am-2 pm, Jan. 11, Feb. 8, Mar. 7, Apr. 11 and May 9, 1976. Indoor contests at Goodyear Hangar, Opa Locka Airport, 9 am-5 pm, Dec. 28, 1975 and Jan. 25, Feb. 22, Mar. 21, Apr. 25 and May 23, 1976. Confirm hangar dates by calling 858-6363. Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

Delta Dart and 90 Minute Glider (90 min. to build HLG from scratch) contest set for Dec. 28, 1975, at Glenview NAS Drill Hall, Glenview Ill. Otto Gurth, 2107 Center Ave., Northbrook IL 60060.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gymnasium, (Vassar St. and Mass. Ave., Cambridge MA; use Vassar St. entrance), Jan. 17, Feb. 14, Mar. 20 and Apr. 17, 1976, 6 pm-10 pm. Contest May 8, 1976, 10 am-8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 617-358-4013.

NEW JERSEY - Livingston

The Union Model Airplane Club is again sponsoring indoor sessions at the Livingston School Gym & Auditorium. 7 pm-10 pm, Jan. 8, Feb. 12, Mar. 11, Apr. 8 and May 13, 1976. Dan Domina, 4701 Fox Run Dr., Plainsboro NJ 08536.

NEW YORK - Long Island

Cat. I Record Trials at Friends Academy, Locust Valley on Sat. Jan. 3 and Sat. Apr. 3, 1976.

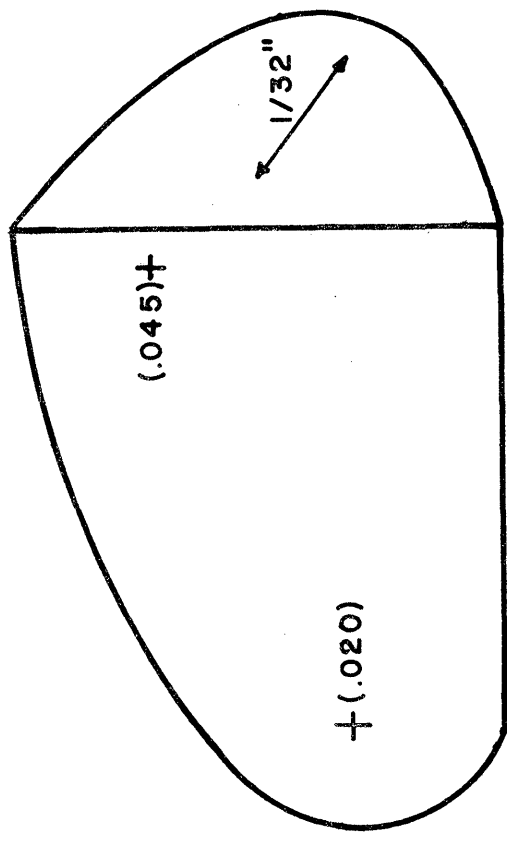
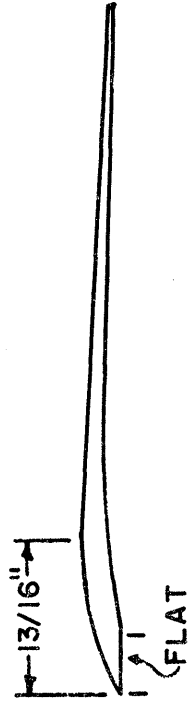
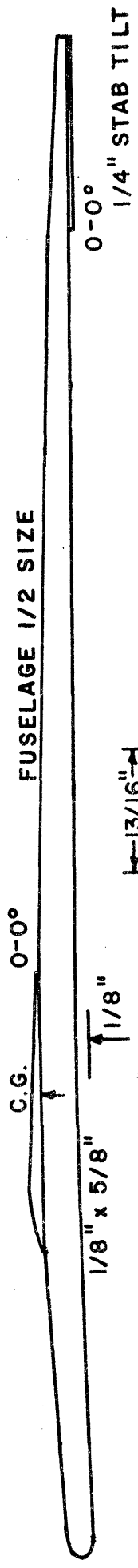
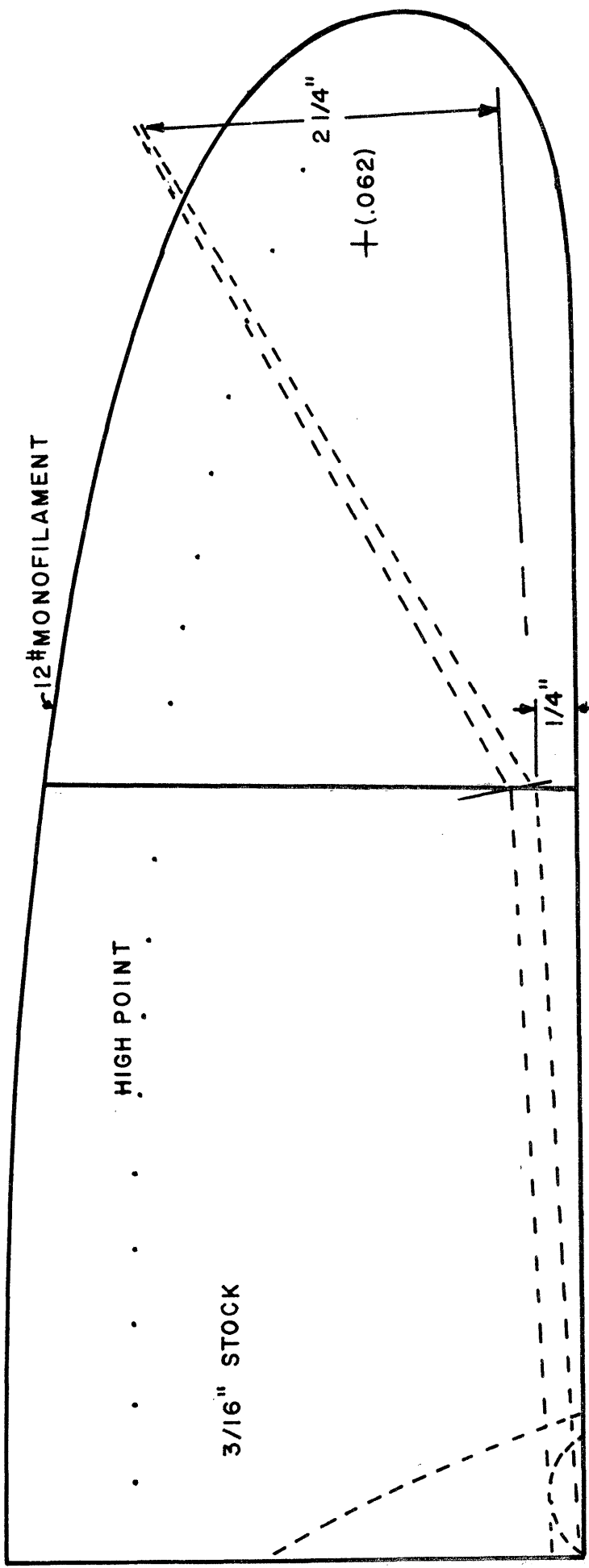
Cat. II contest at Cantiaque Park, Hicksville, Sunday, Apr. 11, 1976.

Cat. I contest at Nassau County Arena, Long Beach, Sunday, June 6, 1976.

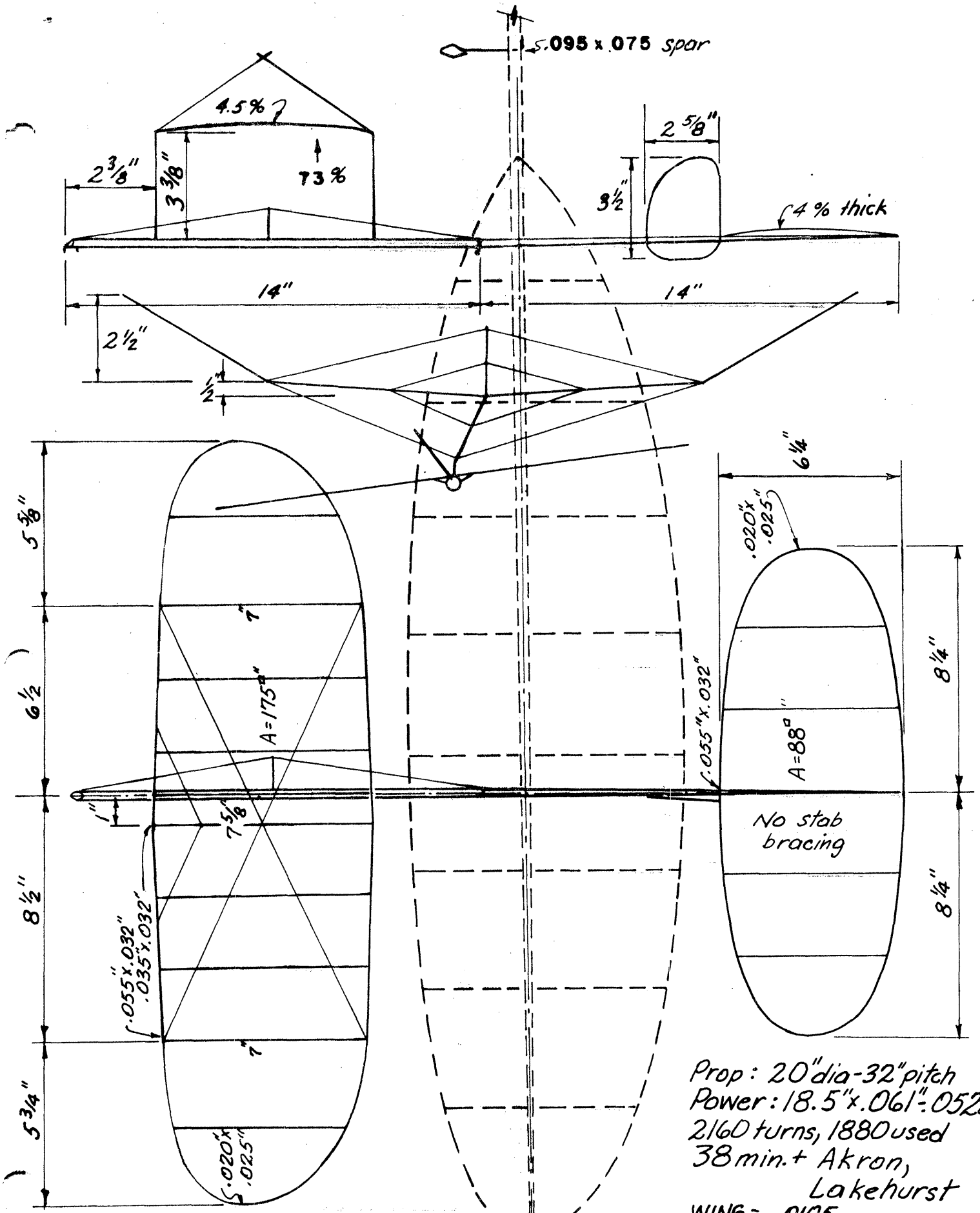
Contact Jean Pailat, 30 Emerson Rd., Brookville, Glen Head NY 11545.

OKLAHOMA - Oklahoma City

A series of indoor contests are being held at an Armory, 200 NE 23rd St., Oklahoma City, 8 am-5 pm, with HLG, Peanut Scale and Easy B. Advance notice has typically been only one week, so drop a line to Matt Gawain, 9710 NE 3rd Place, Midwest City OK to get on the mailing list. Good site, 35' to beams with 200' x 300' floor area.



CAT. II HLG
2nd Open-'75 Nats
 Basic Design - Dennis Kargol, 1965
 Modified - Chuck Markos, 1975
 Weight - 12.7 g., Left-Left Pattern



1975 FAI BUCKY SERVAITĚS

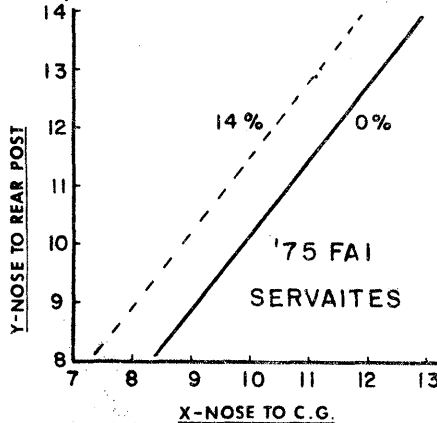
Prop: 20" dia - 32" pitch
 Power: 18.5" x .061" = .052 oz.
 2160 turns, 1880 used
 38 min. + Akron,
 Lakehurst
 WING = .0105
 PROP = .0065
 REST = .0190
 Total = .036 oz.

STATE OF THE ART

The page 2 plan is of Bucky Servaites' 1975 FAI design which carried him through the toughest ever team selection program just finished. Bucky's score for the program was 1495 points, just .3% short of a perfect score. Of the model Bucky says:

The wing outline and fuselage length are essentially the same as used in the previous program. The stab has been enlarged to 50%, the nose moment shortened and the rudder reshaped to fit the new box. Other changes have been made, but they are of a detail nature to strengthen the model and make it more reliable. I adopted a new rear hook design suggested by Dick Kowalski; the previous hook was a major cause of stick crushing and failure on hookup. Ray Harlan's "O" rings have also helped ease the hookup problems and I don't think I could operate properly without them now. Solid compression ribs of .042" constant depth are used in place of built-up ones to reduce buckling and sudden failure due to high launch loads. In conjunction with this, the offset wing posts are used to equalize the inboard wing panels and more evenly distribute the rib loading. Previously the ribs on the left inboard panel would balloon to what seemed like an inch or two on launch.

Bucky flew the model with static margin set at +14% figured by the CMOS method, or +19% when computed by the INP method. As a reminder, most models are balanced about +5% (CMOS), and Hal Crane's recommendation was +10% when INP is used. In view of the turbulent conditions during the Finals, this forward trim doubtless was beneficial.



The plan on page 3 is by Chuck Markos, and with this design he placed 2nd in Open HLG at the '75 Nats, with a time of 97.2 sec. He described the glider:

It has been a consistent winner in the Chicago area, especially in the hands of Bob Watson. It has several Nats places and trophies to its credit. The "modifications" mentioned on the plan consisted of adding a bit of dihedral and undercamber. The original wing center section was flat, and the undercamber was increased from 3/64" to almost 3/32" (1/32" in tip panels). Bob Watson tells me the design has done 65 seconds in the 75' Madison Street Armory.

I flew the model in a left-left pattern (I am right-handed) for two reasons. First was to make the pattern more compact in order to miss the scoreboard at the Lake Charles Civic Center. Second, this type of launch loads the wing less than the traditional right-left pattern. For higher ceilings than the 55' Civic Center, increase the weight by 1 1/2 grams for each 10' and reduce the undercamber to about 3/64".

CONTEST RESULTS

EUCLID INDOOR CONTEST, May 17-18, 1975

Jr.-Sr. Peanut Scale		Open Jetco ROG	
1. Chris Clemens	3	1. Robert Masters	2:29
2. Mark Rader	5	2. Robert Mullins	2:09
3. Rich Hucovsky	6	3. Marge Weisenbach	1:37
4. Mark Taverna	6	4. Joe Skraha	1:31
		5. Vern Hacker	1:22
Jr.-Sr. Jetco ROG		Scraps	
1. Tom Mzik	1:47	1. Vern Hacker	4:01
2. Paul Masters	1:34	2. Warren Weisenbach	3:51
3. Joe Mekina	1:30.2	3. Joe Sova	3:48
4. Joe Skroha	1:30.2	4. Gordon Roberts	3:00
5. Norm Getzlaff	0:59	5. Norm Getzlaff	2:43
Jr. Easy B		Open Easy B	
1. Tom Mzik	4:31	1. Robert Mullins	7:58
2. Paul Masters	4:25	2. Bob Clemens	7:31

3. Mark Rader	3:53	3. Gerald Skrjanc	7:13
4. Amy Hancy	3:16	4. Larry Mzik	7:07
5. Michael Avins	2:24	5. Bernon Hacker	

Delta Dart

1. David Hyka	24
2. Norm Getzlaff	21
3. Lou Vogel	18
4. Cindy Midkiff	18
5. Richie Riffle	18

Sr. Easy B

1. Chris Clemens	5:35
2. Joe Mekina	5:09
3. Joe Skraha	4:18
4. Rich Hucovsky	0:12

Indoor Scale

1. Gerald Skrjanc	144
2. Bob Clemens	129
3. Robert Masters	104
4. Mike Midkiff	95
5. Richie Riffle	64

Peanut Scale

1. Gordon Roberts	7
2. Warren Weisenbach	10
3. Mike Midkiff	10
4. Robert Masters	12
5. Mike Midkiff	12

Sr.-Open HLG

1. Gerald Skrjanc	57.9
2. Rudy Kluber	56.2
3. Norm Getzlaff	47.1
4. Robert Mullins	39.3
5. Joe Skraha	37.2

M.I.A.M.A. Indoor Contest #8, May 25, 1975, Miami, Florida
Goodyear Hangar, Opa Locka Airport

Jr.-Sr. HLG

1. John Arthur, Jr.	49.3
2. A. Honey	10.3

Jr.-Sr. PennyPlane

1. Allen Honey	5:39
2. Charles Slater	3:05.2
3. Cliff McCallum	0:47.0

Jr.-Sr. Easy B

1. Charles Slater	9:02
2. Allen Honey	3:28
3. John Arthur, Jr.	0:33.8

Jr.-Sr. Scale

1. Charles Slater	
2. Kevin Smith	
3. Cliff McCallum	

Chicago Aeronauts Fall Indoor Contest, Nov. 9, 1975
Madison St. Armory, Cat. II, 75' ceiling.

HLG Junior

1. Bill Schuh	83.0
2. Dick Jones	59.8
3. Greg Miller	53.6
4. Mario Moranetz	21.2

HLG Open

1. Bob Larsh	119.4
2. Chuck Markos	116.6
3. Bob Watson	112.6
4. Wally Stammers	65.4

Open PennyPlane

1. Steve Brown	9:43.0
2. Dennis Jaecks	9:15.0
3. Robert Hayes	8:59.0
4. Bob Larsh	7:48.0
5. Joe Fierce	7:05.0
6. Otto Curth	6:48.4
7. Gordy Wisniewski	15:11.0

Jr.-Sr. Paper Stick

1. Dan Brown	14:40.0
2. Keith Gordy	10:50.2

Walnut Scale

1. Bob Clemens	1:15
2. Emerson Elwell	89
3. Dennis Norman	70
4. Rich Hucovsky	66
5. Gordon Roberts	62

Jr.-Sr. Paper Stick

1. Chris Clemens	7:27
2. Joe Mekina	6:09.9
3. Joe Skraha	4:58
4. Paul Masters	3:15
5. Michael Fox	2:00.3

Open Paper Stick

1. Vernon Hacker	8:15
2. Gerald Skrjanc	7:52.2
3. Bob Clemens	7:20.7
4. Warren Weisenbach	7:19
5. Norm Getzlaff	6:48.5

Indoor Stick

1. Vernon Hacker	11:13
2. Dale Hacker	7:21
3. Gerald Skrjanc	6:53
4. Ted Katsanis	6:43
5. Joe Mekina	5:29

Jr. HLG

1. Norm Getzlaff	26.4
2. Paul Masters	16.8

Sr.-Open FAI Stick

1. Vernon Hacker	10:40
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M.I.A.M.A. Indoor Contest #8, May 25, 1975, Miami, Florida
Goodyear Hangar, Opa Locka Airport

Open HLG

1. John Arthur	82.7
2. Jim Whelan	64.0
3. Jim Stewart	56.0

Open PennyPlane

1. Jim Stewart	6:48.8
2. Jim Whelan	1:25
3. Fred McCallum	1:17

Open Easy B

1. Roman Szymula	8:27
2. Jim Stewart	8:11
3. John Martin	6:02.2

Open Scale

1. John Martin	
2. Dan Kilgore	
3. Jim Stewart	

MERRY CHRISTMAS & HAPPY NEW YEAR

By now, it is obvious to me that I won't get another issue out before Christmas, hence the wish of good cheer above. Of all the activity which has been curtailed, I miss the correspondence most. So, it is very pleasant to receive your cards and greetings - thank you very much!

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Special International Issue

Once again, the November issue is dedicated to all indoor fliers outside the North American continent. These friends all around the world, who often work against hardships to fly, provide greater incentive for our own efforts. No new three-views were made available from these many countries, but "News From Around The World" has been revived for this issue. We hope you enjoy the news and contest results presented there.

Dick Black Memorials

A long time ago, a very fine fellow named Dick Black helped with NIMAS and was later very active in forming the National Free Flight Society. Both NFFS and NIMAS took steps to commemorate Dick after his death, and the NIMAS memorial was to be slide-tape lectures on various aspects of indoor flying. A few of these exist, and it would be nice if more of them could be made to help the many new fliers and clubs find out what it is all about. Here is how you can help: as you build, or fly, or do any particular activity associated with flying indoor models, please shoot some color slides. These can be combined in many different ways to make instructional programs for club and individual use. At least two fliers have promised copies of existing slides, so with more help these lectures can be improved and expanded.

Financial Report

This issue begins the 15th year of publication of INDOOR NEWS AND VIEWS. Perhaps it would be more accurate to say the 15th group of newsletters, since this one is about 8 weeks late! The State of the Society is this:

Membership grew by 9% to an average circulation of 385 and a peak circulation of 399 for the Oct. '75 issue. A great number of requests for sample copies and information await answering; if the tardy reply doesn't turn off the requestors, circulation could top 425 average in '76. The yearly expense breakdown is as follows:

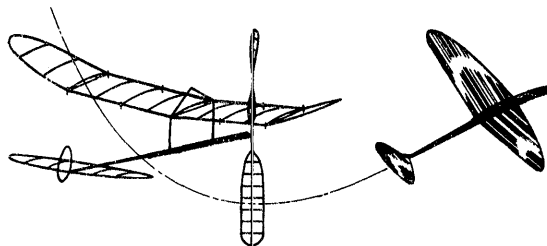
Printing costs (INAV only)	\$479.86
INAV postage	489.20
Correspondence postage	21.87
Office supply, other expense	204.17
	1195.59

Since income rising to \$1320.90, there is a surplus of \$125.80. In comparing costs from last year, almost half of the surplus would have been used up if outgoing mail had been at normal volume.

In view of the recent postal rate increase, the annual angonizing reappraisal of expenses/projected income was made. Surprisingly, the indication is that, with the '75 surplus, and figuring 10% growth plus inflated costs, 1976 projects to be break-even. That assumes that printing and postal rates do not increase; if either happens, there may be a mid-year increase. However, for the present, rates will remain the same, except that those few who request air mail delivery (certain remote countries) will find the air mail surcharge increased from 8¢ per issue to 13¢ per issue to exactly reflect the rate increase. For those who have been wondering:

NIMAS membership (includes INAV)	\$3.50
Subscription only	2.50
(above rates include Canada and Mexico)	
Foreign subscription (surface mail)	\$3.50
(air mail)	5.06

I want to finish the report with another word of thanks for the patience of all INAV readers; besides not complaining, many people have continued to write news and contest schedules and results. We still need new HLG plans, hints etc.; construction ideas and any similar kind of material. How about some more PennyPlane and Easy B designs? Fun models?



FAI INDOOR REPORT

Report From CIAM

Two actions at the Dec. '75 CIAM meeting will affect indoor flying. First, in the definition of an official flight, the minimum time is changed from 30 seconds to 60 seconds. Second, rule 3.4.7, Steering of Model, was replaced by the following:

To prevent a model from colliding with the structure of the building or its contents, or other models, a balloon(s) with its line attached, or a rod 2 to 8 metres in length, may be used to alter the course of the model, or to reposition it in another part of the flying space. There will be no time limit or restriction to the number of steering attempts, except that all steering shall be done from the front end of the model and never from behind.

During the steering the propeller may get caught by the line/balloon(s)/rod and stop revolving. As soon as the propeller stops, a 3rd watch should be used (preferably a double button watch, that records accumulative time) to determine the total of propeller stopped time, which is deducted from the running total shown on the other two watches. While the line is in actual contact during the steering, any attempt to pay out line (to artificially gain height) will disqualify that flight.

If the steerer cannot disengage the propeller after steering, all watches are to be stopped together and the total propstopped time deducted as is detailed above. No re-flight is allowed other than if fouled by another model during steering. The decision to steer is the responsibility of the competitor, and must be done by him, other than for physically handicapped or poor sighted persons, who may nominate someone else to do it for him. It is the timekeepers responsibility to observe the use of the steering equipment, and to warn the competitor if he is likely to endanger other models. If other models are fouled by the steerer, the fouled competitor has the choice of a substitute flight, which, if taken, is his score for that round.

Indoor WCh Scheduled

The 1976 Indoor World Championships will be held at Cardington in mid-August.

New Team Manager Coming?

Erv Rodemsky was unable to obtain a definite commitment on sufficient vacation time when he needed it to be team manager. He has resigned and a new team manager is being elected at this time.

CONTEST CALENDAR

POSTAL MEET - Star Skippers

The Star Skippers, sponsored by Ed and Richard Whitten in New York, are organizing two indoor postal meets for NFFS and open to modelers everywhere through age fifteen. FLY PAPER runs Dec. '75-Jan. '76, and BAITED BREATH runs Mar./Apr. '76. The events can be flown under any ceiling under 50', and results will be fudged to 35'. Events are HLG, Class A ROG and H.L. Stick (all classes combined). For full contest rules, write for the Aug. '74 issue of STAR SKIPPERS newsletter; write to: Star Skippers, P O Box 176, Wall St. Station, New York NY 10005.

COLORADO - Denver Area

The Martin Model Masters have scheduled meets at Hinkley High School Gym in Aurora, Colorado on Jan. 25 and Feb. 15, 1976, and a meet Mar. 7, 1976 at a site to be announced. For details contact Ted Gonzoph, 12996 E. 2nd Ave., Aurora CO 80011, ph. 303-364-1854.

CONNECTICUT - Glastonbury

Indoor sessions 7:30-9 pm at Glastonbury High Gym, Jan. 30, Feb. 20, Mar. 19, Apr. 13, May 11 and June 8, 1976. Sessions on Sunday, 8:30 am-1:30 pm, Jan. 11, Feb. 8, Mar. 14, Apr. 4 and May 2, 1975. George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-Ins at Miami Dade North College, 9 am-2 pm, Jan. 11, Feb. 8, Mar. 7, Apr. 11 and May 9, 1976. Indoor contests at Goodyear Hangar, Opa Locka Airport, 9 am-5 pm, Dec. 28, 1975 and Jan. 25, Feb. 22, Mar. 21, Apr. 25 and May 23, 1976. Confirm hangar dates by calling 858-6363. Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

The Illinois Model Aero Club will hold a meet at Madison St. Armory in Chicago on Feb. 8, 1976 with Paper Stick, PennyPlane and Peanut Scale. CD: Don Lockwood, 10543 S. Hamilton, Chicago IL.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gymnasium, (Vassar St. and Mass. Ave., Cambridge MA; use Vassar St. entrance), Jan. 17, Feb. 14, Mar. 20 and Apr. 17, 1976, 6 pm-10 pm. Contest May 8, 1976, 10 am-8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 617-358-4013.

NEW JERSEY - Livingston

The Union Model Airplane Club is again sponsoring indoor sessions at the Livingston School Gym & Auditorium, 7 pm-10 pm, Jan. 8, Feb. 12, Mar. 11, Apr. 8 and May 13, 1976. Dan Domina, 4701 Fox Run Dr., Plainsboro NJ 08536.

NEW YORK - Long Island

Cat. I Record Trials at Friends Academy, Locust Valley on Sat. Jan. 3 and Sat. Apr. 3, 1976.

Cat. II contest at Cantiaque Park, Hicksville, Sunday, Apr. 11, 1976.

Cat. I contest at Nassau County Arena, Long Beach, Sunday, June 6, 1976.

Contact Jean Paillet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

OKLAHOMA - Oklahoma City

Indoor contests Jan. 25 and Feb. 22, 1976 at a National Guard Armory, 200 NE 23rd St., Oklahoma City. Events: HLG, Easy B, Peanut Scale on Jan. 25; add PennyPlane on Feb. 22. Matt Gewain, 9710 NE 3rd Place, Midwest City, Oklahoma, ph. 405-737-4972 or 405-737-1085. Long distance travelers check on site status just in case.

OREGON - Albany

Indoor contests Jan. 25 and Feb. 22, 1976, 9:30 am to 3:30 pm, at South Albany High School Gym, 3705 S. Columbus St., Albany. Jan. 25 - PennyPlane, Easy B, HLG, R-T-F's, Earle Moorhead. Feb. 22 - AMA Scale, Unmodified Kit Peanut, Open Peanut, Popularity Scale, Keyhole Scale, Old Timer. Bob Stalick, 1120 Shady Lane, Albany OR 97321, ph. 928-8101.

TEXAS - Dallas/Ft. Worth

Indoor session and record trials at Dallas Naval Air Station in Grand Prairie, Texas, 1 pm -3:45 pm, on Jan. 25 and Feb. 8, 1976. NOTE: if you plan to attend, give your name to Ed Turner, 3544 Granada Dr., Ft. Worth TX 76118, ph. 817-589-1519, at least a week in advance. This will be necessary for gate security at Dallas NAS.

RECORDS? MAYBE!

Indoor Record Trials, Jan. 3, 1976 CAT I AMA Friends Academy, Locust Valley, LI, NY, 33' ceiling
Jr. PennyPlane - 0:52.0, Greg Trubowitsch
Sr. PennyPlane - 5:28.8, Richard Whitten
Open PennyPlane - 4:28.4, Ron Williams
Sr. Ornithopter - 1:12.6, Richard Whitten

DESIGN FOOTNOTES

This column explores various ideas and concepts which may or may not have actually been put into practice. As such, it is intended to be a stimulant for the imagination and a spur to further model design experimentation. If you have such an idea, speculative or reduced to practice, please share it. This particular offering is the result of brainstorming after it was announced that Easy B would become an official event of drastically changed character from our old friend. Fortunately, the proposal did not pass and Easy B remains a provisional event.

THE NEW B

by Ron Williams

Dear Bud;

Enclosed is a drawing for an Easy B by the new can-of-worms rule. The rule is like a chess-players joke in that you have to know the game (or the old rule) to get the fun of it.

The New B is based loosely on John Kukon's Penny bipe which has been consistently flying over 15 minutes in Cat. III spaces. At 1.5 grams, 25 minutes can't be far off for New B.

I hope there will be contest directors who'll see fit to include an event for old Easy B. It was truly a beginner's event in that one could build a klunker, fly it against the best and possess a "yardstick" for comparison. With my "B" in my hand and Pete Andrew's ship sitting before me, I could start with the differences I could see. Where does one begin now?

NEWS FROM AROUND THE WORLD

ARGENTINA

According to the most recent reports from Buenos Aires, the FAI Cat. I records in Argentina are the 16:49 flight set by Eduardo Grippo; this was then surpassed by Nereo Beggiano with 17:15. Apparently they also have an active program for youth, emphasizing models similar to Easy B or PennyPlane. No details of these models were revealed.

AUSTRALIA

Although the results have not been received, the Australian Nats were scheduled for Dec. 31, 1975. The top placing fliers will be offered FAI team berths.

WESTERN AUSTRALIA

A report from Fred Tower in Roleystone indicated that indoor modeling is beginning with flying in school gyms with ceilings about 20'. For the most part, models are built from outdoor wood, with the only specialty supplies being imported. Peanut Scale, Scale, Easy B, Paper Stick and Stick models are flown, but spans are generally limited to 20". Typical times are 4 minutes for models similar to Tom Vallee's Bandersnap, 3:40 for Easy B (20' ceiling) and 20 seconds in 14' ceiling for HLG. Easy B and HLG will be added to State Championship meets if they prove to be popular enough.

CZECHOSLOVAKIA

An international indoor meet was held in the big exhibition hall in Brno on July 12-13, 1975. This hall has exceptionally large floor area and 135' ceiling. However, a 25' diameter ventilator in the top restricts the maximum safe altitude to about 25' below the top. As a result it requires very special trim and very capable models to do top time. In the results below, note that Laurie Barr of England attended this meet!

1. J. Kalina	Czech	34:39	32:15	66:54
2. E. Ciapala	Poland	34:10	30:18	64:28
3. E. Chlubny	Czech	31:02	31:26	63:28
4. R. Czechowski	Poland	29:14	30:16	59:30
5. A. Valenta	Czech	28:55	30:20	59:15
6. A. Pespichal	Czech	29:16	29:00	58:16
7. L. Barr	England	25:22	31:55	57:17
8. L. Kouty	Czech	27:55	28:02	55:57
9. L. Schramm	Poland	29:05	25:49	54:54
10. S. Bombol	Poland	25:19	29:18	54:37
11. J. Jirasky	Czech	21:24	30:46	52:10
12. D. Sedlar	Czech	29:35	22:01	51:36
13. P. Bor	Czech	17:44	32:18	50:02
14. S. Sykera	Czech	28:21	21:22	49:43
15. K. Rybecky	Czech	19:08	21:12	48:20

ENGLAND

Judging from reports in FREE FLIGHT NEWS, Cardington has seen considerable activity during 1975. An open competition May 18 yielded top two-flight totals of 58:01, 54:35 and 54:12 by Laurie Barr, Ron Green and Reg Parham, respectively. Two major competitions were the Indoor Nats and the Team Selection competition, with results as listed below. Note in particular Bob Bailey's winning Easy B flight and the performances listed by Jiri Kalina, who visited the shed to try for the World Record. His times, while not reaching his goal, have been adopted by the British as marks to strive for.

Indoor Nats, July 5-6, 1975

Easy B

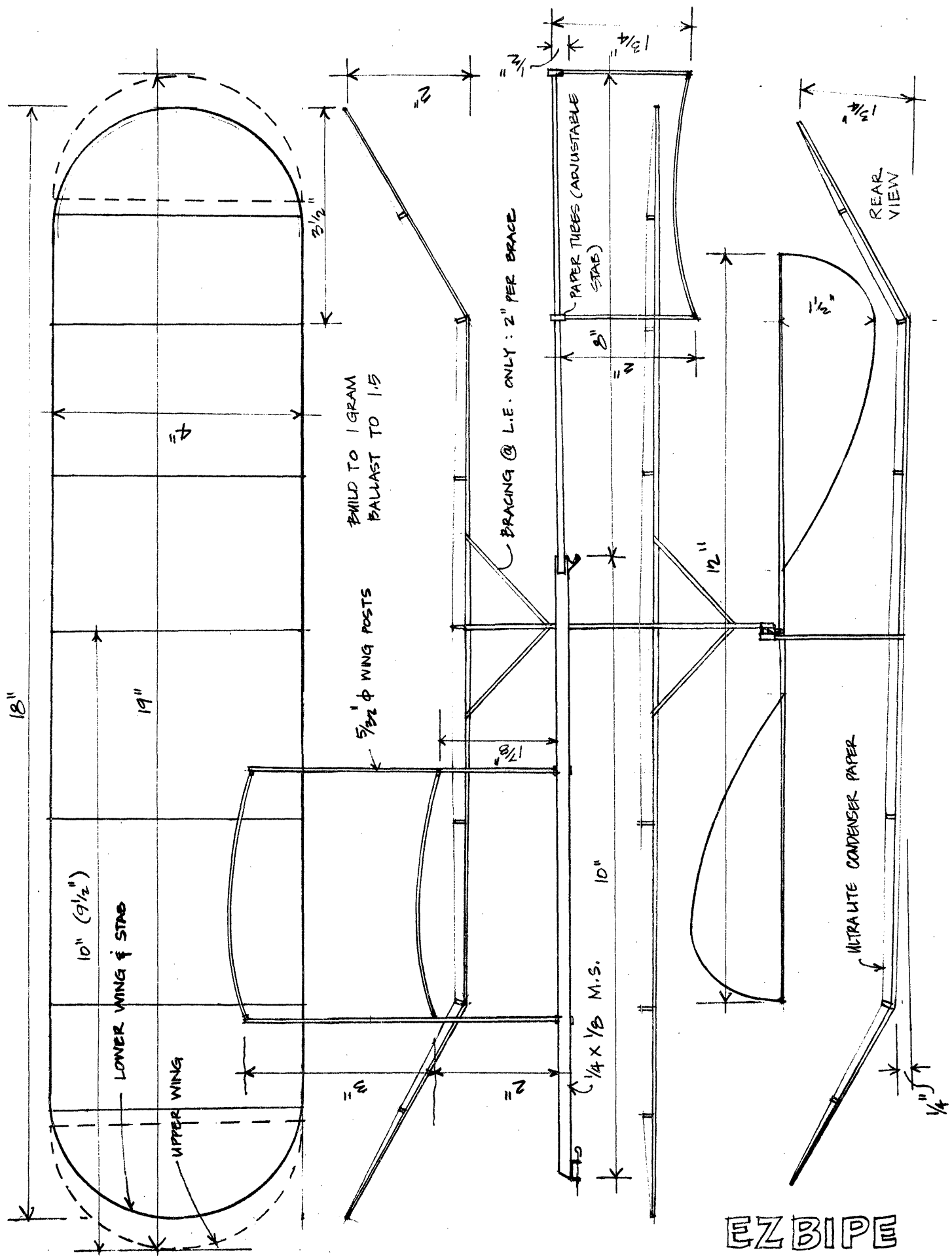
1. R. Bailey	St. Albans	16:46	17:34	34:20
2. J. Blount	Croydon	16:10	16:41	32:51
3. A. Barr	Hayes	15:01	16:13	31:14
4. L. Barr	Hayes	15:25	15:30	30:55
5. R. Melville	St. Albans	14:15	15:21	29:36
6. J. Tipper	Lee Bees	12:58	13:36	26:34

PennyPlane

1. R. Parham	Worcester	9:37	10:48	20:25
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FAI Stick

1. L. Barr	Hayes	30:47	31:19	62:06
2. R. Green	St. Albans	33:35	28:26	61:44
3. J. Blount	Croydon	30:05	31:13	61:18
4. P. Masterman	Norwich	29:00	31:13	60:13
5. G. Lefever	Norwich	28:28	28:39	57:07



EZBIPE
 RON WILLIAMS

Open Stick

1. J. Blount	Croydon	10:55	17:45	28:00
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HLG

1. D. Greaves	Birmingham	59.0	59.0	118
2. P. Bayram	Richmond	58.8	59.0	117.8
3. M. Shepherd	St. Albans	56.2	57.5	113.7
4. J. Hopper	Stansted	52.0	53.0	105.0
J. Tipper	Lee Bees	51.0	54.	105.0

Team Trials, Sept. 20-21, 1975

1. L. Barr	Hayes	32:57	34:04	67:01
2. J. Blount	Croydon	32:52	31:47	64:39
3. R. Green	St. Albans	29:10	34:14	63:24
4. G. Lefever	Norwich	30:09	31:56	63:05
5. R. Bailey	St. Albans	31:50	28:07	59:57
6. D. Morely	Grantham	27:15	29:38	56:53
7. R. Parham	Worcester	26:40	29:07	55:47
8. M. Shepherd	St. Albans	25:19	27:27	52:46
9. B. Edwards	Birmingham	25:20	25:08	50:28
J. Kalina (record attempts)		40:11	38:12	(73:51)

HOLLAND

Indoor fliers in Holland have been allowed reasonably frequent access to the KLM 747 hangar at Schiphol Airport, which they feel will greatly improve their team performance at future WCh's. Judging from photos, the hangar is a twin of the American Airlines hangar at Tulsa, which proved to be a very good site. Also, some model publications have carried articles on indoor modeling, which is helpful in training new fliers.

ITALY

An 8 m hall in Rimini was the site of a late 1974 meet for FAI Stick and PennyPlane. There have been no later reports, but perhaps reports of their team selection will come soon.

FAI Stick

1. C. Cotugno	Rome	11:29	11:05	22:34
2. G. Masciullo	Rome	11:28	9:42	21:10
3. P. Migani	Rimini	7:40	12:45	20:25
4. G. Federici	Rome	10:09	9:56	20:05
5. A. Frioli	Rimini	9:26	9:40	19:06
6. F. Migani	Rimini	7:35	9:50	17:25
7. N. Sighelle	Bologna	5:43	5:38	11:21

PennyPlane (best single flight of six)

1. N. Sighelle	Bologna	(4:29)	5:01
2. P. Migani	Rimini	(3:50)	5:01
3. A. Vittori	Rome		4:01
4. A. Seghrettini	Rimini		3:45
5. P. Vittori	Rome		3:33
6. Q. Cecchetti	Rimini		3:20
7. C. Cecchetti	Rimini		3:06
8. P. Seghettini	Rimini		2:11

NEW ZEALAND

Indoor fliers in Auckland report their site is 30' x 60' with 20' ceiling, with Stick, Easy B and HLG type models being flown. As is common with many places in the world, good indoor supplies are difficult to obtain.

POLAND

At least two major meets were held in Wroclaw, both at the same site and on the same weekend. Apparently, rounds were combined, and for Polish fliers, each flight counted for both events.

National Polish Championships, June 13-15, 1975Open FAI Stick

1. E. Ciapala	Slaski	31:57	31:48	63:45
2. R. Czechowski	Krakow	30:00	28:19	58:19
3. S. Bombol	Wroclaw	29:26	27:27	56:53
4. S. Kujawa	Poznan	28:28	28:18	56:46
5. Z. Szymanski	Wroclaw	25:20	27:52	53:12
6. S. Sierko	Bydgoszcz	26:24	26:23	52:47
7. J. Kapusniak	Bydgoszcz	23:17	23:03	46:20
8. R. Niedzielski	Swidnik	18:41	19:05	37:46
9. M. Czajka	Grudziadz	13:24	11:55	25:19

Junior FAI Stick

1. P. Frackowiak	Wroclaw	24:33	24:32	49:05
2. S. Garlicki	Krakow	24:45	23:33	48:18
3. D. Jaszczak	Wroclaw	16:28	17:55	34:23
4. J. Rygielski	Bydgoszcz	17:35	16:17	33:52
5. J. Zioba	Wroclaw	17:05	16:13	33:18
6. J. Jablonski	Bydgoszcz	14:32	16:49	31:21
7. W. Pawlisz	Bydgoszcz	10:20	18:29	28:49
8. M. Witkowski	Bydgoszcz	9:19	11:14	21:04
9. J. Landowski	Bydgoszcz	11:00	6:37	17:37
10. H. Dembek	Bydgoszcz	6:47	4:20	11:07

International Indoor Championships, June 13-15, 1975

1. J. Kalina	Czech	31:22	32:26	63:48
2. E. Ciapala	Poland 1	31:57	31:48	63:45
3. E. Chlubny	Czech	30:22	28:19	61:34
4. R. Czechowski	Poland 1	30:00	28:19	58:19
5. S. Bombol	Poland 2	29:26	27:27	56:53
6. S. Kujawa	Poland 1	28:28	28:18	56:46
7. A. Valenta	Czech	27:14	29:14	56:28
8. S. Sierko	Poland 2	26:24	26:23	52:47
9. L. Schramm	DDR	22:46	23:51	46:37
10. J. Kapusniak	Poland 2	23:17	23:03	46:20

ROMANIA

Two contests in the salt mine were reported for 1975, the Romanian Nats and an International meet. In a brief commentary, Aurel Popa noted that the only time really wild conditions occurred in the mine were during the 1970 WCh, when many extra lights and heaters were introduced into the mine. During the '75 Nats, the only hangups came from climbing too fast and landing on an upper balcony. Romania still hopes to host another WCh, and their fliers continue to monitor conditions in the mine toward making better arrangements.

Romanian Indoor Championships, Feb. 21-23, 1975FAI Stick

1. Aurel Popa		35:34	34:43	70:17
2. Eugen Holtier		32:54	33:55	66:49
3. Otto Hints		33:36	31:23	64:59
4. Aurel Moraru		31:40	31:42	63:22
5. Daniel Frokanu		29:58	31:51	61:49
6. Tudorel Lungu		26:54	29:59	60:27
7. Vasile Nicocara		29:02	30:15	59:17
8. Nicu Bezman		29:15	28:43	57:58
9. Firel Stawate		27:53	28:45	56:38
10. Gheorghe Dumitrenco		28:16	27:39	55:55

International Indoor Contest, May 9-10, 1975

1. S. Kujawa	Poland	34:56	35:01	69:59
2. A. Popa	Romania	32:17	34:05	66:22
3. E. Chlubny	Czech	32:08	32:51	64:59
4. J. Kalina	Czech	32:29	32:17	64:46
5. C. Czechowski	Poland	32:05	32:39	64:44
6. E. Ciapala	Poland	31:12	31:14	62:26
7. A. Ree	Hungary	30:46	31:32	62:18
8. E. Holtier	Romania	31:20	29:15	60:35
9. G. Buzady	Hungary	29:06	31:03	60:09
10. O. Hints	Romania	28:08	31:45	59:53
11. A. Egri	Hungary	29:57	29:46	59:43
12. A. Moraru	Romania	30:15	28:50	59:05
13. P. Bombol	Poland	27:36	24:53	52:29
14. L. Koutny	Czech	25:37	25:35	51:12
15. T. Lungu	Romania	22:12	22:43	49:43

SWEDEN

Energetic activity by several fliers in Sweden has resulted in good publicity for indoor modeling and a meet late in 1974 yielded 5 FAI fliers, 15 in the event which resembles PennyPlane (somewhat lighter model with the same dimensions), 2 Peanut Scale fliers and 15 HLG fliers. The Cat. I FAI record is 10:57, and best competition times in a 10 meter site: PennyPlane - 8:37, HLG (2 flight total) - 0:48; FAI - about 9 minutes. The contest mentioned above also had 67 Delta Dart/Sleek Streak competitors, including a good number of RC fliers.

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!Members Who Joined in January

CARL JAEGER, Box 2421, Jackson WY 83001
 JOHN H. JENSEN, 1649 Elm St., Des Plaines IL 60018
 SLAYTON JOHNS, 1165 Landsdale Dr., Fairborn OH 45324
 TOM STONE, 6305 Inoa Rd., Ft. Worth TX 76111

Renewal Reminder

It has been mentioned here before that it is very helpful, from a time standpoint, for membership renewals to be made before the month of expiration. This is more true than ever lately, with the urgency of making a living impinging ever more on the spare time.

So, how do you know your membership is about to expire ignominiously? If your address label is printed and has a number like "12" in the upper left corner, better look in the centerfold - there should be a notice discreetly saying "Pay up, you bum!" If there is a paper label (maybe you've moved recently) or a printed label without a number (a few got made wrong), then dig back through your files to the issue which announced your membership. If you joined in February '75 (for example), then you are due in February of each year, and eventually your label will have "02" in the corner. If you are about due, send your \$3.50 and save me the time of shuffling your card to the deadbeat file, writing you a pleading letter and then shuffling the card back again.

Drop Al A Card!

Just after the last issue went out, we received word that Al Rohrbach has been ill. Although I understand he is improving, he doubtless will be happy to receive your get well cards. His address is 1415 Jewel Court, Ft. Wayne IN 46825.

'76 Nats

About the time this issue will be mailed, the Executive Council will meet; one agenda item will be final approval of various details of Nats activity. The indoor site recommended by the Nats Executive Committee Ohio State Fair Coliseum in Columbus, Ohio. It is 71 miles from Wright Field, which is the proposed RC and U/C site, along with AMA contest HQ. The FF site is in Springfield and is 55 miles from the indoor site.

Spread The Word!

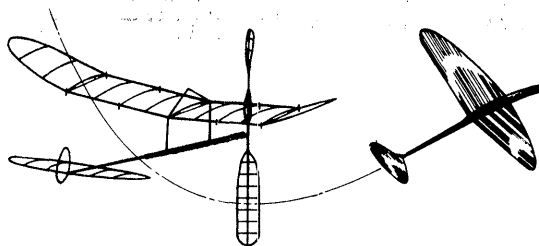
Time and again, when local fliers take time to contact the media in their area, people are exposed to our particular form of madness. The most recent result came when Ron Williams announced the Record Trials at Columbia University in VILLAGE VOICE, a semi-newspaper circulated in the general area. Not only did many spectators come to see the activity and go away impressed, but the same article mentioned NIMAS and people wrote for information.

A Special Request!

We have received a request that all who send contest results should also furnish ceiling height and other site information. This enables the readers to compare the times with their own sites, and adds meaning to the times besides just who won.

NIMAS Internats?

The most recent news on the proposed NIMAS bash was that it might be a "Nats warmup", with a banquet the night before Nats Indoor started in the same site. Unfortunately, the place was booked up from about 5 pm Sunday, Aug. 1 through most of the Nats. As a consequence, the back-to-back event is impossible. However, a glance at a map reveals that contestants coming from the west, southwest and south by car would naturally pass right by. From the southeast it would be a little out of the way, and from the east and northeast it would be four hours or more past the Nats area. Since food and lodging is about \$7 a day per person at Northwood Institute (owners of the site), and family accommodations are possible, it might well be the best "motel" deal around. Planning is continuing and more details will be available soon.

World Record Confirmed

Tom Vallee's 22:45 flight (announced as a possible world record in the Sept. '75 INAV) has been homologated by the CIAM. The next attempt on the FAI Cat. I World Record must exceed 23:13 to meet the 2% requirement. Tom has left a difficult task; anything over 18 minutes in a 6 m site is excellent! The model was an 8 1/2" chord monoplane of conventional layout and dacron braced surfaces. The prop was 20" dia., 31.5" pitch with symmetrical blade layout. No trim details or rubber info is now available.

Manhattan Cabin Flies Again!

Ed Whitten introduced the concept of the Manhattan Cabin model in the Nov. '65 INAV. Briefly, it was a model with a 20" span, a weight limit and an unusual cross-section requirement; it must R.O.G. on all flights. This formula has been a regular part of the recent activity in Miami, with times like 2 1/2 minutes in the Goodyear Hangar. This success has encouraged the Miami Indoor Aircraft Model Association to sponsor the Manhattan Cabin as an unofficial event at the '76 Nats. These rules are paraphrased from ones taken from Dr. John Martin's HANGAR PILOT:

1. Fuselage 20" max. total length excluding prop; must be able to enclose a BOX 2" x 2 1/2" x 4"; must have transparent windows/windshield of 2 sq. in. min. Motor must be enclosed and totally supported by the fuselage without use of removable motor sticks or motor tubes, etc.
2. Prop must be all-balsa of fixed pitch.
3. Wing must be unbraced monoplane, 20" max. span and 4" max. chord.
4. Stab must be 8" max span, 3 1/2" max. chord; rudder must not extend beyond fuselage.
5. Landing gear must be rigid and fixed with two 1" minimum diameter wheels; must support model and all flights must R.O.G.
6. Weight - 4 g without rubber min. Model must be covered with paper only.
7. Flying - unlimited attempts to make 5 flights, all flights R.O.G., less than 20 second flight is attempt.

RECORDS? MAYBE!

CAT. III Record Trials, Jan. 10, 1976, 104' ceiling
 Low Library Rotunda, Columbia University.
 Open PennyPlane - 7:46.8, Ron Williams
 Senior PennyPlane - 8:56.6, Richard Whitten
 Senior Ornithopter - 1:45.2, Richard Whitten

CAT. III RECORD TRIALS, Jan. 25, 1976, 132' ceiling
 NASA Ames Research Center, Moffett Field, Calif.
 Open PennyPlane - 13:56.2, Bob Meuser

CAT. II RECORD TRIALS, Jan. 25, 1976, 42' ceiling
 Dallas NAS Drill Hall, Dallas Texas
 Junior PennyPlane - 3:41, Mike Clem
 Open PennyPlane - 6:26, Mike Fedor

NIMAS POSTAL MEET

The 11th Annual NIMAS Postal Meet will be open for entry through (postmark) May 3, 1976. All flights made as part of a sanctioned indoor meet held between Jan. 1 and May 3, 1976 are eligible for entry. Also, flights made at informal sessions after receipt of this newsletter are eligible, provided the flights are made and timed in accord with AMA Rules.

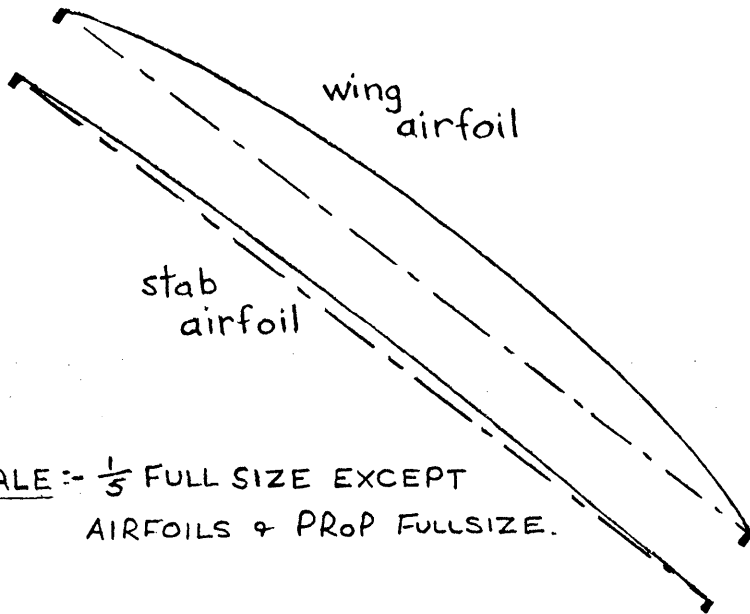
Events: Easy B, paper covered only, all-wood prop, solid motor stick and boom, no bracing.

HLG: AMA Rules except two ceiling classes. Class I - 18' to 25'; Class II - 25' to 35'.

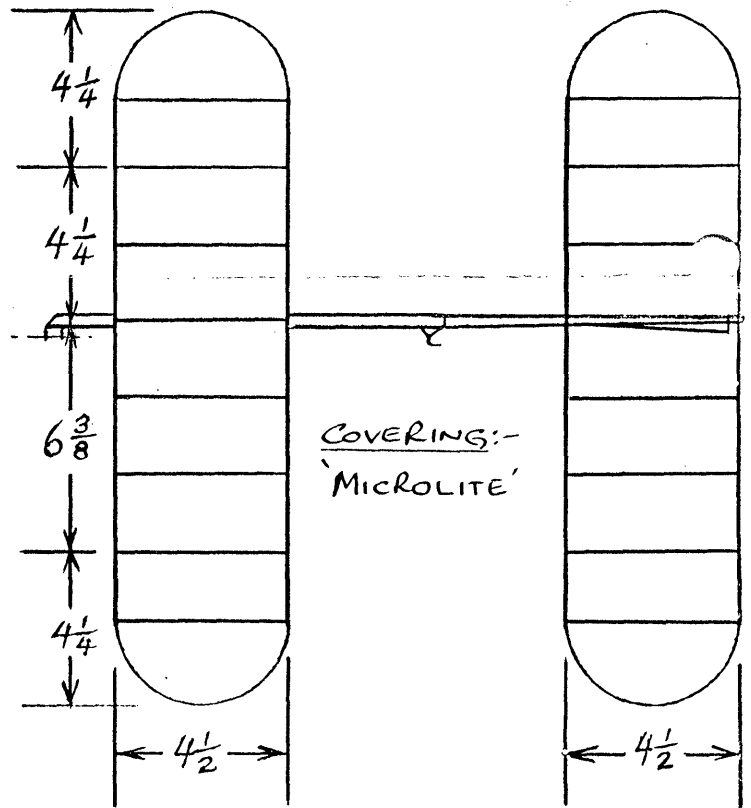
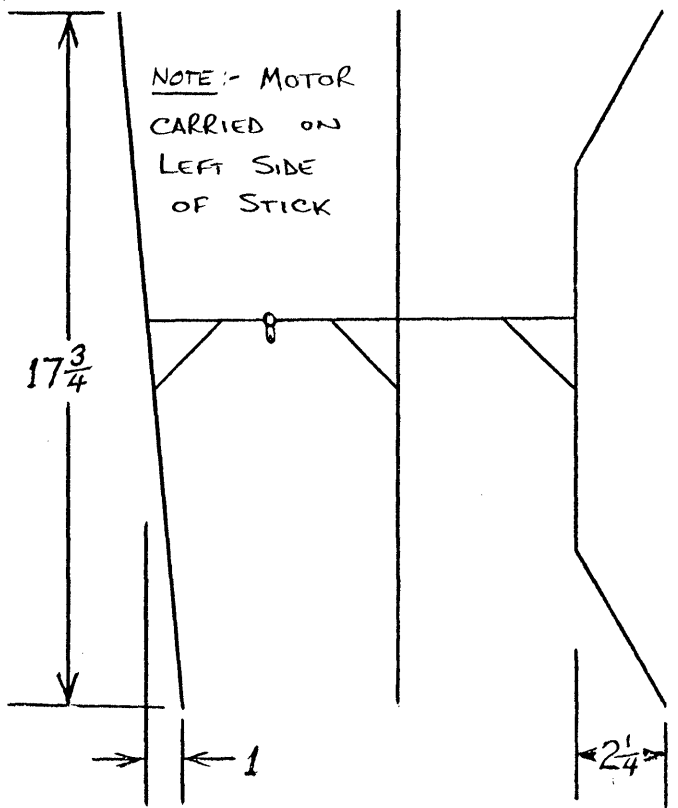
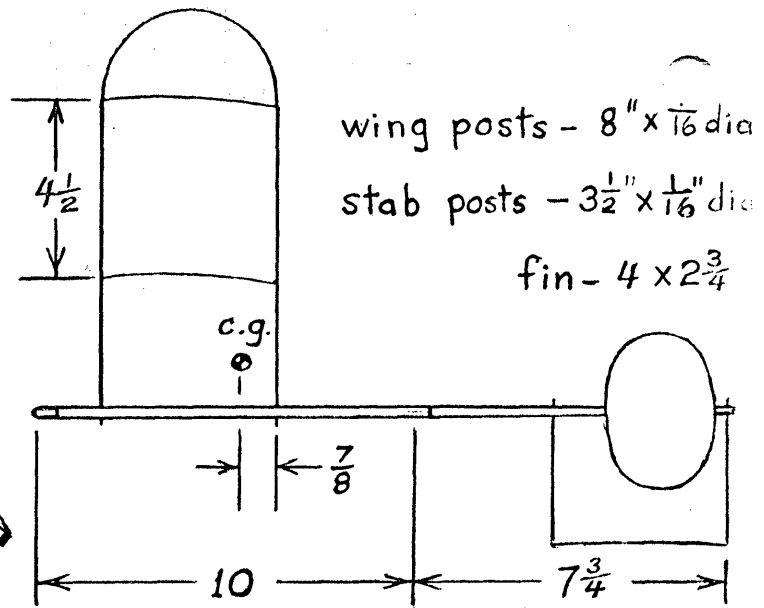
PennyPlane: AMA Rules (be sure to process model).

General Rules: Free entry. Separate events may be flown at separate sessions, but all flights for a given event entry must be flown on the same day. Please note ceiling height for each entry, using FAI ceiling measure. Ceiling height is used to compute fudge factors for final scoring. Separate classes for Juniors in each event; anyone may enter. Send entries to Box 545, Richardson TX 75080.

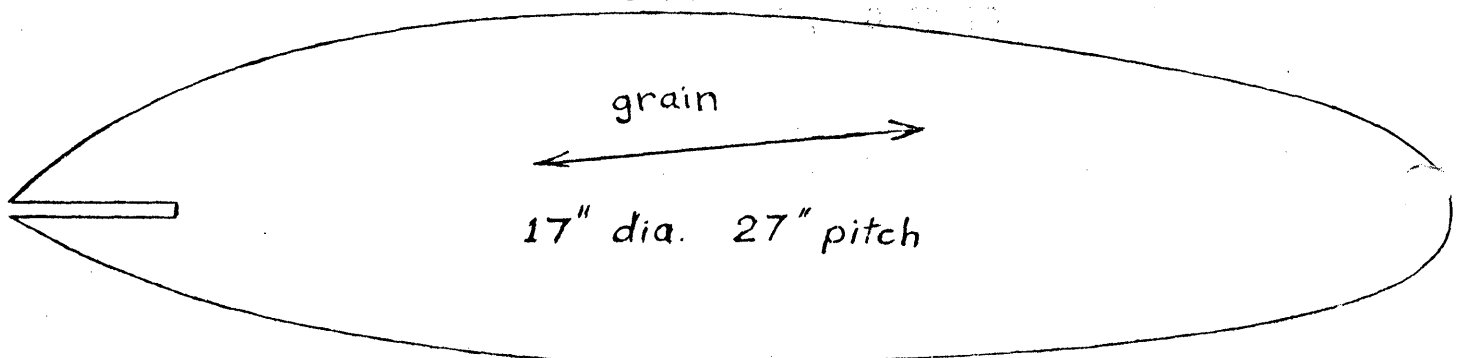
PENNY-PLANE BIPE by Doug McLean.



SCALE :- $\frac{1}{3}$ FULL SIZE EXCEPT AIRFOILS & PROP FULLSIZE.



L.E.



T.E.

CONTEST CALENDAR

POSTAL MEET - Star Skippers

BAITED BREATH Postal, Mar./Apr. '76, for fliers thru age 15. Fly HLG, Class A ROG and Indoor Stick (all classes combined) under any ceiling under 50'; results will be fudged to 35'. For full contest rules, write for the Aug. 74 issue of STAR SKIPPERS newsletter, Star Skippers, P O Box 176, Wall St. Station, New York NY 10005.

COLORADO - Denver Area

Indoor contests Feb. 15 and Mar. 7, 1976; Feb. 15 at Hinkley High School in Aurora, Colorado and the Mar. 7 meet at a site to be announced. For details contact Ted Gonzoph, 12996 E. 2nd Ave., Aurora CO 80011, ph. 303-364-1854.

CONNECTICUT - Glastonbury

Indoor sessions 7:30-9 pm at Glastonbury High Gym, Feb. 20, Mar. 19, Apr. 13, May 11 and June 8, 1976. Sessions on Sunday, 8:30 am-1:30 pm, Mar. 14, Apr. 4 and May 2, 1976. George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-Ins at Miami Dade North College, 9 am-2 pm, Mar. 7, Apr. 11 and May 9, 1976. Indoor contests at Good-year Hangar, Opa Locka Airport, 9 am-5 pm, Feb. 22, Mar. 21, Apr. 25 and May 23, 1976. Confirm hangar dates by calling 858-6363. Dr. John Martin, 3227 Darwin St., Miami FL 33133.

INDIANA - Anderson

The Central Indiana Aeromodellers are holding their 3rd Annual Indoor Contest Mar. 14, 1976 at the Anderson High School Gym, 8:30 am-5 pm. HLG, PennyPlane, Easy B, Peanut Scale, AMA Scale. Phil Sullivan, P O Box 2272, Anderson IN 46011.

MASSACHUSETTS - M.I.T.

Indoor sessions at DuPont Gymnasium, (Vassar St. and Mass. Ave., Cambridge MA; use Vassar St. entrance), Mar. 20 and Apr. 17, 1976, 6 pm-10 pm. Contest May 8, 1976, 10 am-8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 617-358-4013.

NEW JERSEY - Union

The Union Model Airplane Club is again sponsoring indoor sessions at the Livingston School Gym & Auditorium, 7 pm-10 pm, Mar. 11, Apr. 8 and May 13, 1976. Dan Domina, 4701 Fox Run Dr., Palmsboro NJ 08536.

NEW YORK - Long Island

Cat. I Record Trials at Friends Academy, Locust Valley on Saturday, Apr. 3, 1976.

Cat. II contest at Cantlague Park, Hicksville, Sunday, Apr. 11, 1976.

Cat. I contest at Nassau County Arena, Long Beach, Sunday, June 6, 1976.

Contact Jean Pallet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

NEW YORK - Manhattan

The Columbia Indoor Miniature Aircraft Society has scheduled Record Trials for all indoor classes except HLG at the Low Library Rotunda, on the Columbia University campus in New York City. The site is about 85' diameter, topped by a dome, for a total height of 104' by AMA ceiling measure. The Trials are scheduled 9 am-4 pm on Feb. 21, Mar. 14, Mar. 27 and May 16, 1976. Contact Ed Whitten at P O Box 176, Wall St. Station, New York NY 10005.

OKLAHOMA - Oklahoma City

Indoor contest Feb. 22, 1976 at a National Guard Armory, 200 NE 23rd St., Oklahoma City. HLG, Easy B, PennyPlane and Peanut Scale. Matt Gewain, 9710 NE 3rd Place, Midwest City Oklahoma, ph. 405-737-4972 or 405-737-1085. Long distance travelers check site status just in case.

OREGON - Albany

Indoor contest at Albany High School Gym, 3705 South Columbus St., Albany; 9:30 am-3:30 pm on Feb. 22, 1976. AMA Scale, Unmodified Kit Peanut, Open Peanut, Popularity Scale, Keyhole Scale, Old Timer. Bob Stalick, 1120 Shady Lane, Albany OR 97321.

STATE OF THE ART

At long last, this column gets around to presenting a very deserving model. Thanks to the Vancouver Gas Model Club's newsletter "HOT HEAD", I was able to run their plan and then furnish the following commentary by Doug McLean on his PENNY-PLANE BIPE.

The airplane was designed with the help of some theoretical performance calculations. The theoretical predic-

tion method that I developed a few years ago was discussed in an article (Aug. '73 AAM) on John Kukon's FAI Tandem. (I did the calculations for that design, too, and wrote the "theory" half of that article.)

Theory indicates that the biplane design has a considerable edge over any of the monoplanes or tandems I've looked at. As a check on the theory, I looked at Jaecks' 1973 NATS winning PennyPlane. According to theory, that design should do about 12:30 under 90' ceiling. Since it actually logged 12:19, I think the theory is reliable.

I've only had two chances to fly the model in good sites. It won the PennyPlane event at the June '74 indoor contest in Vancouver, with a 12:29 flight under 75'. There was a bad side drift that carried the model into the seats on its winning flight, where it landed about 15' above the floor level. I'm pretty sure it would have done over 13 minutes without the drift.

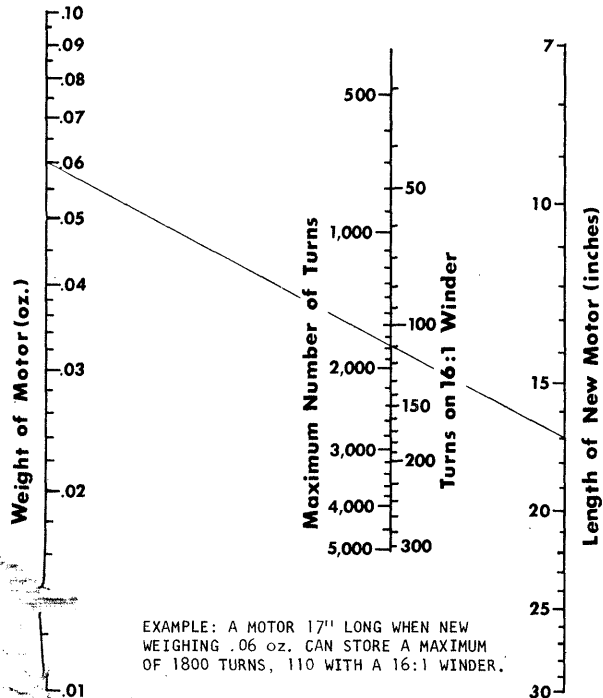
A month later I went on a business trip and had a chance to fly the model at Lakehurst on July 7, 1974. My two best flights were 15:04 and 16:03, with the model climbing about 110' for its best times. Actually, I think the design can do better than that, but it will require some development work to find a better prop.

The wing dimensions shown are for the top wing flat. The projected span of the top wing and the spans of the lower wing and stab are about 17 3/4". My model weighs just over one penny, and the motor on the best flight was an 18" loop of .102" pirelli with 1790 turns. Wood sizes not shown on the plan are:

	Wing	Stab
Center section spars	.045 x .070	.040 x .064
Tip outlines	.040 x .060	.040 x .050
Ribs	.033 x .060	.033 x .050
Motor stick	.019 x 5/16 I.D.	
Tail boom	.018 x 5/16 I.D. tapering to 1/8 I.D.	
Prop spar	3/32" round at center	
Prop blades	.025 sheet tapering to .015 at tips.	

PIRELLI NOMOGRAM

The nomogram below has appeared in INAV before; it was designed by Charlie Sotich in 1962. It is intended to be used this way: make the motor to the desired length and weigh it. A straightedge between the weight (left margin) and length (right margin) will cross the number of turns on the middle scale. This method, using weight/length, is much more accurate than measuring strip width. Pirelli varies somewhat in thickness, and any stripping method has some variation, so weight/length is well worth the extra trouble to use.



EXAMPLE: A MOTOR 17" LONG WHEN NEW WEIGHING .06 oz. CAN STORE A MAXIMUM OF 1800 TURNS, 110 WITH A 16:1 WINDER.

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members

Members who joined in February

JERRY BARNETTE, 4 Jefferson St., Fredericksburg VA 22401
 THOMAS CADOGAN, 6212 Cheri Lynne Dr., Dayton OH 45415
 JOHN A. CARTER, 1444 Hickory Way, Racine WI 53405
 GERALD DONAHUE, 44 Topsfield Circle, Shrewsbury MA 01545
 DUKE DONOVAN, 2012 SW 24 St. #15, Miami FL 33145
 BILL GILLESPIE, 12014 E. Mexico, Aurora CO 80012
 ALLEN HONEY, 6150 N. Kendall Dr., Miami FL 33156
 CHRIS MATSUNO, 10132 Douglass Ct., St. Ann MO 63074
 ROYALL MOORE, Box 37, Mill River MA 01244
 VICTOR NIPPERT, 6 Douglas Dr., Halcyon Park,
 Lake Katrine NY 12449
 DAN O'GRADY, 50 Largo Crescent, Ottawa, Ontario,
 Canada K2G 3C7
 BRUCE SPARROW, 118 Arlnold St., Hartford CT 06106
 LEONARD C. YONAITES, 819 Craite Ave., Rice Lake WI 54868

Honorary Members

B. W. C. ASLETT, 25 Honey Hill, Wooten, Bassett,
 Swindon, England

Panicville!

Look at the masthead above; I hope it says Jan. 1976. The masthead was laid out originally with Feb. 1975, and each month, the appropriate month's name is pasted over Feb. to make it all come out right. Well, a funny thing happened to the Dec. '75 issue on the way to the printing press - Dec. fell off. As a result, the issue came out as the Feb. '75 issue, and no one noticed (around here) until several renewal checks arrived and people asked to be filled in on the issues they missed!

So, right now!, get that last issue and mark out the Feb. and put Dec. I don't want to get, a year from now, plaintive letters that someone can't find their Dec. '75 INAV, would I please send one? It's happened! Since both Feb. and 1975 have to be pasted over, now you know why I hope it says Jan. 1976 up there!

Ed Franklin

Sad news came in the Mar. '76 Glastonbury Modelers NEWS: Ed Franklin died in Feb. 1976. He was injured in an industrial accident and never regained consciousness. Ed had been a NIMAS member for over 14 years, and was an expert scale builder and a fine gentleman. Our world is poorer now that he is gone.

Two Friends Pass

A letter from Otto Curth had the following sad news:

Dear Bud;

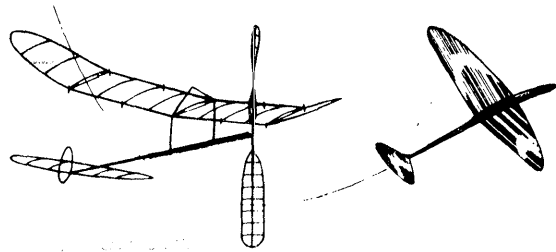
Through INAV you can tell friends of Milton (Butch) Hugelot and Joe (Pappy) Matulis of their passing. Butch died Dec. 22, 1975 and Pappy died Jan. 10, 1976.

Butch was National Champ in 1938 (at age 16) and again in 1946. He retired from competition shortly thereafter. It was a privilege to have known him - he was a rare type who won contests in order to improve himself, not to beat the rest of the entrants as many do. He was 54 years old and had just finished his first IHLG in many years the night before he passed away. Several of his record holding models are shown in the 1938 Zaic yearbook. He was one of the top fliers of unbraced indoor models, but he retired as the braced model was being developed by the west coast modelers.

Pappy Matulis was 63 years old and was one of the original Chicago Aeronuts. He was a well known indoor flier who held national records in the 30's and 40's. I remember him flying indoor cabin models prior to the pod-tube types introduced by Hugelot at the '46 Nats - although there may be others who claim this basic design. Pappy and Carl Goldberg were, I'm sure, responsible for guiding Butch in his earlier efforts.

Their friends in the East and West will want to know of their passing.

Otto Curth



Postal Fudge Factors

The following fudge factors will be used for the NIMAS Postal, and are used regularly in the Top Ten Easy B and Top Ten Ceiling Dodgers. To apply the chart, multiply the flight time by the appropriate factor to obtain the flight score based on 35'.

Ceiling (feet)	Class I HLG (fudge to 25')	Class II HLG (fudge to 35')	Rubber (fudge to 35')
18	1.39		1.394
19	1.316		1.357
20	1.25		1.323
21	1.19		1.29
22	1.136		1.261
23	1.087		1.234
24	1.042		1.207
25	1.0	1.4	1.183
26		1.346	1.16
27		1.296	1.139
28		1.25	1.118
29		1.207	1.098
30		1.167	1.08
31		1.129	1.063
32		1.094	1.046
33		1.061	1.03
34		1.029	1.014
35		1.0	1.0

This Issue

This issue was 85% ready to go to the printer about one month ago. So where has it been? I've been working a lot of overtime, both at T. I. and at my new job. The new job will eventually steady down to more normal hours, but in the meantime the transition and overtime has gone a long way toward taking up the slack in my finances. In case anyone needs to contact me at work, the new office number is 214-661-1530.

Postal Meet Reminder

Entry has so far been very low in the 11th Annual NIMAS postal meet. In view of several May contests, the entry deadline is extended to (postmark) May 31, 1976.

FAI INDOOR REPORT

Opinion Survey Results

The FAI Indoor Committee recently circulated a survey seeking participant opinions of the 1975 team selection program and guidance for the next program. In brief form, the following responses were made:

- 82.6% felt the 1975 program produced a very strong team.
- 70.7% felt the effort to participate in the program was worthwhile.
- 56.8% would prefer a program which produces a strong team, 22.7% would emphasize participation and 20.5% want both features in the same program.
- 55.5% favored a two-year program, with one regional meet each year and the Finals in 1977.
- 41.8% felt that current team members might face a hardship by having to fly one regional meet in 1976, in that this could detract from WCh preparations.
- 53.2% favored a points system similar to the 1975 program; 31.8% favored scoring by time only, 8.6% wanted some combination of points and time, and 6.4% said that either system was satisfactory.
- Question #7 solicited opinions on the format of a point system, with very diffuse results. 77% felt there should be a change; 71% opposed bonus points for single best flight and 58% favored bonus points for best two-flight total. 65% opposed an alternate system giving points based on three flight totals and 65% opposed points for best two-flight total. Finally, 50% wanted the scoring balance unchanged between regional meets and the Finals, while 60% selected an increased weight for Finals scores. **NOTE!** The data above was computed on responses by those who favor some form of a point system only. Since these results are confusing at best and not everyone favoring points answered each part of #7, one would hope that guidance would come from the requested comments.

Unfortunately, 45% of the suggestions submitted as "point system improvements" were vague or unrelated to the subject. Six suggestions would eliminate carryover of points into the Finals, and six accepted carryover while suggesting scoring more flights, or three flight total scoring, or requested "no change". In other words, there is no clear guidance here either!

8. Counting only those who favored using time, a combination or either, 72% favored a return to the '73-'74 program format and 74% rejected scoring 3 flights. However, a full 53% of the "suggestions for a times system of scoring" were vague or irrelevant and 33% mentioned some sort of points system!
- NOTE: from the totals involved, it is clear that both "points" advocates and "time" advocates commented on the system they did not favor, which greatly confuses the whole picture.
9. Question #9 solicited suggestions to improve the quality of competition in qualifying meets. This request drew by far the largest number of comments and the most diverse group of opinions.
 - 10 & 11. 55% would place some limit on the amount of cross-zone flying allowed, but only 12½% would eliminate it.
 12. 67% favored four zones, 23% three zones, and 7% would have an unlimited number of zones.
 13. 77% favored a single site or unified Finals.
 14. 61% suggested site locations of East-Akron-West if the results of #13 had favored three site Finals.
 15. 88% favored rotation of the Finals site, and 93% favored Ed Akron as the 1977 site if it is available.

The rest of the questions dealt with matters not pertinent to program details, or only minimally so. Only one comment about those for now: it is apparent that most people responding to the questionnaire do not understand the duties of a team manager. Essentially by definition, the team manager is an administrator required by the FAI Sporting Code, and none of his duties are even remotely associated with flying the models. The team manager is the official spokesman for his national aero club, an unofficial ambassador for his country, and the only person allowed to be spokesman for his team. In addition, AMA expects the manager to be responsible for all travel and logistical details, especially for on-the-spot decisions when a planned itinerary goes awry. He also must manage the team's expense money, report WCh results, etc. - none of these require any expertise with models! As a clinching argument, note that the team manager's appointment (not election or selection) is subject to approval by the AMA President; again, no mention of modeling expertise.

A close study of the questionnaire reveals that very few people really understand the point system, why it was chosen, or its effect upon the program structure. It is interesting to note that survey participants strongly endorsed the results of the program, but that only a bare majority approved of the system. Most of the attacks upon the point system were based on the fact that the placing or ranking of the program participants did not correspond to the results of the Finals, even though either system picked the same team.

Even a casual reading of the program rules would seem to indicate that a person's final score was based on performance over a minimum of three contests; it is therefore impossible to have a one-for-one correspondence between top program scores and "time" results of one contest. The high correspondence that actually occurred is a tribute to the team members - their total performance was nearly perfect! And, if one of them should have to drop out, there are at least three alternates with almost as good a performance waiting; we would still have a strong team.

A bit of philosophy; although the WCh is scored by measuring flight times, the real results of the WCh are counted as relative performance. That is, there is no more honor in being second place by only 10 seconds than there is in being second by 10 minutes; second place is second place.

One final observation: one questionnaire participant indicated an interest in how other countries choose their teams. Although methods vary, many countries choose their teams by using the results of more than one contest, with equal weight being given to the results from each contest. This is only possible in a country small enough for all contestants to be able to compete in all the trials. One historical note: since 1962, no World Champion team was chosen on the basis of results from a single contest. In the same time frame, all U.S. teams except the present team have been picked on the basis of performance in one contest.

CONTEST CALENDAR

CONNECTICUT - Glastonbury
Indoor sessions at Glastonbury High Gym, 7:30-9 pm,

May 11 and June 8, 1976. Sessions on Sunday, 8:30 am-1 pm on May 2, 1976. George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor Fly-In at Miami Dade North College, 9 am-2 pm, May 9, 1976. Indoor contest at Goodyear Hangar, Opa Locka Airport, 9 am-5 pm, May 23, 1976. Confirm hangar availability by calling 858-6363. Dr. John Martin, 3227 Darwin St., Miami FL 33133.

ILLINOIS - Chicago

3rd Annual Midwestern States Indoor FF Championships, May 1, 1976, 9 am-6 pm and May 2, 1976, 8:30 am-5 pm, at Madison St. Armory, 2653 W. Madison St., Chicago. Paper Stick, Indoor Stick, Cabin, FAI Stick, HLG, Pennyplane, Peanut Scale, Indoor Scale. CD Robert Watson, 9310 Oleander, Morton Grove IL 60053, ph. 312-966-4829.

MARYLAND - Silver Spring

Indoor sessions at J. F. Kennedy High School Gym, Randolph Road, Silver Spring, Md., 7-11 pm, Apr. 30, May 7, May 14 and May 21, 1976. Rolfe Gregory, 11603 Milbern Dr., Potomac MD 20854.

MASSACHUSETTS - M.I.T.

Indoor contest at DuPont Gymnasium (Vassar St. and Mass. Ave., Cambridge MA; use Vassar St. entrance), May 8, 1976, 10 am-8 pm. Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778, ph. 617-358-4013.

NEW JERSEY - Lakehurst

Tentative flying dates in Lakehurst #1: May 2, June 13, June 27, July 10-11, July 18, Aug. 1, Aug. 21-21, 1976. Call John Kukon at 609-737-3522 on Friday before each session to confirm hangar availability.

NEW JERSEY - Princeton

Indoor contest at Jadwin Gymnasium, Princeton Univ., Princeton NJ, May 22, 1976, 9 am-5 pm. HLG, Pennyplane, Peanut Scale and Easy B for all ages; Sleek Streak for up thru age 17, model furnished. John Kukon, 14 Brandon Rd., Trenton NJ 08638.

NEW JERSEY - Union

Indoor session sponsored by the Union Model Airplane Club at the Livingston School Gym & Auditorium, 7-10 pm, May 13, 1976. Dan Domina, 4701 Fox Run Dr., Plainsboro NJ 08536.

NEW YORK - Long Island

Cat. I contest at Nassau County Arena, Long Beach NY, Sunday, June 6, 1976. Contact Jean Paillet, 30 Emerson Rd. Brookville, Glen Head NY 11545.

NEW YORK - Manhattan

Indoor Record Trials at the Low Library Rotunda, Columbia University, New York City, May 16, 1976, for all classes except HLG, 9 am-4 pm. Contact Ed Whitten, P O Box 176, Wall St. Station, New York NY 10005.

RECORDS? MAYBE!

Pennyplane became an official event in 1976, and the record activity has been almost frantic. Follow carefully through the listings below; with one exception, this listing should be a chronological record of the activity. As such, later listings would be the final current value of any given record class. Footnotes indicate site/event.

Cat. I Jr. Pennyplane

1:53.0 - Greg Trubowitsch (flight @ 3 pm)¹
2:15.8 - Mark Trubowitsch (flight @ 3:45 pm)¹

Cat. I Open Pennyplane - 8:53.0, Dick Hardcastle²

*Cat. II Jr. Pennyplane - 3:18.5, Mark Trubowitsch³

Cat. II Sr. Pennyplane - 5:28.8, Richard Whitten³

Cat. III Sr. Pennyplane

10:02.9 - Bill Xenakis (flight 3/13/76)⁴
10:08.8 - Richard Whitten (flight 3/14/76)⁴

1. LIAMAC Cat. I Record Trials, Locust Valley, New York
2. Thermaleers Fly-In, E. St. Louis Armory, 2/15/76
3. LIAMAC Cat. II Meet, Locust Valley NY 4/11/76
4. Cat. III Record Trials, Columbia Univ. NY 3/14/76

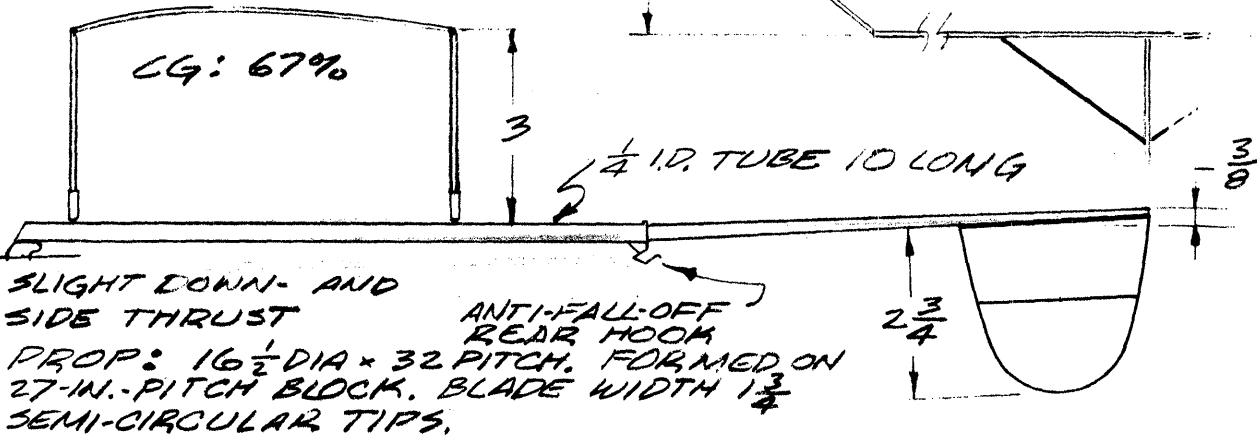
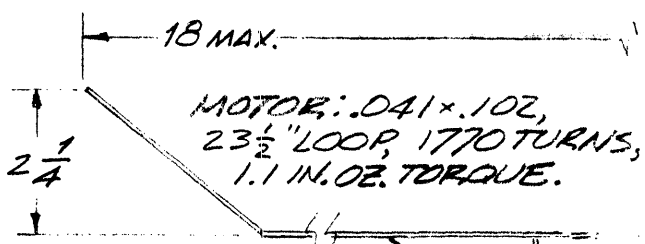
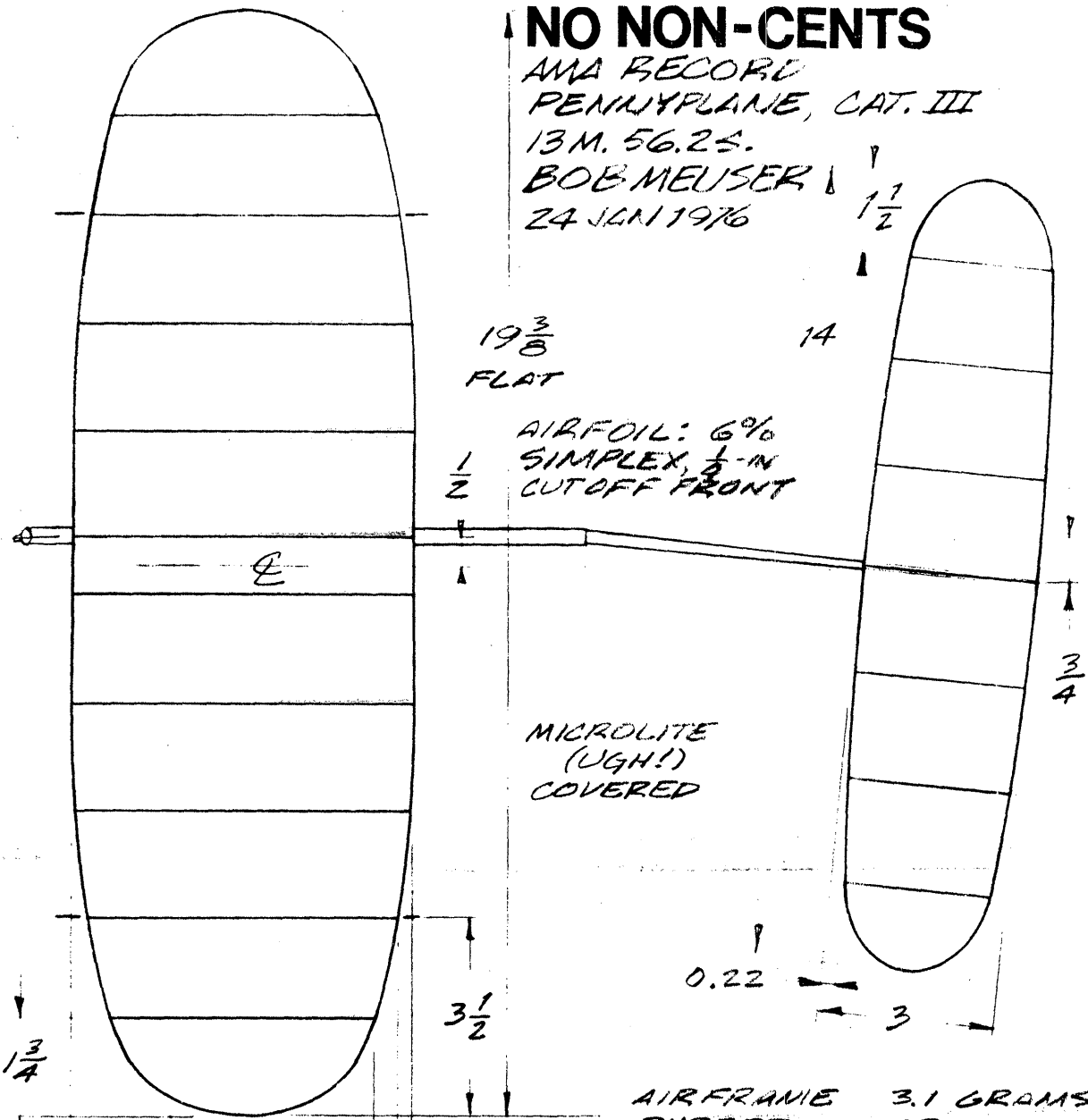
*Flight does not exceed time by Mike Clem (12/75 INAV)

Novice Pennyplane was also made an official event, and the following marks were set in that event:

MDC NATO Day Indoor Meet, East St. Louis, Mo., 3/28/76
East St. Louis Armory, Cat. I AMA - 34' ceiling
Jr. Novice Pennyplane - 3:41.4, Bill Martin, Jr.
Sr. Novice Pennyplane - 3:01.0, Larry Long
Open Paper Stick - 15:58.2, Dick Hardcastle

NO NON-CENTS

ANA RECORD
PENNYPLANE, CAT. III
13 M. 56.2 S.
BOB MEUSER
24 JAN 1976



STATE OF THE ART

With the new official status for PennyPlane, there is a lot of activity. Bob Meuser, claiming to be a duffer, (is he snookering us?) still managed to set a very good Cat. III record with the model shown on page 3. He tells how it happened:

You'll note the model has only a 6" chord, whereas everybody knows that something like an 8" chord is more nearly optimum. I didn't intend building a 6" chord model; it was the result of a comedy of errors. I wanted to build both a PennyPlane and a Novice PennyPlane for our January O.C.D. Record Trials. I figured that I couldn't compete with the local hot-shot Indoor types like Romak, Rodemsky, Parsons and Gibbs in the PennyPlane event, and thought I'd have a better chance for a record in Novice PennyPlane. For Novice I built a 6" chord wing, then discovered that the rules (which I wrote!) called for a 5" maximum. So I built a 5" chord wing, but that left no time to build another 7" or 8" chord wing for PennyPlane, so the 6-incher had to do. Then I discovered that Novice PennyPlanes is a provisional AMA event and no national records are to be established!

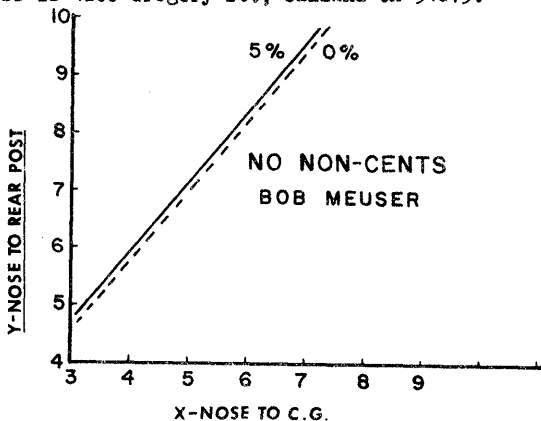
Well, no matter; I had pretty well convinced myself that duration potential is only slightly affected by chord and the optimum is probably not as great as 8". I might have an NFFS Sympo paper on the subject.

All my props are made from blanks I molded three years ago on a 27" pitch block. I use paper-tube hubs, and set the blade angle on a jig. A drop of glue then holds the pitch setting. Sometimes they come loose. On the record flight the prop wobbled badly almost causing the model to dive in during the power burst. It was still wobbling nearly 14 minutes later, when the model hit the wall about 15' above the launch point. A check showed about a 3° difference in blade angle.

Conditions during the meet were average-or-worse, I'd judge. If they were better than that, the other models flying - FAI and AMA Stick - surely didn't know about it.

I expect the maximum potential of this model to be about 15½ minutes, with a non-wobbling prop of slightly higher pitch. (The model was almost dead-stick when it hit the wall, and the motor is already longer than makes any sense. The only way to go is higher pitch, a slightly larger diameter - say from 16½ to 16¾ or 17, or wider blades.) The covering was atrocious - uneven airfoil, big loose sections. Microlite and I just don't get along. An experienced indoor guy with better construction and flying techniques could probably get more than 15½ minutes. John Kukon has gotten over 16 minutes with his biplane, under atmospheric conditions unknown to me, but I'd say my model has performed pretty well for a simple monoplane of eye-pleasing proportions. My previous PennyPlane, also with 6" chord, never exceeded 8½ minutes with the same prop and rubber. If there is some secret to this design, I wish I knew what it is! Bob set up the model to fly at 0% stability margin, but reported that a later session was less successful due to inability to handle power well. The CMOS chart below shows +5% and 0%, with +5% recommended as the best trim.

Finally, Bob has offered full size plans for this model, in different versions (different wing chords), to those who furnish a self-addressed, stamped envelope. His address is 4200 Gregory St., Oakland CA 94619.



TOP TEN LISTINGS

Top Ten Easy B

Each year, the winners of the Easy B event in the NIMAS Annual Postal Meet are listed in the Top Ten Easy B listing. Thereafter during the year, fliers may "bump" into the listing and displace those they are able to beat. The listing then begins anew after the next NIMAS Postal. The current Top Ten are: (times fudged to 35')

Name	Time	Ceiling	Fudge	Score
1. Dick Hardcastle	653.0	23'	1.234	805.8
2. Bob Platt	580.6	21'	1.291	749.5
3. Clarence Mather	579.0	22.3'	1.253	725.5
4. Hal Crane	526.8	21'	1.291	679.8
5. Fudo Takagi	413.0	22.3'	1.253	517.5
6. Richard Whitten	380.8	33'	1.03	392.2
7. Mark Rader	227.1	23'	1.234	280.2
8. Amy Hancy	225.8	23'	1.234	278.6
9. Ray Baughman	196.1	23'	1.234	242.0
10. Susie Herr	181.5	23'	1.234	224.0

Top Ten Ceiling Dodgers

The Top Ten Ceiling Dodger listing began years ago as various fliers maintained an informal competition with the goal of posting the highest time in any particular site without touching the ceiling. Any model class may be used and the times are fudged to 35' ceiling. It is a fun way to develop high performance not related to the model's ability to survive ceiling contact.

Name	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Robert Dunham II	1454	89'	.627	911.7
4. Hal Crane	682	20'	1.323	902.3
5. Bob Dunham	1357	89'	.627	850.8
6. Dick Hardcastle	653	23'	1.234	805.8
7. Bud Tenny	1275	89'	.627	742.9
8. Hewitt Phillips	528.2	20'	1.323	698.8
9. Howard Haupt	456	22'	1.261	575.0
10. Steve Lovens	433.2	20.5'	1.307	566.2

CONTEST RESULTS

Southwestern Ohio Free Flighters Indoor Contest - 1/18/76
School gym with 27' ceiling; it was Super Bowl day and the entry was somewhat low!

<u>Open HLG</u>		<u>Open Pennyplane</u>	
1. Jim Miller	50.8	1. Ken Johnson	6:16
2. Bucky Servaites	47.0	2. Bucky Servaites	5:28.4
3. Joe Mekina	45.4	3. Don Wright	3:58.8

Peanut Scale (Learoyd Rules)

	Scale Points	Handicap Factor	Flight Total	Model Type
1. Don Wright	86	1.0	115	Cessna C-37
2. Jim Miller	69	1.0	118	Cougar
3. Ken Johnson	57	0.6	105	Hyper Bipe

MDC FF Club/Thermaleers Contest, 1/18/76
East St. Louis Armory, 34' AMA ceiling - Cat. I

<u>Open HLG</u>		<u>Open Easy B</u>	
1. Stan Stoy	80	1. Bill Martin	7:30.6
2. Bob Klipp	64.4	2. Dale Frost	7:22.6
3. Chris Matsuno	62.4	3. Roy White	7:06.0
4. Bill Martin	51.0	4. Ed Hicks	5:28.0
5. Don Hickman	38.0	5. Doug DePaul	3:22.0
6. Bill Martin, Jr.	35.8	6. Chris Matsuno	2:45.0

<u>Open Pennyplane</u>		<u>Novice Pennyplane</u>	
1. Dick Hardcastle	8:23.2	1. Dick Hardcastle	6:35.2
2. Roy White	5:28.0	2. Chris Matsuno	3:57.2
3. Chris Matsuno	3:09.0	3. Bill Martin	3:00.0
		4. Bill Martin, Jr.	2:58.2

Paper Stick
1. Doug DePaul 2:54.0

<u>Peanut Scale</u>	Model	Score
1. Tom Stork	Heinkel	333
2. Cecil Cook	Pilatus Porter	166
3. Ed Hicks	Piper J-3	143
4. Doug DePaul	Druine Turbulent	111
5. Don Booher	Nesmith Cougar	111
6. Lorraine Bell	Nesmith Cougar	83
7. M. DePaul	Demoiselle	71
	Pietenpol	59

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

NIMAS Internats Is GO!

Bucky Servaites has received word that Northwood Institute has made their facilities available for a NIMAS proposed get-together; from 10 am, Friday, July 30, 1976 through 5 pm, Sunday, Aug. 1, 1976. Costs per person are: lodging - \$4.50 per night with \$1.00 linen charge; meals - breakfast, \$1.25, lunch, \$1.50, dinner, \$1.75. There is no charge for the atrium where we would fly and no charge for the banquet hall if we have a banquet. Food charges per person for the banquet depend upon how many reservations are received; the maximum (50-90 people) is \$4.50 per person for buffet style and \$3.50 for a sit-down meal. Where else can you get such rates?

It was mentioned (Dec. '75 INAV) that contestants from the west, southwest and south pass directly by the area, while southeastern fliers would have to detour a little and others a bit more. So, if you are driving in, why not plan to attend. Plans are now underway on the agenda and schedule, with announcement due in the next INAV. We can easily foresee that everyone could fly on both Friday and most of Saturday; those who would not fly HLG could also stay Saturday night. If, in addition (see Nats schedule below) one's Nats interests were limited to Monday events, final test flying on Sunday would be possible.

So, lets think of this: flying (competition or test or record trials) Friday and Saturday; a NIMAS banquet on Friday night, and additional testing on Sunday, depending on one's schedule. If you think you are interested, make a tentative reservation; if you know you are interested, and can make it for sure, make a more firm statement. We need some indication of how many are coming, by July 1. Send a post card to NIMAS, P O Box 545, Richardson TX 75080, by July 1. Please restrict reservation information (how many, type of party - family or singles - tentative or firm plans, etc.) on a postcard or a 3 x 5 card sent in a letter. Do it NOW!

Finally, those who have specific ideas about what type of activity is most suitable should contact Dr. John Martin, 3527 Darwin St., Miami FL 33133 and share your ideas. Volunteer helpers should contact Stan Chilton, 1401A South Hydraulic, Wichita KS 67211. Let's move!

'76 Nats

The entry blanks for the '76 Nats are out; if you didn't get one for some reason, send a self-addressed, stamped envelope to AMA HQ and request one. Entry deadline is (postmark) July 1, 1976. AMA membership is required for entry, but application can accompany the form.

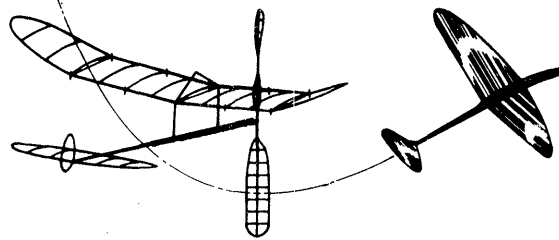
The indoor events will be flown at the 65' State Fairgrounds Coliseum at Columbus, Ohio. Those who have flown at the Detroit State meet will be familiar with the site layout, since it is a twin to the Detroit State Fair Coliseum. HLG will be held from 8 am to 2 pm, followed by Pennyplane and Easy B until 9 pm, Aug. 1, 1976. On Monday, Aug. 2, the standard rubber events run 8 am-9pm. Late entry and adding events can be done at the indoor site until 12 noon, both days. AMA Scale and Peanut Scale are held concurrently with Easy B and Pennyplane.

Postal Meet Reminder

Entry deadline for the 11th Annual NIMAS Postal Meet is (postmark) May 31, 1976. Flights made as part of any contest from Jan. 1, 1976 thru May, 1976 are eligible as are flights made at flying sessions scheduled after the meet was announced. Events are Easy B, HLG, Pennyplane and Ceiling Dodger. See Dec. '75 INAV for details.

"Metric Penny" Postal?

Those of you fortunate enough to receive STAR SKIPPERS journal, Ed Whitten's delightful paper which sponsors and reports Junior postal meets, both indoor and outdoor, have already seen this announcement: STAR SKIPPERS and INAV are jointly announcing tentative plans for an international postal meet for "metric Pennyplanes". What's a metric Pennyplane? Glad you asked! Recently there have been discussions of model types to encourage FAI indoor activity, and Erv Rodemsky (who else?) proposed adopting metric



dimensions for an international pennyplane class. These dimensions (maximum) are: Span - 46 cm, chord - 10 cm, stab - 24 cm x 8 cm, prop dia. - 31 cm, blade width 4 cm, Fuselage - 46 cm. with motor stick 26 cm. The following restrictions apply: two-blade prop only, no hollow parts such as rolled stick, no mechanical devices such as gears or variable pitch props, no multiple wings, tails or props allowed. Covering and bracing optional. Minimum weight is 3 grams without rubber.

So, if you think this can be a good thing, drop Ed Whitten a line telling him you approve and suggest flying rules and other administrative details. Send your comment to P O Box 176, Wall St. Station, New York NY 10005. An editorial comment: I approve of everything about this idea except the limitation on rolled sticks. A good solid stick is far harder than a rolled stick, and if we are to encourage progress toward FAI indoor models, a solid stick restriction is counterproductive.

FAI INDOOR REPORT

New World Champs Schedule?

The April meeting of the FAI brought forth a proposal that all World Championships be held every three years instead of every two years. The major reason for this is that the number of events with activity levels suitable to hold a WCh (A minimum of five countries must participate for a contest to have WCh status) has risen from four in past years to at least nine. Thus, countries with highly diversified competition activity are faced with fielding either four or five teams a year instead of the maximum of two teams a few years ago. National Aero Club budgets just can't stand the strain, so it is deemed extremely likely that the proposal will be formally adopted at the December '75 meeting. The 1976 Indoor WCh will not be affected, but the proposed schedule would then have the next Indoor WCh set for 1979.

WCh Advance Entry

Laurie Barr has reported that 10 countries have (as of Mar. 28, 1976) entered the 1976 Indoor WCh, with two more known to be planning entry. This leaves five countries with previous WCh experience undeclared. Entrants are: U.S.A., Great Britain, Poland, France, Holland, Japan, Canada, Czechoslovakia and Argentina with full team entry and Australia with a one-man entry. West Germany and Sweden were expected to enter, which leaves Italy, Switzerland, Rumania, Hungary and Finland undeclared.

What Is Sandbagging?

A study of the comments on the opinion poll circulated by the FAI Indoor Committee indicated that many fliers and some members of the Indoor Committee do not know what constitutes sandbagging; further they have no appreciation for the effect of sandbagging on the selection process.

Sandbagging can be defined as any device to increase the number of fliers who qualify at any given contest, but which adheres to the letter of the selection program guidelines. That is, it is legal within the rules set out by the Committee, and often has the beneficial effect of increasing the program revenue. The two methods used to sandbag in the past programs are increased entry and performance limiting. In the first case, local fliers are encouraged to fly Easy B's, Pennyplanes, Paper Stick models, or any other model which meets FAI specs; usually, the entry fee and sometimes the FAI stamp costs are paid by the serious contenders. In the second case, leading fliers "hold back" - fly only to place in the qualifying group - so that an ill-prepared or unlucky contestant will still be able to qualify.

The increased entry ploy does generate more program revenue, and has a possible side benefit that one of these "extra" fliers may become inspired and compete in future events. And, in programs where one shot at each level of qualification was all that was allowed (no cross-zone or other type of "make-up" permitted), this type of sandbagging often allowed a flier of great skill and temporarily reduced performance to remain in the program. This method is usually used when the number of qualifiers depends on the number of entrants rather than on relative performance of the entrants.

"Holding back" to minimize the winning score allows one or more less experienced or unlucky fliers to qualify in those programs which qualify fliers on the basis of a performance ratio (for example, 80% of the winning score). This practice - being a "good guy" - has no beneficial effect on the selection process except that the flier benefited by the action may pay more entry fees in that program than he would have otherwise.

So, what is the bad effect of sandbagging so that we should strive to eliminate it? No matter which way sandbagging is accomplished, there is no reason to fly one's models as hard as they will fly, if one is simply over the minimum performance required to qualify. If more people enter in the case of qualification by % of entry, one or more fliers qualified with sub-standard performance, and not really by their own efforts. In the case of holding back, it is clear that the "good guys" learned less about their own performance and the performance of their models than they could have. It may seem hard-hearted to count out a normally good flier because (for example) the airlines jiggled his box and broke his models. Suppose it had happened on the way to the World Champs? Can he repair his models and still make it? If not, the U. S. Team just failed to win another WCh!

CONTEST CALENDAR

NEW JERSEY - Lakehurst

Tentative flying dates in Lakehurst #1: June 13, June 27, July 10-11, July 18, Aug. 1, Aug. 21-22, 1976. Call John Kukon at 609-737-3522 on Friday before each session to confirm hangar availability.

NEW YORK - Long Island

Cat. I contest at Nassau County Arena, Long Beach NY, Sunday, June 6, 1976. Contact Jean Paillet, 30 Emerson Rd., Brookville, Glen Head NY 11545.

AN EDITORIAL

A letter arrived here recently with the comment that the writer and all the local FAI program participants had resolved to read no more mailings which commented on the FAI team selection process now being formulated. As distressing as this viewpoint is, your editor can readily understand. Not only has he received all the normal official mail (as Dist. VIII member of the Committee), but he usually gets two copies of all participant comment (one from the participant and one circulated by AMA HQ). As a result, there is often a pound of mail on this subject in a month.

Nor is that all. Your editor has been castigated, vilified and generally bad-named over his consistent refusal to turn over the pages of INAV to unlimited comment on various special-interest viewpoints regarding both FAI and AMA matters unrelated to model airplane technology. To clarify one point: the "purposes of NIMAS" chosen by the group of seven fliers who formed NIMAS were specific in mentioning indoor model rules and technological topics for comment and dissemination. Thus, commentary on model rules, classes, etc., has sometimes taken over a major portion of some issues.

However, by actual count, the total number of FAI'ers are less than 20% of the total circulation of INAV. Thus it seems unfair to spend everyone's money on comments from a small minority within a minority, when the outcome is of negligible interest to so many subscribers. From a purely selfish viewpoint, I do not feel disposed to donate time re-typing reams of material which I violently disagree with, or some of which is distorted or untrue. Finally, the sheer quantity of words in some of these epistles is more than a newsletter full.

In order to reach a compromise between clearly intractable stands on both sides, the following offer is open to all who wish to air viewpoints of a political nature (not related to model flying rules or technology, but limited to administrative matters of AMA or FAI programs): if the commentary is printed on one side of 8 1/2 x 11 paper and furnished (400 copies), it will be collated with the rest of the next issue and sent to all U. S. members and subscribers. This is an open-ended offer to those who care enough about their viewpoint to furnish enough copies for stateside mailing of INAV. In case more than one comment is available, up to three extra sheets can be sent for the same postage cost. No copies can be sent overseas with the extra pages without extra postage.

On a slightly different subject: it is apparent that I have favored the point system. My personal reasons are rooted in 14 years of administrative involvement in U.S. Team selection - I'd like for us to win a WCh! An intensive study of the past history of U.S. Team selection has proven (to me, at least) that we've gone about it wrong. I have been unable to isolate any factor except consistency of performance which marked WCh-winning teams. No one has advanced any method whereby a flier's performance, in various sites and under varying conditions (WCh sites

and air conditions are never guaranteed) can be compared and quantified, except via the point system. No other proposed system allows cumulative evaluation of performance. No other system requires top-level effort from an entrant every time he opens his box. No other system makes team membership dependent upon performance over a series of contests. No WCh winning team has ever been chosen on the outcome of a single contest, except in 1961, when the sport was in its infancy.

I do not know how other program participants feel about their personal involvement in team selection programs. As for myself, if I am to participate, I must believe that the program is designed to pick the best possible team, or it isn't worth my trouble. No matter that my personal state-of-the-art is insufficient to place me on the team - I only learn when flying hard against tight competition. In programs prior to the point system, I received excellent advice: "Try to qualify without breaking your models - save them for the Finals." I now know that this was short-sighted advice - without risking my models - pushing them - I never really learned their shortcomings until the Finals. I was then not prepared to get the most out of my models at the Finals; two years later I repeated the error with a new set of models. This sort of activity won't make me a team member, and it won't produce a winning team.

STATE OF THE ART

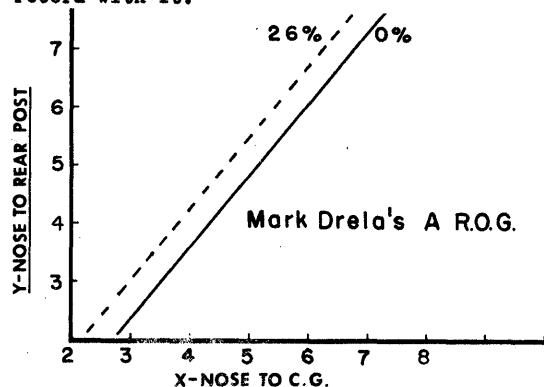
On page 2 there appears a model type long absent from INAV - an "A" R.O.G., as it used to be called - now called Rise Off Ground Stick Model. Mark Drela used the model shown to establish the Jr. Cat. III record at 9:17.3, flying at Lakehurst. Besides the wealth of detail on the plan, Mark adds the following:

The plane was built for very low sites - in case you wonder about the prop design and the airfoil thickness. It was also built without wheels, as I intended to fly it against larger ships at "phone-booth" contests which are held three times a year here in Philadelphia. In this respect, the smaller ship (without wheels) is excellent, having achieved 9:05 in an 18' site with minimal scrubbing.

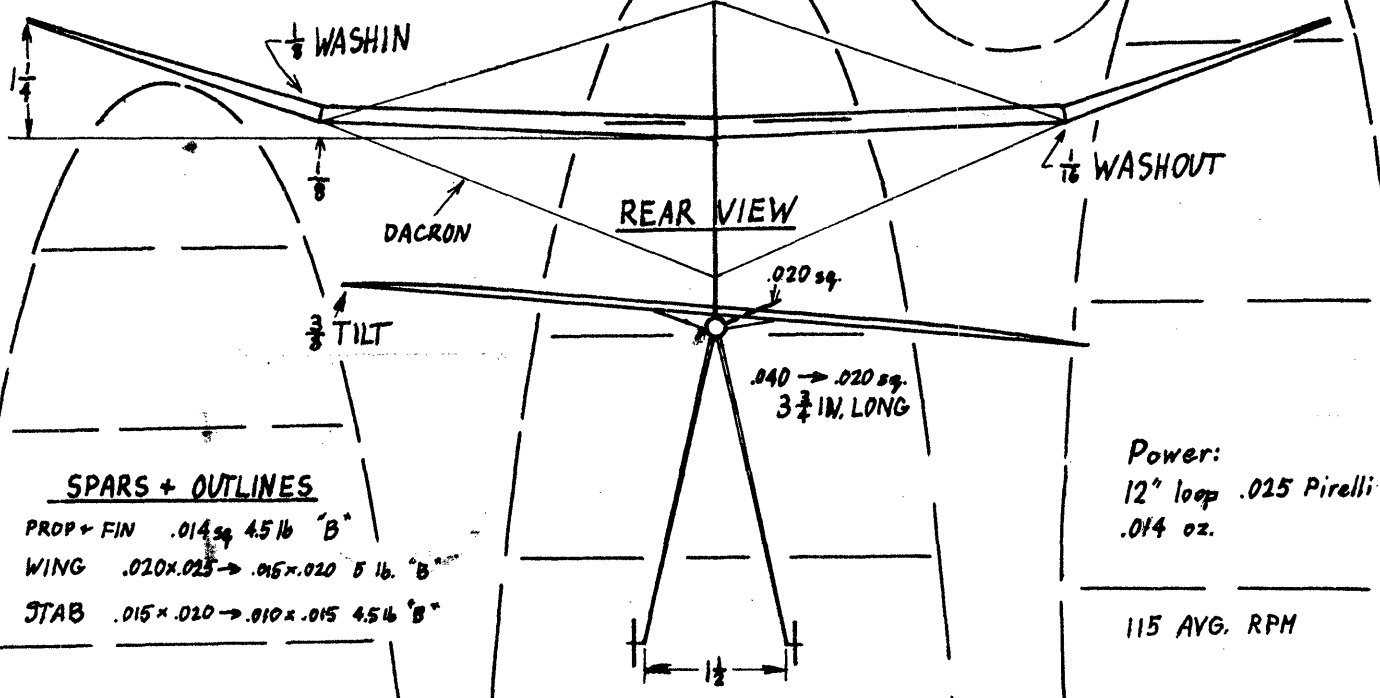
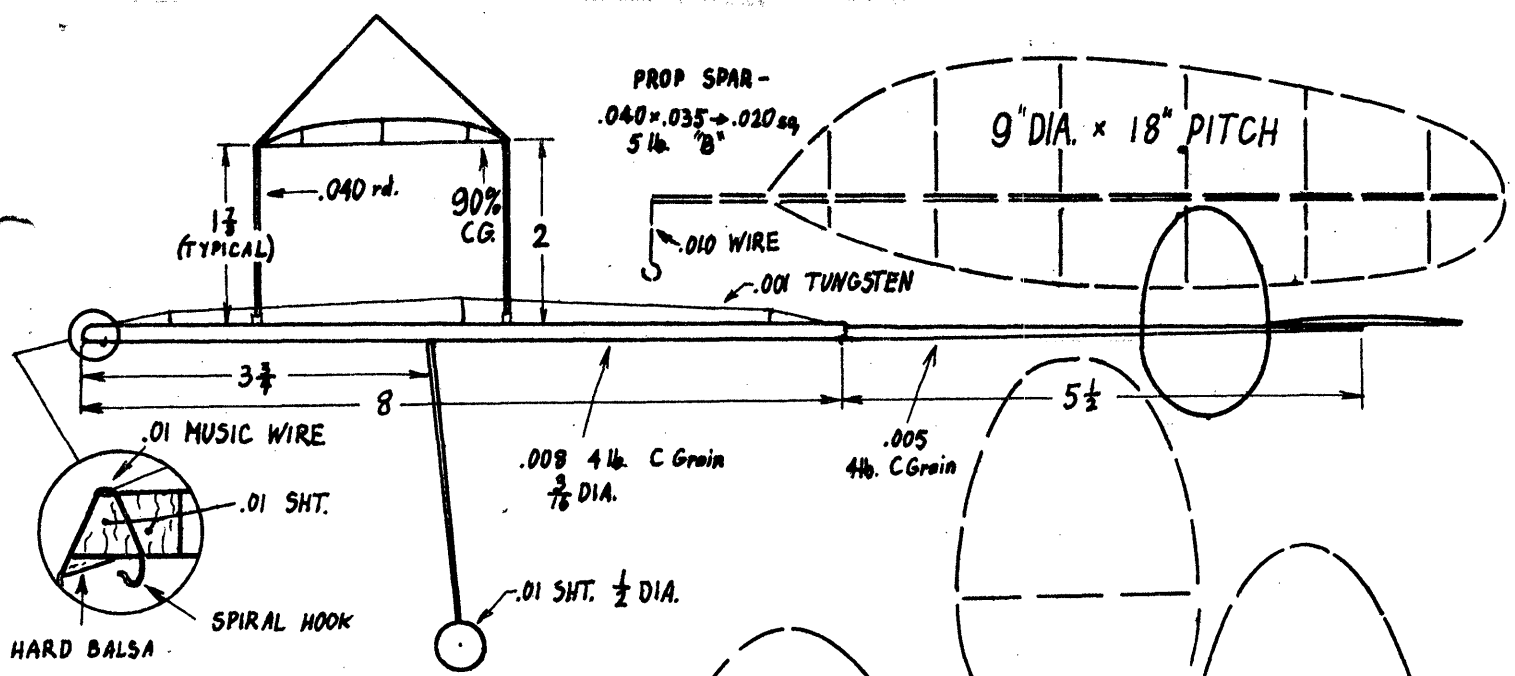
I had decided to take the plane along to the Lakehurst session to try it in the high ceiling. Conditions were excellent without the slightest drift at any height. After trying Cat. I motors, I switched to a longer and heavier loop. Wound it to almost the breaking point, hooked up and let go. The ship rose rather slowly because of the visibly flaring prop. It leveled off at about 80 feet and settled into its characteristically long cruise. The flight lasted 16:20. I asked Pete Andrews what the Junior record for A ROG was - he said three minutes! That was good news, but I didn't have a set of wheels for the ship, hating never built them. However, Charlie Stiles found a pair somewhere on the bottom of his tool box. They looked as if they would support an elephant, so I trimmed them down to minimal dimensions, glued them to the stick and called for an official flight.

Once again I wound the same motor fully. However, my torque meter got stuck and I lost extra turns hooking up. Without the power burst, the ship only climbed to 50' and came down at 9:17.3, with many turns left. After receiving heaps of congratulations, I tried again. I shortened the motor 1/2", rewound and headed toward the middle of the hangar. Unfortunately, there was a launching mishap and the wing collapsed beyond repair.

The plane clearly has more potential for Cat. III. I would recommend a 5% or 6% airfoil and a reverse-flare prop to get way up there. The ship handles power very well and could handle even more rubber. As shown, it is an excellent low-ceiling model and I hope to try for the Cat. I record with it.



Mark flew the model at +26% (dashed line above); a 0% line is shown for reference and is recommended for all except very turbulent conditions.



SPARS + OUTLINES

PROP + FIN .014 sq 4.5 lb "B"

WING .020 x .025 \rightarrow .015 x .020 5 lb. "B"

STAB .015 x .020 \rightarrow .010 x .015 4.5 lb "B"

Power:
 12" loop .025 Pirelli
 .014 oz.

115 AVG. RPM

WEIGHTS, OZ.	
Wing	.0021
Stick + Tail	.0057
Prop	.0015
Gear	.0013
Total	.0106

WING RIB
 9% KOWALSKI .016 x .018 4.5 lb. "C"

STAB RIB
 5% ARC .012 x .015 4.5 lb.

PROP RIB
 4% ARC .014 sq.

"A" ROG

Cat. III Record Holder
 Mark Dreja
 Junior Class

FULL SIZE OUTLINES

INDOOR

NEWS and VIEWS

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

Members who joined in March, 1976

WILLIAM L. BAKER, 1902 Peter Pan, Norman OK 73069
 HARVEY BROWN, 1812 Kenilworth, St. Louis MO 63144
 DAVE BLOOM, 8152 Elmwood Ave., Skokie IL 60076
 MICHAEL MULLIGAN, 6031 Cortez Dr., Huntington Beach CA 92647
 Miss JEAN MURRAY, 9515 S. 54th Ave., Oak Lawn IL 60453
 IRVING C. POLING, 12541 SE 52nd St., Bellevue WA 98006
 WILLIAM R. ROGERS, 209 Linwood Ave., Stevens Point WI 54481

Members who joined in April, 1976

STEVE DAVIS, 1807 Lakemont, Arlington TX 76013
 WARREN EIDEN, 5817 73rd Ave. N, Apt. 30, Brooklyn Park MN 55429
 MIKE MUMFORD, 19 Laurel Lane, Simsbury CT 06070
 RICK POWERS, 148-B 29th St., San Francisco CA 94110
 LARRY RENGER, L. M. Cox Mfg. Co., 1505 E. Warner Ave., Santa Ana CA 92705
 STEVE SPENCE, 3508 Lynnwood, Arlington TX 76013
 CLIFFORD TOMAS, 2356 Superior St., Madison WI 53704

A Reminder

A flier has been included with this issue (only to North American continent) which contains much information about the First NIMAS International Record Trials. The name change from NIMAS Internats came about with the realization that the meet will be unable to qualify as an international sporting event; such a classification is possible only with entrants from at least three countries. Boyd Felstead plans to be in the U.S. this summer, but his schedule won't coincide with the right weekend. It was also hoped that Butch Hadland could attend the Nats again, but he cannot. This leaves only Canada and the U.S., so no international meet this time. Don't forget to send in the entry/reservation form! Deadline advanced to 7/12/76.

Other Reminders

Remember that Nats entry blanks must be postmarked by midnight, July 1, 1976.

Manhattan Cabin (get rules from John Martin, 3327 Darwin St., Miami FL 33133) will be sponsored by the Miami Indoor Model Aircraft Association at the Nats, and held concurrently with Indoor Scale and Peanut Scale.

Subscription renewals have been coming in before expiration dates rather nicely; those who have "04" or higher as part of their address can help the paperwork load here by renewing before the issue corresponding to the number in their address.

Postal meet entry has closed, and the results will be announced in the next issue.

FAI INDOOR REPORT

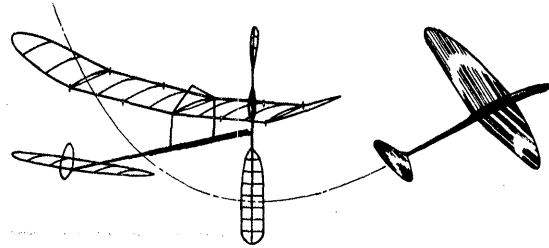
Andrews Is Team Manager

One of the news items overlooked in preparation of recent INAV's is that Pete Andrews was chosen to be U. S. Indoor Team Manager. Pete's wide experience will be beneficial to our team's chances of a win at the 1976 Indoor World Championship, to be held at Cardington hangar Aug. 29-31, 1976.

CONTEST CALENDAR

INDIANA - West Baden
 First NIMAS International Record Trials, July 30-31, 1976. Informal competition and socializing at a top-notch indoor site, besides a chance to trim for the Nats. John Martin, 3227 Darwin St., Miami FL 33133.

NEW JERSEY - Lakehurst
 Tentative flying dates at Lakehurst #1: July 10-11, July 18, Aug. 1, Aug 21-22, 1976. Call John Kukon at 609-



Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

737-3522 on Friday before each session to confirm hangar availability.

TWO SITES: A COMPARISON

Photos on page 3 compare the Nats site (Columbus, Ohio State Fair Coliseum) and Northwood Atrium at West Baden. Top two photos made recently (turn page sideways) at the site in Columbus; peak is 65'. Essentially identical to State Fair Coliseum in Detroit, where times approach 30 minutes in good air competition. Bottom two photos taken at West Baden during 1967 Team Selection Finals; left photo is Dick Ganslen and right photo Clarence Mather.

STATE OF THE ART

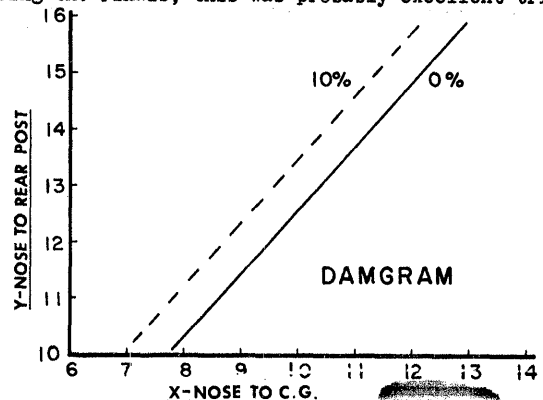
In times past, Jim Richmond's models have tended to become standards for comparison, and have been widely copied and flown by other fliers. His DamGram, the second design Jim made for one gram rules, has flown well in his hands. Time will tell about this model's staying power - it certainly seems to have the necessary potential. Jim has a few remarks about the one gram rule and the model:

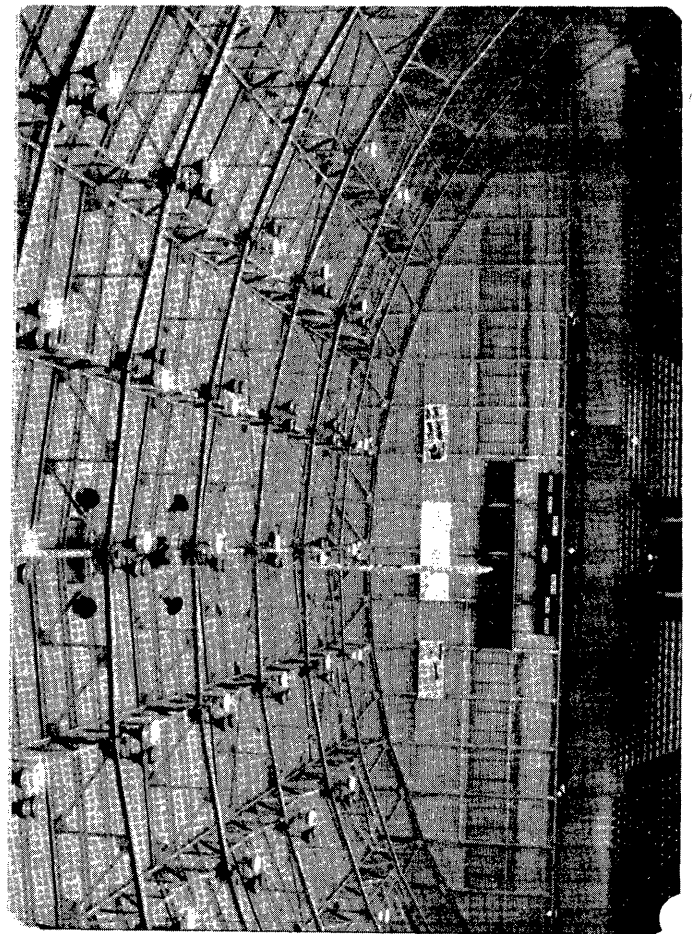
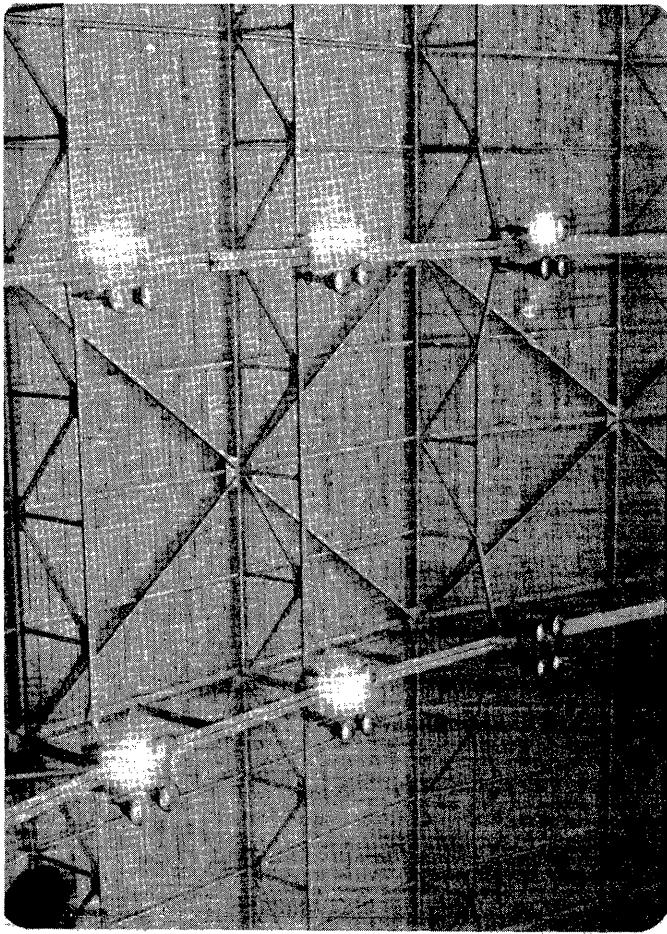
This is the plane which carried me through almost the entire program, doing equally well in low ceiling (Tulsa) and high ceiling (Akron) sites. The relatively small stab seemed to work OK and doesn't have as much drag as the 50% stabs used by others. The funny rudder serves very well as a support for the stab bracing. Yes, I still do brace the stab. I try an unbraced one every so often, but I have absolutely no confidence in a floppy wet noodle unbraced stab. Any way, the rudder bracing support doesn't require punching a hole through the stab film for a support stick and I like that part the best. I still like the slanted wing posts for wing offset, making it possible to use a stronger asymmetrical wing. The compression ribs are one piece, being thick in the center and tapering off at the ends. I have been using this type since 1969 when an investigation revealed they were as light as built-up ones and a heck of a lot easier to make and a lot more forgiving in crisis situations.

The name "DamGram" is mostly sour grapes, the plane being designed and built during the previous program when the "good old days" were still fresh in my mind. The weight rule certainly was successful in removing the emphasis on craftsmanship.

Other data: the prop is a scaled-up version of the same old design I always use (progressive flare). The motor was a 15" loop of .060 at Tulsa and a 16" loop of .059 at Akron and Lakehurst. Motor stick bracing is a "v" at the center and a single stick at the ends. The original plane had an upright motor stick, but the 45° "lean" was adopted during a repair job and I think the performance was improved. The plane was seriously damaged when the motor broke during hook-up in the third round of the Finals. Upon reflection, it seems that this is the fate of most of my models eventually. I'm thinking seriously of going to "0" rings on the motors.

As drawn, DamGram is trimmed at +10% margin computed by the CMOS method (balance chart below) and at +23% using Hal Crane's INF method. In view of the highly turbulent air during the Finals, this was probably excellent trim.

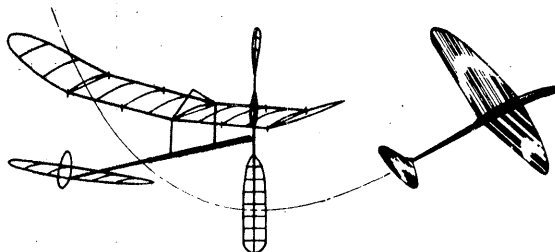




INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

Members who joined in May, 1976

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 SIMON BLAKE, c/o Plandome Caterers, Inc.,
 338 Plandome Rd., Manasset NY 11030
 ROBERT GEYER, 913 Washington St., Baldwin NY 11510
 CLAUDE D. MEYERS, 801 Sanit Bede Lane, Hayward CA 94544
 KEN OBERBECK, 50 East Lakewood, Fenton MO 63026
 JACK PITCHER, 14813 Lakeshore Dr., Grand Haven MI 49417
 DICK SCHUERMAN, 3847 Ruth Lane, Chevoit OH 45211

Members who joined in June, 1976

ARNOLD E. MOHN, 9632 Sailfish Dr., Huntington Beach,
 CA 92646
 STAN STOY, T.C.U., P O Box 30150, Ft. Worth TX 76129
 GARY J. THATCHER, 3365 W. Oswego, Fresno CA 93711

Honorary Members!

PETE REDHEAD, 12 Highfield Rd., Marple, Stockport
 Cheshire SK6 7NG England

This Issue

This issue is a mixture of old and new, with some items reprinted from earlier INAV's. The key thing is virtually all the issue is made up of material furnished, one time or another, by INAV readers and CD's. It has always been thus - the best issues are assembled from contributions of ideas and news. Without such help, INAV's early demise would have been assured. In the past eight months, when letters have gone unanswered, the input of new material has slackened considerably. Note: almost no one has ever refused to share ideas, plans, news, etc. with INAV; the problem is that if I've not had time to write and ask, no one often thinks to share. So, if you have a new approach, or an idea you've not seen in print, or something else which helped you - share it!

In particular, if you set a record, or run a contest, or any similar activity, spread the news. If you plan a contest which may have site problems, at least send a "tentative" notice so people can be alerted. Note Ed Whitten's letter immediately below for more:

Dear Bud;

AMA - at least as far as reporting records is concerned - has gone from a zenith to a nadir. First the listing contained names and dates to lend perspective to the information - then just times - then nothing in the last issue of MA. So, we go back to relying on INAV.

There have been a good many indoor records set around here - and there are probably more elsewhere I haven't heard about. I wonder if CD's have sent them to you?

Regards,
 Ed Whitten

'76 Nats

Advance entry in the Nats has been low, so perhaps those who do fly will have a relaxed session and get high times. Bucky Servaites reported that a test session had very light drift at 2/3 altitude, so there should be few problems in that regard. At one time it was feared that the arena would be set up for an up-coming horse show, but late word assures that the surface will be washed concrete - almost clean enough to eat from.

Nats Reporters Wanted!

Due to a big backlog at the new job, I won't be able to attend both the NIMAS Internats and the Nats. I've been to a Nats, but never to West Baden - so, West Baden it is. The Nats reporting will have to depend strictly on NIMAS readers, so it is up to you! Let me know as soon as you can after the Nats if you can contribute, so I don't publish an issue without your report. Results, photos, happenings - whatever made you enjoy the event - all these are fair game.

West Baden Bash

Advance registration has been good for the First NIMAS International Record Trials. We are all looking forward to a relaxed session and the first NIMAS get-together in 14 years (a brief meeting at the '62 Nats decided that the historic trophy unearthed by Frank Ehling would become a perpetual trophy for Indoor Stick). Drop by to see us if you can!

NIMAS POSTAL MEET

Name	Time	Ceiling	Fudge	Score
Junior Easy B				
1. Eric Barnum	255	23'	1.234	314.7
2. Linn Carter	217	23'	1.234	267.8
3. Dan Bookwalter	188	23'	1.234	232.0
4. Danielle Duffy	186	23'	1.234	229.5
5. Robin Dyke	168.2	23'	1.234	207.6
6. Lisa Fugate	181.4	23'	1.24	181.4

Jr. Cat. I HLG (2 flts.)				
1. Bill Ticherich	40.9	23'	1.087	44.5
2. Eric Barnum	38.1	23'	1.087	41.4
3. Pat Hickey	33.9	23'	1.087	36.8

Junior Pennyplane				
1. John Magnus	369	27'	1.139	420.3

Pennyplane				
1. Clarence Mather	535	22.3'	1.253	670.3
2. Dick Hardcastle	533	30'	1.08	575.6
3. John Kukon	744	65'	.734	546.1
4. Bob Meuser	836.2	132'	.515	430.6
5. Richard Whitten	340	33'	1.046	355.6

Open Easy B				
1. Dick Hardcastle	744	30'	1.08	803.5
2. Hal Crane	604	24.08'	1.205	727.8
3. Clarence Mather	567	22.3'	1.253	710.4
4. John Kukon	778	65'	.734	571
5. Bob Dunham	489	37'	.973	475.8
6. Robert Dunham II	443	37'	.973	431
7. Richard Whitten	503	50'	.837	421

FAI INDOOR REPORT

Team Preparation

The U.S. Indoor Team, Bud Romak, Bucky Servaites and Jim Richmond, have all made significant progress preparing for the '76 Indoor World Championship. Bud Romak has been testing in the wind tunnel site at Moffett Field. In the 132' ceiling all his models have done over 30 minutes, and he is still building backup models beyond the seven ones now in his boxes. Bucky and Jim have been able to test in the Akron hangar with good results. Bucky is pushing 39 minutes, while Jim had a 41:28 flight (possibly under FAI sanction). That model climbs at 44 RPM with 40 RPM average for the flight. Unfortunately, the Akron site varies considerably in flight conditions, so many times sessions become bull sessions instead of flying sessions.

RECORDS? MAYBE!

The following list has been compiled from data sent by several CD's. Duplicate listings on the same day represent successive flights at the same site. Is this a complete list of record applications since March?

Event	Time	Cat.	Flier	Date	Site
Sr. Pennyplane	8:28.8	II	Richard Whitten	5/22	A
Op. Pennyplane	12:27	II	John Kukon	5/22	A
Op. Pennyplane	12:52	II	Doug McLean	5/22	A
Op. Pennyplane	15:50	III	John Kukon	5/2	B
Sr. Pennyplane	7:34.2	I	Richard Whitten	6/6	C
Op. Pennyplane	9:19	I	John Kukon	6/6	C
Nov. Jr. Penny	3:52.8	II	Chad Curth	5/1-2	D
Nov. Sr. Penny	3:07.1	II	Bill Schuh	5/1-2	D
Nov. Jr. Penny	3:08.4	I	Greg Trubowitsch	6/6	C
Nov. Op. Penny	5:49.5	III	Ed Whitten	6/27	B

Sr. P. Stick	20:09.9	III	Richard Whitten	7/10	B
Op. P. Stick	16:00.8	I	Dan Domina	6/6	C
Sr. AMA Stick	22:56.1	I	Richard Whitten	6/6	C
Sr. FAI Stick	22:56	I	Richard Whitten	6/6	C
Jr. HLG	62.6 s.	I	Joseph Nuszer Jr.	6/6	C

Site codes:

- A - Jadwin Gym, Princeton Univ., Princeton NJ, 65' ceiling
- B - Lakehurst hangar #1, Lakehurst NAS, NJ.
- C - Nassau County Arena, Long Beach NJ, 30' ceiling
- D - Madison St. Armory, Chicago IL, 75' ceiling

TOP TEN EASY B

Name	Time	Ceiling	Fudge	Score
1. Dick Hardcastle	744	30'	1.08	803.5
2. Hal Crane	604	24.08'	1.205	727.8
3. Clarence Mather	567	22.3'	1.253	710.4
4. John Kukon	778	65'	.734	571
5. Bob Dunham	489	37'	.973	475.8
6. Robert Dunham II	443	37'	.973	431
7. Richard Whitten	503	50'	.837	421
8. Eric Barnham	255	23'	1.234	314.7
9. Linn Carter	217	23'	1.234	267.8
10. Dan Bookwalter	188	23'	1.234	232

STEERING COMMENTS

Now that balloon steering is allowed in AMA contests, perhaps a bit of information on the subject is in order. The basic idea of model steering is to change the flight pattern location to overcome the effect of drift or to put the model out of danger of collision with another model. It isn't allowable to steer or move the model so that it gains altitude - an excellent steer will preserve altitude and a passable steer maneuver loses only a small amount of altitude. Steering takes practice; not only should the flight pattern be re-located well away from danger, but the maneuver must be accomplished without catching the prop in the string or upsetting the model greatly. Clarence Mather offers the following comments.

Safe Steering Techniques

by Clarence Mather

Of all the steering techniques I've used, I now only use fuselage steering. Wing steering (allowing the model to pivot against the string which is held against the wing leading edge) is very likely to fold a wing, or the wing may slip off prematurely. To use fuselage steering, I try to walk with the string moving parallel to the model and then move the string against the motor stick between the wing and prop. This should be accomplished when the model is moving straight away from the obstruction. I then try to walk just a little slower than the model flies and keep some pressure on the stick to keep the model flying in a straight line. If one walks too fast the string will get caught in the prop. That usually terminates the flight but is better than a broken wing or hung model. If one walks too slowly the model may stall and again hang on the prop. I'm no expert but I've saved my models a number of times, even at high altitude. If the prop does catch the string, reel the balloon in just fast enough to keep the model level. To avoid damage while removing the model from the string, catch the prop hook to prevent further prop rotation, then have a helper pull slack in the string above the model. The slack loop can then be used to unwind the string from the prop shaft. Good luck!

A LOOK AT YESTERYEAR

Two plans appear half-size on page 5 - real nostalgia items for old-timers! It is interesting to note numerous differences in design concept and technology between these two designs. Note also that even the "High Duration Tractor" - the most advanced model - still uses wire clips of fixed incidence setting to mount the wing. Flight trim can only be changed by moving the wing forward or back, and the angle of attack is fixed at a very high value. Thanks to Hal Crane for loaning these plans, and for his patience while I got around to using them!

STATE OF THE ART

Dennis Jaecks won Pennyplane at the Nats three years in a row, then retired as the Nats moved to the deep South for two years. In the meantime, biplane pennyplanes came into being and Dennis tried one. It appears on the plan page; Dennis comments as follows.

The ruling making pennyplane an official event motivated me to try it again. (I did more or less retire after the '73 Nats.) Word on the Kukon success with a biplane led me to try one. Wood sizes were pretty much the same as on my 8" chord models. The objective of building a suitably

stiff model which weighs exactly one penny was just met. "D" spars - rectangular spars sanded round on one side - were used. Main spars were .070 x .060, tip spars were .055 x .040, stab spars .065 x .040. Ribs were .028 x .050, 7 lb. wood. The drooping tail boom was used to get the stab out of downwash into clean air. A tissue socket on the stab front post permits simultaneous adjustment of wing and stab incidence; the effect is to vary downthrust adjustment.

With relatively limited flight experience, the model is already working well. Climb angle can be much higher than the 8" chord model without stalling. This may also be the answer to using higher pitch props. Most flying has been with the prop outlines used on my 6" and 8" chord models.

There are still many questions unanswered in my mind about optimizing designs and prop-rubber combinations for pennyplanes. Does the general rule-of-thumb (rubber wt. 1.25 times model weight) apply? How big a prop is practical in order to keep RPM down? I have also been perplexed by the 180% length motors. I'm now trying some 18" and 19" props with big outlines.

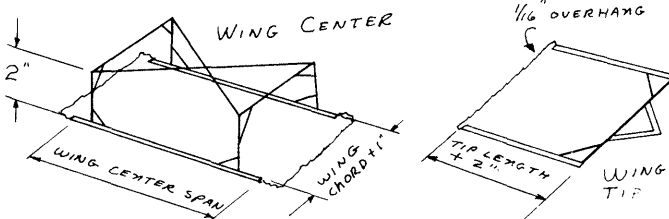
PENNYPLANE HINTS

PennyPlane Covering

by Dennis Jaecks

- Handling of microlite* can be made easier by placing it between two sheets of paper, such as newspaper or heavy tracing paper. It can then be cut to size and shape with scissors.
- Covering frames are worth the time and trouble needed to build them, since they speed up and improve the covering job. See sketches below for construction ideas, and it is recommended that 1/16" x 3/16" wood be used.
- Used thinned rubber cement to attach either microlite or condenser paper. Thin the cement to about the consistency of water. Use naphtha based rubber cement, since this solvent does not affect microlite. Pipe cleaners make excellent disposable brushes to apply the cement.
- Trim microlite with methylene chloride applied with a #000 size brush. This solvent can be slowed down by adding ethylene dichloride. **Safety Note:** both these solvents are hazardous to breathe, and should be used only under conditions of excellent ventilation. **Bear in mind** that this same comment applies to acetone, methyl ethyl ketone, butyl acetate and almost all other solvents used in microfilm solutions.
- Coat wing and stab outlines (where covering touches) with thinned dope or microfilm solution to seal the wood. This prevents the thinned rubber cement from soaking in, so that only one coat is needed to attach the covering.

*Microlite is polycarbonate-type plastic film which weighs approximately half as much as the lightest condenser paper and perhaps five times as much as microfilm. It is dimensionally stable (won't shrink, except slightly with heat), and is quite strong. It is available from Micro-X, P O Box 1063, Lorain OH 44055. By using microlite to cover PennyPlane, it is possible to save perhaps 7% of the total weight. The advantage is to concentrate the required excess weight near the CG to reduce the moment of inertia of the model, which improves dynamic stability.



CONTEST RESULTS

THERMALEERS FLY-IN, 2/15/76, East St. Louis Armory
St. Louis, Mo., Cat. I - 34' ceiling

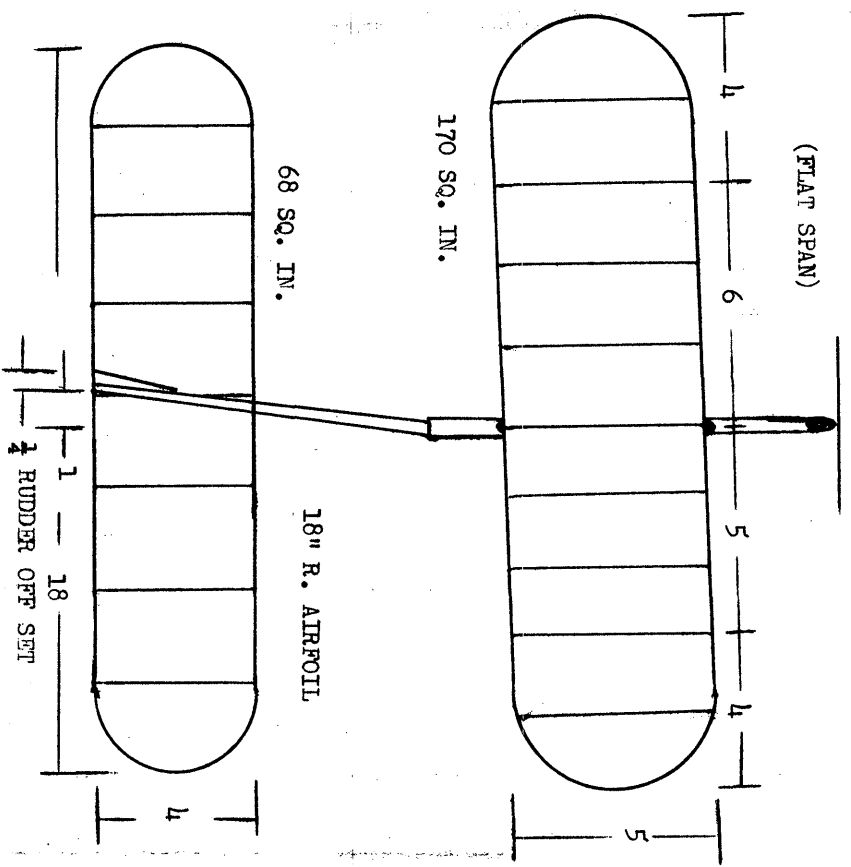
Jr./Sr. HLG	Time	Jr./Sr. Easy B	Time
1. Jason Tryon	:53.2	1. Rosie Tryon	5:22
2. Erik Schwan	:47	2. Doug DePaul	5:17.4
3. Bill Martin, Jr.	:41.6	3. Jason Tryon	3:54
4. Kurt Schwan	:34.6	4. Eddie White	3:19

Open HLG	Time	Pennyplane	Time
1. Stan Stoy	1:15.6	1. Dick Hardcastle	8:33.4
2. Mike Stoy	1:10.6	2. Chris Matsuno	5:32
3. Bob Klipp	1:08	3. Roy White	2:17
4. Chris Matsuno	1:07		
5. Dale Frost	1:07		
6. Paul Tryon	0:54		
7. Hal Schwan	0:45		

Novice Pennyplane

1. Bill Martin	4:21
2. Chris Matsuno	3:55
3. Roy White	2:17

PROP: 17 D. X 27 P.



WEIGHTS

PROP - .031

WINGS - .040

BODY - .038

BALAST - .0003

PENNY PLANE

TOTAL - 0.1093 OZ. / 1.0 PENNY

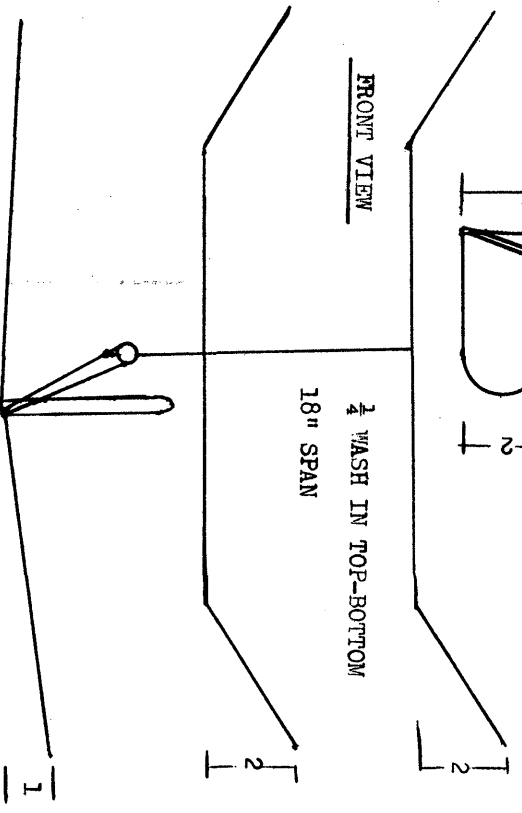
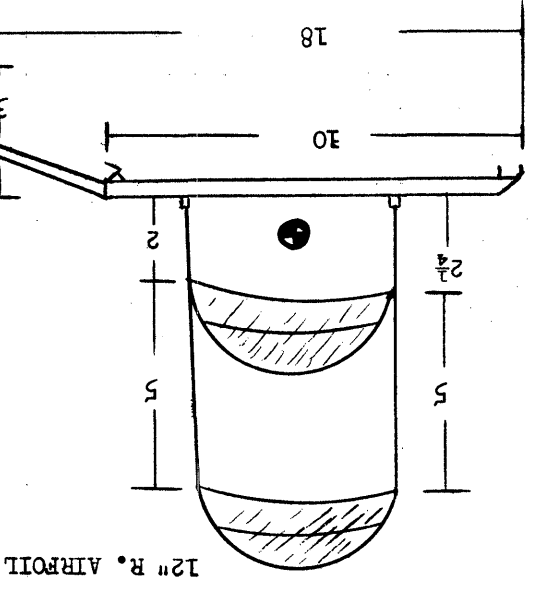
TIME: 11MIN. 12SEC.

POWER: 18 X .098 @ 1150 TURNS

DATE: FEB. 8 1976

BY

Samuel M. Kueker



Open Easy B

1. Dick Hardcastle	12:11
2. Dale Frost	7:46
3. Paul Tryon	7:45
4. Bill Martin	6:40
5. Roy White	6:35
6. Chris Matsuno	5:26

AMA Stick

1. Dick Hardcastle	16:58
2. Roy White	12:00
3. Paul Tryon	11:00

RUBBER STRIPPING METHOD

by Ted Gonzoph

It is possible to get very consistent cuts of pirelli with the proper equipment, preparation and a little practice in using the equipment. This is my way of stripping:

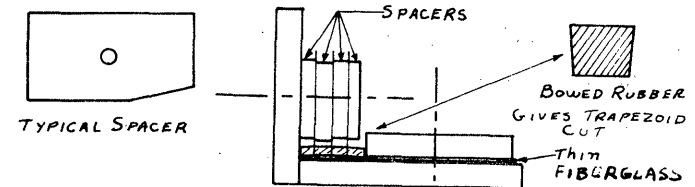
I use the Bilgri style stripper made of plexiglas, and generally take two strips from the center of 5 or 8 mm rubber, and discard the outer edges. This takes three razor blades and the blades give a smoother cut than the factory cut on the edges.

Much of the success of the method is due to using full width spacers like those shown in the sketch. They are made from special lead spacers available from print shops that do flat bed printing, or from steel rule die making shops. The spacers are available in sizes called "points" with one "point" being equal to about .015" in thickness. Intermediate rubber sizes are cut by adding similar spacers cut from .003" vinyl sheet, or other plastic which does not absorb water. Remember that the width of the cut will equal the spacer plus the thickness of one blade.

The blades are single edge steel (not stainless steel) razor blades with the doubler back removed. Each blade is typically .010" thick, so the thickness of a strip would be figured this way: assume a 4 point spacer; 4 x .015" = .060", then add .005" for half the thickness of a blade on each side - a total of .070". To cut a .050" strip, use a 2 point spacer and three .003" vinyl spacers (total of .049", which is within the accuracy of the equipment). Important: do not use any spacer made from absorbent material. Stick to vinyl, celluloid or other plastic.

The gang-strip system is basically a matter of getting the spacers set for the cut needed. However, there is more - experiments since the mid-'50's show:

1. The guide side of the stripper should have two holes for locking.
2. The plexiglas base will wear ragged after several cuts due to razor impressions. I use a thin plastic or fiberglass base piece beneath the guide plat to sink the blades into, then replace it when it gets ragged.
3. The balsa wedge is important. If the guide spacing is set just right, the the rubber gets slightly wider (pirelli can vary as much as .020" in width), the rubber will buckle and give a trapezoidal cut as shown in the sketch.
4. Use a vertical back piece with several bolt holes (I have six on 1/2" centers), then you can mount the blades in several locations without marring the base too much.
5. This I found most helpful: I wash the rubber while it is still in the skein and cut it into 50' lengths. Just before I begin to strip I place the rubber into a bucket which contains one gallon of water, a handful of Ivory Snow and about 5 ounces of glycerin. The rubber is fed into the stripper directly from the pail. The whole thing gets really sudsy, but the cut is so smooth that it's worth the mess.



(Reprinted from an early INAV)

Peanut Scale

	Heinkel HE119	Scale	Time	Points	
1. Tom Stark	2	176	(1)	3	
2. Lew Merlotti	Corbin Baby Ace	1	80	(3)	4
3. Hal Schwan	Taylor Cub	3	156	(2)	5
4. Lloyd Wood	Andresen BA4-B	1	73	(4)	5
4. Cecil Cook	Fairchild	3	72	(5)	8
5. L. A. Bell	Peacemaker Nesmith Cougar	4	23	(6)	10

LIAMAC Cat. II Indoor Meet, 4/11/76, Locust Valley, NY

Jr./Sr. HLG

1. Adam Minissian	1:23.2
2. Mark Janoska	1:16
3. Barry Paillet	1:12.8
4. Bruce Paillet	1:11.4
5. Joe Nuszer, Jr.	1:08.1

Open HLG

1. Dan Domina	1:23.6
2. Joe Nuszer	1:17.5
3. Jack Minissian	1:14.5
4. Jean Paillet	1:04.8
5. Al Vollmer	1:03.6

Jr./Sr. Easy B

1. Richard Whitten	8:34
2. Mitch Stewart	7:39.2
3. Barry Paillet	6:39.2
4. Adam Minissian	5:36.2
5. Greg Trubowitsch	5:27.9

Open Easy B

1. Wilbur Tyler	11:01.4
2. Pete Andrews	10:21.4
3. Frank Haynes	10:16.2
4. Jack Minissian	9:52.3
5. Al Vollmer	8:06

Jr./Sr./Op. Indoor Stick

1. Dan Domina	14:55.5
2. Richard Whitten	10:56
3. Frank Haynes	10:20.2
4. Bill Tyler	9:45.0
5. Pete Andrews	8:26

Jr./Sr./Op. Scale

1. Jack Minissian	155.75
2. Adam Minissian	147.75
3. Sal Alu	137.7
4. Don Garofalow	129.5
5. Bob Clemens	127.7

Jr./Sr. Peanut Scale

1. Adam Minissian	287.22
2. Richard Whitten	259.2
3. Billy Henn	218.96
4. Barry Paillet	172.1
5. Bruce Paillet	163.55

Open Peanut Scale

1. Jack Minissian	284.16
2. William Henn	239.98
3. Bob Bender	238.9
4. Jean Paillet	219.61
5. Chuck Pawelczyk	214.11

MDC NATO Day Indoor Meet, 3/28/76, East St. Louis Army St. Louis, Mo., Cat. I, 34' ceiling.

Jr.-Sr. HLG

1. Lou Matusik	0:38
2. Kurt Schwan	0:23

Jr.-Sr. Easy B

1. Ed White	5:03
2. Larry Long	2:26

Open HLG

1. Stan Stoy	1:16.6
2. Dale Frost	1:10.4
3. Bob Klipp	1:09.6
4. Mike Stoy	1:07.4
5. Dick Hardcastle	1:06.6
6. A. Telford	2:46
7. Chris Matsuno	1:01.6
8. J. Fierce	0:49.2
9. Ken Oberbeck	0:48
10. D. Hickman	0:47.6
11. H. Schwan	0:41

Novice Pennyplane

1. Chris Matsuno	5:06
2. B. Martin	4:04
3. B. Martin, Jr.	3:41.4
4. Larry Long	3:01
5. Lou Matusik	0:37

Pennyplane

1. Roy White	7:33
2. Dick Hardcastle	6:58
3. Chris Matsuno	6:06
4. J. Fierce	5:21
5. Ken Oberbeck	2:51
6. A. Telford	2:46
7. L. Long	2:38

Open Easy B

1. Dick Hardcastle	10:49
2. Paul Tryon	8:31
3. Carl Fries	7:50
4. Roy White	6:24
5. Chris Matsuno	6:02
6. Bill Martin	5:55
7. Ed Hicks	5:03
8. K. Olsen	3:37

Combined Stick

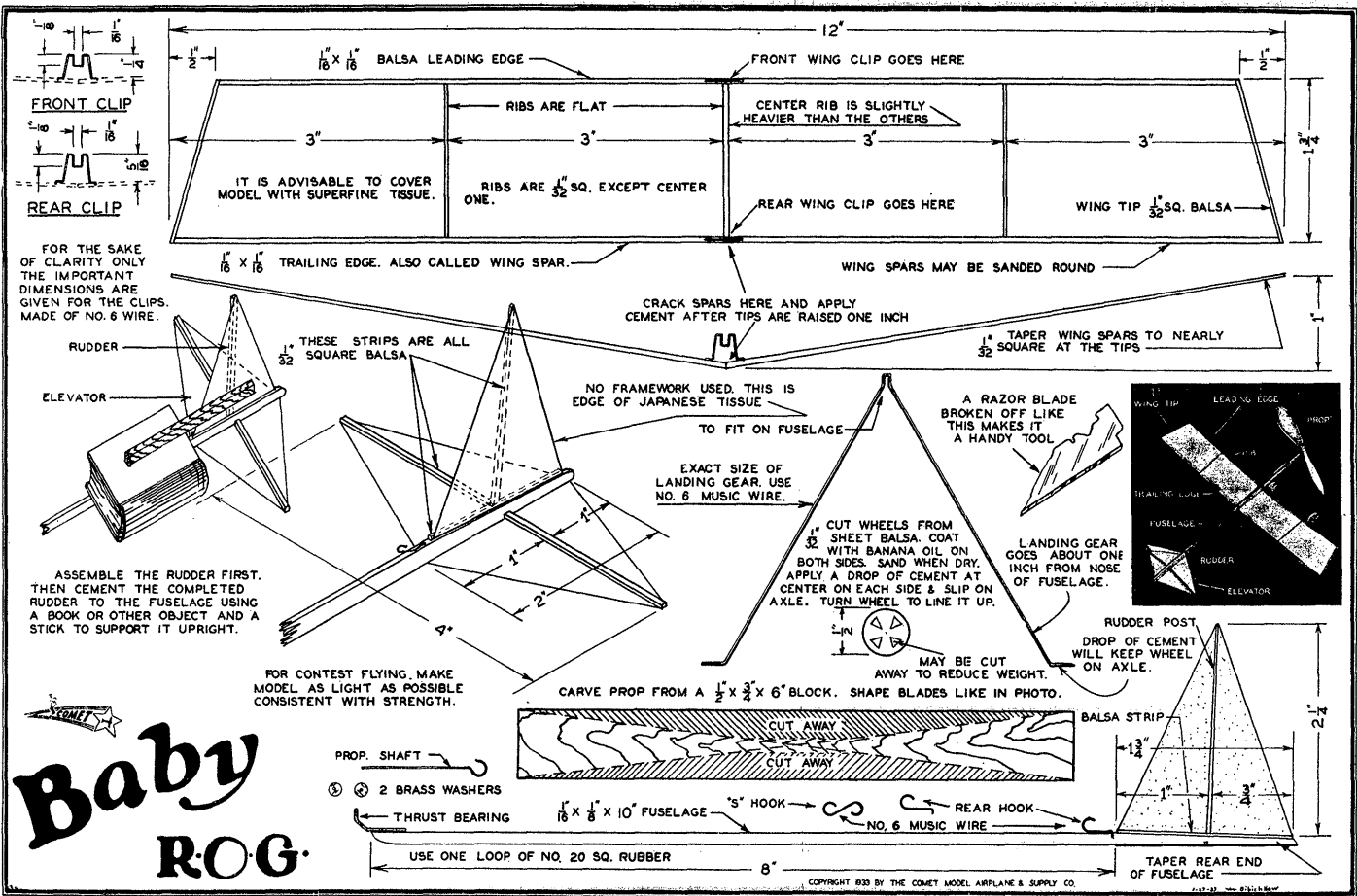
1. Dick Hardcastle	15:58.2
2. Roy White	10:35.8
3. Paul Tryon	9:28

Peanut Scale

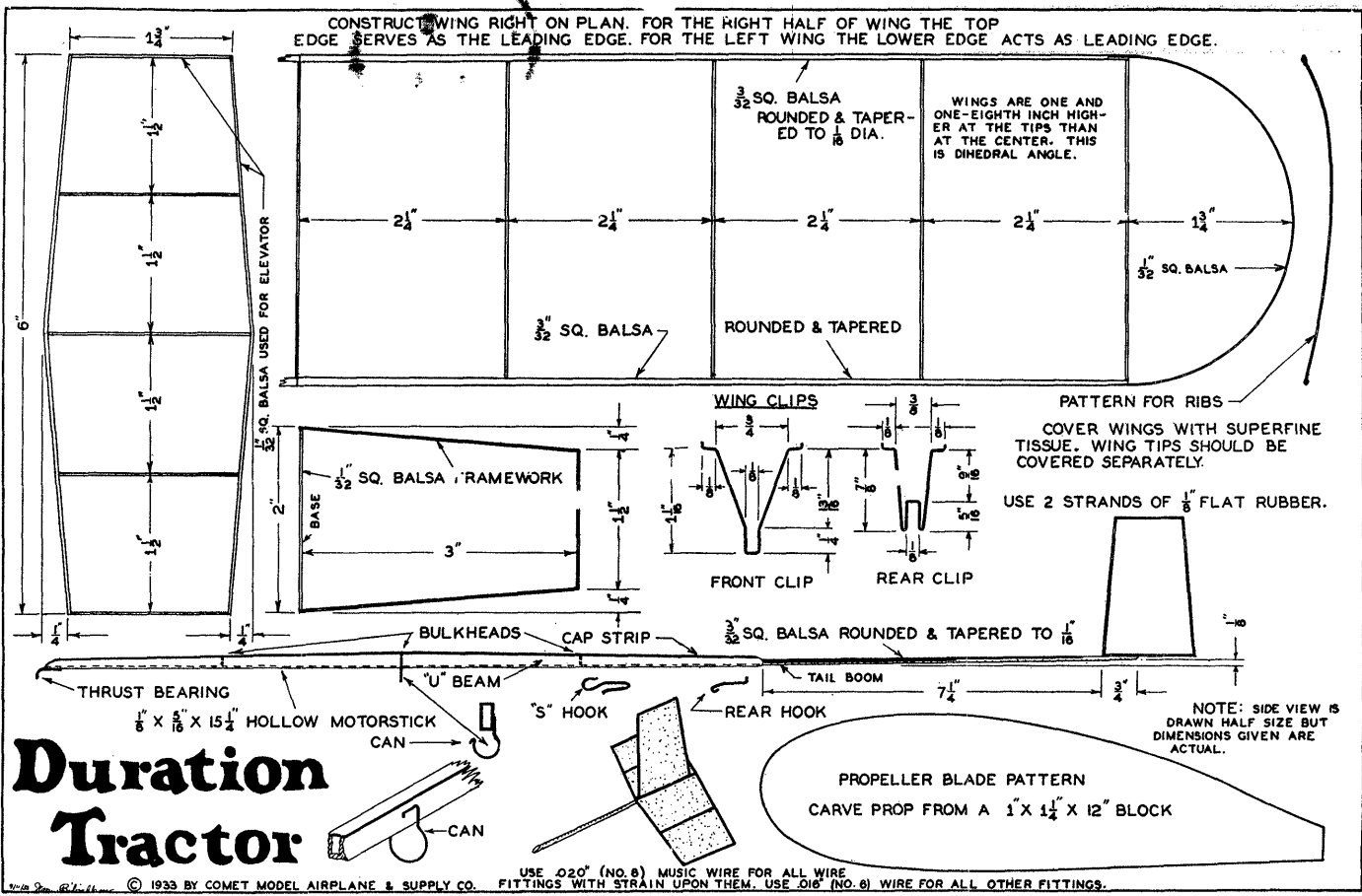
	Halberstaat	Scale	Flight	Points
1. Hal Schwan	1	1	1	2
2. Cecil Cook	Pilatus Porter	3	2	5
3. Ken Olsen	Druine Turbulent	2	6	8
4. Lloyd Wood	Andresen BA4-B	4	5	9
5. Larry Long	Lacey M10	7	3	10
Joe Fierce	Lacey M10	6	4	10

AMA Scale

1. Hal Schwan	Halberstaat	107 points
2. Lloyd Wood	Stinson SR10	87
3. Cecil Cook	Monocoque	82



Baby ROG

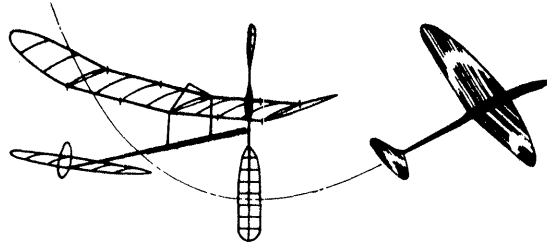


Duration Tractor

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

This Issue - Results

Due to the fact that various results (including some very important WCh and world record info) such as Nats Scale, etc., have just arrived and various promised sets of Nats pictures have not arrived, this issue will be all results and news. Shortly, I hope to follow up with one whole issue of pictures.

Possible World Record!

On Aug. 14, 1976, Dick Kowalski flew an AMA "300" to establish the time of 50:41, over 5 minutes longer than the record which stood as an absolute FAI record for indoor models since September, 1962. The previous record, set by Karl-Heinz Rieke during the 1962 WCh at Cardington, was set with a 90 cm F1D model. Although Dick's model is larger, its 420 sq. in. total area (AMA max size is 300 sq. in. wing area) is relatively puny compared to the FAI limit of 1800 sq. in. total. More details appear later in this issue.

Preliminary WCh Results

Although scattered bits of info drifted in via Erv Rodemsky's LD call and a note from AMA HQ, the most complete data on hand came from Bucky Servaites; on the envelope it said "WE WON!" Inside was this note and some WCh results:

"Just a short note on World Champ results. Bud Romak really pulled us through. Jim and I just couldn't get everything together - variable air in hangar (updraft, downdrafts and side drift)."

1. Romak	U.S.	78:58	7. Green	England	68:26
2. Ciapala	Poland	72:03	8. Servaites	U.S.	68:18
3. Barr	England	71:24	9. Richmond	U.S.	68:10
4. Blount	England	70:26	10. DeMello	Canada	68:05
5. Thomas	Canada	68:50	11. Felstead	Australia	68:03
6. RyBecky	Czech.	68:43			

1. U.S.A.	215:26
2. England	210:26
3. Canada	202:51

THE WEST BADEN STORY

People began arriving mid-afternoon on July 29 to be on hand for the flying of the "light stuff" which began at 10 am on Friday, July 30. Amid the relatively restrained and admiring presence of great numbers of high school band members, Easy B's, Pennyplanes and an occasional HLG flew in the magnificent Atrium of Northwood Institute. By the time it was dark that first evening, the band-kid traffic had increased enough to discourage flying and everyone switched over to bull-session mode. When curfew for the high-schoolers came, models came out again - a few of them being flown until morning. After breakfast, the band members were packing for departure and the traffic was again too high for models.

The competition was based on the performance index, which is computed by dividing one's flight time by the existing record - in other words, the performance index, when multiplied by 100, is the percentage of the record achieved by the model. This type of scoring was chosen to allow direct competition between various model classes and all age groups. The effect is to bring some measure of strategy into choice of events to fly. That is, with the Open FAI Stick record being so high, not many fliers tried for that one. Advance predictions were that perhaps the first place mug (John Martin chose engraved pewter mugs as prizes) would go to some junior flying an autogyro or ornithopter. As can be seen by the results listing below, it didn't happen that way, but neither did an Open flier win.

Meanwhile, competition for all the lightweight indoor model classes finished at 9 pm, and everyone prepared for an excellent buffet-style banquet prepared by the Northwood staff. Mr. & Mrs. Ray Semmons and their infant son (Ray is Director of Outside Activities for Northwood) were

guests of honor. After the banquet, Stan Chilton and John Martin made a few remarks regarding how the First NIMAS International Record Trials came to be set up. Bud Tenny was called on to give a brief history of NIMAS. Then John Martin awarded the pewter mugs for the day's competition. The final item of festivity came as Stan Chilton presented Ray and Mrs. Semmons a beautiful silver serving tray in appreciation for their efforts.

As the banquet broke up, it was noted that the chef had said "eat it all", and some of the banquet left-overs were carried out to the Atrium to sustain a number of fliers who flew Peanut Scale, Manhattan Cabin, Pennyplane and Easy B all night. Someone set up a microfilm tank on a ping-pong table, and poured microfilm at 2 am. It should be noted that the Atrium is only fully lighted in the daytime - overhead lights seem very dim until one's eyes have adjusted. It is then possible to see almost anything except mike ships that get very high.

When the night shift had breakfast, most of them went to sleep and the relatively few HLG fliers had the whole floor to themselves from 8 am to 1 pm. Six fliers entered the event, but only Bucky Servaites bothered to turn in his times - 106.8 - less than his winning Nats time. Also the Saturday competition followed more normal contest formats in that fliers competed directly against each other instead of against a record. It doubtless wasn't worth the trouble to turn in flight sheets if the times weren't good enough to capture the single prize.

After HLG was over, Scale, Peanut, Manhattan, Pennyplane and Easy B models took over. Neither scale event had large entry, but Pennyplane, Manhattan and Easy B were well attended and Pennyplane and Easy B were battled down to the wire. That is, Easy B was a battle for 1st place, and everyone besides Dennis Jaecks battled for 2nd place in Pennyplane. Dennis had done a tremendous amount of preparation, planning to fly a number of props and making full use of the incidence adjustments (wing and stab) as shown on the plans of his biplane (Apr/May '76 INAV). It all worked well, with Dennis capturing his former record on his first official flight. A later flight pushed the time to 13:42, but the other contestants battled for 2nd place with Dick Hardcastle's 11:39 coming out in 2nd.

Easy B was another battle, with Hal Crane and Dick Hardcastle renewing their long-standing rivalry. Hal had it for quite a while, but eventually both Dick Hardcastle and Dick Obarski pulled ahead. With six flights bunched into a two-minute span, it would be hard to accuse any of the Easy B pilots of goofing off!

Bucky Servaites seemed to have Manhattan Cabin sewed up pretty well, but Richard Whitten pushed pretty hard to keep it interesting. As can be seen from the Nats Manhattan results, this West Baden bash was merely a minor skirmish!

From a modeler's standpoint, the First NIMAS International Record Trials was a resounding success. The idea of performance index was bothersome to some, and the math put off some fliers, but the resulting intermingled events and relatively light competition was popular. By all reports of commentary at the Nats, a lot of people wished they had attended. John Martin's recommendation is that the format be retained, but that planning be advanced to assure early announcement of the 2nd NIMAS Internats.

RESULTS FROM WEST BADEN

The results listed below are grouped in order by model class and flight time, which results in random locations for the winners. That is, final scoring was on the basis of performance index (% of record time) regardless of age class or model class. Note that all the eight winning index scores except one were in highly competitive events rather than obscure events such as autogyro and ornithopter. Ken Johnson flew an autogyro and didn't turn in his scores, while Ron Ganser flew an ornithopter that suffered total destruction - to a tiny pile of sticks - when something went wrong. And it was flying so well, too!

FAI STICK	Time	Age	Index	Placing	Records
Clarence Mather	30:14	Open	.9347	5th	Open:
Richard Whitten	29:31	Senior	1.219	1st	32:21
Bucky Servaites	28:42	Open	.8872		
Roman Szymula	26:42	Open	.8253		Senior:
Richard Doig	26:05	Open	.8063		24:13
Hal Crane	24:55	Open	.7702		
Al Rohrbaugh	24:19	Open	.7517		
Dick Obarski	23:26	Open	.7244		
Bud Tenny	20:30	Open	.6337		

H.L. STICK

Al Rohrbaugh	32:02.2	Open	.9267	6th	Open:
Clarence Mather	31:46.6	Open	.9092	8th	34:57
Richard Whitten	29:31.5	Senior	1.214	2nd	
Jim Richmond	29:30.5	Open	.8443		Senior:
Dick Hardcastle	26:57.2	Open	.7712		24:19
Roman Szymula	26:42	Open	.7693		
Richard Doig	26:05.5	Open	.7465		

PAPER STICK

Jim Richmond	24:16.4	Open	1.042	3rd	Open:
Stan Chilton	21:03.6	Open	.9032		23:19
Al Rohrbaugh	20:53	Open	.8976		
Gordon Wisniewski	17:25	Open	.7469		Senior:
Roman Szymula	16:06.5	Open	.6908		19:34.2
Roy White	12:24	Open	.5318		

CABIN

Richard Doig	22:42.5	Open	.9734	4th	Open:
Ron Ganser	21:23.2	Open	.9169	7th	23:19.4

R.O.G. STICK

Richard Doig	14:14.2	Open	.8965	Open:	15:53
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Standard Events

With the banquet on Friday night and many people needing to leave for the Nats as early as possible, it was decided that the Saturday events would be flown normally instead of using a performance index. Although HLG and Pennyplane models have national record status, these two events are incompatible with the microfilm models. Easy B, Manhattan Cabin and the scale events do not have record status, so these four events added to HLG and Pennyplane made a full venue for Saturday's flying. HLG ran from 8 am to 1 pm, with relatively few - only eight - entrants; only two of those turned in times. The entrants in all the other events turned in their scores, and the results are shown below.

HLG		Manhattan Cabin	
Bucky Servaites	106.8	Bucky Servaites	4:52.8
		Richard Whitten	4:32.2
		Kevin Smith	3:58.5
		Walter Lounsbury	2:57.7
		Ed Whitten	1:27.4

Easy B		Pennyplane	
Dick Hardcastle	13:55.5	Dennis Jaecks	13:42.0
Dick Obarski	13:26.6	Dick Hardcastle	11:39.5
Hal Crane	13:09.7	Clarence Mather	11:28.4
Clarence Mather	12:55.5	Bucky Servaites	11:19.8
Earl Hoffman	12:41.0	Ron Ganser	10:57.5
Roman Szymula	12:12.5	Gordon Wisniewski	10:10.0
Roy White	11:06.0	Richard Doig	9:28.0
Richard Doig	10:42.0		

Indoor Scale (flight only)

Ken Johnson	Hyperbipe	1:43.0
John Martin	Lacey M-10	0:57.0
Charles Slater	Dumont 14-Bis	0:50.0

Peanut Scale

Clarence Mather	Davis DA-2A	1:45.8
John Martin	Volkspiane	1:20.4
Ken Johnson	Gee Bee	1:05.0

One final word about West Baden - several people did a lot to set it up, especially John Martin who set up all the paperwork and publicity. However, without the efforts of Bucky Servaites, it might not have come off. Bucky was the main contact, and cut down a lot of strings which hung models in past years. Finally, he shrouded the "toadstool" with plastic so it didn't hang models. Thanks, Bucky!

RESULTS FROM THE NATS

Thanks to 'NATS' NEWS '76 (edited by Les Hard and published by Johnny Clemens and Art LaLonde), we have results on all the regular AMA indoor events except Scale. John Martin sent Scale results and Ed Whitten sent the Manhattan Cabin results. *Possible error in Open HLG times

Easy B - Open		Pennyplane - Open	
1. Earl Hoffman	13:05	1. Clarence Mather	11:34
2. Ted Gonzoph	12:40	2. Charles Learoyd	10:51
3. Richard Obarski	12:29	3. Bucky Servaites	10:33
4. Stan Chilton	12:23	4. Thomas Vallee	10:32
5. Clarence Mather	12:02	5. Gordon Wisniewski	9:40

Easy B - Senior		Pennyplane - Senior	
1. Richard Whitten	9:38	1. Mike Plotzke	8:29
2. Chris Clemens	8:56	2. Robert Perkins	8:17
3. Jim Clem	8:31	3. Richard Whitten	8:04
4. Margaret Proctor	7:51	4. Margaret Proctor	3:59
5. Charles Slater	5:51	5. William Schlarb	3:39

Easy B - Junior		Pennyplane - Junior	
1. Kathy Mullins	7:55	1. Jim Bowers	7:14
2. David Nault	6:42	2. Mike Clem	5:32
3. Mark Rader	5:47	3. Greg Trubowitsch	5:00
4. Mark Trubowitsch	5:20	4. Glenn Anderson	4:42
5. Eric Barnum	4:54	5. Chris Scott	4:39

HLG - Open*		AMA Stick - Open	
1. Bucky Servaites	1:14.2	1. Jim Richmond	29:08.0
2. Paul Shallor	1:08.4	2. Stan Chilton	26:05.8
3. Robert Larsh	1:05.6	3. Bucky Servaites	25:27.6
4. Chuck Markos	1:03.6	4. Clarence Mather	23:17.4
5. Dan Domina	1:03.4	5. Tom Vallee	22:45.0

HLG - Senior		AMA Stick - Senior	
1. Barry Pallet	88.0	1. Richard Whitten	17:39.2
2. Dan Belieff	85.4	2. Jim Clem	13:15.6
3. Jim Clem	83.6	3. Robert Perkins	13:08.2
4. Dan Berry	81.2	4. William Schlarb	6:52.9
5. Bill Schlarb	81.0	5. Joseph Kubina	6:43.8

HLG - Junior		AMA Stick - Junior	
1. William Langley	79.8	1. Jim Geraghty	14:49.6
2. Steve Davis	79.4	2. Mark Trubowitsch	7:55.3
3. Jim Geraghty	78.2	3. Mike Clem	5:12.0
4. Jim Bowers	76.8		
5. Mark Rader	68.2		

Paper Stick - Open		Indoor Cabin - Open	
1. Stan Chilton	17:36.0	1. Ron Ganser	18:05.8
2. Clarence Mather	16:56.2	2. Richard Doig	17:38.0
3. Dick Hardcastle	16:49.0	3. Ron Plotzke	11:15.8
4. Dan Domina	16:24.4	4. Paul Shallor	9:33.4
5. Jim Richmond	16:09.5	5. Gregory Simon	8:59.0
6. Gilbert Graunke	15:56.5	6. Dan Domina	6:42.9
7. Tom Vallee	15:31.6		

Paper Stick - Senior		Indoor Cabin - Jr/Sr	
1. Richard Whitten	12:52.0	1. Richard Whitten	11:24.6
2. Chris Clemens	9:48.2	2. Mark Trubowitsch	2:18.0
3. Barry Pallet	9:45.7	3. William Schlarb	1:56.3
4. Robert Perkins	7:57.2	4. Barry Pallet	1:51.0
5. Joseph Kubina	6:05.8		
6. William Schlarb	3:41.2		

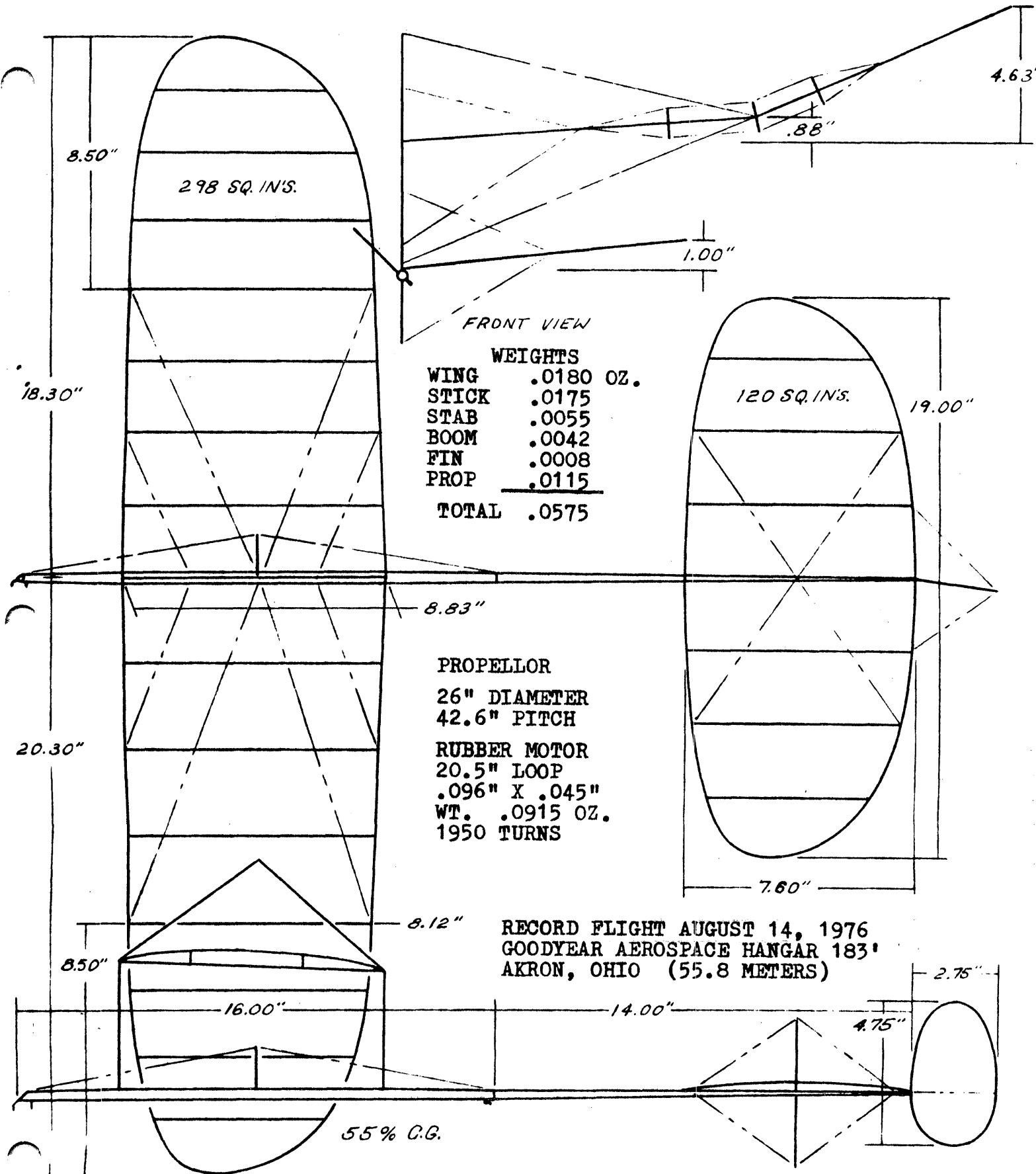
Paper Stick - Junior		FAI Stick - Jr/Sr/Op	
1. Jim Bowers	9:35.5	1. Jim Richmond	55:07
2. Mark Trubowitsch	8:54.0	2. Tom Vallee	43:32
3. Mike Clem	6:29.0	3. Ed Stoll	43:16
4. Glenn Anderson	5:15.0	4. Ron Ganser	39:40
5. Jim Geraghty	4:48.2	5. Dan Domina	37:23
		6. Charlie Sotich	37:07
		7. Bob Champine	35:03

Indoor Scale - Open		Static Flight	Total	
1. Chuck Markos	Westland Widgeon	74	100	174
2. Bill A. Henn	Lacey M-10	79	91	170
3. Ed Stoll	Corbin Super Ace	87.5	78	165.5
4. Don Strull	Lacey M-10	47.5	100	147.5
5. Dan Domina	Piper J-3	47	100	147
6. Elsie Henn	Lacey M-10	58	84	142
7. John Martin	Lacey M-10	65	76	141
8. Charles Smith	Turbo Porter	45	92	137
9. Bob Clemens	Farman Moustique	68	58	126
10. Otis Daily	Inland Sport	73.5	47	120.5

Indoor Scale - Jr/Sr				
1. Bill C. Henn	Lacey M-10	82	65	147
2. Charles Slater	Santos Dumont	49	71	120
3. Michael Nallen	Drurine	67.5	48	115.5
4. Barry Pallet	Helio Courier	42.5	65	107.5
5. Bruce Pallet	Pilatus Porter	44	52	96

Peanut Scale - Jr/Sr/Op		Static	Total	Age
1. Charles Learoyd	Lacey M-10	71	427	Op
2. John Martin	Volkspiane	62	383.6	Op
3. Jack McGillvray	Isaacs Fury	72	332.7	Op
4. Elsie Henn	Lacey M-10	85	289	Op
5. Bill A. Henn	Fike E	78	285	Jr/Sr
6. Clarence Mather	Davis Da-2A	70	281.4	Op
7. George Meyers	Howard Pete	72	265.2	Op
8. Dan Domina	J-3 Cub	65	250.5	Op
9. Charlie Sotich	Volkspiane	85	234.1	Op
10. Bob Clemens	General Aristocrat	93	232	Op

Manhattan Cabin - Jr/Sr/Op	Grams	
1. John Triolo (Domina Proxy)	4.0	8:09.7
2. Bob Clemens	5.5	5:28.0
3. Bob Meuser (Brodersen proxy)	4.75	5:26.5



DESIGN & FLIGHT BY
DICK KOWALSKI
WARREN, MI. U.S.A.

ABSOLUTE F1D-32 WORLD RECORD
INDOOR AEROMODELS, CATEGORY IV
U.S.A. NATIONAL INDOOR STICK
CLASS D RECORD, CATEGORY III

50 MIN 41 SEC'S
50 MIN 42.1 SEC'S

4. Bucky Servaites	4.0	5:17.7
5. Richard Whitten	4.2	4:58.4
6. Walter Lounsbury	5.5	2:28.6
7. Ed Whitten	12.6	2:03.7
8. Robert Geyer, Jr.	11.4	1:42.0
9. Rolfe Gregory	7.3	1:35.3

A NATS REPORT

by Jim Richmond

From my standpoint, the air was thick with planes most of the time and collisions were quite common. Also, the ceiling had lots of plane catchers, but most were rescued without too much damage. The drift was pretty swift early Monday, but it settled down by 11 am and was very good the rest of the day. The site was really very good and I enjoyed flying in it.

As for my performance, I had some problems with the many repaired spots on the Paper Tiger, some of which were coming unglued. Also, I had some trouble getting the altitude range with this plane and either went too low or too high (hung the last one - it just slid up over the edge of a light). I guess I should have been more active with a balloon, but with all those planes in the air, you couldn't do too much fooling around.

I was glad the Damgram was performing well, since as a team member I felt I was expected to "show my stuff". The Damgram was almost destroyed at the Finals and I finished the repair job the night before the Nats. The first flight was a bit strong and it tried to take out all the lights, but it survived lots of "hits", a couple of tail slides and a collision with a paper job. It finally ended up with 28:08. The next two flights had a better altitude range and were less eventful, but were good enough to lock up FAI and Stick.

I also flew HLG on Sunday amid lots of snickers. I never did have much of an arm for throwing but I always had a deep appreciation for the beauty of an indoor glider locked into a well-adjusted glide path.

INDOOR SCALE REPORT

by John Martin

Preamble

It was the year of the Lacey. About 5 years ago SPORT FLYING magazine did a spread on an ugly home-built airplane by a man named Joe Lacey. A year or so later Bill Warner presented a Peanut version of this plane in the very last issue of AMERICAN AIRCRAFT MODELER. A trickle of models began to appear and they flew very well. Last year at the Nats the Lacey M-10 was first in rubber scale and 1st and 2nd in Peanut. This year - boom - the deluge hit. Everyone showed up with one. There have been popular planes before: there was the year of the Pilatus Porter, the year of the 1910 Cessna, and the J-3 Cub. But, never before has one model been so popular and successful.

Indoor Scale

There was a record entry larger than the two previous Nats combined; a large field of beautifully built and fine flying models. The strange phenomenon I first observed in Chicago continued in Ohio. That is, there would be spontaneous applause (mostly from non-modelers) following a good flight. There is something about the realistic take-off, the slow, scale-like flight and the approach and touch down of an indoor scale model that appeals to all.

Chuck Markos won first as he did at Lake Charles with his 1/2 oz. Westland Widgeon. John Martin, who won 2nd last year, found himself in 7th place with the same plane and superior performance. This is an indication of the improvement in the competition. Bill Henn, with the ubiquitous M-10 was 2nd, and Ed Stoll's beautiful Corbin Super Ace was 3rd. Ed's engine compartment had a fully scale Ford Model A motor and removable cowl, but the paper trim tabs on the wing trailing edges did nothing to enhance the appearance. Ed would have been 1st under last year's rule that did not permit more flight points than static points. The Corbin earned 87 1/2 points from a rough bunch of judges under George Lewis and Ralph Kuenz. Greg Thomas was tops with 88 points for his Fokker EIII. As another indication of the caliber of competition, Tom Stark finished 11th with the same DeHavilland DH-29 that won the event in 1972.

The 10th place Inland Sport was a beautiful-looking and -flying little-known parasol that was an exact replica of the plane Otis Daily's dad owned and flew in the 1920's ...documentation came from the family photo album! In the Jr/Sr event, Bill Henn won with a (guess what?) M-10, but

the real show-stopper was Charles Slater's canard biplane Santos Dumont 14-Bis which out-flew the Lacey with 1:11 but lost out on documentation. Everyone stopped to watch when it flew.

Indoor Peanut Scale

There were new provisional rules this year that seemed quite similar to the old Flying Aces rules they replaced. An amusing sidelight is that the author of the new rules, Charles Learoyd, won both indoor and outdoor Peanut (with a you-know-what). When Peanut was flown last year as an unofficial event John Martin won with the MIAMA rules he wrote. Anyone wishing to win next year is requested to submit his rules to AMA for approval. Martin finished 2nd this year, and Jack McGillivray was 3rd with a silver Isaacs Fury biplane that could fly over a minute and a half. The best flyer was Dan Domina's J-3 Cub that was averaging 2 minutes, but it was covered with condenser paper and that is a no-no this year (big flight penalties). The best looking ship was Greg Thomas' Smith DEA-1 (96 points) that finished 20th although it could fly half a minute...something is wrong here. Patrick Barry also scored 96 of 100 static points with a half-minute flyer and placed 19th. Third best looking plane, FREE FLIGHT's Scale Editor Bob Clemens' General Aristocrat (93 points) did manage a 10th by getting close to one minute on its three flights. All of these better looking planes should have fared better in the final standings. In the entire field there were only two planes with lower static scores than my 2nd place Volksplane. Peanut is still growing - 35 entries this year, 33 last.

MIAMA MANHATTAN EVENT A BIG SUCCESS!

by Ed Whitten

The MIAMA club is to be complimented for promoting the Manhattan Formula and for holding the first national contest for such models. Much interest was created, with many enthusiastic comments from onlookers. Nine models actually made official flights at the Nats unofficial event. Others, for one reason or another, did not get timed. We heard of models not completed, eaten by cats, or mailed and not received.

We wanted to get more information on each model, but managed only to get the weight (thanks to Ron Ganser and his gram scale). I also managed to leave my camera in the motel, so no pictures.

John Triolo's model, already well trimmed at Lakehurst with 8 minute flights, was masterfully proxy-flown by Dan Domina. No one else came close to his 8:09.7. The weight was right on the 4.0 gram minimum. A pretty model, with wood dyed orangey-red with mercurichrome, it did its job well.

The battle for second place was close with only 30 seconds separating the next four places. Hardy Brodersen did a great job of proxy-flying Bob Meuser's "Manhattan Serenade", establishing an early 5:26.5. Bob Clemens was behind by 9 seconds, then 2 seconds, and finally ahead by 1.5 seconds. Bucky Servaites, who was limited by time in flying his West Baden winner, was fourth with 5:17.7. Richard Whitten, who placed second at West Baden, won the Jr/Sr top prize with 4:58.4.

No doubt even more entries would have made a better contest; but I consider it very successful - the greatest boost to the Manhattan Formula since it was first proposed in 1965. It was a little disappointing that only one Junior or Senior entered. The contest proved the usual that an expertly built model, weighing only the minimum, thoroughly tested and expertly flown - would win - and it did.

What direction now? Frankly, I thought the MIAMA rules produced a very nice indoor cabin model. We did hear comments on raising the minimum weight, however, to shift the emphasis more toward scale.

Both the MIAMA club and Ed Whitten would appreciate receiving comments.

Ed Whitten
P O Box 176
Wall Street Station
New York NY 10005

John Martin
3227 Darwin St.
Miami FL 33133

STATE OF THE ART

Dick Kowalski's blockbuster attempt on the absolute

world record (see p. 1) in a session at the Goodyear Aerospace Hangar in Akron was the culmination of years of planning, building and testing. An excerpt from the FAI dossier on the record attempt follows:

Outdoor weather conditions during the earlier part of the day of this attempt were nearly ideal. Past experience has shown that days of moderate temperature, low wind velocity, partially obscured sky and low humidity can produce long indoor model flights in this hangar. The temperature this day was 80° F., the winds were 5 mph and the skies were partly cloudy. Although the humidity was generally low, a brief rain shower of 30 minutes duration fell on the hangar several hours before the attempt began.

Preflight preparations included a 44 minute first attempt and slight re-trimming thereafter to optimize the flight profile of the model for this attempt. Water drops, which fell precariously in some sections of the hangar after the earlier rain shower, delayed this attempt most of the afternoon. Finally, at 6:30 pm conditions were judged to be adequate for the attempt. The rubber motor was carefully wound to 1950 turns using a 16:1 winder and was then fixed to the model with an initial torque measurement of .94 in. oz. The model was launched and began to climb rapidly. Although it exhibited some tendency to stall momentarily during its first orbit, it corrected itself easily as it quartered the slightly drifting air.

Climbing majestically, the model reached its peak altitude after 9 minutes and 15 seconds, where it first contacted the rafters at a height of 183' (55.8 m) above the floor of the hangar. The model continued in a shallow climb for another 10 minutes, 45 seconds but was stopped from gaining more altitude as it gently "tapped" the rafters once every 30 seconds. At 21 minutes of elapsed time it was just below the rafters where it cruised for nearly 9 minutes. Gradually descending at a very slow rate, the model drifted diagonally across the hangar until its last orbits were eclipsing some internal structures of the

hangar. With nearly 50 minutes already recorded on the stopwatches, it became necessary to steer the model away from these structures to avoid a collision with them. The model was at an altitude of 20' (6.1 m). Using a helium filled balloon fixed to a line, the model was steered for three brief periods until its orbit was clear of the structures. The model finally landed in the clear, upon the hangar floor. The timekeepers reported 50 minutes, 41 seconds as the final record figure from the average of their watch readings.

In his note, Dick also acknowledged help by Erv Rodemsky with the record flight; Erv talked him into a few more turns in the rubber before launching the record flight.

The usual model trim (CMOS) chart is shown below, computed on the basis of 0% trim. Dick didn't note the nose-to-C.G. or nose-to-rear post distance, so it was not possible to compute the static margin of the actual trim.

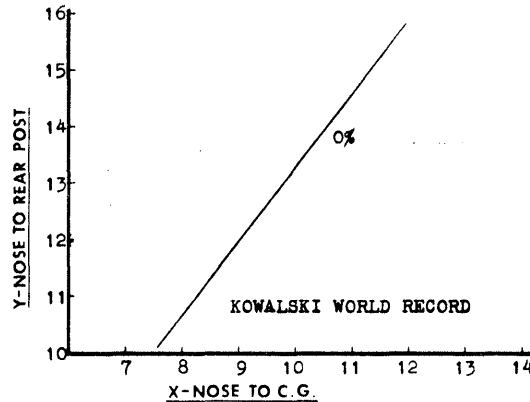
RECORDS? MAYBE!

First NIMAS International Record Trials, July 30-31, 1976
 Northwood Institute, West Baden, Ind. Cat. II AMA 98'
 Senior FAI Stick - 29:31, Richard Whitten
 Senior AMA Stick - 29:31.5, Richard Whitten
 Open Paper Stick - 24:16.4, Jim Richmond
 Open Pennyplane - 13:42, Dennis Jaecks
 Open Novice Pennyplane - 8:31.3, Walter Lounsbury

CONTEST CALENDAR

FLORIDA - Miami

John Martin announces the activity schedule for the MIAMA club; please confirm individual dates shortly before the session by calling 305-858-6363. Fly-ins at JFK Gym of Miami Dade N. College: Oct. 3, Nov. 7, Dec. 5, 1976. Also Jan. 2, Feb. 6, Mar. 6, Apr. 3, May 8, 1977, 9 am to 2 pm. Contests at Goodyear Blimp Hangar, Opa Locka Airport: Oct. 17, Nov. 21, Dec. 19, 1976. Also Jan. 16, Feb. 20, Mar. 20, Apr. 24, May 22, 1977, 9 am to 5 pm.



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

Members who joined in July, 1976

H. H. CLAY, 322 N. Verde, Flagstaff AZ 86001
DALE WANGEMAN, PSC 1, Box 2485, McChord AFB WA 98438

Members who joined in August, 1976

CHARLES R. SLATER, 941 SW 39th Ave., Ft. Lauderdale FL 33312
KEVIN SMITH, 9000 SW 61 Ct., Miami FL 33156

Family Memberships

MIKE PLOTZKE, 36659 Ledgestone, Mt. Clemens MI 48043

An Editorial Question

If a WCh team's performance has any relationship to the program which chose that team, is there any reason to change the U. S. program? This question assumes that the purpose in choosing a team is to win a WCh.

CONTEST CALENDAR

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FT. WORTH/DALLAS - TEXAS

Indoor sessions expected to begin in late October or early November; to be held at the Drill Hall, Dallas NAS, Dallas, Texas. Check with Ed Turner, 3544 Granada Dr., Ft. Worth TX 76118, 817-589-1519.

CONTEST DIRECTORS NOTE: The time to get announcements of contests and sessions in is now! Even if final dates are not firm, advance warning is helpful!

THE PICTURE STORY

It is appropriate to remind everyone that all the Nats coverage (stories, commentary and results in the June '76 INAV, and pictures in this issue) are the result of extra work and effort on the part of volunteers. So, whenever you see any of these contributors, give them an extra pat on the back.

West Baden - Page 2 (Photos by Tenny)

Row 1:

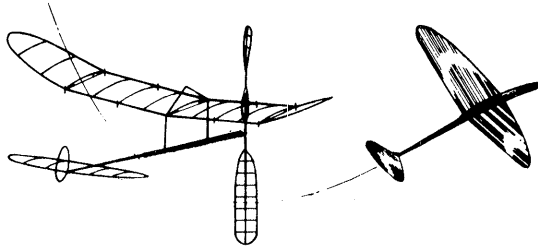
Left - Dennis Jaecks prepares another test flight on his Pennyplane Bipe. Boxes on table contain motors in individual envelopes with test and flight data recorded on the envelopes.
Center - Ted Gonzoph, sparkplug of activity in Denver, with a conventional Easy B. He also had a canard Easy which does well.
Right - Hal Crane helps Alan Crane prepare an official flight.

Row 2:

Left - Kevin Smith shows his Manhattan model, with Ed Whitten in the background. Kevin's persistent effort got him into third place.
Center - Ken Johnson hooks up for an Easy B flight.
Right - Jim Richmond with the original Paper Tiger. It had been heavily repaired, still set new record.

Row 3:

Left - Clarence Mather (right) prepares for Pennyplane flight. Model has extremely short wing posts, flies well enough to win the Nats.
Center - Clarence Mather's "300" - did 31:46 at West Baden for second high time in Stick and 8th place in points.



Right - Ken Johnson warps trim into his Gee Bee D.

Row 4:

Left - Ken and Mrs. Johnson wind his autogyro. Model made many successful flights, but Ken didn't turn in any times.
Right - "Genial host" John Martin takes a break from contest paperwork. He did a lot!

Nats pictures - Page 3 Photos by John Carter (JC), Chris Clemens (CC) and Ron Plotzke.

Row 1:

Left - Dick Kowalski with the new World Record model after the 50:41 flight at Akron.
Center - Stan Chilton with 2nd place Indoor Stick. (JC)
Right - Ed Stoll and his model box.

Row 2:

Left - Mike Plotzke with Nats winning Pennyplane. Time was enough for a record; not applied for.
Center - Howard Haupt and FAI model. (JC)
Right - Ron Plotzke with 3rd place Cabin model.

Row 3:

Left - Dan Domina with FAI.
Center - Bucky Servaites in a repair mode. (JC)
Right - Rick Doig. (JC)

Row 4:

Left - Greg Simon (back to camera) winds Cabin model as Paul Shailor holds.
Center - Bob Clemens and 2nd place Manhattan. Note hypnotic gaze and magic gestures! (CC)
Right - Tom Vallee, 2nd place FAI. (JC)

STATE OF THE ART

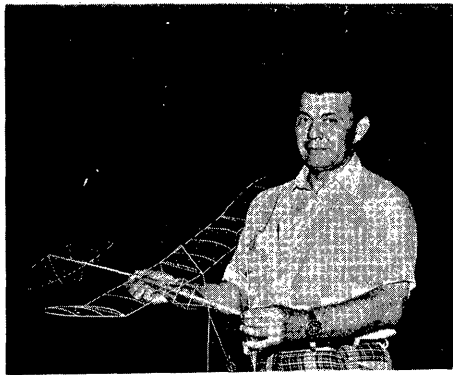
A new breed of model is coming into national focus, after years of very limited activity. This is Manhattan Cabin, invented years ago by Ed Whitten, flown at MIAMA contests for a couple of years, and then sponsored at the Nats by MIAMA. The Nats winner was built by John Tricolo and proxy-flown by Dan Domina to 8:09.7.

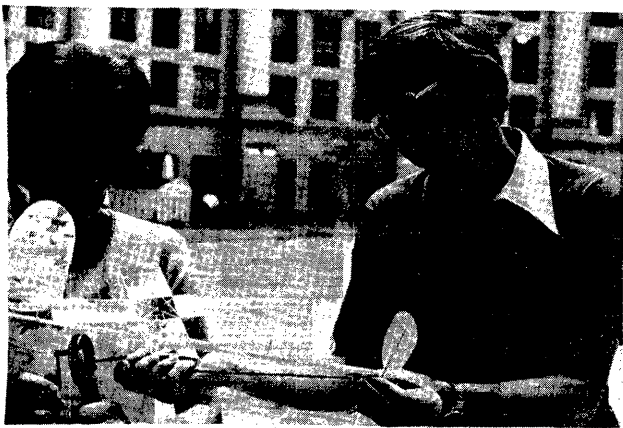
Of the model, John says "I was surprised at its cruising ability. It is such a bulky model that it was an interesting challenge. I think the event deserves notice and a plug; however, at 4 grams minimum weight, my model is not a beginner model."

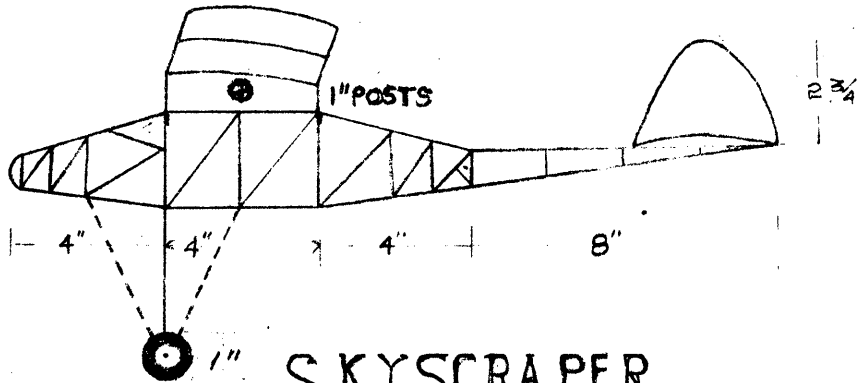
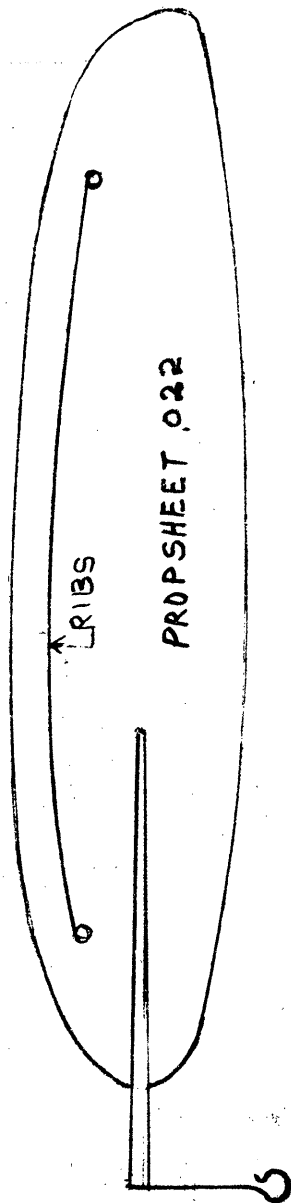
John also furnished these extra details: the fuselage back to the motor peg is built from 4 1/2 lb. stock, 1/16" square. The tail boom is built from 1/16" x 1/32" strips. Wing spars are 1/16" diameter tapering to 1/32", and the wing ribs were .030" x .025. Stab spars and rudder are .030" x .030". The landing gear strut and axle are made from .030 bamboo tapered, with a thread brace. The wheels are .025" sheet. .071 oz. of pirelli (.085" x 17" loop) drove the 12 1/4" x 22" prop.

The MIAMA rules used at the Nats (and West Baden) are:

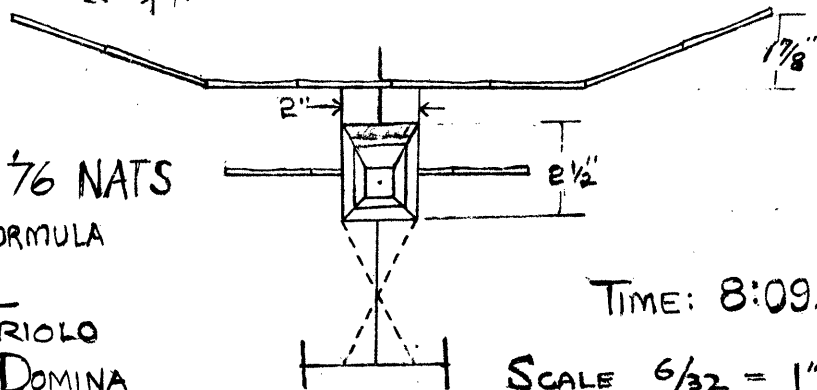
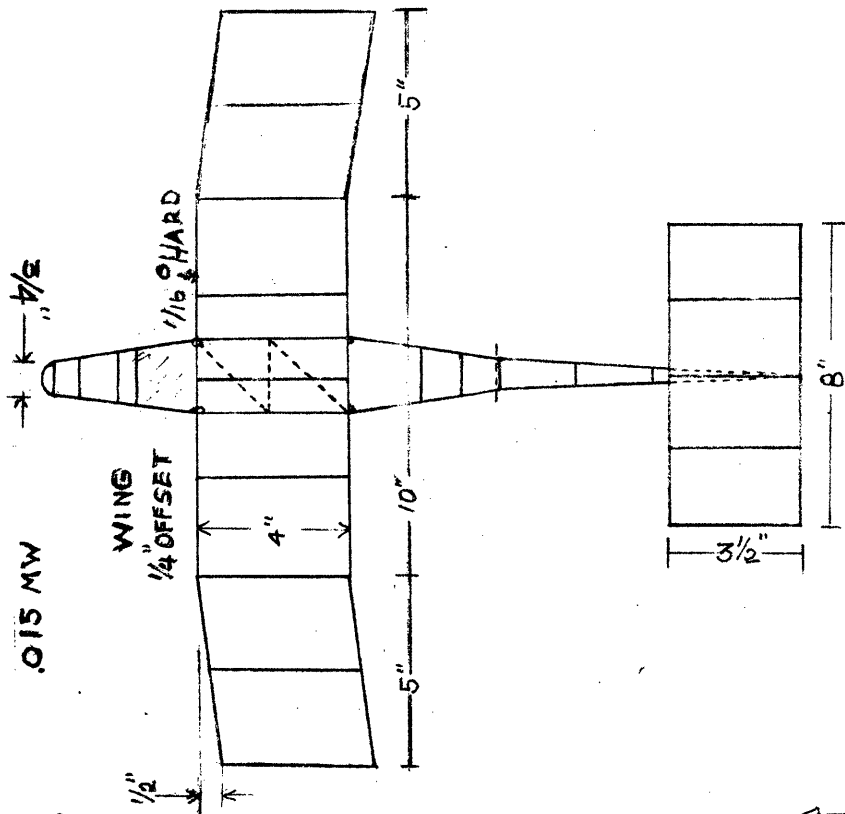
Fuselage: Maximum length, exclusive of propeller is 20". Fuselage must enclose a box 2" x 2 1/2" x 4", have a transparent windshield and cabin windows with a total area of 2 sq. in. Motor must be enclosed by fuselage, which must not be a motor stick or diamond configuration.
Wing: Unbraced monoplane with 4" max chord and max span of 20", projected.
Stabilizer: 8" max span projected, max chord 3 1/2".
Fin: Any size, not to extend beyond stab trailing edge.
Propeller: Solid wood, direct drive, fixed pitch.
Landing Gear: Rigid with two wheels 1" diameter minimum.
Covering: Must be paper, no poured or plastic films. Windows and windshield may be any transparent material.
Weight: 4 grams minimum without motor.
Flying: Rubber power only, all flights R.O.G. Unlimited attempts to record 5 flights; flights less than 20 seconds are attempts.







SKYSCRAPER



FIRST PLACE 76 NATS
MANHATTAN FORMULA

by
JOHN G. TRIOLO
Proxy - DAN DOMINA

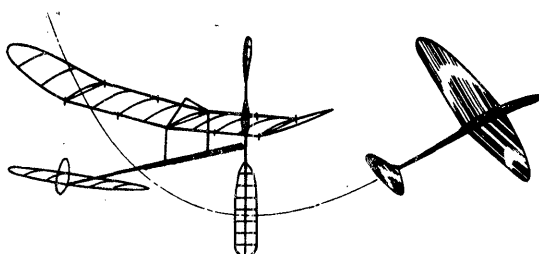
TIME: 8:09.7

SCALE 6/32 = 1"

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



THE 1976 INDOOR WORLD CHAMPIONSHIPS

1. Bud Romak	U.S.A.	34:59	29:23	32:48	39:22	39:36	-	78:58
2. Edward Ciapala	Poland	35:45	36:18	30:19	0:46	29:32	2:48	72:03
3. Laurie Barr	England	34:30	36:59	17:44	32:05	13:45	11:03	71:24
4. John Blount	England	25:25	35:42	34:05	18:05	34:44	24:58	70:26
5. Mike Thomas	Canada	32:19	35:32	33:18	23:14	28:20	27:51	68:50
6. Karol Rykecky	Czechoslovakia	34:35	33:39	31:22	34:08	9:17	15:49	68:43
7. Ron Green	England	33:10	34:33	33:06	30:12	33:53	18:49	68:26
8. Bucky Serraites	U.S.A.	34:37	14:27	10:15	32:34	23:48	33:41	68:18
9. Jim Richmond	U.S.A.	9:37	31:32	36:29	20:53	31:41	17:28	68:10
10. Andy DeMello	Canada	32:22	34:43	11:12	29:34	4:30	-	68:05
11. Boyd Felstead	Australia	27:25	31:47	31:37	32:18	20:23	35:45	68:03
12. Jiri Kalina	Czechoslovakia	32:45	33:34	7:25	32:42	9:33	23:17	66:19
13. Jack McGillivray	Canada	29:50	36:06	29:02	26:20	12:10	6:27	65:56
14. Vilim Kmoch	Yugoslavia	26:28	30:31	34:58	26:03	29:39	-	65:29
15. Eduard Chlubny	Czechoslovakia	28:57	36:04	24:28	28:46	11:39	-	65:01
16. Rene Butti	Switzerland	23:25	29:40	23:33	5:40	34:29	14:15	64:09
17. Werner Wetzel	West Germany	30:04	31:01	-	32:17	13:32	-	63:18
18. Leopold Gabrijel	Yugoslavia	26:34	33:41	13:00	1:12	1:28	29:22	63:03
19. Syvelster Kujawa	Poland	29:02	32:45	16:56	8:29	28:26	5:15	61:47
20. Edmund Leim	Holland	26:03	8:55	25:05	22:53	34:12	-	60:15
21. Yasutoshi Banba	Japan	28:48	29:26	30:14	21:55	29:20	19:08	59:40
22. Pierluigi Migani	Italy	7:35	26:14	33:15	25:49	8:30	-	59:29
23. Teodor Strasberger	Yugoslavia	27:30	23:34	29:28	29:21	-	-	58:49
24. Ferdinando Migani	Italy	24:38	19:49	28:22	30:01	7:30	18:30	58:23
25. Carlo Cotugno	Italy	28:53	29:10	24:54	16:15	22:01	1:17	58:03
26. Dieter Siebenmann	Switzerland	26:20	29:55	27:03	26:31	27:46	-	57:41
27. Cornelius Wolthoorn	Holland	25:54	26:42	11:38	28:39	22:36	26:19	55:21
28. Kurt Vogler	West Germany	17:25	28:25	15:14	22:35	26:19	17:32	54:44
29. Ryszard Czechowski	Poland	10:05	30:24	8:45	23:51	8:51	-	54:15
30. Pentti Nore	Finland	27:42	19:22	17:52	20:25	25:47	-	53:29
31. Hideyo Enomoto	Japan	22:40	25:43	22:03	24:01	4:27	14:45	49:44
32. Sven Pontan	Sweden	17:07	19:14	28:09	11:32	20:23	-	48:32
33. Harri Raulio	Finland	22:35	-	24:43	20:31	5:23	4:29	47:18
34. Klaus Nottelmann	West Germany	21:36	19:40	18:39	19:31	25:33	5:47	47:09
35. Sven-Olov Linden	Sweden	12:26	1:38	7:20	12:42	34:06	5:17	46:51
36. Hideharu Odagiri	Japan	20:39	22:29	-	19:04	23:10	15:05	45:39
37. Harro Erofejeff	Finland	18:42	19:19	21:08	23:33	18:42	0:16	44:31
38. Willem Beekmeyer	Holland	16:21	21:56	9:10	19:54	9:24	3:01	41:50
39. Per Sodersten	Sweden	16:36	17:34	21:45	18:47	15:13	-	40:32
40. Guy Cognet	France	14:03	16:07	17:39	7:41	19:38	1:07	37:17
41. Werner Heise	Switzerland	14:58	13:37	16:39	1:15	0:53	14:21	31:37

1. U.S.A.	215:26
2. England	210:16
3. Canada	202:51
4. Czechoslovakia	200:03
5. Poland	188:05
6. Yugoslavia	187:21
7. Italy	175:55
8. Germany	165:02
9. Holland	157:26
10. Japan	155:03
11. Switzerland	134:55
12. Finland	145:18
13. Sweden	134:55

A WORLD CHAMPS REPORT

by Bud Romak

First of all, I (and also the team) must congratulate Mr. Laurie Barr and the S.M.A.E. for the excellent job they did. You can't imagine the complete organization they had. There was transportation to and from Heathrow Airport (international airport in London), a special trailer to carry the model boxes, a full buffet lunch served in the hangar each day of the championship, and get this - a bar in the hangar! Can you imagine? Put your model up for a flight, walk over to the bar and order your favorite drink, the sit in a lounge chair and watch your model fly. It was truly an experience.

The team had its first get-together on Thursday, Aug. 26 at the Country Hotel in Bedford. We discussed our model boxes and how they were handled. Richmond had some models in one box that were badly damaged; his other box was okay. Bucky's models were okay and mine were okay - not one hole. I must thank Pan Am for the super handling of my boxes. Pete Andrews did one hell of a job as Team Manager. The spirit of the team was always high. We discussed team strategy and about who would fly first, second or third. We all selected Richmond to fly last because we thought he would have the best shot at being World Champ; after all, he did get 41 minutes at Akron.

The weather was not the best for either test flying or the championships. It rained off and on and it was quite windy. Our test flying was really nothing to boast about. It was just too turbulent on the floor.

The first day of competition was a little better but none of us could put it all together. I told Pete that I would fly my average models for the first three starts and then fly my good models the last three starts. I took out my model for the fourth start - the same model I used at Moffett and Lakehurst. It was fully wound and I was walking out to the flying area when the motor stick suddenly collapsed. I lost everything except the rudder. I told Pete to get someone else in line to start because I had to get another model and make a quick test. I gave the model a test and it locked okay. Well, I finally did get my fourth start off and it really looked bad. The model stalled for about two minutes, but once it got through the turbulence it was on its way. It didn't reach the top of the hangar, about twenty feet under, but it flew well enough to do 39:22. We were now tied with the British team for first place.

On the fifth start I flew the same model but this time I wound in another one hundred and twenty turns; 2320. I asked Pete to start the stop watch and to let me know when one minute was up. I let the prop unwind for one minute in order to kill the burst and also the stalling tendencies. I launched the model and it took off very smoothly. It hung ever so slightly on the climb but it did not stall and climbed to within five feet of the top of the hangar. The model made a slow descent; it slowly drifted to the side and at 37 minutes I had to make one steer. It was a bad steer and the model lost some valuable altitude. It landed at 39:36. Everyone gave a big applause and needless to say I was the happiest person in the United Kingdom. The team was really happy. We were now in first place.

It started to rain just after my model landed. The conditions got worse and you could see the other competitors' models making like acrobats in the sky. It was very turbulent and I decided to put my models away and not fly the last start.

This had to be the best run World Championships ever. My thanks to the team and their fine support and to Pete Andrews for his fine effort as team manager. Thanks also must be given to Erv Rodemsky for helping to pave the way for the smooth handling of my models by Pan Am, and to Joe Bilgri and George Xenakis for their help in obtaining Moffett Field wind tunnel for use in testing.

ANOTHER WCH REPORT

The following tidbits have been gleaned from the magazine report written by Larry Cailliau. Larry was kind enough to loan a copy, and these remarks are paraphrased from the original text.

The first day of official test flying was also the first day of the rains that broke the long drought which had almost brought England to her knees. It rained some both days of competition, with the worst conditions waiting for the sixth round.

England's Ron Green had high time on test day - 37 minutes. Numerous fliers became acquainted with the rigger - a brave soul who retrieved many models undamaged. This was also the day to get acquainted, and to see all the equipment sported by other teams. Torquemeters were almost universally used, and several designs sported the offset, or bent wing post to get wing offset. The really neat gadget was a large clear plastic collapsible box which was used by the Dutch team to transport assembled models to processing and to the flight area.

On competition days, test flying was done in the morning, with official flying beginning right after lunch. Each team had all afternoon to make three flights for each team member. The only restriction was that only one model from each team could be airborne at one time. While this seems to be a fairly relaxed schedule, it can become tight if anyone has trouble. In Round 3 the U.S. team got a late start, so Bucky processed while Bud's flight was up. Bucky's flight hung, which left time for Jim to make the most amazing flight of the meet. The model climbed to 110', hit bad air and dropped to about 60'. The world's longest "cruise" followed - without getting any higher, the flight lasted 36:29. This was top time for the round! At the end of Round 3, the team placings were: England, Canada, Czechoslovakia. The day finished with no flights spoiled by mid-air collision.

The next day Bud lost a total model when the motor let go - so he got out a "good" model! That model won it all - as Bud tells in his report. Meanwhile, Bucky finally got his second "safe" flight and Jim's #4 flight was very underpowered. Bucky lost his model with a folded stick, and the replacement made a short flight. Jim's #5 flight was diving slightly, but bettered his previous backup time. Bucky disappeared to test-fly while Bud made the clincher, then made one of the two 30+ round 6 flights to cinch the team win. Jim's #6 flight suffered greatly from the turbulence, drifting badly and finally snagging the balloon string during a steer. The end came too fast as it always does - but the U.S. finally won one!

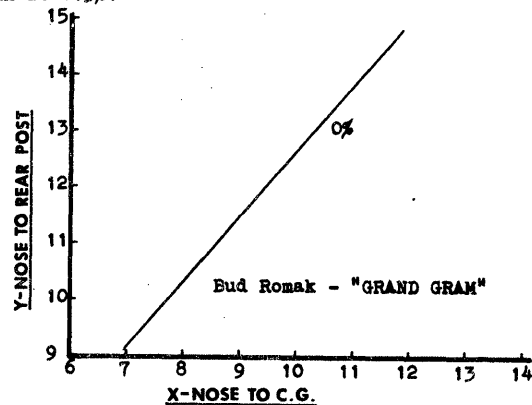
STATE OF THE ART

GRAND GRAM, Bud Romak's championship model, is, as he notes below, a fairly ordinary model. That is, the design is fairly ordinary. The result, in Bud's hands, won the 1976 Indoor World Championship by the second largest margin in the history of the event. The difference is lots of hard work, attention to detail, and precise adjustment of the model's flight trim and power train. The eight models which went to the WCh were the best of sixteen models Bud built in the months preceding the WCh. Bud and Joe Bilgri flew all the models (sometimes there were as many as six models airborne in the wind tunnel at one time) and kept out the best. Bud's comments appear below:

This is the same design I have been building and flying for the past year. It is a straight-forward model to

build and fly. I think the most important feature of any indoor model is the prop and rubber combination. When building this model one must make sure to keep the tail boom and stab light. Do not use a braced stab; this puts too much load on the tail boom and causes too much deflection at the wrong time, especially during turbulent flying conditions. The motor stick should be of paramount importance. It must be of good quality wood - 4 to 5 lb. stock "C" grain. I don't know about the other fliers, but when I fly in competition I wind my model to maximum turns. Of course, this really puts a load on the motor stick. I use a small amount of left thrust and up thrust. Only slack film is used on the model. What else is there to say? It's just a basic indoor model that seems to fly well. (For those checking static margin, the rear post is 1 1/8" from the nose.)

Computation of the static margin by CMOS, the model was trimmed at +.6%. By Crane's INP method, the static margin is +15%.



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Sundays, 8 am to 5 pm; Nov. 21, 1976; Feb. 13, Apr. 17.
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OKLAHOMA - Midwest City

Indoor contests at the National Guard Armory, 200 NE 23rd St., Oklahoma City, Oklahoma. Easy B, Peanut Scale and HLG, 9 am to 5 pm, Nov. 21, Dec. 19, 1976, Jan 16, Feb. 20, Mar. 20, 1977. Site is 35' to rafters, 45' peak. Contact Matt & Gail Gawain, Aero Hobbies, 2215 Air Depot Blvd., Midwest City OK 73110, ph. 405-737-1085.

TEXAS - Ft. Worth/Dallas

Indoor contest at Dallas NAS, Dallas TX, Nov. 7, 1 pm to 5 pm; Peanut Scale, HLG, Easy B-Pennyplane. Get word to Ed Turner, 3544 Granada Dr., Ft. Worth TX 76118, phone 817-589-1519.

THE PICTURE STORY

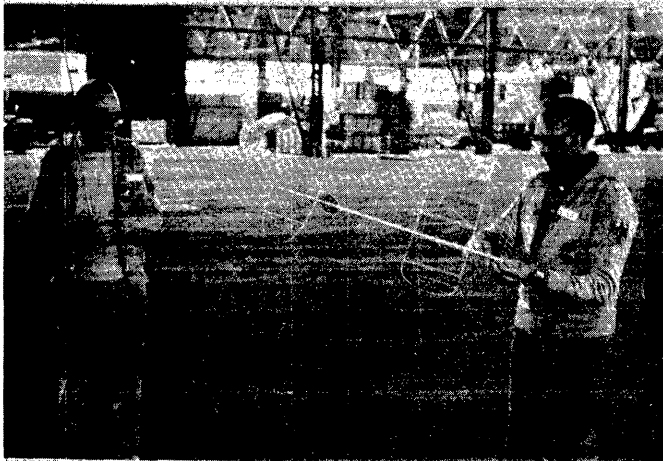
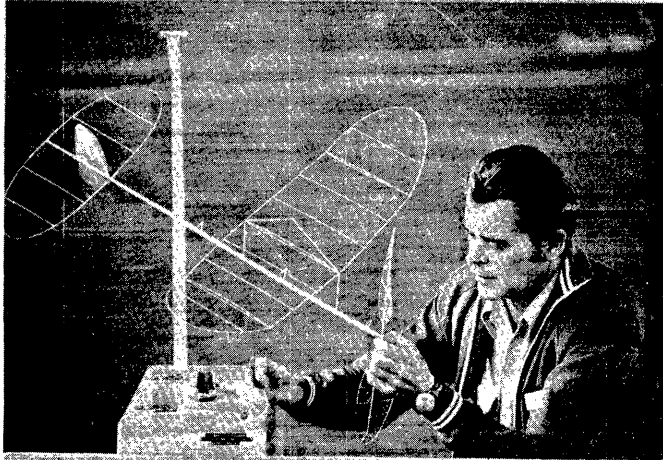
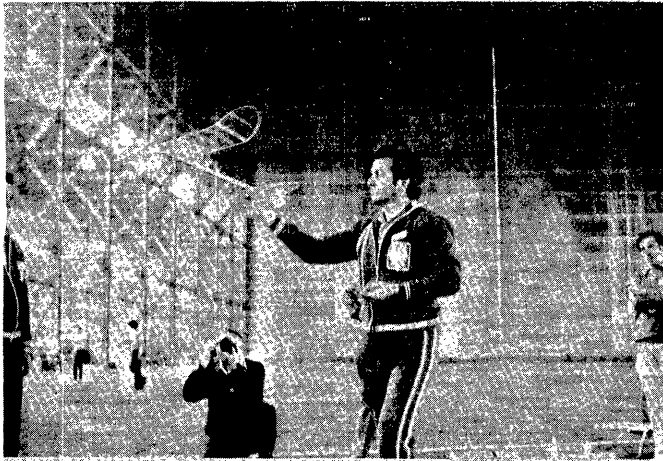
All photos by Larry Cailliau

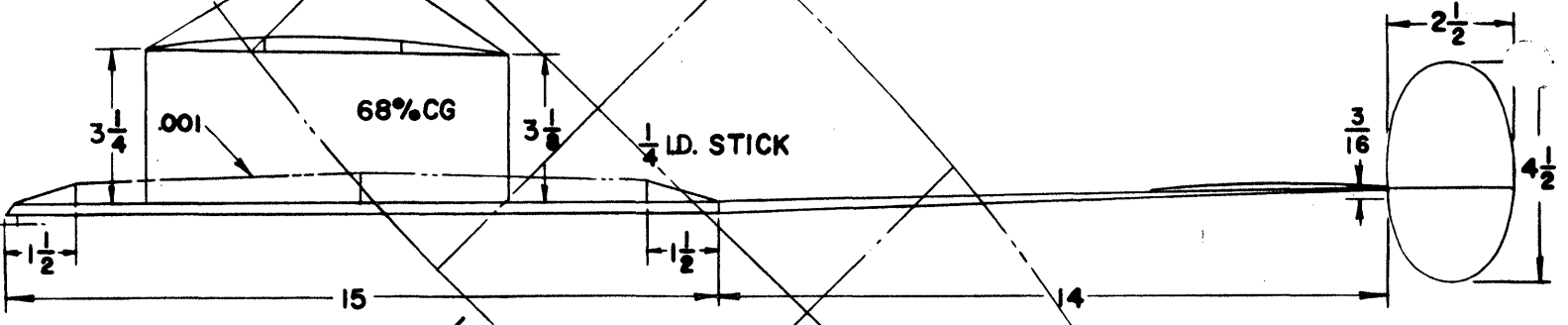
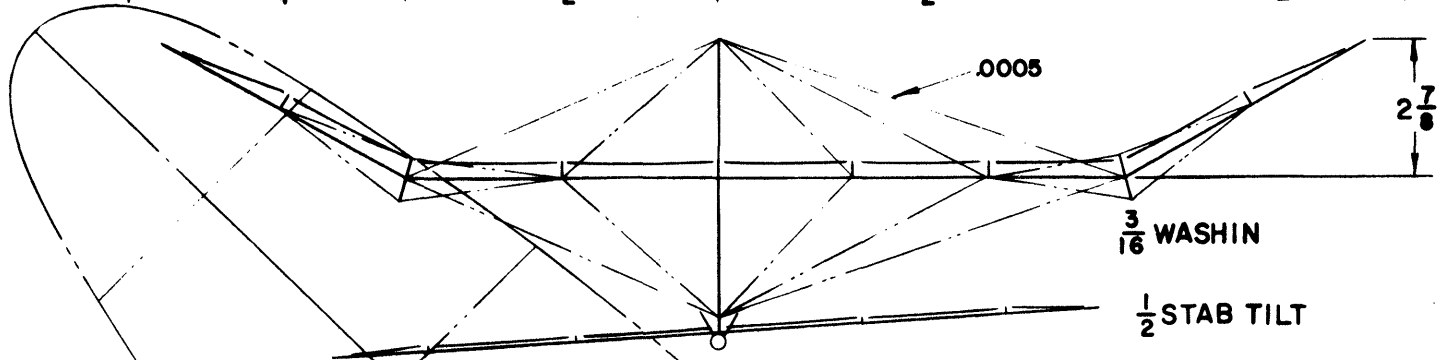
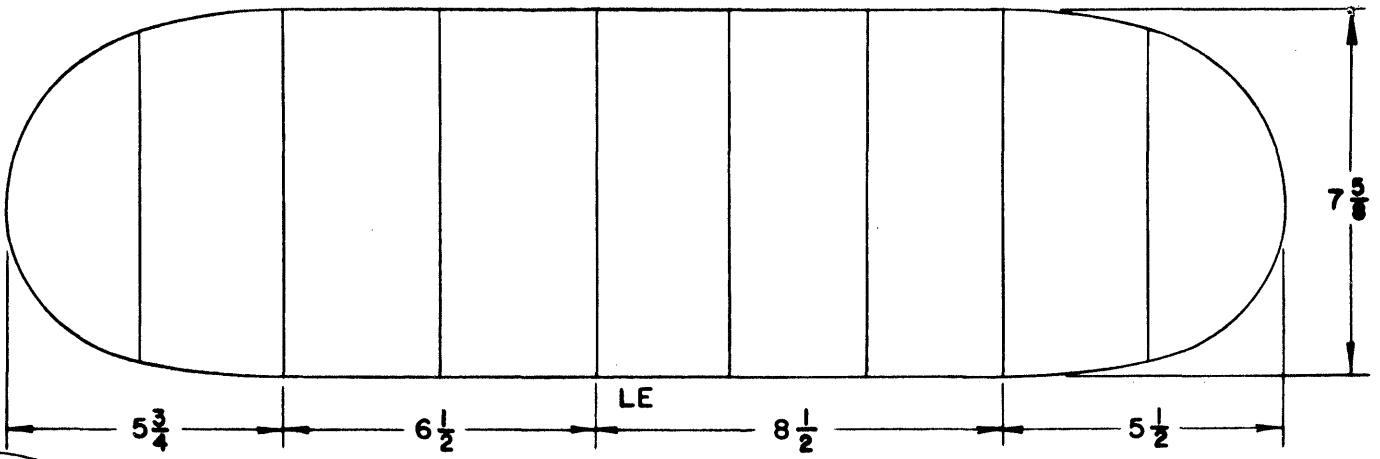
Row 1: Left - Edward Ciapala; Right - Bucky Servaites

Row 2: Left - Sylvester Kujawa; Right - Mike Thomas is standing, Jack McGillivray seated.

Row 3: Gunter Maibaum winds for Kurt Vogler; Right - The Swiss team members, Dieter Siebenmann in front.

Row 4: Left - Jim Richmond; Right - one of the Japanese team makes a flight.

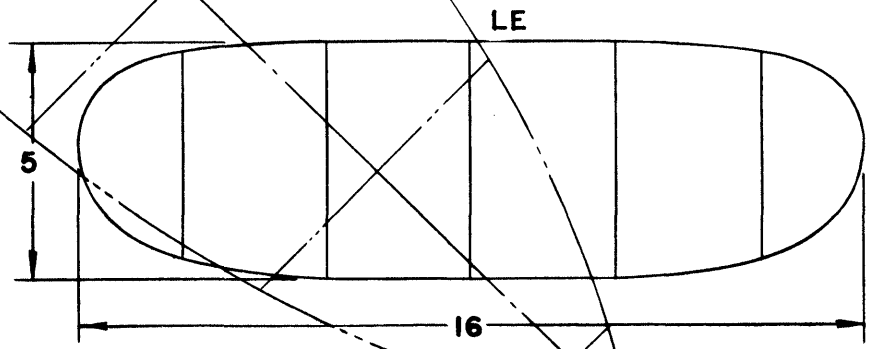




WING .010
 PROP .006
 REST .020
 .036

PROP 22" DIA. x 32" PITCH
 RUBBER 16" LOOP PIRELLI .048 .OZ
 2350 TURNS

.032 SQ. SPARS
 .025 SQ. RIBS
 .013 STICK
 .008 BOOM
 .015 SHAFT



U.S.A.
 BUD ROMAK FAI STICK
 1976 WORLD CHAMP
 CARDINGTON

"GRAND GRAM"

WINNING TIME 39:22+39:36 = 78:58

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

Members who joined in September, 1976

TONY NACCARATO, c/o T-A Hobby Lobby, 3512 W. Victory Blvd.
Burbank CA 91505
BILL SINRAM, 70 Auburn Ave., Shirley NY 11967

Members who joined in October, 1976

EDMUND J. BANKS, 6635-16th Ave, Kenosha WI 53140
CARL G. BARTHOLOMAUS, 105 Peirce Rd., Wilmington DE 19803
NEW DOWNIE, 7339-7 Winthrop Way, Downers Grove IL 60515
BILL HENN, 53 Hall St., Clifton NJ 07014

Who Owns Them?

The Apr-May '76 INAV column "A LOOK AT YESTERYEAR" had a real nostalgia item; copies of the plans for "Baby ROG" and "Duration Tractor"; both were 1933 vintage Comet Kits. Credit was given to Hal Crane for the loan of these genuine antiques - but the initials "HRC" on the corner of each page weren't Hal's! So, whose are they? I'll be happy to return them when the real owner stands up.

Renewal Reminder

Last month, for the first time, paper address labels on INAV's had a number in the upper left-hand corner. If that number (or the similar number on machine-printed addresses) was 09, your subscription/membership expires with this issue. In that case, you should find a note to that effect with this issue. However, if the number is 10, 11 or 12 - you're about due. If you send it in early, it sure saves a lot of time around here!

The Postal Service Strikes Again?

Maybe, maybe not. However, Philadelphia area fliers were sure they sent NIMAS Postal results, but these never were received.

Easy B

Name	Time	Ceiling	Fudge	Score
Charlie Stiles	485.0	18'	1.394	676.3
T. Woods	391.0	18'	1.394	545.2
Mark Drela (Senior)	358.0	18'	1.394	499.2
Bob Leishman	278.0	18'	1.394	387.6

HIG (Senior)

G. Van Bant	40.0	18'	1.39	55.6
Mark Drela	37.3	18'	1.39	51.8

HIG (Open)

Charlie Stiles	41.9	18'	1.39	55.6
Bob Leishman	38.8	18'	1.39	53.9

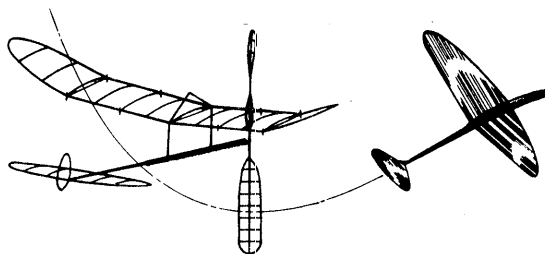
Top Ten Easy B

This listing has been updated to include the times shown above, which have just been received.

Name	Time	Ceiling	Fudge	Score
1. Dick Hardcastle	744	30'	1.08	803.5
2. Hal Crane	604	24.08'	1.205	727.8
3. Clarence Mather	567	22.3'	1.253	710.4
4. Charlie Stiles	485	18'	1.394	676.3
5. John Kukon	778	65'	.734	571
6. T. Woods	391	18'	1.394	545.2
7. Mark Drela	358	18'	1.394	499.2
8. Bob Dunham	489	37'	.973	475.8
9. Robert Dunham II	443	37'	.973	431
10. Richard Whitten	503	50'	.873	421

Peanut Scale Request

A number of INAV readers have indicated that Scale info, particularly Peanut Scale, is welcome and desirable. In times past, various fliers have offered to furnish some Scale info, but somehow it never materialized. So, let's try again! In particular, hints and techniques which improve flying or building or appearance are welcome. If someone has Peanut plans which can be reproduced easily,



as blue lines for example, perhaps these same plans can be reduced to fit a page of INAV. The result probably would be inadequate for building, but would show those interested what was available. Anyone interested?

NFFS Call For Papers

The National Free Flight Society is soliciting papers for the 1977 NFFS Symposium to be held at the 1977 Nats. Papers will be published in the 1977 Symposium volume whether or not the author is able to present his paper personally at the Nats. Papers should cover some aspect of science or art of free-flight models, including technical studies, practical design and engineering as applied to models, new or unusual model aircraft developments, or historical items. Both indoor and outdoor free-flight modeling developments are to be included. Please send proposed papers to:

Mr. Robert P. Dodds, Editor
Box 436
Rancho Santa Fe CA 92067

Send title of proposed paper together with an abstract of 200 words or more, or a complete paper if it is available. Abstracts should be submitted as soon as possible and hopefully within a month after publication of this notice. The editor this year would like to have a complete list of the material to be published by December 15, 1976.

FAI INDOOR REPORT

Two Incredible Proposals

Once again, CIAM agenda material was late arriving at AMA HQ; there was the usual flap to react quickly to all the proposals so the AMA's voting delegate would have a consensus to guide his vote. Oddly enough, the two proposals which would have the most objectionable effect on FAI Indoor originated in the U.S. Even more interesting, these proposals apparently were never reviewed by anyone with responsibility for formulating such proposals. They apparently were intended to offer some alternative to the controversial three year Wch cycle which is to be voted on at the December CIAM meeting. All such proposals by all countries essentially would schedule some Wch's more often at the expense of other Wch's; it is extremely distressing that both such proposals by the U.S. would have Indoor be the event which "gives" consistently. It is even more distressing that no U.S. FAI participants were allowed to review these proposals before being submitted.

The most recent meeting of AMA's Executive Council was in October; the major topics of discussion were FAI problems. By unanimous resolution, the Council instructed the AMA's voting delegate to vote against the three year Wch cycle. Incredibly (again!), the Executive Council was not informed of these two proposals; as of this writing, it is likely that no District VP's have seen them.

The furor is all over proposed changes in a certain clause in FAI regulations: "Each World Championships are normally held every other year". Both U.S. proposals and most others would change that clause; items 5 through 11 under Sec. III. General Items (for the agenda) all offer some alternate wording for that simple clause. The U.S. proposals are numbered 10 and 11:

10. "Aeromodelling World Championships shall be limited to three per year, with the type of world championships to be approved by the CIAM plenary meeting of the year prior, and with preference given to the categories which have had the longest time since the previous world championships for those categories; except that any new category, without any previous history of world championships, shall be given first priority. Note: world championships for new categories can only be approved if the current CIAM requirements for minimum international contest participation have been met".

11. "Aeromodelling World Championships shall be limited to three per year, with determination of the type of world championships to be based upon the level of competition participation throughout the CIAM membership as follows:

1. Each participant country shall supply a certified affidavit at the December plenary meeting of the CIAM indicating the exact number of registered participants in each of current FAI events.
2. The total number of such participants as determined by each member country's affidavit, will be considered to be 100%.
3. Events which constitute the 3 highest percentages will be able to hold world championships each two years.
4. The remaining events would be held every three or four years depending upon their percentage of the total participation in decreasing order."

For indoor fliers, it is easy to see an objection with #11 immediately. We know that, in terms of participation, indoor worldwide is the least practiced FAI class. Indoor WCh's would thus be relegated to a four year cycle.

As for #10, consider this background information, undoubtedly well known to the proposal's author: the Executive Council has ruled that team selection programs must be approved by Jan. 1 of the year the programs start, and that such programs must finish by December 31 of the year prior to the WCh. Thus, with the WCh schedule being decided "by the CIAM plenary meeting of the year prior", it is impossible for the U.S. to field any team. Further, if the regulations were changed, it is highly improbable that an effective U.S. team could be picked in only eight months. (Presumably, it would be the April plenary meeting which would set the schedules.)

Due to the allowance made for new WCh categories, it is likely that under proposal #10 there would often be only two "slots" in a given year for nine WCh's (nine is the current number, with more being planned). With a limit of three WCh's per year, it is obvious that some event will be on a four year cycle almost immediately. For Indoor, it is likely that a four year cycle will be normal.

It is disturbing that the committees charged with responsibility for formulating agenda items were not consulted and given a chance to work out alternatives. It is more disturbing to have the U.S. be represented by such ineptly conceived proposals.

CORRECTION: WCh Results

We received no official copy of the WCh results, and some 5th and 6th round flights were omitted from the INAV presentation. The following errors have been noted: Strasserger, Yugoslavia - 66:19 total; to 13th place Siebenmann, Switzerland - 58:09 total; no change Czechowski, Poland - 57:47 total; to 28th place Pontan, Sweden - 59:44 total; to 22nd place

Sweden from 13th to 12th; Yugoslavia from 6th to 5th

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STATE OF THE ART

Hi Bud,

As promised, here's the three-views of my V-tail Pennyplane. I feel better about having the design appear in the newsletter now since it placed second at the Nats with 10:51 (Mather won with 11:34). Interestingly, the biplanes and tandems just didn't seem to realize their potential in the Columbus site.

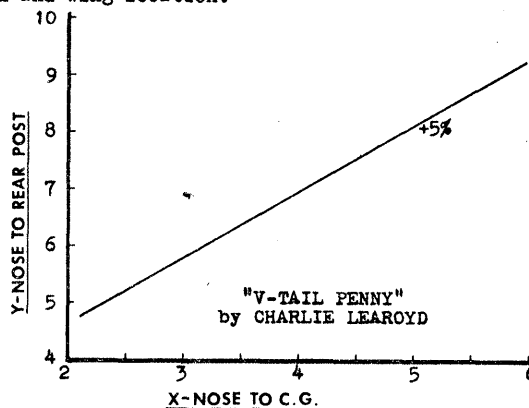
The design goal was a model which would be easy to handle, and in particular, be good at rafter-banging - i.e., fast recovery from diving, etc. I've seen many designs do a kamikazi job to the floor after hitting the ceiling. The wing tips tuck under and never recover. This led to "Y" struts on the wing, in an attempt to improve torsional rigidity, and it seems to work pretty well. The double-tapered wing and stab spars take extra time, but I think they are worth it - the strength distribution more closely matches the loads, and more important, the controlled flexing seems to help in rafter-banging and in dive recovery. About 1/8" washout on both stab tips also helps, especially in recovery from a tail-slide.

I use a Harlan thrust bearing, but mount it on a hard balsa spacer to increase rubber clearance (I fly on .107" rubber). The left thrust is crucial to get the V-tail to turn tightly, as is the stab tilt.

This version differs primarily from my first V-tail design primarily with the flat center section - which does better than the V-dihedral original version. Incidentally (no pun intended) the wing wash-in is easy to change by loosening one of the four strut attachments and re-gluing it.

Good luck,
Charlie Learoyd

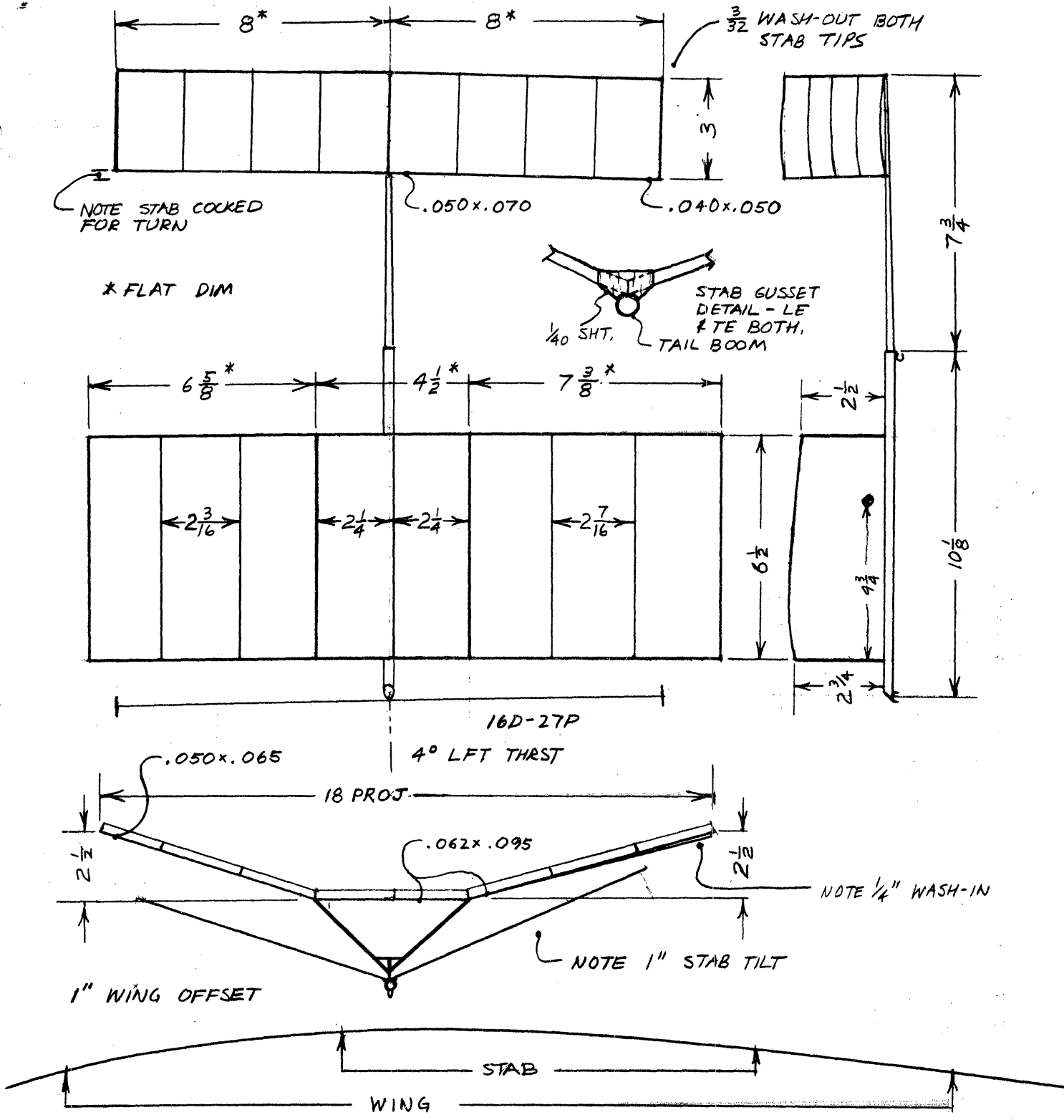
Editorial comments: the usual CMOS balance diagram is presented below, computed for +5% margin. In light of my personal experience, it is often difficult to apply CMOS directly to Pennyplane designs due to the wide chord and short motorstick. As a result, the desired wing position may be such that the prop may strike the inboard wing, particularly if left thrust is used. If the model is underweight and requires ballast, the ballast location can be chosen to allow the best compromise between stability margin and wing location.



PIRELLI LORE

A long time ago, this column was started to assemble both "rule-of-thumb" and technically derived info about pirelli rubber. Perhaps the title will soon have to be changed, since Pirelli is vanishing! However, page four shows curves taken by Mark Drele, comparing Sig rubber and Pirelli. He is demonstrating about three things: first, that .0085 oz. of pirelli, wound in the typical indoor manner (curve 3) has noticeably more energy storage than .009 oz. of Sig. However, with the winding technique shown on the chart (curve 2), the Sig energy approaches that of pirelli. Third, note that the Sig has a longer "flat" portion on its curve, which is of significant advantage in Cat. I flying.

Has anyone else done similar work on rubber from new sources? If so, please share it. Nothing fancy needed - this was ball-point pen on engineering tablet - just fine!



ALL RIBS $\frac{1}{32}$ C-GRAIN,
 DEPTH TO SUIT SPAR DEPTH.
 "V" STRUTS AND POSTS HARD $\frac{1}{16}$ ϕ BALS
 MICROLITE COVERING

MOTOR STICK .020, $\frac{5}{16}$ ϕ
 TAIL BOOM .015 TAPERED
 WEIGHTS: (BALLAST AS NEEDED)
 M.S., T.B., STAB - 1.05 gm
 WING & STRUTS 1.25 gm
 PROP 0.85 gm
 TOTAL 3.15 gm

V-TAILED PENNY

8/13/76 CHARLIE LEAROYD

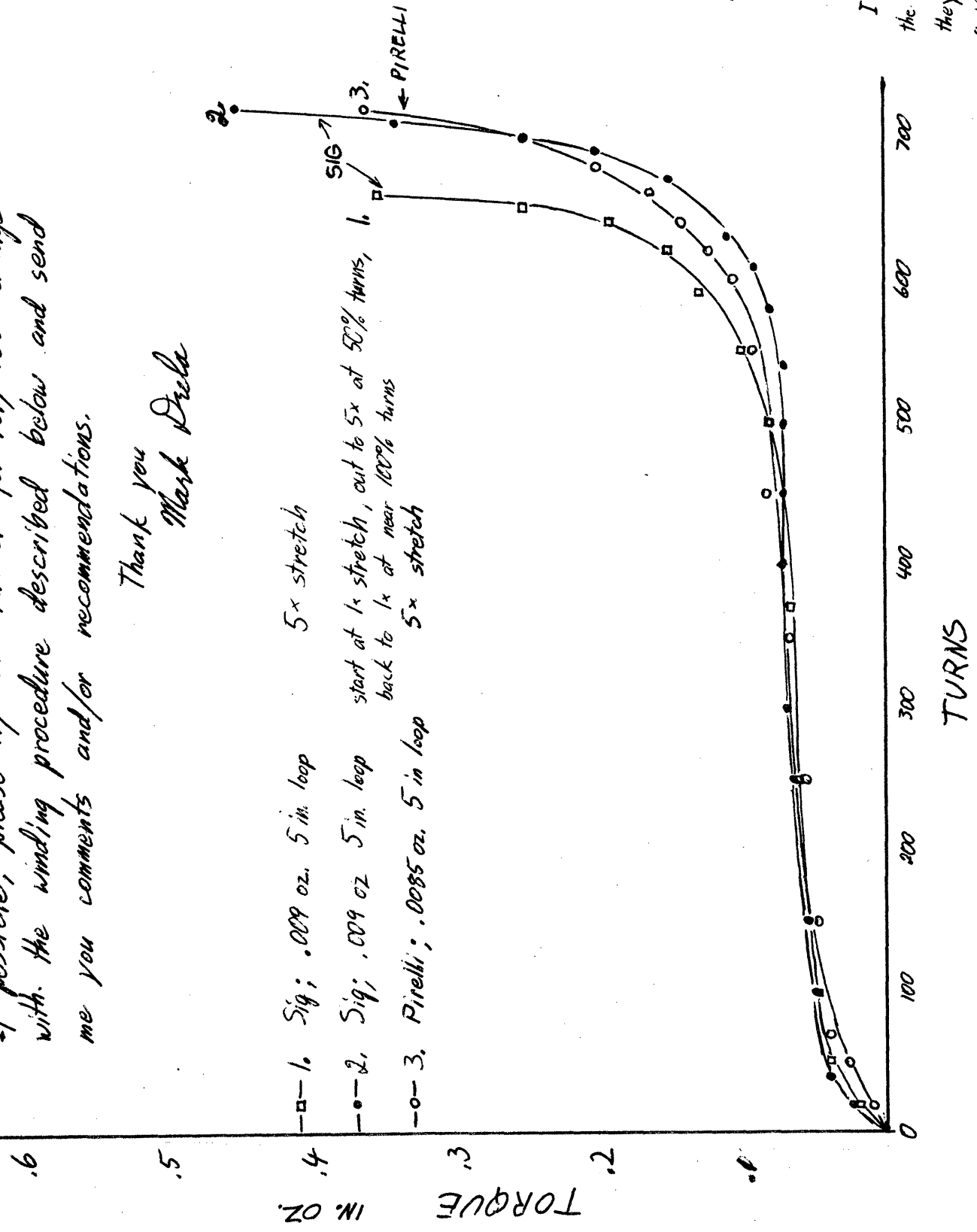
Dear Bud,

Here are the curves you requested enlarged. If possible, please try SIG rubber for very low ceilings with the winding procedure described below and send me you comments and/or recommendations.

Thank you
Mark Drela

MARK DRELA
7-18-75

I did not draw the FAI curves as they were were from a very early batch which, in general were very poor.



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Call For Papers

The Sept. '76 INAV contained a request for technical papers for the 1977 NFFS Symposium. Dr. Dodds has repeated his request, stressing his desire for indoor papers. He has also extended the time - he would like to have a complete list of material to be published by Jan. 15, 1977. Send proposed title and 200 word abstract to Dr. Robert P. Dodds, Box 436, Rancho Santa Fe CA 92067.

This Issue

In recent times, there have been a large number of requests for information about CMOS or Constant Margin of Stability. Almost every model three-view presented for many years has been accompanied by a CMOS balance chart, for the convenience of anyone who wished to build that particular model. The reason for this effort is that your editor and many other flier believe that CMOS offers a reliable approach to trimming a model before it ever leaves the shop. The resulting trim is very close to optimum, requiring only incidence settings to be made at the flying field.

Due to the large number of requests, and the fact that my move from a large corporation to a smaller one cost one particular fringe benefit - free xerox - this issue reprints both the most recent dissertation on CMOS and Hal Crane's INP method. This entire issue is a reference volume on indoor model wing location - the most important single item of indoor model trim. If the wing is in the wrong location with regard to the CG, abnormal amounts of incidence will be necessary to achieve normal flight. Such adjustment causes the model to be less efficient in flight so it never reaches its true potential.

The Cover Sheet

The cover sheet (page 5) was submitted by John Triolo and Manny Radoff; it is the first response to the recent offer to include camera-ready copy on controversial matters such as the politics of FAI program management. (Note that model flying rules, theory, etc. have a free forum, subject only to where particular pieces will fit in a particular issue. Some typical communiques in the "political" field would fill a whole issue!) The cost of inclusion of this page was simply that of printing - \$9 for the 500 page press run.

Their presentation is excellent and deserves careful, attentive reading. Their key point - that the point system does not guarantee a winning team - is valid. It was not intended to do so. What the point system did accomplish is that 75% of the finalists had 90% or better of a perfect score over the entire qualification process, and 56% of those had 95% or better of a perfect score. Only one finalist had less than 88%. Never before has the finalist field been so highly qualified - which was precisely the intent.

FAI INDOOR REPORT

Notes From Paris

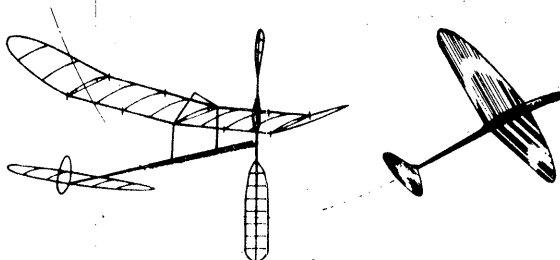
Only two items from the CIAM meeting are of interest to indoor fliers. First, the concept of three-year cycles for World Championships was voted down 21 to 3, against all expectations. Second, it seems likely that the 1978 Indoor WCh will be in Romania, since theirs was the only bid for the event.

Team Selection Program

Due to the CIAM decision for continuing the two-year WCh cycle, the 1978 U.S. Indoor Team will have to be selected in 1977. This means the program will have to be approved quickly, and another questionnaire will shortly be distributed to program participants.

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Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

MIAMA Fly-Ins are largely in doubt; with one currently scheduled for Monday, Jan. 3, 1977, 6 pm to 10 pm at Youth Fair on 109 Ave. and Coral Way. Contests at Goodyear Hangar, Opa Locka Airport, 9 am to 5 pm, Jan. 16, Feb. 20, Mar. 20, Apr. 24 and May 22, 1977. Confirm individual dates shortly before each session by calling 305-858-6363.

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OKLAHOMA - Midwest City

Indoor contests at the National Guard Armory, 200 NE 23rd St., Oklahoma City, Oklahoma. Easy B, Peanut Scale and HLG, 9 am to 5 pm, Jan. 23, Feb. 20, Mar. 20, 1977. Site is 35' to rafters, 45' to peak. Contact Matt & Gail Gowan, Aero Hobbies, 2215 Air Depot Blvd., Midwest City OK 73110, ph. 405-737-1085.

TEXAS - Ft. Worth-Dallas area

Contest at Dallas NAS Drill Hall, Dallas Texas; tentative date Jan. 30, 1977. Contact Ed Turner, 3544 Granada Dr., Ft. Worth TX 76118, ph. 817-589-1519.

INSTANT NEUTRAL POINT

The Jan. '73 INAV had a review and recap of the CMOS balance method. In the past two or three years, Hal Crane has been developing another system to locate the neutral point - or to put it another way, compute the static margin. It was pointed out in the CMOS article that the basic chart was developed for A-2 towline, and thus does not exactly fit indoor models. However, it does have a provision for different aspect ratio of wing and stab, thus allowing comparison of reasonably diverse designs. Hal's method can be adapted to various designs by using a different chart for each subgroup, but the chart shown on page 5 is "peaked" for low aspect ratio designs such as are now common in one gram FAI. PennyPlanes follow this same basic trend, and should also work well on this chart.

The CMOS method requires considerable computation and construction of a graph which is then applicable to all models built to that exact design. Hal's method calls for less computation, but requires several guesses. At this time, several years of experience with CMOS has pinpointed the best range of balance points, but this advantage can be rapidly overcome if people using Instant Neutral Point will give feedback on the results. Hal's own "best guess" is to use at least 10% static margin; that is, the C.G. should be at least 10% of the average wing chord ahead of the neutral point.

A couple of examples will illustrate the method of using INP. First, let's compute the static margin of a hypothetical model which has been completed and flown, to see how it should have been trimmed. This model will have the following design: constant chord wing and stab with 7" x 25" wing and 4" x 18" stab. Fuselage and tail boom dimensions, plus wing location, will be as shown in Fig. .. The basic procedure is as follows:

1. Compute average chord of wing (C_w, ave) and stab (C_t, ave). Note that the example model has constant chord wing and stab, which is a special case. See the CMOS discussion (Jan. '73 INAV) for computing average chord of tapered wings.

2. Measure (on existing model) or compute (on model under construction) l_t (tail length, or tail moment arm).
3. Divide l_t by $C_{w,ave}$.
4. Divide stab area (S_t) by wing area (S_w).
5. Refer to the INP chart (p. 5) and extend the line corresponding to the proper S_t/S_w .
6. Move vertically from the computed value $l_t/C_{w,ave}$ on the X-axis of the chart to the extended line, then across to the neutral point (NP) on the Y-axis.
7. Compare the NP location with the CG location.

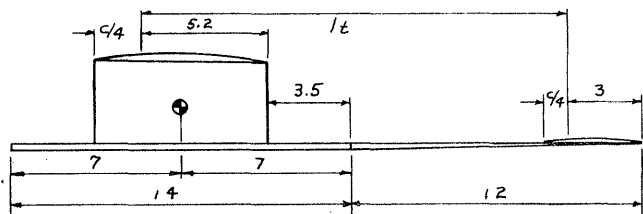


Fig. 1

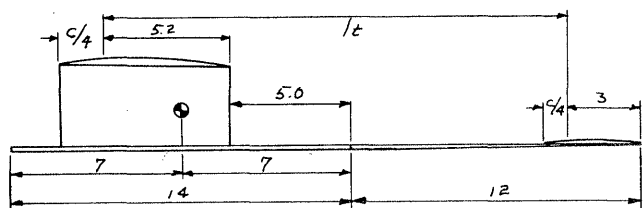


Fig. 2

Working with the specified dimensions of our "tested" model, the following figures come out:

1. $C_{w,ave} = 7$, $C_t, ave = 4$.
2. $l_t = 17.7''$. (From Fig. 1, note that l_t is defined (as in CMOS method) as the distance from $C/4_{wing}$ to $C/4_{tail}$. That is from 25% of the average chord on the wing to 25% of the stab average chord. Thus, from Fig. 1 $l_t = 9 + 3.5 + 5.2 = 17.7$).
3. $l_t/C_{w,ave} = 17.7/7 = 2.53$
4. $S_t/S_w = 72/175 = .41$. Refer to p. 5 and note that the line corresponding to the .41 has been extended (step 5). Note that this line is the same for all models built to this same design.
6. Following the light line, NP is shown to be 79.5% C_w . In other words NP is 20.5% or 1.43" ahead of the rear wing post.
7. Since the CG is 7 - 3.5 or 3.5" ahead of the rear wing post, the static margin is $3.5 - 1.43 = 2.07$. Then, $2.07/7 \times 100\% = 29.4\%$ margin. Since Hal recommends about 10% margin, the hypothetical model is trimmed too far forward; as a result both the flight efficiency and the rafter banging qualities will be impaired.

Fig. 2 and the following discussion will illustrate the trial-and-error method for proper wing location. From the example above, we can assume that the wing will have to be moved forward. Therefore, assume a wing location 5" ahead of the rear hook, or 1.5" ahead of the original location. Then the new $l_t = 17.7 + 1.5 = 19.2''$, and $l_t/C_{w,ave} = 19.2/7 = 2.74$. From the graph, NP = 82.4%, and NP is 17.6% of 7 or 1.23" ahead of the rear post. The CG is now only 2" ahead of the rear post (trial location) and the margin would be $2 - 1.23 = .77$. $.77/7 \times 100\% = 11\%$ margin, well within proper limits.

Why another method to compute static margin? What is it with this guy, anyhow? Simply this: it is the personal belief of many top fliers that computation of static margin is one of the major shortcuts to high-level performance. Most certainly it is possible to trim models at other margins and get respectable performance. However, once anyone tries balancing models with some method of static margin rather than by some arbitrary CG location, they usually continue regardless of the bother of compu-

tation. It is a measure of my own conviction that this is vital that I take time to compute CMOS on all models presented. In the future, INP will also be given for all models with low aspect ratio wings.

DESIGN FOOTNOTES

Constant Margin of Stability

Since CMOS was introduced in the Jan. '69 INAV, most stick model 3-views in INAV have been accompanied by CMOS balance charts. Various questions about the method led to the development of an info packet on CMOS which was available upon request. This presentation is further explanation on how to use CMOS to design better models.

CMOS stands for constant margin of stability. The margin of stability of an airplane is a measure of how the model's stability differs from neutral stability. (A model with neutral stability has no tendency to recover from upset or un-natural attitudes.) With positive stability, the model tends to recover from upset, while with negative stability the upset will tend to get worse. By choosing an optimum margin of stability, it is possible to have a new model almost perfectly trimmed before it leaves the workbench. Certainly, it should never be necessary to move wing sockets or add ballast as sometimes happens with new models that must be flown that certain day!

In other words, models of similar design which have the same stability margin will fly almost the same, and after anyone "zeros in" on their favorite margin, they can build other designs with a minimum of adjustment problems to cope with.

The NIMAS CMOS Chart was designed by Hank Cole and was originally published in the Dec. '47 Air Trails. It was designed for A-2 gliders instead of indoor models, so it gives relative stability figures which are smaller than the absolute stability of the indoor model. Even though this difference may amount to perhaps 20% margin, the CMOS method allows direct comparison and can be used as if the results were correct.

Many people tend to shy away from CMOS because of the computations involved. However, if the balance diagram is furnished (as with INAV 3-views), it is simple to balance the model using CMOS. Assemble the model with prop and rubber motor on the complete fuselage/tail group and find the balance point as usual. Measure from the balance point to the thrust bearing - let's assume the distance is 8". If Fig. 1 is the balance chart for the model and we wish to use 0% margin, follow the dotted line up from 8" to the 0% line and across to the Y axis at 8.55". Thus, the rear post should be located 8.55" from the thrust bearing. If the stab tilt and wing washin/washout is OK, only incidence and thrust line should need to be set for a good flying model!

Calculation of CMOS balance diagrams is simpler than most people realize. Fig. 2 is the top of the CMOS computation form, listing wing and tail specifications. Beginning with span and area, the average chord (span/area) and aspect ratio (span/av. chord) are computed. Fig. 3 is the CMOS Chart (extrapolated to wing aspect ratio = 3). With a wing aspect ratio = 6.25:1 and stab aspect ratio = 4.3:1 both lines have to be interpolated; the intersection on the Chart is at .46 (C_T).

Tail moment arm is usually defined as the distance between 25% of average chord on the wing to the same point on the stab. As a beginning example, let's assume a wing and stab that are rectangular; the root chord will equal the average chord. Thus for the model with dimensions as defined in Fig. 2, 25% of wing and stab chords are 1" and .7" respectively. Since the wing and stab do not taper in any fashion, 0" is noted as the dimension between average chord and trailing or leading edges. With a tail boom 12" long, subtract 2.1" from 12" to reach the rear hook, then add the distance "2" and "3" to define the tail moment arm.

The CMOS method is a graphical solution which eliminates several computations by defining a straight line. To do this, the aerodynamic center is calculated for two wing locations; in this example the wing will be 1" from the rear hook ($Z = 1''$) and 6" from the rear hook. The formula for A.C. is shown solved for these two wing locations and values for X (distance from balance point to nose) and Y (distance from rear post to balance point) are plotted on Fig. 1, working from values in the box on Fig. 2.

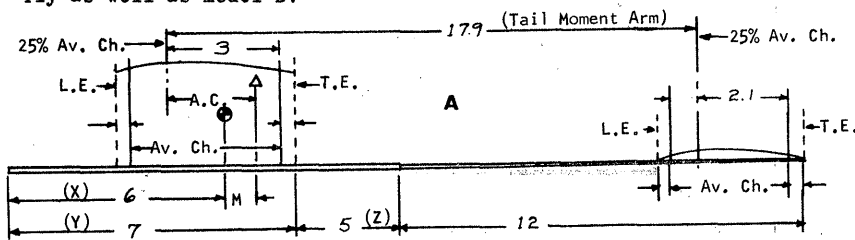
The computations discussed above were also made with the stipulation of 0% margin - the aerodynamic center and center of gravity are coincident. This simplifies the computation considerably. Note that Fig. 1 has three balance lines - +5%, 0% and -5%. Only the 0% line was calculated in Fig. 2, and the other two lines were established

by moving the 0% line .05 x 4 (4" avg. chord) in each direction. Three dotted lines on Fig. 1 show the effect on wing location that different choices of stability margin will have; rear wing post locations are 8.8", 8.55" and 8.3" from the nose as the margin changes from +5% to -5%.

The final factor to consider in CMOS computation is average chord. If the model in question had used a wing with parabolic planform, 25" span and 5.1" root chord, the area would still be 100 sq. in. and average chord would be 4" - same as before. The only change in computation would be that the wing is 1.1" wider at the root, half in front and half in back. The 0" dimension at the T.E. would then become .55", tail moment arm figures would change to 14.45 and 19.45. The slope of the graph and location of the 0% line will not change.

The location of the end-points of the average chord is obvious on wings symmetrical with respect to the lateral centerline. A shortcut for locating mean chord of wings with odd shapes is shown in Fig. 4. With a span of 25.4", root chord of 6" and area of 127 sq.in., average chord is 5". A scale drawing of the wing planform was used, and the T.E. dimension checked to be .25".

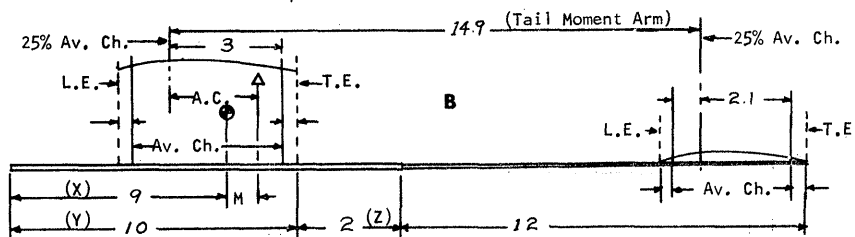
To figure stability margin on an existing model, compute the A.C. as before, then measure where the CG is with respect to the CG. Compute the margin according to the formula shown in Fig. 2. Fig. 5 illustrates this process on two models built to the design illustrated in Fig. 2, except that both models were built with fixed 70% CG. Model A balanced 6" from the nose and model B balanced 9" from the nose. The margin computation shows dramatically how much variation is possible between models of the same design which vary in balance point - the wing posts of model A might have to be moved as much as 1/2" to make it fly as well as model B!



$$A.C. = \frac{32.8}{100} \times 17.9 \times .46 = 2.7 \quad 3 - 2.7 = .3; \Delta \leftarrow T.E.$$

$$1 - .3 = .7; CG \leftarrow A.C.$$

$$\text{Stability Margin} = \frac{.7}{4} \times 100 = 17.5\%$$

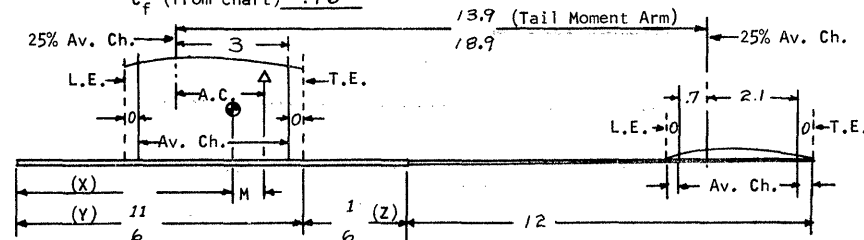


$$A.C. = \frac{32.8}{100} \times 14.9 \times .46 = 2.25 \quad 3 - 2.25 = .75; \Delta \leftarrow T.E.$$

$$1 - .75 = .25; CG \leftarrow A.C.$$

$$\text{Stability Margin} = \frac{.25}{4} \times 100 = 6.25\%$$

MODEL SPECS: Wing Span 25 Wing Area 100 Av. Chord 4 Aspect Ratio 6.25:1
 Stab span 12 Stab area 32.8 Av. chord 2.8 Aspect ratio 4.3:1
 C_f (from chart) .46



$$\text{Tail Moment Arm} = 12 - 2.1 + Z + 3$$

$$A.C. = \frac{\text{Stab Area}}{\text{Wing Area}} \times \text{Tail Moment Arm} \times C_f \quad \text{Stability Margin} = \frac{M}{\text{Av. Chord}} \times 100\%$$

$$= \frac{32.8}{100} \times 13.9 \times .46 = 2.1 \quad (Z = 1) \quad 3 - 2.1 = .9; A.C. \leftarrow T.E.$$

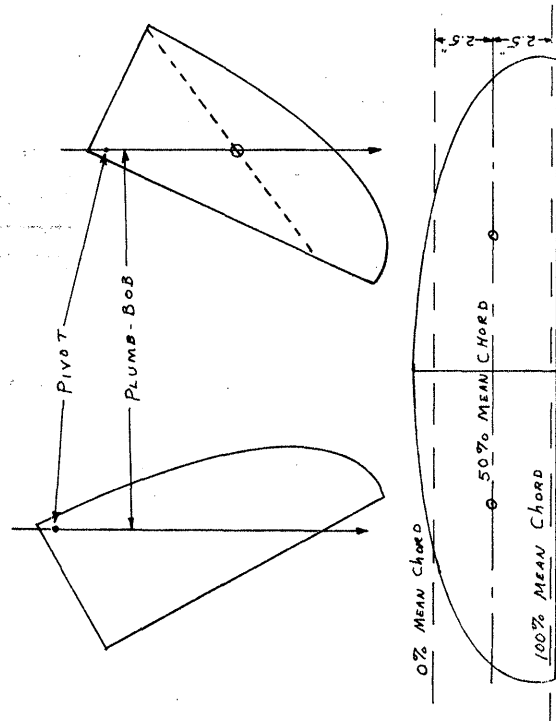
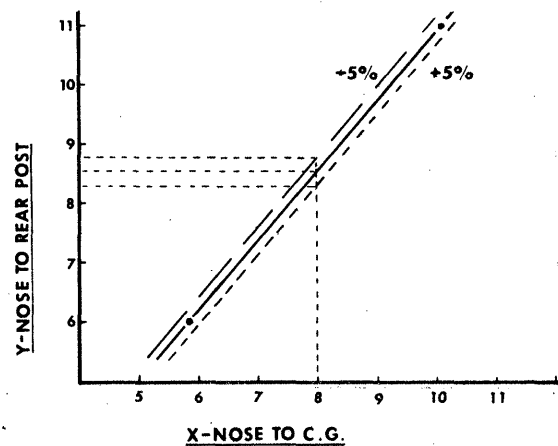
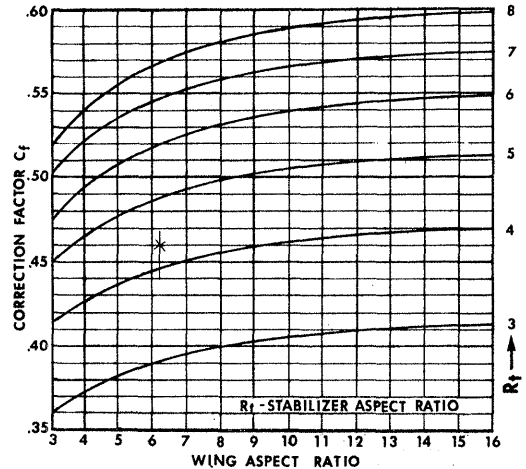
$$11 - .9 = X = 10.1$$

$$= \frac{32.8}{100} \times 18.9 \times .46 = 2.85 \quad (Z = 6) \quad 3 - 2.85 = .15; A.C. \leftarrow T.E.$$

$$6 - .15 = X = 5.85$$

Besides the benefits of more efficient flying and ready-made flight trim, models balanced near 0% margin by this system and adjusted with washin/washout wing trim are usually excellent rafter-banging models. Also, and this is not yet proven, CMOS balanced models seem less affected by light drift than models with high positive margin such as model A of Fig. 5.

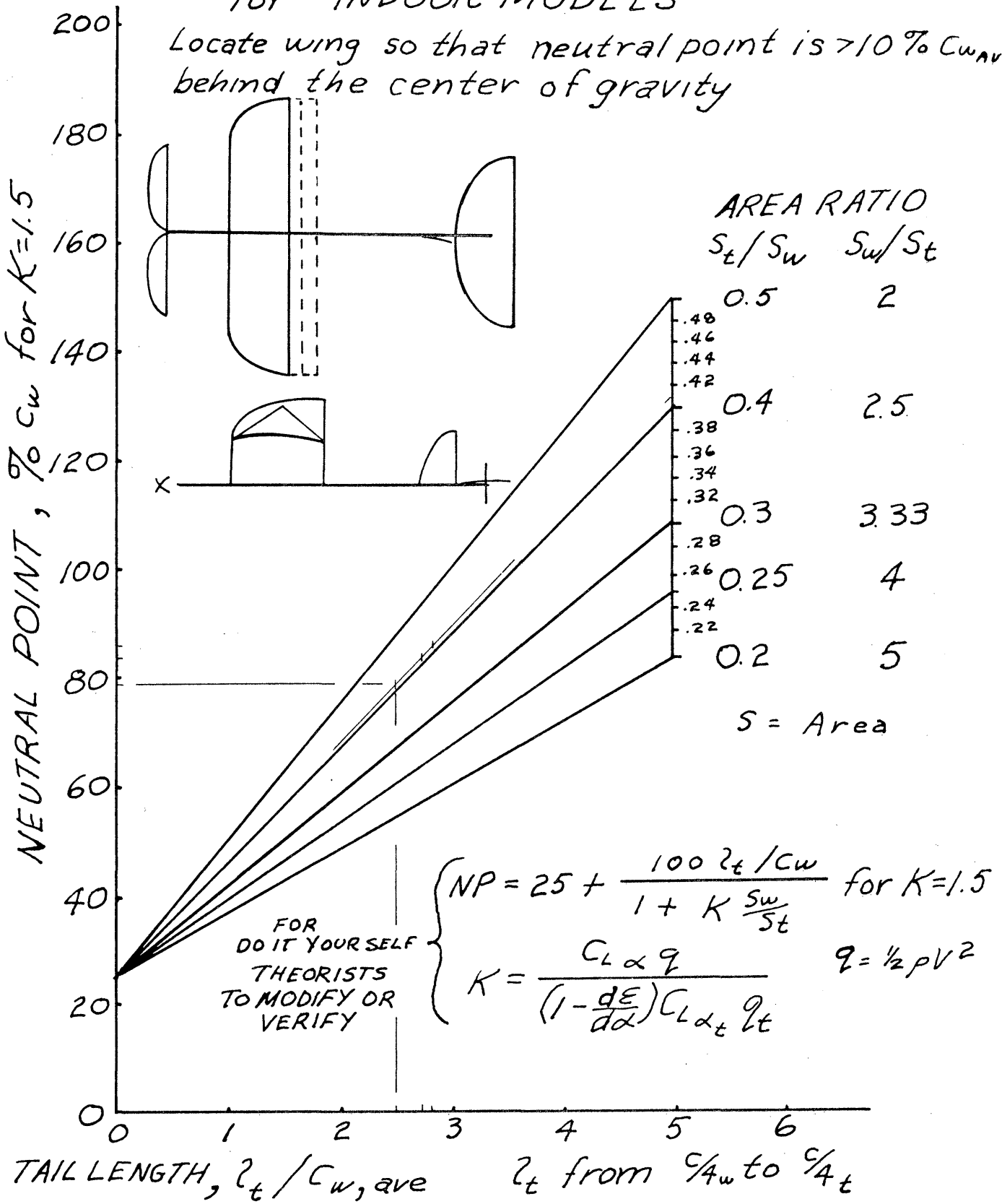
Three final points regarding CMOS: First, C_f remains unchanged so long as wing and stab dimensions and tail boom length remain unchanged. Changes in motor stick length can be handled by making a corresponding change in both X and Y dimensions. It is easiest to use projected wing area and build the wing to fit max span limits on FAI and PennyPlane models.



Z = 1
Y = 11
X = 10.1
Z = 6
Y = 6
X = 5.85

INSTANT NEUTRAL POINT for INDOOR MODELS

Locate wing so that neutral point is $> 10\%$ $C_{w,AVE}$ behind the center of gravity



To Whom it May Concern:

Our team members are to be congratulated for having won all the honors at the World Championships. As the team manager said, "Our team, with a little luck or better weather conditions, would have clobbered the opposition", meaning places 1, 2 and 3, I presume.

It will probably be argued that since we won the W/C with a team chosen by the point system we should therefore retain the point system in our future team selection trials. The following is intended to counter this reasoning.

In examining the flight times at the W/C, it is illogical to conclude that the point system was the cause of our win. I would agree that if Bucky were the champion, and Jim and/or Bud were second and third, it could be argued that the point system should be retained. The facts are that our third-ranked team member was 1st at the W/C, and our first and second team members were 8th and 9th in the same contest.

Fact: The stellar performance of Bud Romak with his two spectacular flights was sufficient to offset the perilous 8th and 9th positions held by Bucky and Jim.

It is a statistical accident that we are the team champions, rather than because we had a "point" chosen team. Points are not used at the W/C, so why use them at home? They were intended to eliminate the luck factor and produce consistency, but the record shows that points had no bearing in these matters at the W/C, and luck will always be a factor in any contest, points or no points! The use of points is pointless (pun intended), no matter how well-intentioned their use may have seemed.

Fact: The use of points resulted in a distorted view of our team's individual performance expectations. Bud Romak had the highest time at our finals and the highest time at the W/C, and, theoretically, that's the way it should be. Bud won the W/C by times alone, and that's the name of the game!

Let's stop kidding ourselves that points will give us consistency and eliminate luck. There's no such thing in this game. A look at the record will show that points did not rate our fliers correctly nor accomplish its intended purpose. Actually, they proved to be a needless burden and should be dropped in favor of a time system.

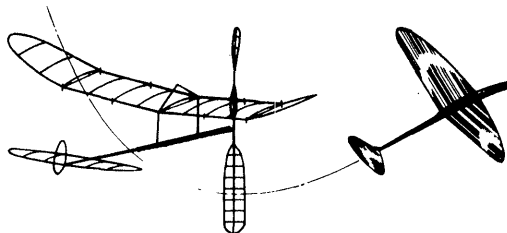


John G. Trielo

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Special International Issue

This issue is dedicated to the indoor fliers all over the world. INAV presently goes to 20 countries, with 15 of those countries participating in the 1976 Wch. So, a few of us are fortunate enough to have met and known many of these friends from other countries. It is a pleasure to know them, and we wish them well.

A Salute To Hard Workers

On Jan. 15-16, 1976, the Southwest Modelers Show was held in Fair Park in Dallas, Texas. NIMAS was invited to participate via donated booth space, along with local modeling groups in the metroplex. Jess Shepherd and Ed Turner, long-time NIMAS members, responded to my plea for help. Not only did they set up the booth and recruit all kinds of indoor models and paraphernalia for the booth, but they also formed a group which is essentially the first NIMAS chapter. Signs and information posters were created by Marvin Kreiger, while Jess, Ed, Bob Putman, Stan Wilson, Marvin and Tom Kreiger and Paul Vineburg all manned the booth sometime during the two-day show. Thanks to all of them - they represented us very well!

Craftsmanship!

A number of indoor builders in the Detroit-Chicago area have acquired balsa strippers recently. That's not really news until you see the stripper. It is the A.B.S. (adjustable balsa stripper) by Jim Jones, 36631 Ledgestone Mt. Clemens MI 48043. It is constructed from plexiglas and hardwood with centimeter and inch calibrations; it has good accuracy and excellent repeatability. This device easily will cut .01" thick strips from sheets varying from .01" to 1/8", yet will expand to cut .12" strips from the same sheets of balsa. With dimensions of 6" x 3" x 1 5/8", the machine is portable enough for field repairs and accurate enough for very serious building. It won't cut tapered spars, but that seems to be the only limitation. The cost is \$10.80 including postage and insurance.

Financial Report

The financial report which usually appears in the November issue has been held over until the December issue to make room for the model info presented.

The "Comments" Space

A rebuttal from John Worth and comments from Tom Vallee occupy the commentary space. Due to the weight of an extra sheet, it would cost extra postage for overseas mail and the commentary is omitted from such issues.

FAI INDOOR REPORT

John's Turn

The Sept. '76 INAV contained strong commentary on certain proposals submitted to CIAM by AMA Hq. Admittedly, the comments were strongly biased; almost as much as those proposals were (if adopted) detrimental to FAI Indoor Wch participation. John Worth's reply appears in the "cover section"; the jammed format resulting from two pages being pasted-up into one sheet. Three comments on his reply:

1. Par. 4: The time allotted FF Finalists to review #10 is more time than was allowed the FAI Indoor Committee to review #10 & #11 after they were on the agenda.
2. The normal CIAM procedure is to make final approval of host arrangements for a previously scheduled Wch. By the provisions of #11, the schedule for each year would be established in the previous year, subject to a number of conditions. My remarks stand as made.
3. In a letter, Bob Stalick pointed out that the threat of re-scheduling of Wch's is only postponed; it will arise again in 1978.

A Plea

I sincerely hope that on future consideration of Wch

re-scheduling and any other matter which affects U.S. FAI participation will be characterized by planning adequate to insure informed participation and feedback by those who actively support and participate in team selection.

Tom's Comments

It is unfortunate that Tom does not cite the "available data" which supports his conclusion. Data available to me after being Romak's manager twice assures me that Bud is a superb strategist, able to win in all conditions. He is also able to adapt to changing rules comfortably.

CONTEST CALENDAR

STAR SKIPPER'S Indoor Junior Postals (ages 15 and younger) Jan./Feb. and Mar./Apr. - HL Stick, "A" ROG, HLG and Peanut ROG. Contact Ed Whitten, P O Box 176, Wall Street Station, New York NY 10005 for details.

CONNECTICUT - Glastonbury

Indoor sessions at Glastonbury High Gym: Evenings, 7 pm to 9 pm, Feb. 9, Mar. 13 and Apr. 12, 1977. Sundays, 8 am to 1:30 pm, Mar. 13 and May 1, 1977. Sundays, 8 am to 5 pm, Feb. 13 and Apr. 17, 1977. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor contests at Goodyear Hangar, Opa Locka Airport, 9 am to 5 pm, Feb. 20, Mar. 20, Apr. 24 and May 22, 1977. Confirm individual dates shortly before each session by calling 305-858-6363.

ILLINOIS - Chicago Area

Indoor sessions/contests will be held in Chicago on approximately a monthly schedule. Contact Otto Curth, 2107 Center, Northbrook IL 60062, ph. 312-272-5114.

INDIANA - Anderson

The 4th annual indoor meet by the Central Indiana Aeromodellers will be held at the Anderson old high school gym, 13th & Lincoln Streets, from 8 am to 5 pm. HLG, Easy B, Pennyplane, Manhattan, Peanut, AMA Scale. Gym is 105' x 150' with 43' ceiling. Contact Phil Sullivan, P O Box 2272, Anderson IN 46011.

NEW YORK - Long Island

Cat. I Record Trials at Friend's Academy, Locust Valley, New York, Mar. 26, 1977, 11 am to 5 pm.
Class AA Cat. II indoor contest at Cantiague Park, Hicksville NY, May 1, 1977, 8 am to 5 pm
Class AA Cat. I indoor meet at Nassau County Arena, Long Beach NY, June 12, 1977, 8 am to 5 pm.
Contact J.G. Paillet, 30 Emerson Rd., Brookville, Glen Head NY 11545, Ofc. ph. 516-575-2388, home 516-626-2825.

OKLAHOMA - Midwest City

Indoor contests at National Guard Armory, 200 NE 23rd St., Oklahoma City OK, Feb. 20, Mar. 20, 1977, 9 am to 5 pm. Contact Matt & Gail Gewain, Aero Hobbies, 2215 Air Depot Blvd., Midwest City OK 73110, ph. 405-737-1085.

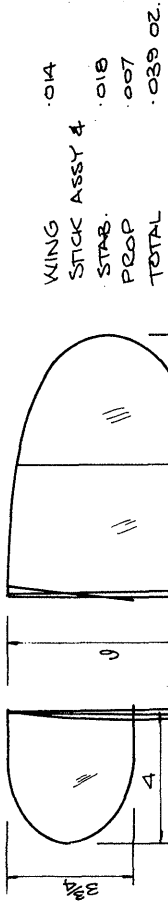
TEXAS - Ft. Worth/Dallas

Indoor contest Jan. 30, 1977 at Dallas NAS Drill Hall, Dallas TX, 1 pm to 4 pm, HLG, Easy B, Peanut Scale. Contact Jess Shepherd, 2713 Summit View, Bedford TX 76021, ph. 817-282-3770.

STATE OF THE ART

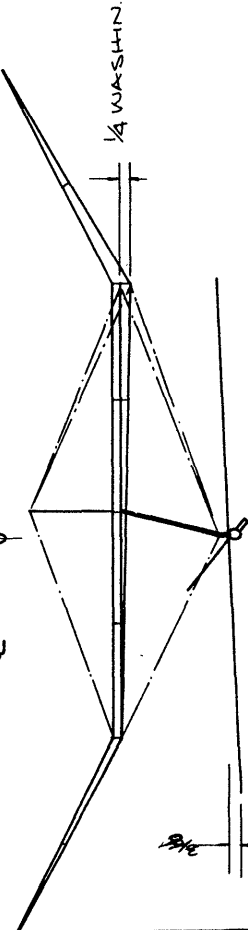
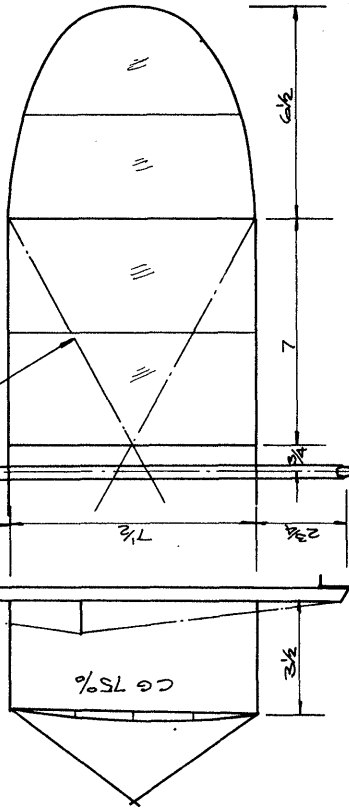
Three models appear in the next three pages; FAI's by John Blount and Mike Thomas with prop and airfoil info on John's model, and Butch Hadland's version of Laurie Barr's Easy B. Note that the copier slightly reduced the prop outlines. Butch's sketch was part of an excellent booklet he produced to help beginners; the other data was published in Free Flight News, Ian Kaynes' excellent paper. The CMOS charts for these models will be presented in the next issue. For those who compute their own balance charts, Mike's model was flown at +14% by CMOS and +12% by INP.

ALL DIMS IN INCHES



RUBBER: 17 LOOP, .060
 PROP: 20 1/2 X 32 SYMMETRICAL

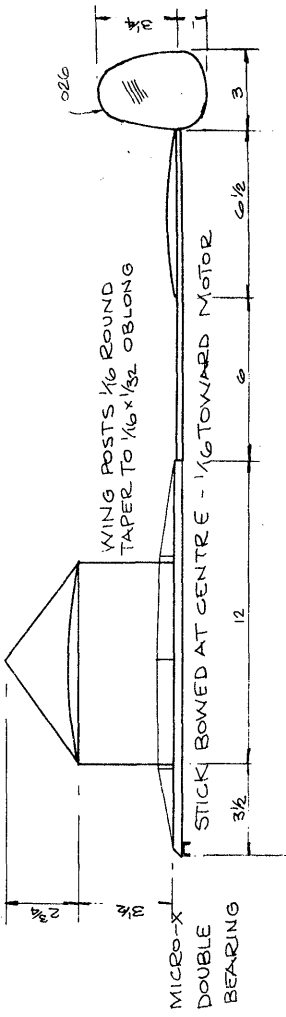
1007 KARMA WIRE BRACING



FRONT VIEW

'LUCKY JIM' F.I.D. by Mike Thomas. Canada

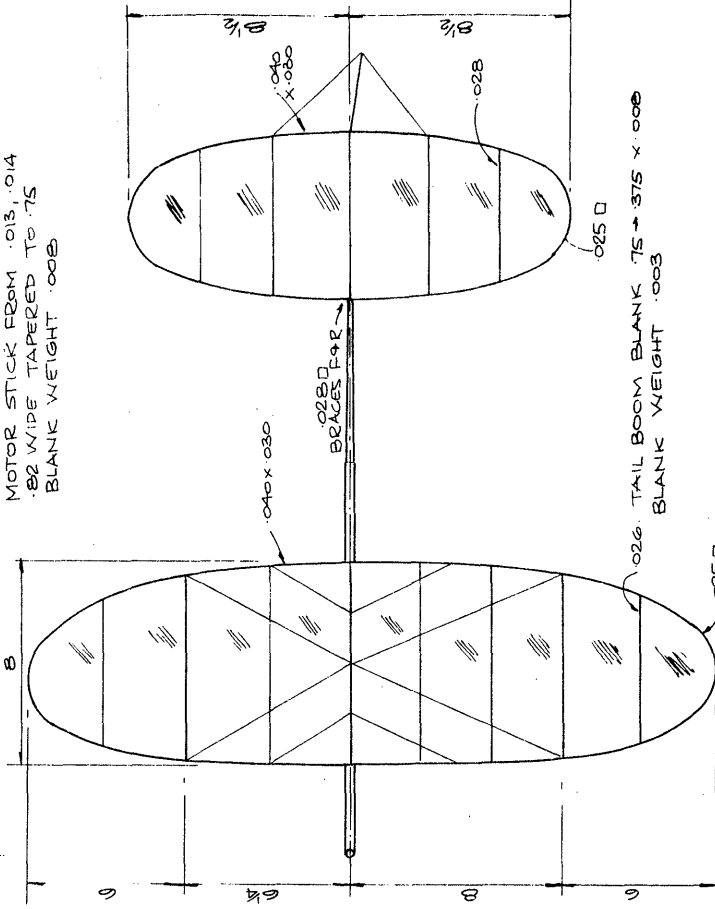
ALL DIMS IN INCHES



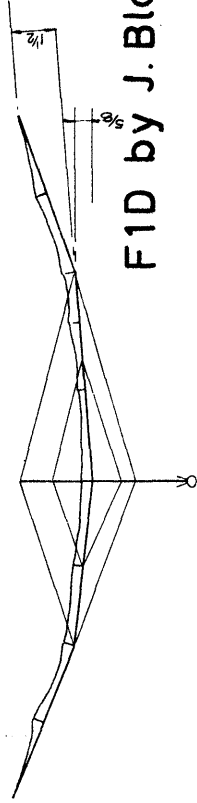
WING POSTS 1/16 ROUND
 TAPER TO 1/16 X 1/32 OBLONG

STICK BOWED AT CENTRE - 1/16 TOWARD MOTOR

MOTOR STICK FROM .013, .014
 .02 WIDE TAPERED TO .015
 BLANK WEIGHT .008



TAIL BOOM BLANK 75 X .008
 BLANK WEIGHT .003



F1D by J. Blount

BRACING POSTS .030
 7/8 CENTRE 5/8 AT ENDS
 CROSS MEMBER AT CENTRE ONLY

.013 WIRE

1/16 ROUND - HARD

NOTE!
5% reduction by copier.

.024 □

MOST TYPICAL SECTION .35 DEEP AT 40% AT ROOT
VARIETY OF SECTIONS USED.

.028 □

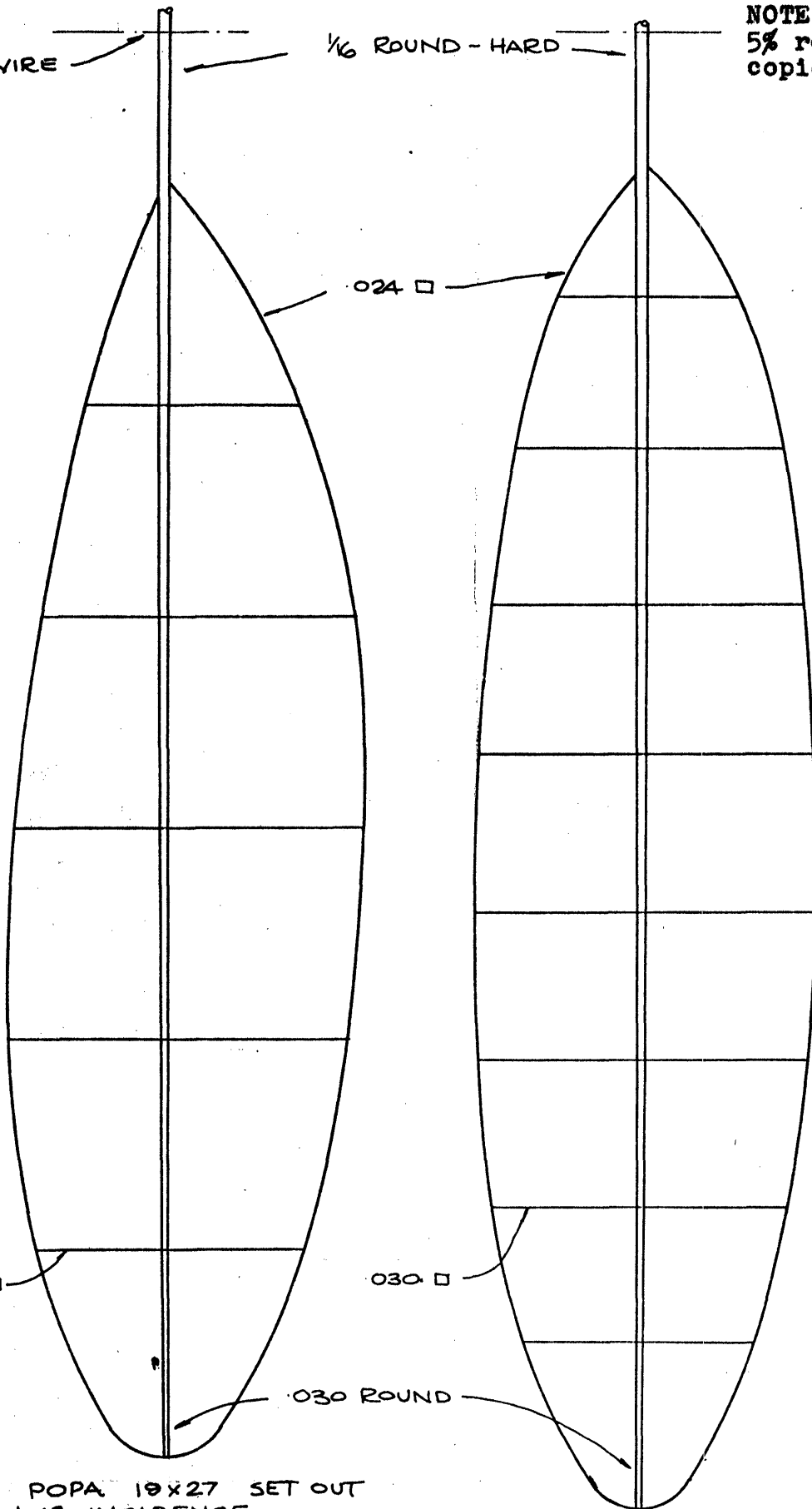
.030 □

.030 ROUND

full
size
details

POPA 19x27 SET OUT
+4° INCIDENCE.
OR 19x33

ANDREWS SYMMETRICAL
20x33 OR 20x27
POSITIVE FLARE ALSO USED.



All ribs $.028" \times .032"$ - deepest section vertical.

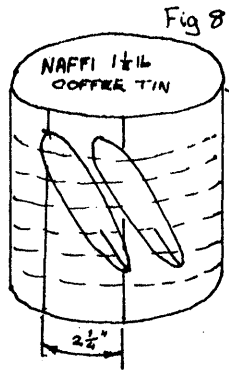
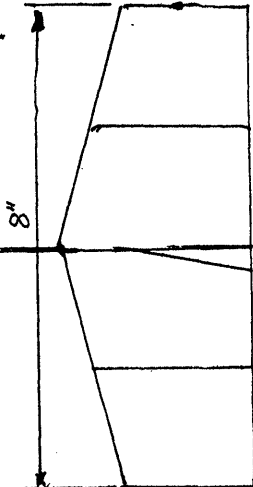
All spars $.065" \times .032"$ tapering to $.032"$ sq at tips

Motor stick $\frac{3}{16}" \times \frac{1}{8}"$, the last 3" of each end tapering to $\frac{1}{8}"$

Wing posts $\frac{1}{16}"$ dia tapered.

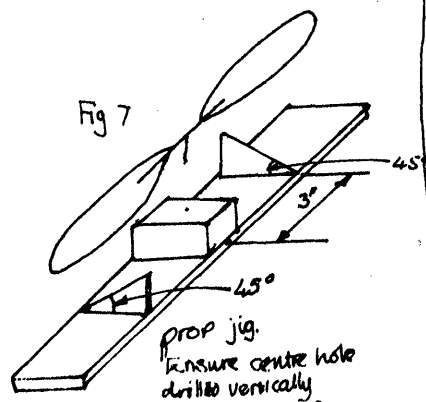
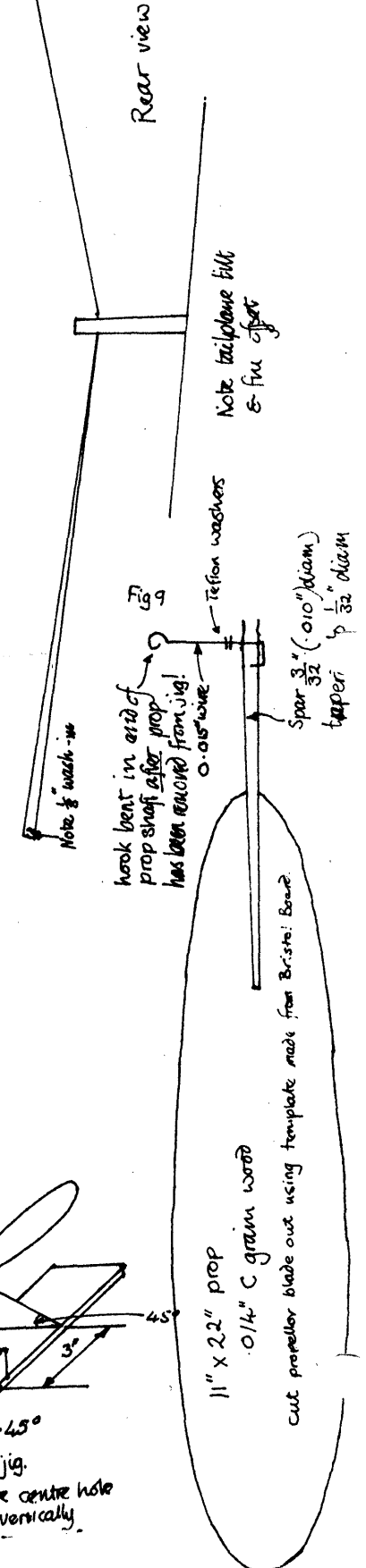
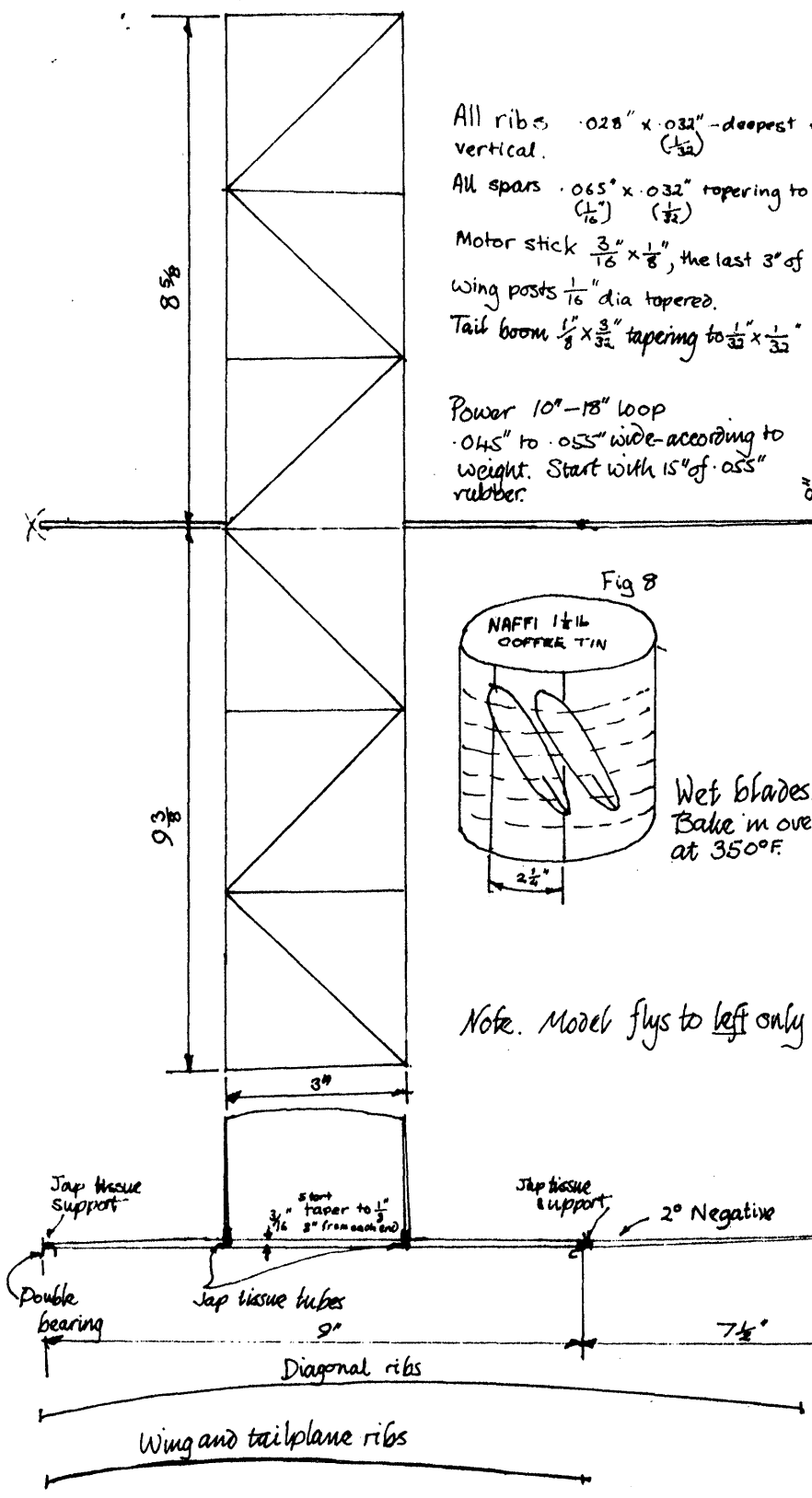
Tail boom $\frac{1}{8}" \times \frac{3}{32}"$ tapering to $\frac{1}{32}" \times \frac{1}{32}"$

Power 10"-18" loop
 $.045"$ to $.055"$ wide - according to weight. Start with 15" of $.055"$ rubber.



Wet blades. Bind to tin. Bake in oven 10-15 mins at 350°F.

Note. Model flies to left only





Academy of Model Aeronautics

NATIONAL HEADQUARTERS

815 FIFTEENTH STREET, N.W.
Washington, D. C. 20005

Mr. Bud Tenny
Box 545
Richardson, TX 75080

December 9, 1976

Dear Bud,

Your FAI report in the Sept. issue, entitled Two Incredible Proposals, needs some perspective--it is not quite accurate.

First of all, current policy requires acceptance of any FAI proposals from any member. We do not as yet have a screening or review procedure to reject any proposals. We may utilize our team selection committees for this purpose in the future, but for now only the President has the authority to reject a proposal.

But neither proposal regarding the 3 year world championship cycle was rejected simply because both were considered better than the CIAM Bureau proposal which has had universal criticism. So the two U.S. proposals were better alternatives--not necessarily good but better than what was threatened. They were also the only U.S. proposals received on the subject. If there were better ideas they were not submitted to AMA for forwarding to the FAI.

Furthermore, there was very little time to get any opinions before the FAI deadline of Sept. 20th. The U.S. proposal identified as number 10 was given to key people at the FF finals in Minnesota over the Labor Day weekend, but no responses came back other than proposal number 11, which was submitted by the head of the Outdoor FF Committee, Bob Stalick.

Second, the AMA Executive Council did not instruct the U.S. delegate to vote against the three year proposal. It voted for our delegation to do all it could to retain the 2 year cycle. The difference is important because the council is not normally involved in FAI voting matters. That's why the council was not involved in the consideration of the two U.S. proposals. The council's interest was in doing two contradictory things: following the wishes of the membership while minimizing the risk of FAI costs becoming unmanageable.


Third, the world championships schedule has almost always been decided by the CIAM plenary meeting the year before. This is the normal system. Thus at the Dec. 1976 CIAM meeting we approved the 1977 W.C. schedule and noted, tentatively, offers for 1978 hosting. The 1978 offers will be finally decided at the Dec. 1977 meeting. So your comments on this point are erroneous--we have almost always picked our teams based on guesses as to the date and location of world championships. Knowing for sure in advance of our team program is the rare exception.

The 3 year cycle threat is now gone. The Dec. CIAM plenary meeting rejected all proposals in favor of sticking with the current 'system'. The latter simply is to look at all offers in Dec. and approve those that seem compatible with the basic desire for 2 year intervals. So the crisis is over.

Incidentally, at the Dec. '76 CIAM meeting the Romanians offered to host the Indoor W.C. in 1979. They were asked if they could do it in 1978. They agreed they could and will submit a firm offer in Dec. 1977. No other offers to host Indoor were made.

JW/mm
cc: Indoor Committee

Sincerely,



John Worth
Executive Director

TO WHOM IT MAY CONCERN

In the most recent issue of INAV Bud was kind enough to include some opposition commentary by John Triolo, who strongly disagrees with the suggestion, that the success of our Indoor FAI team was due to some special advantage of the point system. John suggests that the success of our team was in spite of the point system, not because it! I agree with John.

As John points out, we won the individual and team championships because of an outstanding state of the art performance by the third place man in our point system FAI program. If the point system concept was valid, we would expect a different result.

Romak making the team at all under the point system was something of a fluke. Only difficult air conditions at the finals, enabled Romak to advance ahead of less well rounded flyers who had higher preliminary point totals. Analysis of available data, suggests that if air conditions had been better at the finals, Romak would not have made the team, even if he had still had the best time at the finals. In short, Romak made the team in spite of, not because of, the point system!

Yet, it is Romak, the third place finisher who should not have made the team at all, (under the point system), who is world champion. This suggests to me that there is something wrong with the point system.

I suggest that points carried over from preliminary contests are often not a fair measure of the relative merits of two FAI flyers for a place on the team. The best time on a stop watch in face to face competition at the finals, is the best measure of a flyers right to be on the team!

While it was not meant to be unfair, the point system gives an unfair edge to some flyers while forcing other flyers, to spot odds to their competition. This is wrong! The point system should be dropped for reasons stated below.

1. Cross zone flying gives an unfair edge to flyers able to arrange extra travel.
2. Flyers qualifying against the weakest competition in the country may (and have) get more points than flyers of equal ability, who have to qualify against world championship level competition. This is unfair.
3. There is no fair way to compare value of preliminary points from high ceiling vs low ceiling contests. This is an "apples vs oranges" comparison as optimum design and flying technique for high and low ceilings are different.
4. Opportunity to compete and practice outside the program itself, is extremely limited for most flyers, but varies widely. The results of the first contest in the program may not be a fair measure of the ability of flyers not able to fly outside the program. Under points, such flyers are either eliminated in the first contest, or in effect, forced to spot their competition an edge, if they are unable to fly cross zone.

Let's face the facts. Points are unfair! Let's get back to winning by a physical constant, the best time on a stop watch at the finals. We can select strong teams and have serious all out competition at every stage of the program without the injustice of points.

The so called compromise program maintains the point system and cross zone flying. It is unfair for the reasons cited above. Under the "compromise", flyers who must qualify against world championship level flyers, will be at an unfair position with regard flyers who qualify against weak competition or fly cross zone. THIS UNFAIR edge (as much as one minute per best round) could really screw up a closely contested finals. This is wrong!

Tom Vallee

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

A Word of Explanation

Once upon a time, new members of NIMAS would receive a note acknowledging their membership application and explaining when their membership would begin. After that, xeroxed sheets went out containing the information to follow. Recently, nobody been gettin' nuttin'; it is hoped this will change. Meanwhile, the New Members column has been listing members by month. For all you new members, the month called out above your name is the month your membership began. If you asked special questions, I hope to answer them eventually.

Members who joined in November, 1976

BUZZIN' BUZZARDS, c/o Bob Heywood, 4777 Taylorsville Rd., Dayton OH 45424
 EDWARD J. BUXTON, 4401 Kling #38, Burbank CA 91505
 MARG NAGASAWA, 253-140th NE, Bellevue WA 98005
 CHARLES A. SCHAAP, P O Box 1406, Forks, WA 98331

Members who joined in December, 1976

DEAN FULLER, 10 Old Depot Rd., Chester CT 06412
 MICHAEL J. HARRIS, 634 Olde Farm Rd., Media PA 19063
 EUGENE JOSHU, Box 62-B, R R #1, Red Bud IL 62278
 WILLIAM A KIRBY, 2833 NE 14th St., Gainesville FL 32601
 MARK L. PRICE, 12884 Barrow Rd., N Palm Beach FL 33408

Scale Info Sources

Vintage Aero, 1 The Glen, Tenafly NJ 07670, has a fascinating collection of early model plans, reconstructions of early kits, etc. The catalog, available for \$1, is in itself a nostalgia trip. Also, Fred Hall, 29 Sunrise Terrace, Westville NH 03892, has an extremely well-done book "Indoor Scale Model Flying". The cost is \$3.95 plus 30¢ for postage and handling.

Recent Publications

Lately, INAV's have overlooked some sources of indoor info, so here are some items you may want to read if you haven't seen them:

"Top Cat", by Bob Randolph, the story of his "D" which set a new AMA Stick record of 44:50.2 (since broken by Kowalski's 50:41); Oct. '76 MODEL AVIATION.

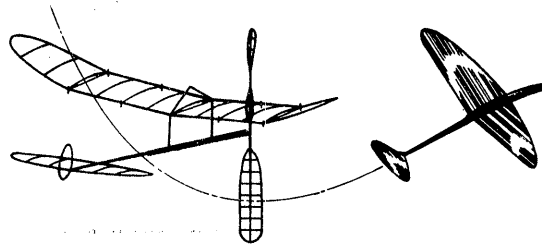
In the Dec. '76 MODEL AVIATION: "Fike Peanut" by Bob Dunham; "Indoor World Championships" by Larry Cailliau, and in the AMA Section, WCh reports by Pete Andrews, Bud Romak Bucky Servaites and Manny Radoff.

Two New Books

MODEL & ALLIED PUBLICATIONS, ARGUS BOOKS LIMITED, St. James Rd, Watford, Herts, England, has published both the 1976-77 AEROMODELLER ANNUAL and BASIC AEROMODELLING by R. H. Warring. Although this ANNUAL has very little for the indoor purist, it does have good coverage of the Manhattan Cabin event. It also has an article on an RC airship with 10' length and powered by electric motors, and a good description of Round-the-pole scale models powered by compressed air. There are at least three nostalgia pieces on A-Frame pushers plus the usual mix of more modern model technology. The most fascinating reading is in Frank Zaic's development of the Flash X-18 - an all-balsa rubber powered model of very spectacular performance. The real challenge in such a project is the very great amount of aerodynamics which must be built-in. The model is intended for inexperienced 8- to 10-year old youngsters; what they don't know about flight and adjustment must be built into the model.

BASIC AEROMODELLING gives fairly good coverage of all normal modeling practices, including working with polyester film (Monokote) and styrofoam. That is to say, no mention of indoor modeling at all. Also, the chapter on adjustment and flight is by far the shortest. It is perhaps the only chapter with really inadequate illustrations of the various topics involved.

No prices were given for either book, except for sale in England.



Financial Report

We are on the brink of the 16th year of NIMAS, after a year of 5.6% growth from average circulation of 385 to 406. A large number of sample requests went unanswered, which doubtless slowed growth. Many members are sending camera ready material, which will continue to appear in pending issues. With expenses at 1340.78 and income at 1311.53, there was a net loss of 29.25. This is difficult to arrive at exactly, since the messed-up publishing rate messes up the income pattern. Dues will hold at \$3.50 for North America and overseas surface mail at \$3.50 until either a postage rate or printing cost increase happens. Overseas air mail will continue at \$5.06. The expense breakdown is as follows:

Printing costs (INAV only)	475.05
INAV postage	643.17
Correspondence postage	43.00
Office supplies, other expense	179.56
	<u>1340.70</u>

Thanks for sticking with us - keep those letters and sketches coming! We need Peanut, HLG and Pennyplane info.

NIMAS POSTAL MEET

Entries have been coming in for the 1977 NIMAS Postal Meet, well in advance of this announcement. Entry will be accepted (postmark) until May 9, 1977. As usual, flights made as part of sanctioned contests are eligible, along with flights made at informal sessions between now and May 9, 1977, provided those flights are made and timed in accord with AMA Rules.

Events: Easy B, paper covered only, all-wood prop, solid motor stick and boom, no bracing.

HLG: AMA Rules except two ceiling classes. Class I - 18' to 25'; Class II - 25' to 35'.

Pennyplane: AMA Rules (be sure to process model).

General Rules: Free entry. Separate events may be flown at separate sessions, but all flights for a given event entry must be flown on the same day. Please note ceiling height for each entry, using FAI ceiling measure. Ceiling height is used to compute fudge factors for final scoring. Separate classes for Juniors in each event, anyone may enter. Send entries to Box 545, Richardson TX 75080.

Postal Fudge Factors

The following fudge factors will be used for the NIMAS Postal, and are used regularly in the Top Ten Easy B and Top Ten Ceiling Dodgers. To apply the chart, multiply the flight time by the appropriate factor to obtain the flight score based on 35'.

Ceiling (feet)	Class I HLG (fudge to 25')	Class II HLG (fudge to 35')	Rubber (fudge to 35')
18	1.39		1.394
19	1.316		1.357
20	1.25		1.323
21	1.19		1.29
22	1.136		1.261
23	1.087		1.234
24	1.042		1.207
25	1.0	1.4	1.183
26		1.346	1.16
27		1.296	1.139
28		1.25	1.118
29		1.207	1.098
30		1.167	1.08
31		1.129	1.063
32		1.094	1.046
33		1.061	1.03
34		1.029	1.014
35		1.0	1.0

CONTEST CALENDAR

STAR SKIPPERS Indoor Junior Postal (ages 15 and younger) Jan./Feb. and Mar./Apr. - HL Stick, "A" ROG, HLG and Peanut ROG. Contact Ed Whitten, P O Box 176, Wall Street Station, New York NY 10005 for details.

CALIFORNIA - Burbank

Indoor sessions at Burbank High School beginning at 7:30 pm, Mar. 10, Apr. 14, May 12, Jun. 9, and July 14, 1977. Indoor sessions at National Guard Armory in Burbank on 4th Wednesday each month, 7 pm to 10 pm; Mar. 23, Apr. 27, May 25, Jun. 22, July 27, 1977. For info call Tony Naccarato at 213-842-5062.

CONNECTICUT - Glastonbury

Indoor sessions at Glastonbury High Gym: Evenings, 7 pm to 9 pm, Feb. 9, Mar. 13 and Apr. 12, 1977. Sundays, 8 am to 1:30 pm, Mar. 13 and May 1, 1977. Sundays, 8 am to 5 pm, Feb. 13 and Apr. 17, 1977. Contact George Armstead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

Indoor contests at Goodyear Hangar, Ops Locka Airport, 9 am to 5 pm, Feb. 20, Mar. 20, Apr. 24 and May 22, 1977. Confirm individual dates shortly before each session by calling 305-858-6363.

ILLINOIS - Chicago Area

Indoor sessions/contests will be held in Chicago on approximately a monthly schedule. Contact Otto Curth, 2107 Center, Northbrook IL 60062, ph. 312-272-5114.

INDIANA - Anderson

The 4th annual indoor meet by the Central Indiana Aeromodellers will be held at the Anderson old high school gym, 13th & Lincoln Streets, from 8 am to 5 pm. HLG, Easy B, Pennyplane, Manhattan, Peanut, AMA Scale. Gym is 105' x 150' with 43' ceiling. Contact Phil Sullivan, P O Box 2272, Anderson IN 46011. Ooops! Mar. 27, 1977.

NEW YORK CITY - Columbia University

Indoor Record Trials at the Low Library Rotunda, 9 am to 5 pm, Mar. 6, Mar. 20, Apr. 23 and 11 am to 7 pm, Apr. 3, 1977. Site is 75' square to 80', topped by a 25' high dome. No HLG! Static exhibits 9 am to 5 pm weekdays from Mar. 22 thru Apr. 22, 1977. Contact Ron Williams, 1364 Lexington Ave., New York NY 10028.

NEW YORK - Long Island

Cat. I Record Trials at Friend's Academy, Locust Valley, New York, Mar. 26, 1977, 11 am to 5 pm. Class AA Cat. II indoor contest at Cantiague Park, Hicksville NY, May 1, 1977, 8 am to 5 pm. Class AA Cat. I indoor meet at Nassau County Arena, Long Beach NY, June 12, 1977, 8 am to 5 pm. Contact J.G. Pallet, 30 Emerson Rd., Brookville, Glen Head NY 11545, Ofc. ph. 516-575-2388, home 516-626-2825.

OKLAHOMA - Midwest City

Indoor contests at National Guard Armory, 200 NE 23rd St., Oklahoma City OK, Feb. 20, Mar. 20, 1977, 9 am to 5 pm. Contact Matt & Gail Gewain, Aero Hobbies, 2215 Air Depot Blvd., Midwest City OK 73110, ph. 405-737-1085.

PROP FORUM

This column was established to present both practical and theoretical information on indoor props. Contributions are welcome - tell us how you make your props better either by theoretical design or special construction. The following is an interesting theoretical study; I will draw some conclusions and you tell me if I'm all wet!

Dear Bud;

In your series on prop theory in late '67 and early '68, one of the prop efficiency graphs you used came from me. Since then, I kept my notes and recently had some free computer time at work. This allowed me to carry the efficiency calculations a little further. The enclosed printout shows results based on the efficiency equation:

(cont. p 4)

STATE OF THE ART

The model of the month is an unusual looking airplane - not unusual for the sake of being unusual - but unusual as the result of experimental and theoretical design conclusions. In a country with no large sites, how do very inexperienced indoor fliers begin from scratch to develop WCh quality models? Dieter Siebenmann faced and largely solved this problem in an interesting fashion. The following account is taken from letters written by Dieter:

Without a suitable site, it is necessary to make theoretical improvements which may prove worthless without suitable assumptions and measurements to support the basic theory. Dieter began by adapting a German rule-of-thumb that optimum dynamic stability is achieved if the model's stall recover pattern smoothed into level flight after two oscillations. Because the neutral point type of calculations allowed reasonably accurate predictions of stall recovery on untested designs, he developed his own neutral point calculations (see Oct. '76 INAV for two neutral point methods).

Beginning with glide tests on special indoor models built by Rene Butty, Dieter arrived at suitable constants for drag coefficients. To arrive at suitable constants for neutral point calculations, a half-size (32.5 cm span) sheet balsa model was built. It was made four times heavier than a one gram model to arrive at the same Reynolds number, and was similarly proportioned to the proposed FAI indoor model design.

Repeated glide testing of the sheet balsa model was done, varying fuselage proportions and stab area along with center of gravity locations until the proper stall recovery characteristic was achieved. The resulting proportions reduced the sinking speed of the final design by 10% over "normal models". Even so, the final design was a compromise on fuselage length so the model could be built to one gram. In order to further allow a rearward CG (which requires extra lift from the tailplane), the stab airfoil has more camber than the wing airfoil.

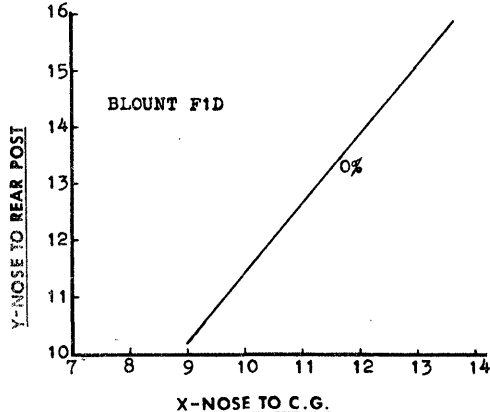
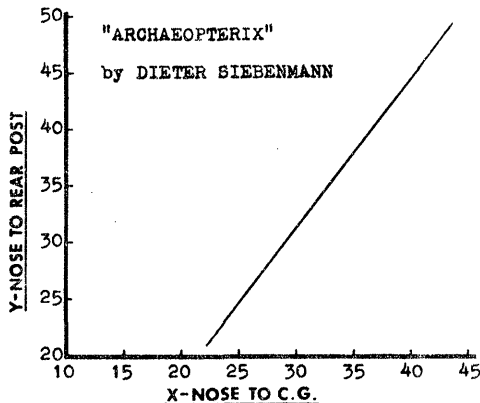
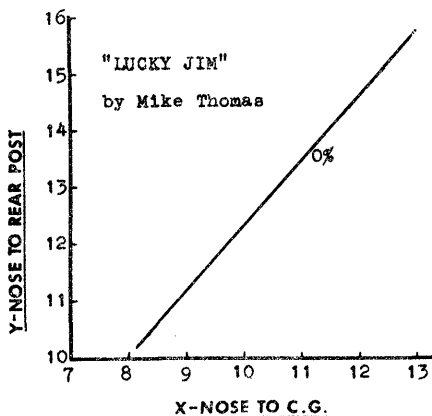
Other notable features of this model are the adjustable stab incidence, symmetrical wing planform with canted wing posts to allow wing offset, and a two-piece fuselage which allows more efficient packing. The 22" x 31.5" prop is powered by a relatively short loop (1.9" longer than the hook distance) of .049" rubber. This gives a very low rubber/airframe ration of 1.2:1.

It would be nice to be able to say that all the hard work won Dieter a much higher WCh score, but the model's high potential has only been approached in practice. It should be noted that the Swiss team's relative performance improved by 16% over the '74 WCh - more than any other team achieved. Also, Dieter noted that so much time was spent in model design and development that rubber selection and application was slighted.

Archaeopterix was flown with fairly conservative trim, in spite of the apparently radical design. Static margin computed by CMOS is +2.5%, and +40% by INP.

Unfinished Business

CMOS balance charts for the two models appearing in the Nov. '76 INAV, FAI's by John Blount and Mike Thomas, appear below with the balance chart for Archaeopterix. Both plans and CMOS chart for Archaeopterix are dimensioned in metric units, while the other two charts are in inches.



$$EFF. = \tan \phi \left[\frac{1 - D/L \tan \phi}{D/L + \tan \phi} \right]$$

where D = drag, L = lift and ϕ = the pitch angle at a specific radius from the prop centerline. The equation is discontinuous at a radius of 0, so the printout figures represent a numerical integration of the equation along the prop blade from 10% radius to the tip in 1/8" increments. The average efficiency is then the average of all the incremental point efficiencies along the blade length. The top row of five sets of data show efficiencies for a 10" diameter prop at L/D ratios between 6 and 14, while the remaining eight sets show efficiency variations on props from 6" diameter to 24" diameter. Both sets were computed for pitches from dia./2 thru 2 x dia.

This analysis does not consider any effect of blade shape and the aerodynamic effects are simply considered as an L/D ratio. It would seem that there is more work than can be done. For example, a blade section near the hub does little work compared with a tip section. Perhaps the efficiency averaging should be weighted to include this fact.

Best regards,
Roger Schroeder

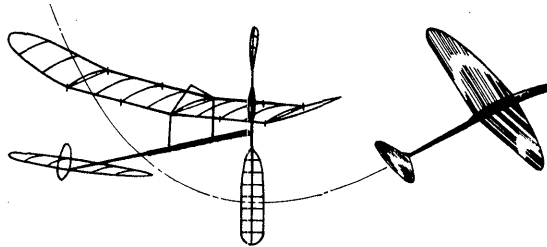
Now comes some thoughts and observations. First, note that each curve shows a peak efficiency. On the top five curves the most efficient P/D ratio moves from 1.1:1 to 1.3:1 as the L/D ratio improves. Does this say anything to anyone which would lead to better practice? If so, please share your thoughts!

The most interesting thing which I noted is that, no matter what the diameter, efficiency peaks at P/D of 1.2:1 or the closest 1" increment (those which differ from 1.2:1 show the calculated P/D of the next largest station). This seems to say to me that we should build even larger diameter props than at present; a 24 x 30 should be about 2% more efficient than a 19 x 32. Yes, that's not a lot of difference, and would be extra trouble in a number of ways. However, look at a common rule-of-thumb used by a number of fliers not many years ago - prop diameter not larger than 60% of wingspan, and a minimum P/D of 2:1. In that case, compare a 24 x 30 with a 20 x 40 - 4% more efficient. If prop efficiency would increase flight time in proportion to the increase, a 30 minute flight would increase to 31:07! Think about it and tell me if I'm all wet or not!

TYPE L/D RATIO ?6 TYPE DIAMETER ?10 PITCH EFF.		TYPE L/D RATIO ?8 TYPE DIAMETER ?10 PITCH EFF.		TYPE L/D RATIO ?10 TYPE DIAMETER ?10 PITCH EFF.		TYPE L/D RATIO ?12 TYPE DIAMETER ?10 PITCH EFF.		TYPE L/D RATIO ?14 TYPE DIAMETER ?10 PITCH EFF.	
5	0.603802	5	0.672477	5	0.720535	5	0.756147	5	0.783634
6	0.62833	6	0.696392	6	0.743122	6	0.772721	6	0.80335
7	0.64515	7	0.71293	7	0.758752	7	0.791867	7	0.816943
8	0.656394	8	0.724252	8	0.769543	8	0.801979	8	0.826374
9	0.66347	9	0.731745	9	0.77683	9	0.808877	9	0.832845
10	0.667347	10	0.736339	10	0.781496	10	0.813391	10	0.837134
-11	0.668682 ← 1.1:1	11	0.738687	11	0.784147	11	0.816086	11	0.839769
12	0.668007	12	0.739256	12	0.785219	12	0.817363	12	0.841118
13	0.665688	13	0.738393 ← 1.2:1	13	0.785026 ← 1.2:1	13	0.817511 ← 1.3:1	13	0.84145 ← 1.3:1
14	0.662013	14	0.73636	14	0.783808	14	0.816748	14	0.840961
15	0.657206	15	0.733357	15	0.781744	15	0.815236	15	0.839802
16	0.651444	16	0.729542	16	0.778976	16	0.813103	16	0.838988
17	0.644858	17	0.725041	17	0.775615	17	0.810449	17	0.835909
18	0.637593	18	0.719954	18	0.771749	18	0.807352	18	0.833336
19	0.629715	19	0.714362	19	0.767452	19	0.803878	19	0.830428
20	0.621369	20	0.708334	20	0.762781	20	0.800078	20	0.827231
TYPE L/D RATIO ?8 TYPE DIAMETER ?24 PITCH EFF.		TYPE L/D RATIO ?8 TYPE DIAMETER ?22 PITCH EFF.		TYPE L/D RATIO ?8 TYPE DIAMETER ?20 PITCH EFF.		TYPE L/D RATIO ?6 TYPE DIAMETER ?15 PITCH EFF.			
12	0.673549	11	0.673257	10	0.672907	7	0.662535		
13	0.684694	12	0.68534	11	0.6861	8	0.6818		
14	0.694255	13	0.695565	12	0.697083	9	0.696857		
15	0.702466	14	0.704227	13	0.706236	10	0.708658		
16	0.709513	15	0.711563	14	0.713857	11	0.717876		
17	0.715565	16	0.717762	15	0.720181	12	0.725022		
18	0.720737	17	0.722979	16	0.725399	13	0.730472		
19	0.725141	18	0.727344	17	0.729663	14	0.734517		
20	0.728868	19	0.730961	18	0.7331	15	0.737384		
21	0.731994	20	0.733921	19	0.735815	16	0.739254		
22	0.734584	21	0.736298	20	0.737896	17	0.740273		
23	0.736695	22	0.738157	21	0.739416	18	0.740559 ← 1.2:1		
24	0.738375	23	0.739554	22	0.740439	19	0.74021		
25	0.739667	24	0.740536	23	0.741017	20	0.739305		
26	0.740607	25	0.741143	24	0.741199 ← 1.2:1	21	0.737913		
27	0.741227	26	0.741413 ← 1.18:1	25	0.741022	22	0.73609		
28	0.741557	27	0.741375 (1.23)	26	0.740523	23	0.733885		
29	0.74162 ← 1.2:1	28	0.741059	27	0.739732	24	0.73134		
30	0.74144	29	0.740488	28	0.738675	25	0.728489		
31	0.741036	30	0.739684	29	0.737375	26	0.725364		
32	0.740426	31	0.738666	30	0.735855	27	0.721992		
33	0.739626	32	0.737451	31	0.734131	28	0.718396		
34	0.73865	33	0.736056	32	0.732222	29	0.714596		
35	0.737512	34	0.734492	33	0.73014	30	0.710611		
36	0.736222	35	0.732774	34	0.727901				
37	0.734792	36	0.730912	35	0.725514				
38	0.733231	37	0.728917	36	0.722993				
39	0.731548	38	0.726797	37	0.720345				
40	0.72975	39	0.724561	38	0.717579				
41	0.727845	40	0.722217	39	0.714705				
42	0.725841	41	0.719771	40	0.711728				
43	0.723742	42	0.717231						
44	0.721555	43	0.714601						
45	0.719284	44	0.711888						
46	0.716935								
47	0.714513								
48	0.71202								
TYPE L/D RATIO ?8 TYPE DIAMETER ?6 PITCH EFF.		TYPE L/D RATIO ?8 TYPE DIAMETER ?8 PITCH EFF.		TYPE L/D RATIO ?8 TYPE DIAMETER ?10 PITCH EFF.		TYPE L/D RATIO ?8 TYPE DIAMETER ?12 PITCH EFF.			
3	0.675263	4	0.675672	5	0.672477	6	0.673194		
4	0.709508	5	0.703555	6	0.696392	7	0.693719		
5	0.727327	6	0.720882	7	0.71293	8	0.708815		
6	0.73543	7	0.731264	8	0.724252	9	0.719878		
7	0.737293 ← 1.17:1	8	0.736824	9	0.731745	10	0.72786		
8	0.734908 (1.23)	9	0.738895 ← 1.125:1	10	0.736339	11	0.733434		
9	0.729495	10	0.73836 (1.25)	11	0.738687	12	0.737087		
10	0.721849	11	0.735824	12	0.739256 ← 1.2:1	13	0.739183		
11	0.712507	12	0.73172	13	0.738393	14	0.740001 ← 1.16:1		
12	0.701847	13	0.726363	14	0.73636	15	0.739754 (1.25)		
		14	0.719988	15	0.733357	16	0.738611		
		15	0.712775	16	0.729542	17	0.736708		
		16	0.704865	17	0.725041	18	0.734154		
				18	0.719954	19	0.731037		
				19	0.714362	20	0.727432		
				20	0.708334	21	0.723399		
						22	0.718989		
						23	0.714247		
						24	0.709209		

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

This Issue

Circumstances made it both necessary and advantageous to mail this issue with the Dec. '76 issue. A portion of the postage cost (16%) is duplicated on certain overseas issues, but the saving is still substantial.

Page 3 is an experiment. If you can read it, the same approach will be used from time to time. John Blount's remarks there were continued from a previous issue of Free Flight News, the excellent newsletter by Ian Kaynes and Paul Masterman. Much of the material in FFN is excellent, but this time I simply didn't have time to type it over. So it was photo-reduced enough to fit the NIMAS paste-up which is then reduced again. Got a magnifying glass?

An Apology

The Nov. '76 INAV had an Easy B plan on page 4 which was attributed to Butch Hadland, through some filing goof on my part. In reality, the helpful booklet which accompanied the plan was written and distributed by Nick Zotov, who was quite gentle in pointing out the error. Sorry, Nick, and I'll be more careful in the future!

The Postal Service Strikes Again!

A number of people wrote to say their Nov. '76 issue was damaged in the mail. One poor soul, as yet unknown, may have received the cover sheet only. His page 5-6 was returned to me (remember the letter addressed to me?) marked "Found loose in the mail at Dallas Regional Facility". Apparently the newsletter was ripped open and the pages scattered; the otherwise blank cover sheet had an address and a stamp, so it was mailed on! So, if you got a mangled newsletter or a cover sheet only, let me know and I'll try again. Another cute trick: I keep getting some newsletters back marked "Unable to deliver as addressed". No postal officials can explain what that means except that "they must have moved more than a year ago". When I point out that (in some cases) the address is both current and valid, I get the equivalent of a shrug and "send it back and we'll try again". In other words, "Stick it in your ear, fella, we don't care!"

'77 Nats

The '77 Nats will be held Aug. 6-13, 1977 in California; indoor events will be at Norton AFB near Riverside, California. The indoor site has been variously reported as being 65' and about 90'. Can a Californian please find the real number and report?

Page Two

Page 2 is another example of camera-ready information which has been furnished in response to numerous requests. Ron's topic is timely, shows an excellent solution to a common problem, and is high contrast so no re-drawing was necessary. Many of you have similar ideas and techniques which are valuable. Tell us!

1977 NIMAS Internats

Apparently we are "go" on another session at West Baden. The current date is June 2-3, 1977 with similar housing and food arrangements as last year. It is expected that conditions will be better (cooler) in June than in August and the flying better also. More info soon!

FAI INDOOR REPORTProgram Approved

The December FAI Indoor ballot was returned by 50 program participants with 44 votes for approval. This gives 88% approval for a very diluted point system with the following characteristics: points are awarded for a flier's two best of six flights at each of two regional meets. With a top score at each regional meet, the maximum score carried forward to the Finals is 200 points; a minimum of 160 points carried forward is required to gain entry into the Finals. Travel funds will be awarded to the holders of the top nine regional totals, subject to the availability of such funds. A contestant's Finals score will be

computed as at a regional meet (flier's time/top time x 100) and then multiplied by 10 for a top Finals score of 1000. A perfect score for both regionals and the Finals would then total 1200 points.

The above is a brief summary; the complete report is on page 68 of the Apr. '77 MODEL AVIATION. For up-to-date information (received automatically by participants in the '75-'76 program), pre-register for the program by sending \$15 to AMA HQ, 815 Fifteenth Ave. NW, Washington DC 20005, attention Micheline Madison.

CONTEST RESULTS

Although the results immediately below are 9 months out of date, both are important contests. Although only three places are shown, both contests are significantly larger than indicated.

Third Annual Midwestern States Indoor Free Flight Championships, Madison Street Armory, Chicago, Ill. 5/1-2/76.

<u>Jr. Paper Stick</u>		<u>Sr. Paper Stick</u>	
Chad Curth	4:03.6	Dan Brown	13:49.6
Dick Jones	3:50.8	Eric Miller	7:15.0
Mario Mararetz	1:40.0	Bill Schuh	6:58.2

<u>Open Paper Stick</u>		<u>Indoor Stick Combined</u>	
Dick Hardcastle	18:11.0	Bill Shallor	25:25.4
Charlie Sotich	17:58.4	Dick Hardcastle	24:01.0
Richard Doig	17:16.2	Charlie Sotich	23:07.2

<u>FAI Indoor Combined</u>		<u>Jr. HLG</u>	
Dick Hardcastle	48:46.8	Mario Mararetz	1:13.8
Richard Doig	40:09.0	Gregg Miller	0:33.6
Keith Gordey	37:26.0	Dick Jones	0:22.2

<u>Sr. HLG</u>		<u>Open HLG</u>	
Bill Schuh	1:24.2	Bob Watson	1:53.6
		Paul Shallor	1:49.4
		Stan Stoy	1:46.2

<u>Indoor Cabin Combined</u>		<u>Jr. Pennyplane</u>	
Richard Doig	15:18.8	Dick Jones	4:13.0
Dennis Jaecks	14:56.5	Chad Curth	3:52.8
Paul Shallor	14:38.9	Mario Mararetz	2:50.0

<u>Sr. Pennyplane</u>		<u>Open Pennyplane</u>	
Dan Brown	7:29.2	Bob DeBatty	9:02.1
Eric Miller	5:00.4	Dennis Jaecks	8:37.2
Bill Schuh	3:07.1	Charlie Sotich	8:27.4

<u>Peanut Scale Combined</u>		<u>AMA Scale Combined</u>	
James Gerz	165.4	Chuck Markos	165.0
Charlie Sotich	153.0	Charlie Sotich	145.5
Glenn Goubeaux	126.4	Ed Fort	113.0

<u>Junior High Point Champ</u>		Chad Curth	
			340.9

<u>Senior High Point Champ</u>		Dan Brown	
			300.0

<u>Open High Point Champ</u>		Dick Hardcastle	
			377.9

LIAMAC Cat. I Indoor Championships, Long Beach, NY June 6, 1976

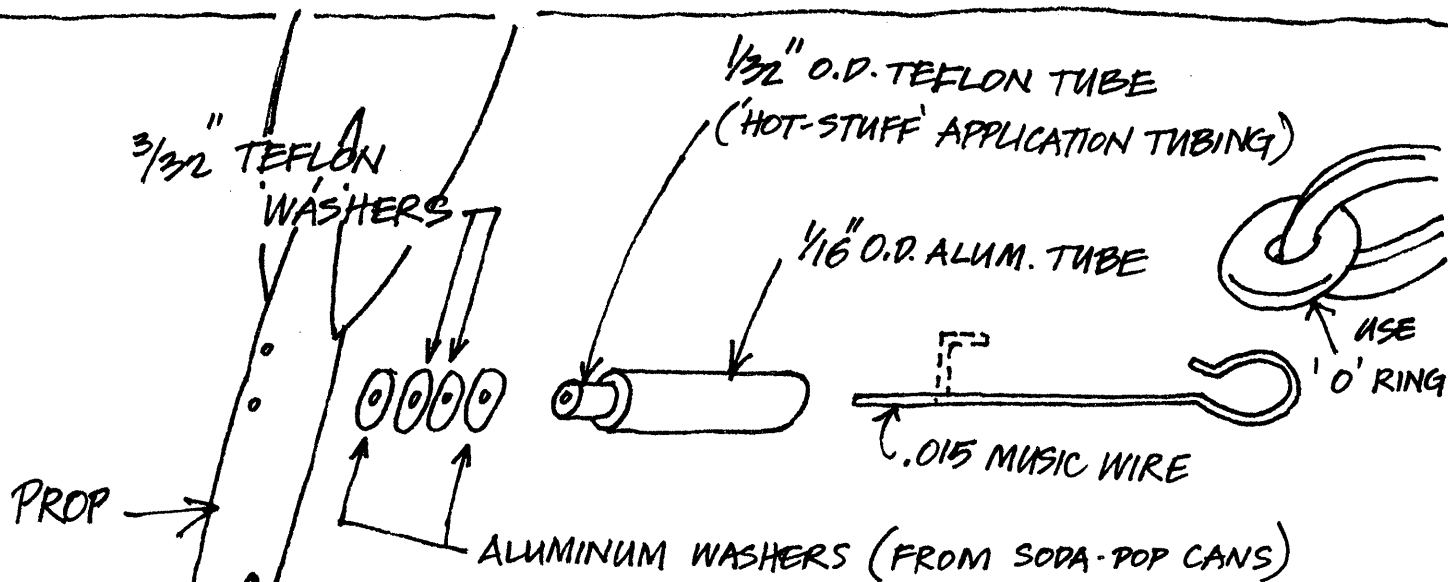
<u>Jr.-Sr. HLG</u>		<u>Open HLG</u>	
Joseph Nuszer, Jr.	1:02.6	Jack Minissian	1:06.3
Barry Pallet	0:57.2	Dan Domina	1:01.2
Richard Whitten	0:54.1	Joe Nuszer	0:59.7

<u>AMA Scale Combined</u>		<u>Jr.-Sr. Scale</u>	
Joe Nuszer	171.5	Wm. Henn, Jr.	250.0
Dan Domina	167.0	Richard Whitten	222.3
Wm. Henn	158.0	Barry Pallet	196.7

<u>Open Peanut Scale</u>		<u>Jr.-Sr. Easy B</u>	
Wm. Henn	270.6	Joseph Nuszer, Jr.	7:22.1
Joe Nuszer	207.5	Patricia Nuszer	7:13.1
Jean Pallet	207.1	Richard Whitten	6:57.9

<u>Open Easy B</u>		<u>Indoor Stick Combined</u>	
John Kukron	9:36.6	Richard Whitten	22:56.1
Pete Andrews	9:07.7	Dan Domina	20:07.6
Joe Nuszer	7:04.1	Pete Andrews	14:04.2

SUPER INDOOR SCALE NOSE BEARING (SMOOTH!)



Cut teflon sheet (.010 or thinner) with sharpened brass tube, drill with .016-.020 drill for hole

Cut aluminum washers with scissors from Pepsi (Fanta, Coke, etc.) can, drill with .016-.020 washers.



Put a drop or less onto joint between teflon and aluminum tube. Glue tube into nose block hole drilled for down or side thrust.

RONALD WILLIAMS
1364 LEXINGTON AVE.
NEW YORK CITY 10028

Dear Bud - Scale Info re: your Request.

Meets at Columbia confirmed:
19 Dec 76, 2 Jan 77, 20 Feb 77
6 Mar 77, 27 Mar 77, exhibit 6-27 Mar.

INDOOR ODDS AND ENDS (Part 2) by J Blount

I find that a winding jig ensures minimum dependence on a helper. Mine fastens to my model box top by a couple of wood screws and incorporates a torque meter (see page 5). The torque meter is another length of 0.015 inch diameter wire suitably mounted in a nylon bearing, with a pointer at the free end. When the motor is wound, the winding end of the motor torque and the winder can be detached, the winding end of the motor being slipped over the 16 swg wire support at the other end of the rig.

I started Indoor, I always thought the worst moment was when all the turns had been put on, you'd got the winder detached and put the on the rear hook. Then you let go, and the motor took up the slack, lashing merry hell out of the motor stick as it did so. Furthermore, when trimming, one often needs to take the motor off the model. More motor anchorages get torn out of the stick by this removal of a partially wound motor than by any other method. To obviate this, I use two '0' rings, one on either end of the motor. These are bent out of 0.010 inch wire (see figure 11) Both A and B are about 1/4 inch long and 3/32 inch deep. The ends clip together and are bent so that they are pressed together by motor torque. I make them as per Fig. 12. Basically, a 3/4 inch length of 0.010 inch piano wire has its ends turned up 1/16 inch or less, and bent round, as in stage 1. Then you must bend the ends of the '0' ring away from the turned-up ends, as in stage 3. Finally, hold the '0' ring at A, and looking from the centre of the '0' ring, where the ends meet, take the bend end nearest where you have hold of it at A and give it an anti-clockwise tweak. Repeat with the other end, and you will find that the ends clip together and are pressed onto each other by motor torque. I usually make about a dozen of these before a meeting - one drawback is that they disappear when a motor breaks.

The next item is really a trimming and testing aid. It consists of a wire spacer made to replace a proportion (I use half) of the motor. I make them from 18 - 20 swg piano wire. The length is equal to half the distance between the rubber anchorages, and the weight for testing must be half the rubber weight (ie. the full length motor weight). To accommodate different motors I make the spacer lighter than required and ballast it with paper tape wrapped around the centre. All these things - '0' rings, spacers, Torque meter fittings - must all fit together, of course, and be of common curvature and size. A half spacer theoretically gives a half-scale flight, but in practice it's probably rather less than half because of the temperature/altitude changes in a given indoor space.

Trimming and Testing

Because most of the trim adjustments are built into the model, trimming consists basically of adjusting wing incidence and rudder offset for basic flight pattern. So it started when you built all those odds and ends into the model. You didn't? Oh Well, at the building stage, try to ensure you get the following items into the construction. Down and sidethrust, about 3 degrees of each - but it's hard to be exact. Front bearings can be bent when 'in situ', but it's difficult, and can end up with a busted model.

An asymmetric wing planform is needed, with approximately 3/16 inch extra incidence at the port dihedral break. Also, build in about 1/4 inch left rudder offset, and about 2 degrees negative on the tailplane. These measurements are for F1D-size models. However, bear in mind that all the offsets cause drag, so in general, the smaller the better.

To start flying, check the prop has equal pitch on each blade, and start a loop of rubber about 1.5 times the model weight and 1.2 times long as the distance between hooks, ie. for an F1D model weighing .2 ounces (1.2 grams) and 15 inches between hooks, try a motor weighing about 0.060 ounces (1.7 grams) and about 18 inches long. This gives the basic flight pattern. I suggest that very special attention be paid to flying the model at the correct angle of attack, and not on the wrong side of the drag curve. It is quite easy to demonstrate that the slowest possible flight without stalls will not give optimum duration. Some tests I ran with models flown at the '72 World Championships gave flight times around four minutes more with average prop rpm increased from 65 to 69.5, only by changing the angle of incidence. Clearly, there is a point beyond which it is exceedingly wasteful of power to slow the model by increasing incidence. Similarly, flying the model on the fast side increases rpm and speeds up dissipation of energy in excess flying speed. So, find out how much torque your model needs to fly level, at or about mid motor run. This will, of course, change as model and/or motor weight changes. I am convinced that there is one basic way to fly, and that is to treat all sites as low-ceiling sites, and out off the bottom, as it

NB. distance between hooks to be same as on motor stick.

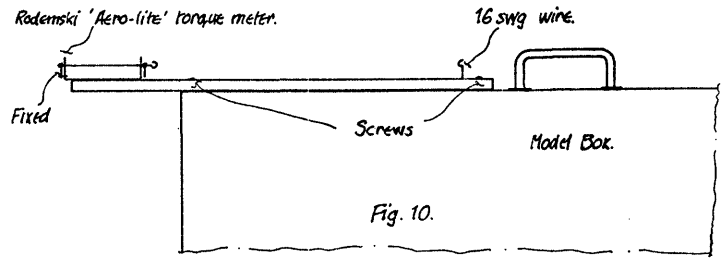


Fig. 11, showing method of making '0' rings (enlarged!).

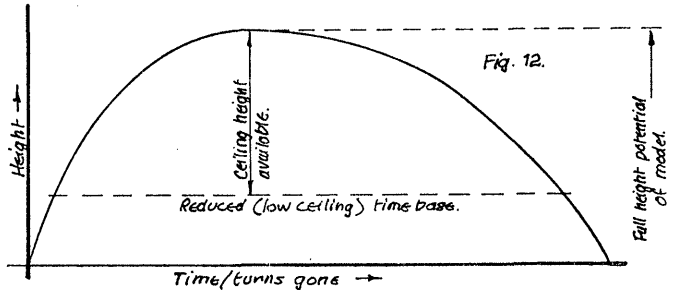
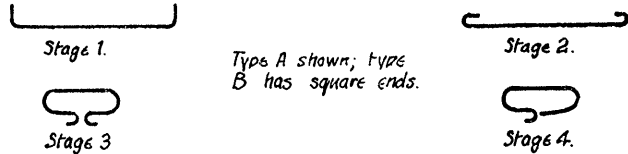


Fig. 12. were, of the flight profile of a correctly matched model and motor - see Fig. 13.

A complication is that at low temperatures, it seems to take more power to climb. A change of propeller also changes the required motor characteristics. The upshot of all these variables is that we come back to data recording so that an understanding emerges of what your model requires. I find that useful data consists of an estimate of conditions prevailing, launch torque, launch turns, flight time, turns remaining, motor weight, motor length. These will apply to one particular model/propeller combination, but if you can reproduce model components to a high degree of accuracy, the information may be relevant in a more general manner, but in any case will provide a useful basis for other variations of propeller/wing section combinations.

Of course, things don't have to be so complex. You might be able to build a model and hit the right model/propeller/rubber combination on the nose and do forty minutes first time out...

low.ce III

HLG BY JIM MAYES 25th IN SERIES

FULL SIZE PATTERNS

HIGH TIME 23 SEC.
UNDER 20' CEILING

LEADING EDGE

30% HI-POINT

TAIL SURFACES -
1/32" SH. V. LIGHT

WING - 1/8" SH. CONTEST BALS

TRIANGULAR AIRFOIL 0° DECALAGE

2 1/2" | 3" | 6 1/2" | 2"

FUSELAGE - 3/32" x 1/2" x 14" HARD BALS

1 1/2" DIHEDRAL

1/8" ANHEDRAL

PROTOTYPE WEIGHTS	
WING	2.25 gr
STAB	.25
RUBBER	.12
FUSE	.75
TOTAL	3.37 gr
COULD BE LIGHTER	

DBL 10/69

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

Members who joined in January, 1977:

ERIC ANDERSON, 5041 Dorchester Apt. 1B, Chicago IL 60615
ALLAN D. BRUSH, 14960 Sherman Way Apt. 201, Vay Nuyz CA 91405

JULIAN T. CORNWELL, RR 8B, 7932 N. Elizabeth Rd., Pasadena MD 21122

GERALD A. MALLETT, P O Box 199, W. Warren MA 01092
JIM THOMERSON, 1317 Eileen, Collinsville IL 62234
ROBERT WARMANN, 245 N. Oaklawn, Elmhurst IL 60126

Members who joined in February, 1977:

MICHAEL CHMURA, 946 F St., Meadville PA 16335
R. L. COCHRAN, 25312 Via Dona Christa, Valencia CA 91355
ALAN McADAM, 9340 NW 32 ct., Miami FL 33147
WALTER P. Van GORDER, 5669 Victory View Lane, Cincinnati OH 45238
GUYLA E. WAGNER, 1438 Grace Rd., Swarthmore PA 19081

A Friend Passes

Tom Stone, lately of Fort Worth but a one-time Chicago Aeronut, passed away recently. He suffered a heart attack and was DOA at the hospital. We will miss him.

Recent Publications

Bob Meuser's No Non Cents Pennyplane appeared in the June '77 MODEL AVIATION. This article is a must for anyone who enjoys good writing and superb illustration. The model itself is a good design with no fussy features, and the illustrations practically convert the article into a textbook for indoor construction. Don't miss it.

Anyone interested in Manhattan Cabin, or anyone who thinks they might get interested should send a SASE to Ed Whitten, P O Box 176, Wall Street Station, New York NY 10005 for a copy of the Special Manhattan issue of STAR SKIPPER. It is all there - history, three-views, photos and dialog between various fliers discussing the rules and other matters pertaining to the event.

No New Records?

The June '77 MODEL AVIATION had a complete listing of records. Just to jog a few of you - 55% of all records except Pennyplane were set in 1972 or earlier. Pennyplane was made official in 1976, so naturally all those records are new. Incidentally, 20% of the newer records (except Pennyplane) belong to Richard Whitten!

A Correction

Bob Meuser's sharp eye noted that the drawing of Bud Romak's Grand Gram (Aug. '76 INAV) didn't seem to match up with the dimensions. A call to Bud revealed that both wing tips are the same length - 5 3/4".

Postal Reminder

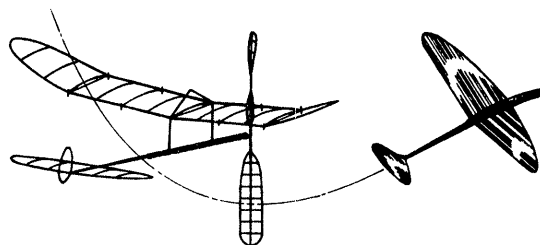
Since this Feb. issue will go out early in May, it doesn't seem premature to remind everyone that entries in the 1977 NIMAS Postal must be postmarked by May 9, 1977. Quite a number of entries have already arrived, so perhaps this meet will be larger than usual.

Second NIMAS International Record Trials

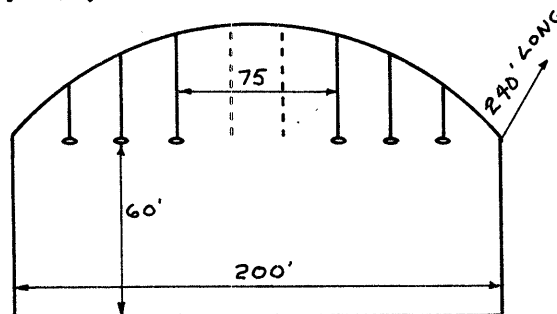
We're either going to have to get a smaller name for our annual bash or get a wider newsletter! Anyway, just in case the Postal Service strikes again and your issue doesn't have the special announcement page, the SNIRT will take place June 2-5, 1977. The longer schedule allows for North Central and South Central Team Qualification Trials to be held on June 4-5, 1977. The arrangements with Northwood Institute are essentially the same; if you didn't get the flier, call me at 214-235-4035 (home) or 214-661-1530 (business).

'77 Nats

Bob Randolph has furnished the data sketched below;



the Indoor Nats site will either be Dock 1 or Dock 2 in Hangar 763 at Norton AFB near Riverside, California. No info is available about the air conditions to be expected, and probably none will be available before the meet.



The dotted lines above indicate two rows of lights that will be pulled up, allowing a 75' wide corridor up to the full 90' maximum ceiling.

Model Films Available

Wings And Things, a marvelous film which captures a lot of the mystery and wonder of model airplanes, and Fly Away, a new film by the same director, are available for rent (\$25 and \$20 respectively) from Phoenix Films, 470 Park Avenue South, New York NY 10016. I can heartily recommend Wings And Things, and the description of the Fly Away film seems to indicate it is also very well done in the same style. Both are 16 mm sound films.

Microfilm Saves Lives?

Well, not quite. However, techniques like pouring microfilm are being used to make special ultra-thin semi-permeable membranes. Such membranes have applications in artificial kidney and heart-lung machines. Early trials used cellulose acetate, poured like microfilm, but newer materials have been developed for many specific uses. No one ever told you that you were training to be a medical technician?? Thanks to William Baker of Norman, Oklahoma for the clipping which revealed the above!

FAI INDOOR REPORT

Team Selection Trials Schedule

By the time this newsletter is mailed, all previous program participants will have received a HQ mailing with essentially the same schedule as noted below. Those dates which have been changed are marked with appropriate comments.

May 14-15 - West Coast, Moffet Field wind tunnel.

June 4-5 - Central & South combined, West Baden, Indiana.

June 18-19 - East Coast, Lakehurst #5.

July 3-4 - West Coast, Moffet Field wind tunnel

July 3-4 - Central, Akron Goodyear Aerospace hangar

July 10 - South, Tulsa. International Petroleum Exposition Building, tentative. (change from mailing)

July 23-24 - East Coast, Lakehurst #5.

Even on the confirmed dates, check with the site contact man listed below. Tulsa entrants: send your name to Bob Dunham well in advance. Site is commercial building and could be rented at last minute. Contact men:

MOFFET FIELD
Bud Romak, 85 Sullivan Dr., Moraga CA 94556 415-376-4624

WEST BADEN
Bucky Serwaites, 7660 Duffield Cir., Centerville OH 45459 513-433-0975

John Martin, 3227 Darwin St., Miami FL 33133

EAST COAST
John Kukon, 14 Brandon Rd., Trenton NJ 08638 609-737-3522

TULSA
Bob Dunham, 4730 S. Yorktown Ave., Tulsa OK 74105
918-743-5424

AKRON
Bill Hulbert, 174 Castle Blvd., Akron OH 44313
216-864-8030

STATE OF THE ART

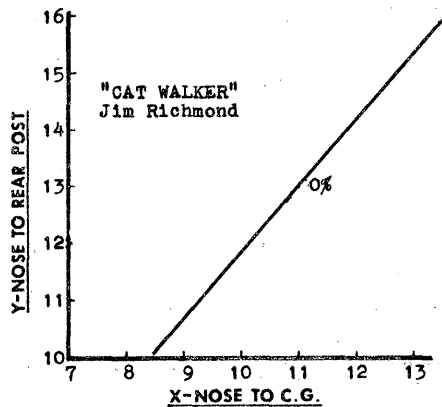
Jim Richmond's qualifying performances in the 1975 program led to a reasonable expectation of high times at the WCh. Jim's remarks below detail some of the many pitfalls available in indoor flying.

Here is a drawing of the plane I flew at Cardington. I believe it is the only "over 40" one gram FAI besides Pete Anrews' Time Machine.

Four copies of the design were made and all tested at more than 36 minutes. Unfortunately, the "indoor fog" at cardington expanded the wood and tightened the bracing to the point that most cabanes and stabs were warped. This led me to use parts combinations that weren't previously tested. Also, the ribs had been straight strips and were formed to shape with water. These ribs tried to return to their original shape, resulting in an almost flat airfoil. Unexpected problems are par for the course at a World Championship, I'm afraid.

The wing planform was inspired by Ray Harlan's FAI design and my version was designed on my honeymoon at the Black Sea. The large prop worked well in good air, running at 43 RPM during the cruise on the 41:32 flight. During the climb, RPM was 47 and descent was at 40 RPM. The model's name was inspired by the fact that it had me walking catwalks at Akron, West Baden and Cardington.

Trim info: +13% CMOS, +33% INP



And in this corner:

The winner of the Easy B event at the 1976 Nats was Earl Hoffman, flying the Queen Bee. Although the model is more conventional in design than recent Easy B's in this column, it has a number of noteworthy features not seen on most models. The most immediately noticeable feature is a built-up prop! Not legal, you say? Since it is a built-up frame covered with balsa wood, it is an all wood prop. The craftsmanship inherent in such a prop was carried over to the rest of the model, but that is one prop which ought not warp. Note also the adjustable pitch feature - a good way to adapt to changing conditions quickly.

Undoubtedly the model's light weight is partly made possible by the rounded tips on the wing and tail - this construction is much stronger and lighter than a butt-joint between rib and spar at the tip. Finally, the double rib at the dihedral joint has to make covering easier!

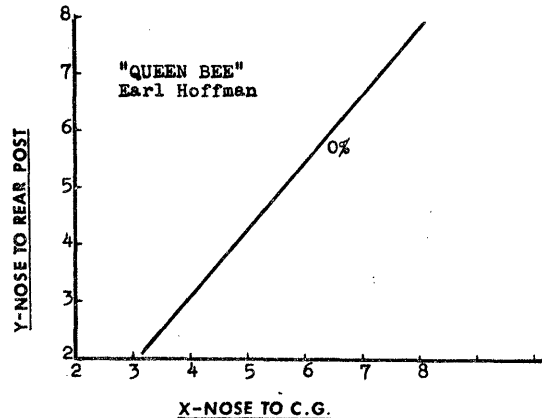
Earl supplied the following data about the model:
NOTES ON CONSTRUCTION:

4 to 4½ lb. wood was used throughout. I suggest that beginners increase the wood sizes shown by 20 or 30% or use heavier wood. I would also suggest that beginners stick to easier methods of building the prop, such as the method shown in Lew Gitlow's book on INDOOR BUILDING AND FLYING.

Note that the prop is covered with .005" thick balsa. To sand balsa to this thickness I used the following method: First try to obtain a pair of "feeler gages" .005" x 12" long. Otherwise you can substitute brass shim stock available from most auto supply dealers. Place the balsa on a piece of plate glass with a gage along each side. Use a sanding block long enough to extend over both gages. Use progressively finer sandpaper starting with #220 or 280. When the wood thickness is around .015" use only

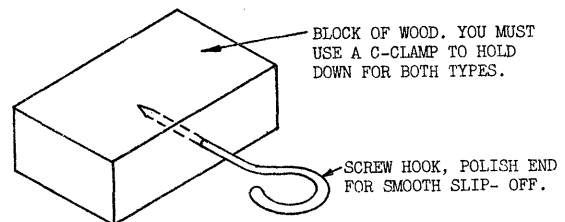
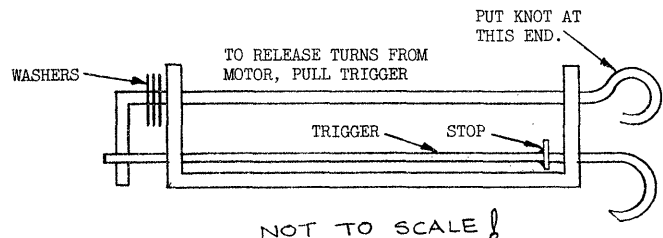
#330 or 400; under .008" thickness use only #600. Be sure to sand only away from you and use very light pressure. Patience does it - don't expect to sand a sheet this thin in a few minutes.

Trim info: not available; CMOS chart below.



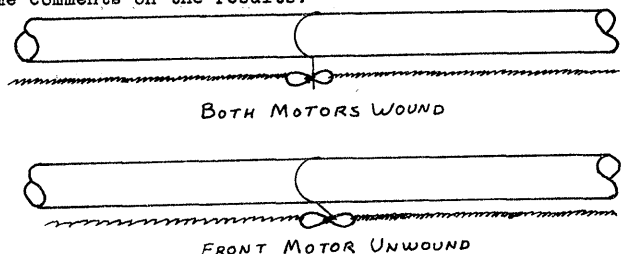
HINTS AND KINKS

The two ideas below have come full circle: they were first printed in INAV some time ago, then were re-cycled by CROSSWINDS, a newsletter from the Cleveland Free Flight Society. Here they are again; both involve some way to hold the rubber motor while winding it off the model. The chief advantage is that the flier can work alone, reducing his dependence on a helper who might not be able to make that important meet. Thus, the flier is not distracted by a change in routine at a crucial time. Note also that many fliers now use a torque meter for the same purpose.

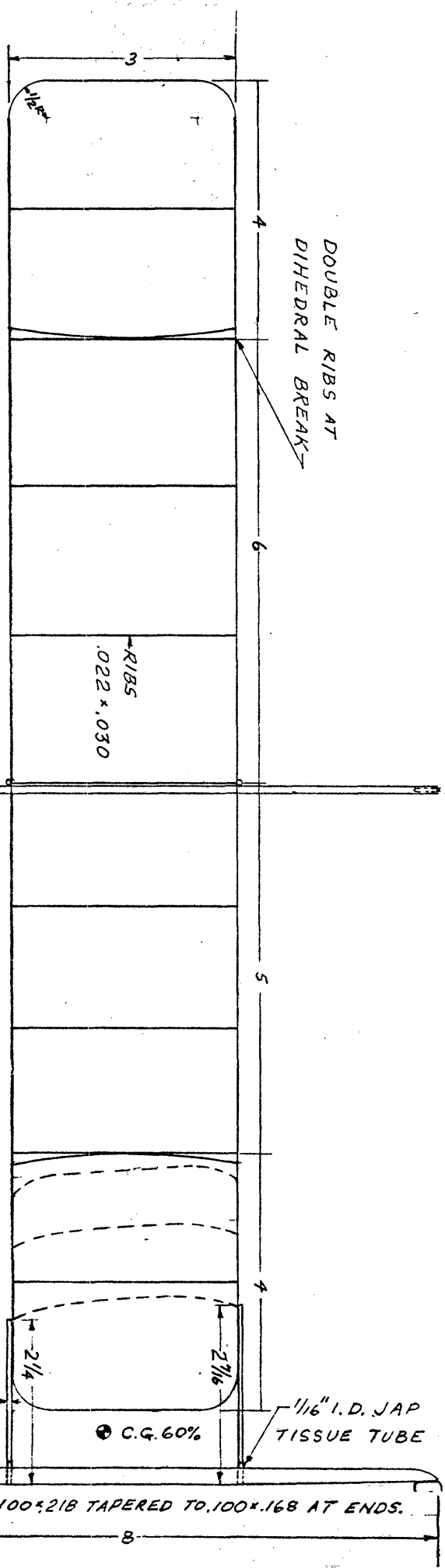
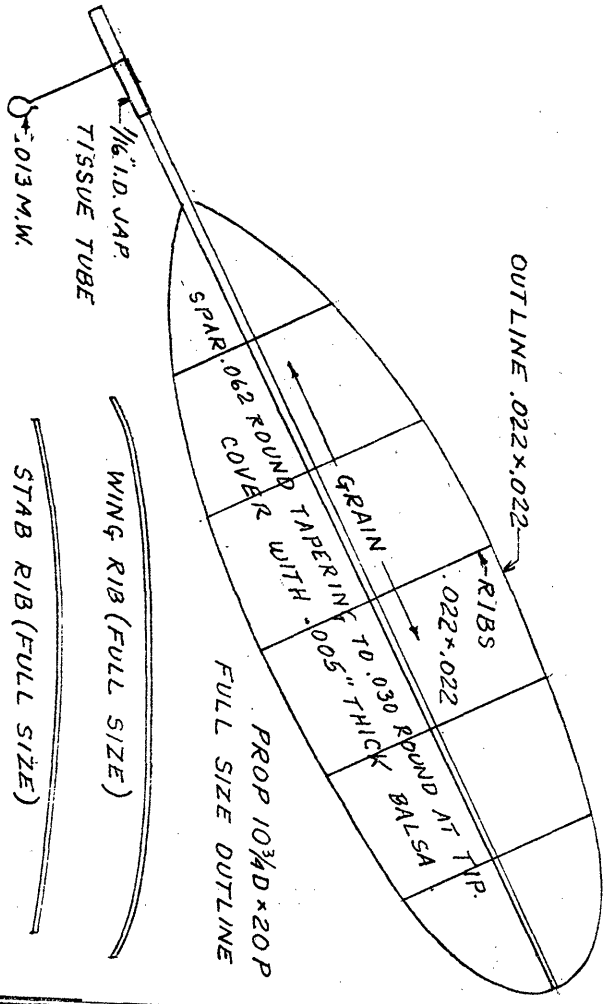


A LOOK AT YESTERYEAR

Back in 1936, there used to be a magazine called MODEL AIRCRAFT BUILDER. In one of these, Louis Garami suggested a gadget which was intended to help control model altitude in low ceilings. The device consisted of an S-hook and a wire pin. Two motors, shorter than the usual single motor, are hooked to the S-hook and to the prop and rear hook, so the S-hook is in between the motors. The pin mounts to the motor stick and prevents the S-hook from turning for a while. The sketch below shows (top) both motors wound and the pin engaged in the S-hook. The second sketch shows the rig as the front motor is mostly unwound; the S-hook has moved back almost enough to disengage the pin. The intent is for the model to climb on the power of the front motor, then drop down as the second motor rewinds the front motor enough for a second climb (but not as high). He also suggested that the pin location (and relative motor lengths) can be adjusted to tailor the climb pattern. Now - has anyone tried this idea? If so, how about some comments on the results?



QUEEN BEE
 EASY B
 FIRST 1976 NATS 13MIN. 5 SEC.
 SCALE 1/2" = 1" EXCEPT WHERE
 INDICATED.
 DESIGN V: EARL HOFFMAN

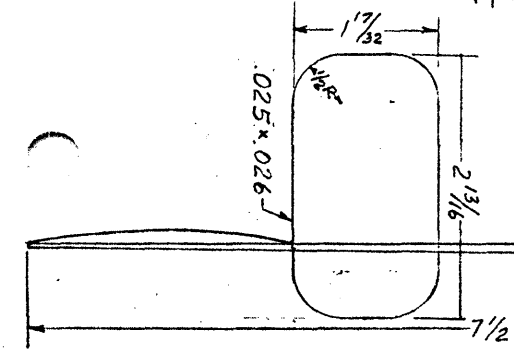
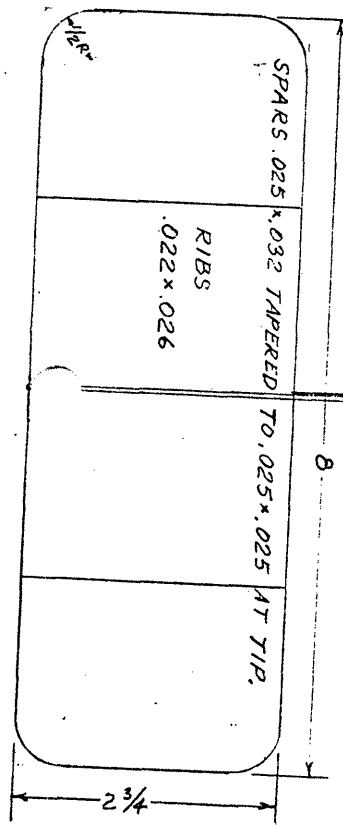
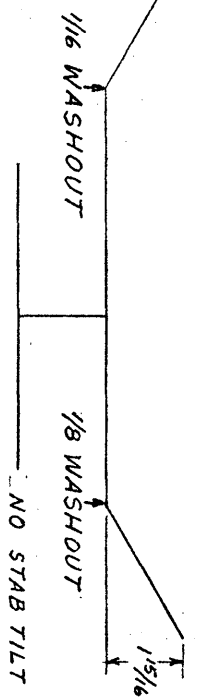


BOOM .050 x .112 TAPERED TO .050 x .050
 BOOM OFFSET 3/8" FOR LEFT TURN.

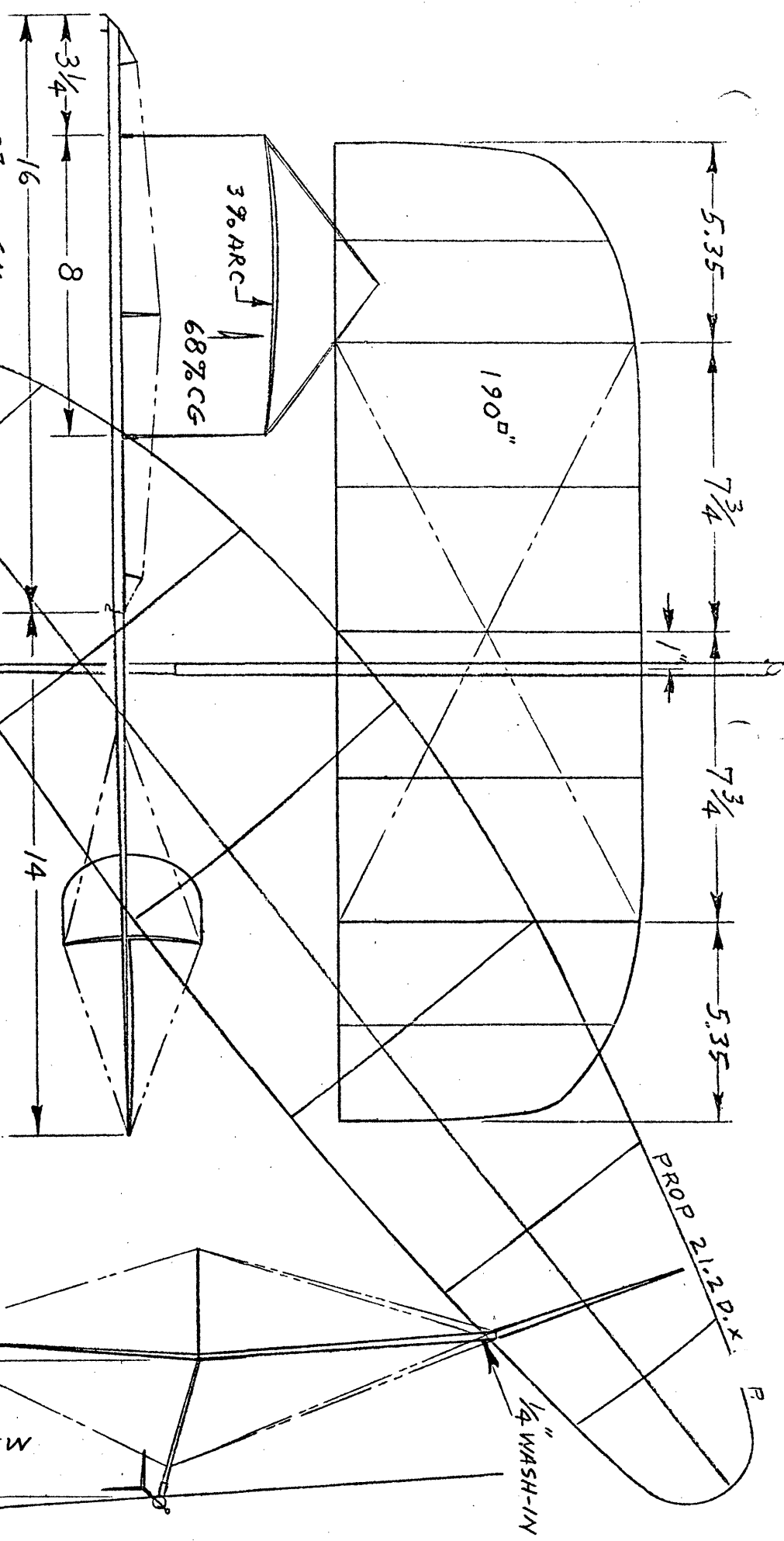
WEIGHTS
 STICK, BOOM, STAB, FIN .0155 OZ.
 WING .0115
 PROP .0065
 TOTAL .0335

POWER:
 1 3/2" LOOP .045 PIRELLI

REAR VIEW (NOT TO SCALE)



	OZ.	GM
WING	.0106	.30
STICK	.0106	.30
STAB+BM	.0071	.20
PROP	.0049	.14
BALAST	.0021	.06
TOTAL	.0353	1.000



"CAT WALKER" FAI
By Jim Richmond

INAV

MAR. '77

(PUBLISHED SEP '77)

BUD TENNY, EDITOR

A FUNNY THING

Happened on the way to the printer - - the masthead disappeared! By next issue a new one will be made or the old one found; the search delayed this issue over one whole weekend and this is one way to cut the losses!

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Remember Me?

At least those who wrote asking if the Postal Service had done them in remember INAV! This issue will serve to indicate that rumors about the demise of INAV or Bud Tenny are unsubstantiated. In recent weeks, a few of you have even received a note from me; I hope the shock wasn't too great!

Aside from a general condition of overwork, the delay between issues stemmed from heavy personal and professional involvement in the National Computer Conference, held in Dallas June 13-16. Several related matters remained as unfinished business after the conference, and then followed a bad case of the "don't wannas". Perhaps the ensuing break in routine will help get things back on schedule.

This Issue

Thanks to a number of faithful correspondents, a large number of items are available to be reported on. These will be worked up and presented as quickly as possible, but the most timely have been selected for this issue.

The paragraph immediately above was written as a big push was being made to get this issue out before the FAI Finals. Circumstances prevented this, so parts of the issue will be outdated.

Material presently on hand includes Nats results data (no pix and no commentary), FAI Finals results and good pix (no commentary) and plans and commentary for at least two recent record models. Anyone with Nats pix or commentary, or commentary on the FAI Finals, please send them immediately or notify me that you will send them soon.

RECORDS? MAYBE!

These records have been listed in chronological order; if two listings for the same record appear, it is assumed that the second time would prevail.

May 14, 1977 (Moffett Field Wind Tunnel; 130'+)

Cat. III Open Novice Pennyplane - 9:53.6, Bob Meuser

June 2-5, 1977 (West Baden, Ind., approx. 98' ceiling)

Cat. II Junior Pennyplane - 9:31.4, Mike Van Gorder

Cat. II Junior Novice P/P - 9:31.4, Mike Van Gorder

Cat. II Senior Pennyplane - 10:03.9, Richard Whitten

Cat. II Senior A ROG - 11:09.0, Richard Whitten

Cat. II Open Indoor Stick - 35:08.5, Bucky Servaites*

Cat. II Open ROG Stick - 25:19.9, Ron Ganser

Cat. II Open FAI Stick - 32:40, Jim Richmond

FAI Cat. III FAI Stick - 32:40, Jim Richmond

* Bucky's flight was also covered by a special FAI sanction and was submitted as a World Record.

June 12, 1977 (30' ceiling)

Cat. I Junior Pennyplane - 3:29, Mark Trubowitsch

Cat. I Senior Pennyplane - 8:58.0, Richard Whitten

Cat. I Senior A ROG - 12:14.4, Mark Drela

Cat. I Senior Paper Stick - 14:37.6, Mark Drela

Cat. I Open Indoor Stick - 22:21.6, Dan Domina

July 2, 1977 (Moffett Field Wind Tunnel; 130'+)

Cat. III Junior Pennyplane - 7:33.0, Marnie Meuser

Cat. III Junior Novice P/P - 7:33.0, Marnie Meuser

Cat. III Open Novice Pennyplane - 10:47, Cezar Banks

Aug. 20, 1977 (FAI Finals @ Akron - 180' ceiling)

Cat. III Open FAI Stick - 42:06, Jim Richmond

FAI Cat. IV FAI Stick - 42:06, Jim Richmond

Aug. 7, 1977 Nats Indoor 90' ceiling (60' usable)

Cat. II Junior Pennyplane - 10:05.9, Marnie Meuser

NIMAS Postal Meet

Easy B	Time	Ceiling	Fudge	Score
1. Clarence Mather	673.0	22.3'	1.253	843.3
2. Dick Hardcastle	756.0	31'	1.063	803.6
3. Stan Chilton	779.5	35'	1.0	779.6
4. Cezar Banks	535.0	22.3'	1.253	670.4
5. Jim Miller	482.2	24.33'	1.20	578.6
6. Frank Haynes	682.0	50'	.837	570.8

7. Bucky Servaites	423.8	24.33'	1.20	508.6
8. Ron Roberti	499.6	35'	1.0	499.6
9. Bud Tenny	414.0	42'	.913	378.0
10. Jim Clem	377.0	42'	.913	344.2
11. Mike Fedor	343.5	42'	.913	313.6
12. Ed Turner	327.0	42'	.913	298.5
13. Walt Van Gorder	244.0	24.33'	1.20	292.8
14. Jess Shepherd	266.0	42'	.913	242.9

Pennyplane

1. Charlie Stiles	396.0	18'	1.394	552.0
2. Clarence Mather	408.0	22.3'	1.253	511.2
3. Cezar Banks	395.0	22.3'	1.253	499.9
4. Richard Doig	322.0	24'	1.207	388.6

Jr. Pennyplane

1. Mike Clem	273.0	42'	.913	249.2
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HLG*

1. Hermann Andresen	77.0	29'	1.034	82.4
2. Richard Doig	59.6	24'	1.25	74.5

*Doig flew in Class I and Andresen in Class II. To compare these two flights, both were fudged to 30'.

CONTEST CALENDAR

CALIFORNIA - Sunnyvale

Cat. I Record Trials, Aug. 27-28, 1977, new Sunnyvale Community Center Gymnasium. Fred Terzian, 4858 Moorpark Ave., San Jose CA 95129, ph. 255-0381.

NEW JERSEY - Lakehurst

Indoor sessions at Lakehurst #5; Aug. 21, Sept. 3-4, Sept. 18, Oct. 2, 1977. Verify site availability late in week before date by calling 609-737-3522.

NEW YORK - New York City

Cat. III Indoor Record Trials (no HLG) at Low Library Rotunda, Columbia University, New York City, 9 am - 5 pm. Sunday, Sept. 25, 1977, all classes invited. Sunday, Oct. 9, 1977, microfilm only. Sunday, Oct. 23, 1977, Easy B, Pennyplane, Manhattan Sunday, Nov. 13, 1977, Flying Scale only. Contact Ron Williams, 1364 Lexington Ave., New York NY 10028.

POSSIBLE WORLD RECORD

Bucky Servaites flew a 65 cm FAI model to 35:08, which exceeds the existing FAI Cat. III World Record. Plans and commentary appear in this issue.

FAI INDOOR REPORT

Qualification Scores

The point scores listed below are those listed in a recent memo from AMA HQ, updated by adding in results from the July 23-24 Lakehurst trials. Assuming the ol' TI calculator didn't goof, these point standings should represent the finalist standings going into the Aug. 19-21 Finals at Akron.

1. Jim Richmond	200.00	19. Bob Gibbs	169.97
2. Joe Bilgri	195.35	20. Ron Williams	169.51
3. Ray Harlan	193.70	21. Bob Randolph*	168.56
4. Larry Cailliau	193.07	22. Richard Whitten*	168.56
5. Stan Chilton	191.83	23. Clarence Mather	159.69
6. Dick Kowalski	185.91	24. Sal Cannizzo	157.66
7. Bill Hulbert	185.51	25. Manny Radoff	156.24
8. Al Rohrbaugh	183.41	26. Bob Champagne	154.92
9. Bob Platt	182.63	27. Hal Crane	151.13
10. Pete Andrews	182.06	28. Paul Allen	151.11
11. Bud Romak	177.65	29. Bill Tyler	147.93
12. Dick Hardcastle	176.88	30. Ron Ganser	144.67
13. Bucky Servaites	174.34	31. Bill Shailor	143.83
14. Dan Domina	173.79	32. C. J. Banks	140.39
15. Rick Doig	173.73	33. Bud Tenny**	75.60
16. Ed Stoll	172.71	34. Robert Dunham**	65.20
17. Dick Obarski	171.26	35. Tom Vallee**	64.67
18. Erv Rodemsky	170.16	36. Carl Rambo**	60.60

*Apparent tie **Flew one trials only

Note: The above listing was published first as a program update. Individual trials results will be printed as space allows in this issue and the next.

FAI Finals Outcome

The top five finalists and their point standings are listed below; three members of the 1978 U.S. Indoor Team, their manager (first runner-up will probably be manager), and the next runner-up. Full results and pix next issue!

Jim Richmond	1200.00 pts.
Bill Hulbert	1079.02
Dan Domina	1074.38
Ray Harlan	1062.57
Joe Bilgri	1060.98

STATE OF THE ART

The model of the month is by Bucky Servaites, and is his solution of how to set a World Record in a particular site. Bucky describes the model:

The model design was arrived at late in 1973 when an attempt was made to design a small FAI model that would be suitable for flying in windy or turbulent conditions. It was hoped that the 6 $\frac{1}{2}$ " wing chord would permit better penetration in the rough air than the 7 $\frac{1}{2}$ " and 8" chord ships would. As it turned out the design performed very well at one gram weight and was used for the first flight at the 1974 World Champs (34 minutes). The design exhibited very stable flight characteristics and was good at rafter banging.

Last winter I thought this same design, built lighter, could be made to perform well under the 96' ceiling at West Baden, and have a good chance at the Cat. III World Record. I felt that this smaller ship with its tighter turning radius would have a better chance at West Baden than a large D class ship approaching 300 sq. in. area. The larger ships just look out of place in the somewhat small site, so it was decided to go with the small ship and a target weight around .028-.030 oz.

Some construction details:

The prop is one of my old FAI props used at the '76 WCh in England. It is a Jim Richmond design with lower pitch but constructed to be very flexible. Wing and stab spars are .030" x .032" from 6# stock. Motor stick wood is 3 3/4# density and .016" thick. The stick bracing is also Jim's design and seems to work well.

Description of flight from FAI record application dossier:

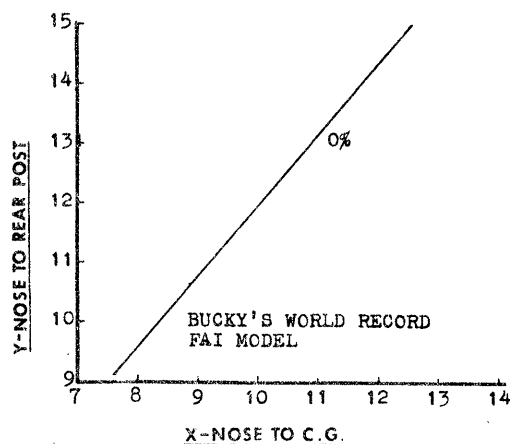
Outdoor atmospheric conditions on the day of the record attempt were rather cool; 65-70°F with partly cloudy skies and 5-10 MPH winds. The coolness was the result of a passing front which brought only brief showers the day before, but which produced a clearing of the air. Two years prior at this same site similar conditions existed which produced record flights, so expectations were high that long flights could be expected. Initial test flights beginning at 11 am showed that the air was very light and buoyant as little power was needed to make the models climb. The only problem marring the flying conditions was ground turbulence which existed below the 12' level and was caused by the entrance of air at the four main entryways. Initial flying included a 32:30 attempt and slight re-trimming to prepare the model for the third attempt.

At 2:30 pm the conditions appeared favorable and the rubber motor was wound to 1800 turns using a 16:1 winder. Initial winding torque was .5 inch ounces but turns were backed off to 1750 to produce a launching torque of .35 inch ounces. The model was hand launched into flight and immediately produced a very high climb angle indicating that ground turbulence had caught the model. This climb angle continued until the model stalled but quickly recovered and turned downwind to the drifting air. As the model again came around into the drifting air a second stall was produced but this time at a slightly higher altitude than the first. Again the model recovered and turned downwind but the stall was repeated a third and fourth time until the model's altitude exceeded the area of turbulent drift. Thereafter a slow but steady climb resulted with the model climbing up to the overhead disc (94' 3") and barely touching it with the propeller at the 17 minute mark. In the descent the model began drifting toward one of the entry doors and it was feared that ground turbulence would disrupt the flight. However the model drift changed direction and the final touchdown was on the floor some distance from the door.

Examination of the model revealed that the motor had 250 turns remaining unused. The average propeller speed for the overall flight was 43 RPM ranging from 50 RPM at release to 34 RPM just prior to touchdown.

Trim

Computation shows that Bucky's trim had +5% margin (CMOS) or + 18.5% by the INP method. The CMOS graph is below, drawn at 0% as usual.



REPORT ON THE 1977 SNIRT

by John Martin, CD

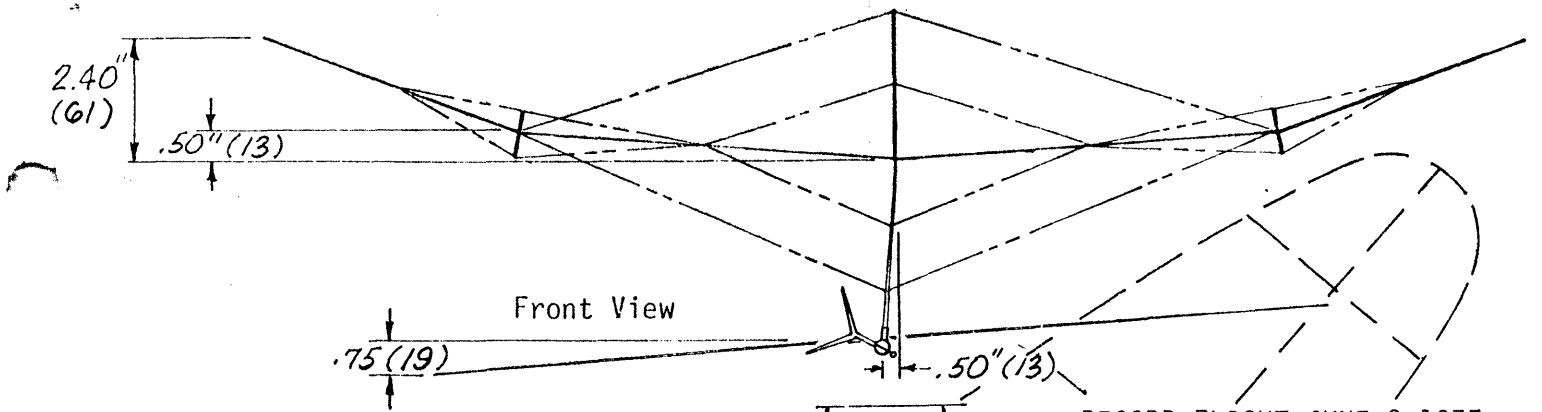
It was the SNIRT .. the Second NIMAS International Record Trials in Northwood Institute's magnificent Atrium. So there we all were in West Baden - NIMAS, the MIAMA indoor club, and some of the world's best hot-shot indoor modelers in the process of setting six AMA records and one world record. Then along comes this little eleven year old kid whose old man plunks down two bits for a one-day Junior membership, see? So three guesses who wins the 1st place cup for the best index of performance flying? Right! The little kid (Mike Van Gorder), and he more than doubled the national records for Pennyplane and Novice Pennyplane. In this meet contestants are scored on their index of performance...how well the best flight of their model compares with the AMA record of that type model. In this ideal Cat. II site the record book has taken a real beating. Twelve Cat. II records have been established in the Atrium in the past two years.

Bucky Servaites set two records with but a single flight of his hand-launched stick model. One was a new FAI Cat. III world record and the other was the AMA Cat. II stick record, both with a magnificent 35:08 flight. In addition to his flying, Bucky had prepared the site in championship condition. Richard Whitten, who won the meet last year, was 2nd and 3rd this year. He set two new records, one in Pennyplane and one in ROG Stick. The latter model type is rarely seen - a tiny peanut-sized ROG (rise off ground) model - but there were a lot of them at the SNIRT. I suppose that by the time Richard leaves the Senior age group he will have most of the indoor records - he still has a year to go.

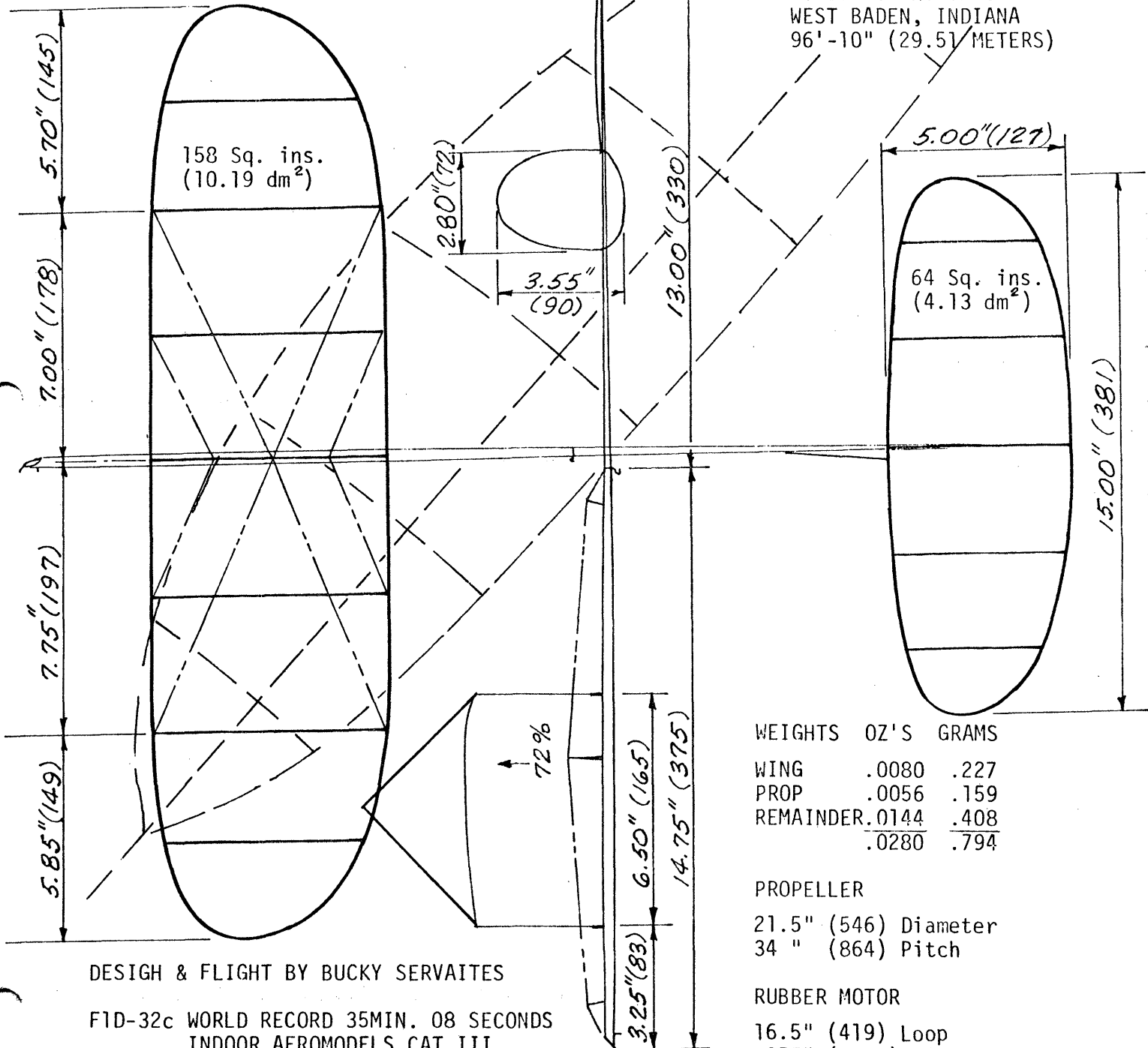
The most exciting moment of the Trials came when Ron Ganser broke Col. Bob Randolph's long-standing ROG Cabin record. (If it can be said that indoor is exciting at all - some claim it is as exciting as watching an off-shore yacht race. Some yachting buffs claim this is exciting too.) Let's face it, Indoor isn't for everyone. Ron hung both his Cabin models, but managed to piece together one whole plane from the remains of the other two. He took a short test hop with this hybrid and then went for broke. It flew like silk. Near the twenty-second minute of the flight, the model was still up 30 feet and it looked like the record would be broken, so all flying ceased. Fliers kept coming over to make the already nervous Ganser even worse. He looked like a man with a bowling average of 150 who was working on the twelfth strike of a perfect game. As the model landed at 25:19, a rousing cheer rose from the usually phlegmatic group of indoor fliers. A little later, Richard Dolg wanted to know what the excitement was...he had slept through the flight. When told of the flight that took place "at the other end" he wanted to know "where is the other end of a round building?" Indoor fliers put up with a lot.

Just a few months ago in MODEL AVIATION Bob Meuser presented a Novice Pennyplane design called No-Non-Cents. Bob admittedly knows nothing at all about Indoor, besides, what's to know? Wouldn't you know that this was the model that young Mike Van Gorder used to win the NIMAS meet and set two new AMA Junior records..Oh, irony!

Stan Chilton dominated the Easy B field which is becoming more Hard B every year. Stan had more hardware that the first moon shot to put a 2/3 gram model up in the



RECORD FLIGHT JUNE 2, 1977
 ATRIUM OF NORTHWOOD INSTITUTE
 WEST BADEN, INDIANA
 96'-10" (29.51 METERS)



	WEIGHTS	OZ'S	GRAMS
WING	.0080	.227	
PROP	.0056	.159	
REMAINDER	.0144	.408	
	.0280	.794	

PROPELLER

21.5" (546) Diameter
 34" (864) Pitch

RUBBER MOTOR

16.5" (419) Loop
 .057" (1.45) Width
 .044" (1.11) Thickness
 Weight .045 oz. (1.28 gms.)
 1760 Turns

DESIGN & FLIGHT BY BUCKY SERVAITES
 F1D-32c WORLD RECORD 35MIN. 08 SECONDS
 INDOOR AEROMODELS CAT III
 U.S.A. NATIONAL RECORD 35 MIN. 08.5 SECONDS
 INDOOR STICK,, CAT.II

air for almost 17 minutes. Take a look at Easy B times... 5th place was 13:51.4 which would have won last year. Manhattan Cabin, in just one tear, has bloomed. Any time over four minutes was super, but now you better do twice that. Jim Miller did 8:14.5 to beat out Dick Obarski at 7:09. This event has not, as yet, evolved a stereotyped winning planform, and many different designs were seen.

Novice Pennyplane	Time	Index*	Index Place
1. Mike Van Gorder	9:31.4	2.093	1st
2. Walt Van Gorder	7:42.0		

PennyPlane	Time	Index*	Index Place
1. Roy White	11:49		
2. Bob Mullins	10:18		
3. Richard Whitten	10:03	1.187	2nd
4. Richard Doig	9:48.5		
5. Mike Van Gorder	9:31.4		
6. Bob Larsh	7:21		

ROG Stick	Time	Index*	Index Place
1. Richard Doig	15:59.4	.997	5th
2. Dick Obarski	12:09.7		
3. Richard Whitten	11:09	1.0565	3rd

HL Stick	Time	Index*	Index Place
1. Bucky Servaites	35:08.5	1.047	4th
2. Richard Doig	28:44		
3. Al Rohrbaugh	27:38		
4. Richard Whitten	25:57		

Paper Stick	Time	Index*	Index Place
1. Stan Chilton	23:14	.960	6th
2. Dick Obarski	18:31		
3. Richard Doig	17:18		
4. Roy White	15:30		

FAI Stick	Time	Index*	Index Place
1. Al Rohrbaugh	29:55	.925	7th
2. Richard Doig	28:44	.890	9th
3. Richard Whitten	25:57		
4. Dick Hardcastle	25:33		

HL Glider	Time	Index*	Index Place
1. Bob Larsh	129.6	.9075	8th
2. Paul Shailor	116.7		
3. Richard Doig	114.7		

Ornithopter	Time
1. Roy White	2:54.5
2. Richard Whitten	:45.7

ROG Cabin	Time
1. Ron Ganser	25:19.9

Easy B	Time	Manhattan	Time
1. Stan Chilton	16:42.6	1. Jim Miller	8:14.5
2. Bob Mullins	15:34.0	2. Dick Obarski	7:09.0
3. Dick Obarski	14:58.0	3. Bob Larsh	6:15.0
4. Dick Hardcastle	14:06.0	4. Richard Whitten	5:50.0
5. Jim Miller	13:51.4	5. Walt Van Gorder	5:17.4
6. Walt Van Gorder	6:01.4	6. Dick Hardcastle	4:30.2

Qualification Trial Results

MOFFETT FIELD WIND TUNNEL, May 41-15, 1977

	Best two flights	Total	Points
1. Larry Cailliau	36:21 35:19	71:40	100.00
2. Joe Bilgri	35:14 32:55	68:09	95.35
3. Bud Romak	31:44 32:39	64:06	89.95
4. Bob Gibbs	32:01 32:05	64:06	89.72
5. Bob Randolph	32:50 30:38	63:28	88.62
6. Clarence Mather	30:55 30:12	61:07	85.53
7. Cezar Banks	30:07 27:37	57:44	80.41
8. Erv Rodemsky	29:58 27:40	57:38	80.36
9. Paul Allen	25:56 31:38	57:34	80.30
10. Carl Rambo	26:13 17:14	43:27	60.60

WEST BADEN, INDIANA, June 4-5, 1977

1. Jim Richmond	31:35	32:40	64:15	100.00
2. Bill Hulbert	30:52	29:24	60:16	93.80
3. Stan Chilton	28:19	30:41	59:00	91.83
4. Al Rohrbaugh	27:40	29:45	57:15	89.36
5. Bucky Servaites	28:35	27:34	56:09	87.39
6. Ed Stoll	27:07	28:17	55:24	86.23
7. Dick Kowalski	29:59	22:39	52:38	85.91
8. Dick Obarski	27:46	25:48	53:34	83.37
9. Richard Doig	26:24	26:02	52:26	81.61
10. Dick Hardcastle	26:42	25:39	52:21	81.48
11. Ron Ganser	25:14	25:37	50:51	79.14
12. Bill Shailor	25:54	24:47	50:41	78.88
13. Richard Whitten	24:54	24:07	49:01	76.29

N.A.S. LAKEHURST, N.J., June 18-19, 1977

1. Jim Richmond	37:04	39:35	76:39	100.00
2. Ray Harlan	33:08	34:10	67:18	87.80
3. Bob Platt	33:49	31:59	65:48	85.84
4. Sal Cannizzo	32:17	30:55	63:12	82.45
5. Pete Andrews	33:04	29:50	62:54	82.06
6. Dan Domina	30:55	30:46	61:41	80.47
7. Ron Williams	32:13	28:10	60:23	78.78
8. Hal Crane	26:39	31:13	57:42	75.49
9. Bill Tyler	28:20	29:03	57:23	74.86
10. Manny Radoff	27:54	28:13	56:07	73.21
11. Bob Champine	29:25	25:28	54:53	71.60
12. Tom Vallee	23:10	26:24	49:34	64.67

MOFFETT FIELD WIND TUNNEL, July 2-3, 1977

1. Joe Bilgri	36:30	34:38	71:08	100.00
2. Larry Cailliau	32:52	33:20	66:12	93.07
3. Bud Romak	30:12	32:11	62:23	87.70
4. Bob Gibbs	30:43	26:22	57:05	80.25
5. Bob Randolph	27:58	28:54	56:52	79.94
6. Erv Rodemsky	32:25	23:51	56:16	79.10
7. Clarence Mather	26:07	28:38	54:45	74.16
8. Paul Allen	22:47	27:35	52:22	70.81
9. Cezar Banks	17:38	25:02	42:40	59.98

AKRON BLIMP HANGAR, July 3-4, 1977

1. Dick Kowalski	38:00	39:39	77:39	100.00
2. Ray Harlan	37:19	37:55	75:14	96.89
3. Al Rohrbaugh	36:02	37:00	73:02	94.05
4. Dan Domina	35:29	36:59	72:28	93.32
5. Richard Doig	38:33	33:36	72:09	92.92
6. Bill Hulbert	37:00	34:13	71:13	91.71
7. Richard Whitten	35:54	33:53	69:47	89.87
8. Dick Obarski	33:44	34:31	68:15	87.89
9. Bucky Servaites	29:17	38:14	67:31	86.95
10. Ed Stoll	32:50	34:19	67:09	86.48
11. Ron Williams	34:17	28:41	62:58	81.09
12. Sal Cannizzo	29:00	29:24	58:24	75.21
13. Ron Ganser	32:21	18:32	50:53	65.53
14. Bill Shailor	25:01	25:25	50:26	64.95
15. Dick Hardcastle	6:47	11:40	18:27	23.76

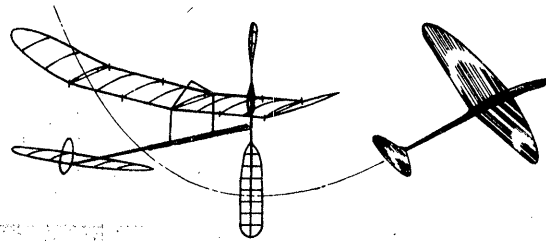
TULSA SOUTH CENTRAL QUALIFICATION TRIALS, July 10, 1977

1. Stan Chilton	18:41	20:52	39:33	100.00
2. Dick Hardcastle	18:35	19:09	37:44	95.40
3. Erv Rodemsky	14:39	20:54	35:33	89.80
4. Bud Tenny	14:21	15:34	29:55	75.60
5. Robert Dunham	12:50	12:58	25:48	65.20

N.A.S. LAKEHURST, N.J., July 23-24, 1977

1. Pete Andrews	37:08	36:09	73:17	100.00
2. Ray Harlan	35:33	35:24	70:57	96.81
3. Bob Platt	33:59	36:57	70:56	96.79
4. Ron Williams	31:17	33:31	64:48	88.42
5. Bob Champine	32:32	28:32	61:04	83.32
6. Manny Radoff	27:52	32:59	60:51	83:03
7. Richard Whitten	28:28	29:12	57:40	78.69
8. Hal Crane	27:54	27:32	55:16	75.64
9. Bill Tyler	30:02	23:33	53:35	73:07

INDOOR



NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

RESULTS FROM THE TEAM FINALS

	1	2	3	Points 1st Day	4	5	6	Total	Finals Points	Program Score
1. Jim Richmond	37:48	40:23	42:06	1200.00	-	1:13	-	82:29	1000.00	1200.00
2. Bill Hulbert	33:17	36:58	36:44	1079.02	32:21	-	-	73:42	893.51	1079.02
3. Dan Domina	36:30	36:15	28:43	1055.82	33:50	37:47	-	74:17	900.59	1074.38
4. Ray Harlan	36:45	34:55	18:53	1062.57	25:46	29:05	-	71:40	868.86	1062.57
5. Joe Bilgri	36:06	33:48	35:18	1060.98	32:50	-	-	71:24	865.63	1060.98
6. Dick Kowalski	36:26	35:36	31:31	1059.22	32:14	11:09	-	72:02	873.31	1059.22
7. Bob Gibbs	33:48	36:27	36:45	1057.42	29:16	29:18	-	73:12	887.45	1057.42
8. Bud Romak	33:58	36:41	34:55	1046.31	2:05	-	-	71:39	868.66	1046.31
9. Ron Williams	32:40	34:36	36:11	1027.66	31:37	-	-	70:47	858.15	1027.66
10. Bucky Servaites	35:54	2:00	13:21	771.45	19:59	33:47	-	69:01	844.82	1019.16
11. Pete Andrews	31:02	31:26	34:52	985.89	25:04	33:30	-	68:22	828.85	1010.91
12. Al Rohrbaugh	29:45	25:00	38:02	1005.19	20:46	20:17	-	67:47	821.78	1005.19
13. Erv Rodemsky	5:44	1:09	31:47	625.11	36:33	-	-	68:20	828.45	998.70
14. Ed Stoll	27:56	32:09	24:37	901.17	33:30	34:02	-	67:32	818.75	991.46
15. Richard Whitten	23:56	24:59	33:06	872.71	20:21	33:51	8:04	66:57	811.68	980.24
16. Dick Obarski	30:18	26:31	36:11	977.28	23:12	-	10:15	66:29	806.02	977.28
17. Larry Cailliau	3:32	30:25	29:38	921.13	34:03	-	-	64:28	781.57	974.64
18. Richard Doig	26:55	21:43	32:26	894.10	28:08	30:57	-	63:23	768.44	942.97
19. Dick Hardcastle	11:39	24:03	31:01	844.52	26:57	3:43	-	57:58	702.77	879.65
20. Bob Platt	11:32	27:54	4:32	661.83	0:26	22:52	-	50:46	615.48	798.11

Qualifiers not competing in the Finals:

	Program Points
Stan Chilton	191.83
Bob Randolph	168.56
Clarence Mather	162.50

1977 NATS RESULTS

Event #1 - Indoor AMA Stick

JUNIOR			
1. 89538	M. Meuser	9:13.6	
2. 10612	D. Stevens	8:55.2	
3. 33725	F. Barragan	8:09.3	
4. 85568	M. Chavez	4:48.0	

SENIOR

1. 30748	K. Bauer	22:47.4	
2. 53002	J. Magnus	16:56.5	
3. 54284	G. Stevens	8:22.0	

OPEN

1. 05848	R. Randolph	24:38.0	
2. 27032	B. Romak	23:37.8	
3. 50570	D. Domina	22:33.3	
4. 03187	C. Sotich	21:35.2	
5. 62433	E. Hoffman	17:17.4	
6. 08133	C. Mather	10:06.1	
7. 77021	C. Banks	9:45.0	
8. 01576	R. Roberti	5:52.0	
9. 00L30	S. Chilton	4:22.5	

Event #2 - Indoor Paper Stick

JUNIOR			
1. 89538	M. Meuser	9:19.7	
2. 10612	D. Stevens	8:34.4	
3. 73740	S. Wittman	5:58.8	
4. 85568	M. Chavez	3:42.0	
5. 33729	F. Barragan	2:41.6	
6. 62790	J. Cunningham	2:17.1	
7. 88768	B. Payne	1:23.0	

SENIOR

1. 54284	G. Stevens	8:50.5	
2. 60034	C. Clemens	8:44.2	

OPEN

1. 50570	D. Domina	18:04.4	
2. 08133	C. Mather	16:37.8	
3. 05948	R. Randolph	16:32.0	
4. 01576	R. Roberti	15:39.1	
5. 14044	B. DeShields	14:59.2	
6. 00L30	S. Chilton	14:53.2	
7. 66601	L. Sutter	14:46.0	
8. 87522	M. Bristol	13:00.3	
9. 29634	R. Clemens	12:50.0	
10. 03187	C. Sotich	12:04.2	
11. 71761	A. Payne	1:16.8	

Event #3 - Indoor Cabin

JR/SR			
1. 33729	F. Barragan	5:33.2	
2. 54284	G. Stevens	3:55.3	
3. 10612	D. Stevens	3:53.6	
4. 73740	S. Wittman	3:34.0	

OPEN

1. 05848	R. Randolph	20:10.8	
2. 50570	D. Domina	14:35.2	
3. 66601	L. Sutter	9:04.7	
4. 03187	C. Sotich	2:44.8	

Event #4 - Indoor FAI Stick

J-S-O			
1. 50570	D. Domina	43:55.0	
2. 08133	C. Mather	43:50.8	
3. 27032	B. Romak	42:54.8	
4. 30748	K. Bauer	42:30.3	
5. 00805	A. Faykun	37:36.8	
6. 53002	J. Magnus	34:46.5	
7. 77021	C. Banks	30:50.0	
8. 03187	C. Sotich	24:13.5	
9. 89538	M. Meuser	19:15.4	
10. 85568	M. Chavez	8:37.0	
11. 33729	F. Barragan	1:11.2	

Event #5 - Indoor Pennyplane

JUNIOR			
1. 89538	M. Meuser	9:07.8	
2. 47807	C. Dimairo	6:13.0	
3. 25553	D. Cope	5:30.4	
4. 73740	S. Wittman	5:03.0	
5. 99847	R. Hutchison	4:37.0	
6. 85568	M. Chavez	3:48.2	
7. 88785	B. Payne	1:35.6	

SENIOR

1. 96478	T. Young	8:00.6	
2. 53002	J. Magnus	5:46.8	
3. 99845	G. Hutchison	4:55.4	
4. 54284	G. Stevens	4:15.0	
5. 81700	P. Munana	2:20.6	

OPEN

1. 62433	E. Hoffman	11:24.2	
2. 08133	C. Mather	10:00.0	
3. 02736	R. Meuser	9:32.0	

Event #6 - Indoor Easy B

JUNIOR			
1. 89538	M. Meuser	6:41.0	
2. 10612	D. Stevens	6:21.6	
3. 78420	T. Stalick	5:14.0	
4. 85568	M. Chavez	4:18.6	
5. 47807	C. Dimairo	4:06.0	
6. 11268	A. Scuro	3:00.0	
7. 20194	M. Scuro	2:26.4	
8. 76535	W. Maio	2:10.6	
9. 89596	J. Grove	1:51.0	
10. 88785	B. Payne	1:25.5	
11. 33729	F. Barragan	:04.5	

SENIOR

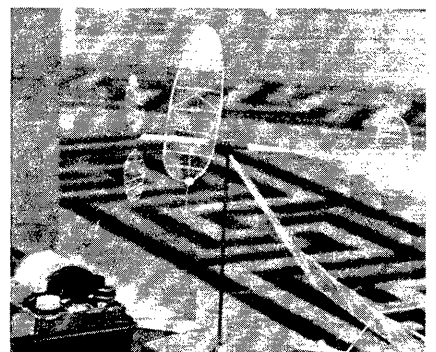
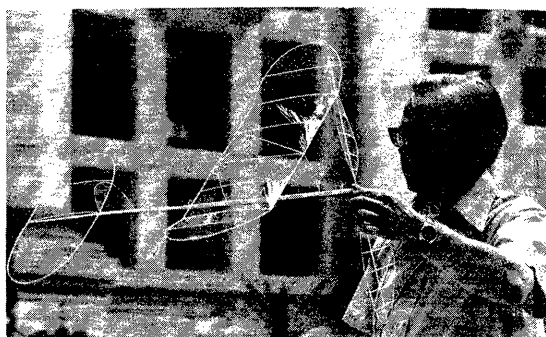
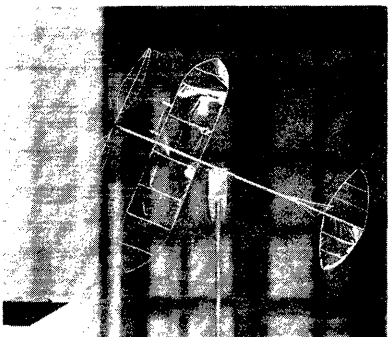
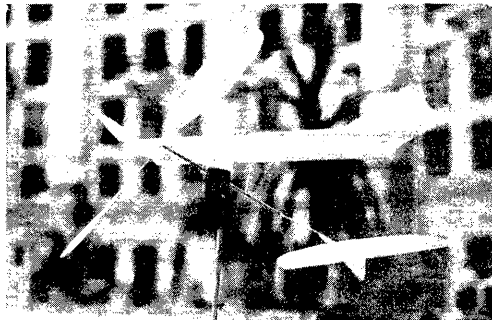
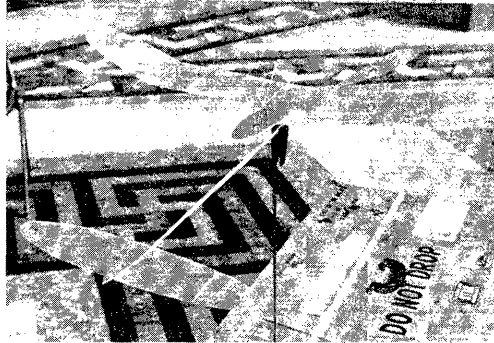
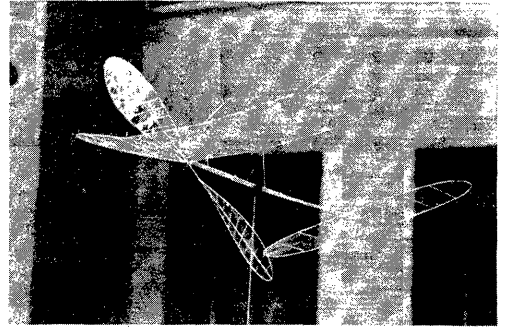
1. 60034	C. Clemens	6:19.0	
2. 54284	G. Stevens	5:34.8	
3. 92595	D. Segle	5:06.4	
4. 52673	B. Grove	4:44.5	

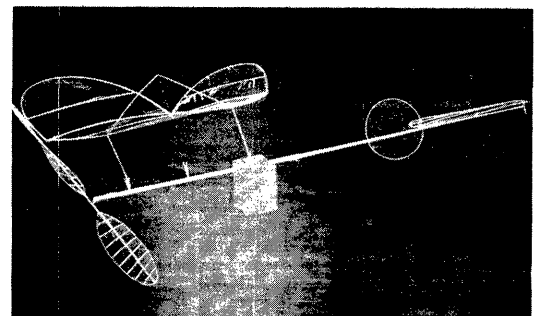
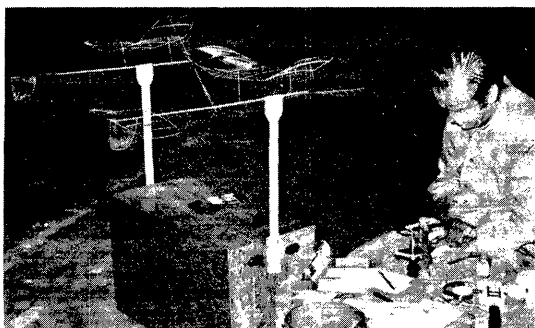
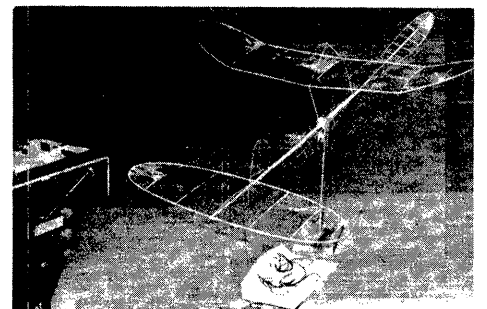
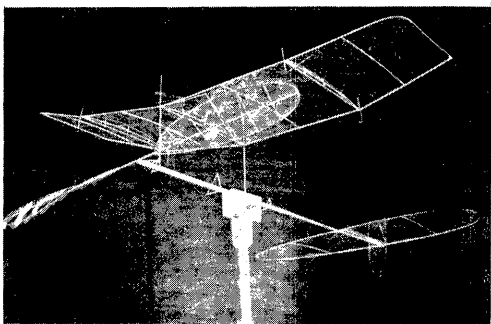
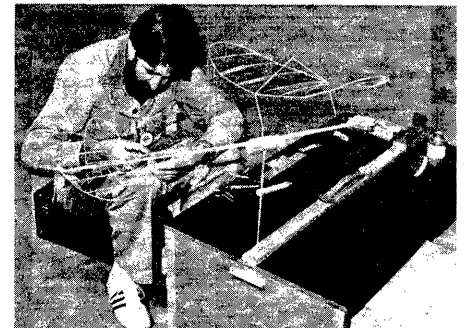
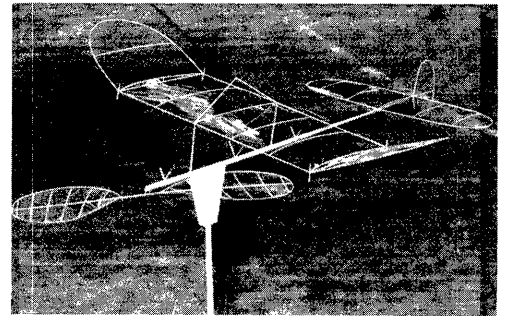
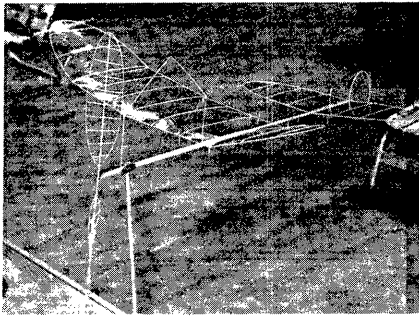
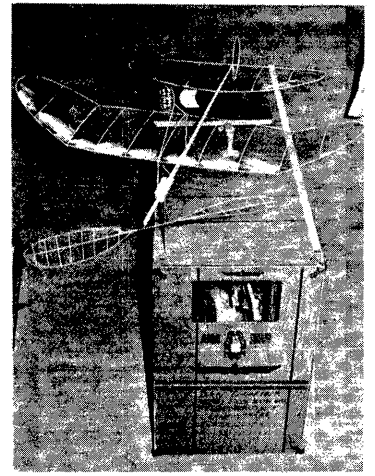
OPEN

1. L30	S. Chilton	16:42.0	
2. 08133	C. Mather	16:33.6	
3. 14044	B. DeShields	11:56.5	
4. 01576	R. Roberti	11:26.6	
5. 29634	R. Clemens	10:30.9	
6. 05703	F. Takagi	10:25.0	
7. 77021	C. Banks	10:07.0	
8. 34649	S. Fink	9:53.5	
9. 66601	L. Sutter	9:42.0	
10. 07738	E. Buxton	8:56.0	
11. 28705	K. Johnson	8:09.4	
12. 62433	E. Hoffman	3:27.0	

Event #7 - Indoor H.L. Glider

JUNIOR			
1. 10612	D. Stevens	107.8	
2. 60557	D. Eble	104.4	
3. 57125	D. Turgeon	102.8	
4. 71337	P. McQuown	97.0	
5. 73506	J. Foster	88.2	
6. 73740	S. Wittman	83.4	





Event #7 con't

7. 62790 J. Cunnyngham	83.0
8. 42826 T. Stalick	63.8
9. 78420 T. Stalick	56.3
10. 76535 W.L. Malo	56.2
11. 88785 B. Payne	44.0
12. 33729 F. Barragan	9.0

SENIOR

1. 82816 G. Sussey	121.8
2. 54284 G. Stevens	119.0
3. 56520 B. Boyer	114.6
4. 92575 D. Segle	92.2
5. 46334 C. Taft	87.6
6. 33224 J. Lueken	85.6
7. 36055 J. Smead	85.0
8. 61362 S. Mounsey	81.0
9. 9535 B. Lepak	72.6
10. 87011 R. Fessler	53.0
11. 81700 P. Munana	39.4

OPEN

1. 51191 B. Blanchard	138.0
2. 07334 L. Hines	127.8
3. 50570 D. Domina	127.4
4. 06152 R. Wittman	124.0
5. 60558 D. Eble	121.1
6. 14044 B. DeShields	120.4
7. 11554 V. Cunnyngham	110.6
8. 83658 R. Harper	108.6
9. 18320 P. Stober	102.4
10. 02331 T. Hutchinson	101.6
11. 34834 M. Smith	101.5
12. 05869 C. Markos	101.0
13. 01576 R. Roberti	94.8
14. 79878 R. Secor	92.4
15. 77832 P. Tsiknopoulos	90.2
16. 00138 S. Geraghty	87.8
17. 09534 D. Lepak	85.5

18. 26406 M. Thompson	85.2
19. 04757 C. Stout	78.8
20. 73297 C. Adams	74.6
21. 09403 H. Fessler	72.8
22. 15430 C. Sanford	70.2
23. 86571 G. Guiles	68.5
24. 88171 T. Rimert	66.2
25. 24538 T. Naccarato	65.3
26. 00531 J. Norcross	65.3
27. 57046 G. Fessler	61.9
28. 11054 K. Varnau	52.0
29. 05472 J. Combs	41.4
30. 4483 P. Lloyd	35.8
31. 71761 A. Payne	31.8
32. 85567 C. Davis	18.0

Event #8 - Indoor AMA Scale

JUNIOR/SENIOR

1. 33729 F. Barragan	113.0
2. 73740 S. Wittman	113.0
3. 85568 M. Chavez	73.0
4. 63113 S. Oliveria	64.5

OPEN

1. 08133 C. Mather	169.5
2. 50570 D. Domina	166.0
3. 22239 D. Srull	154.5
4. 03187 C. Sotich	143.0
5. 29634 R. Clemens	131.5
6. 19349 B. Hannan	127.0
7. 63710 M. Mulligan	126.0
8. 28070 H. Warner	123.5
9. 36130 G. Thomas	123.5
10. 28705 K. Johnson	122.0
11. 38289 J. Macay	117.0
12. 78556 G. Meyer	103.0
13. 34834 M. Smith	93.0

14. 77700 W. Mooney	87.5
15. 63115 J. Oliveria	71.0

Event #9 - Indoor Peanut Scale

JUNIOR/SENIOR

1. 76748 K. Hannan	250.0
2. 60034 C. Clemens	172.0
3. 81700 P. Munana	129.0
4. 60557 D. Eble	113.0
5. 52673 B. Grove	99.0
6. 42826 T. Stalick	97.3
7. 73740 S. Wittman	78.7
8. 63113 S. Oliveira	68.0
9. 33579 D. Babb	65.8
10. 33729 F. Barragan	62.0
11. 85568 M. Chavez	46.0

OPEN

1. 05848 R. Randolph	584.2
2. 09403 H. Fessler	288.0
3. 01576 R. Roberti	258.0
4. 28705 K. Johnson	243.0
5. 54288 R. Baxter	233.0
6. 03187 C. Sotich	231.2
7. 19349 B. Hannan	215.3
8. 29634 R. Clemens	206.7
9. 33222 J. Lueken	183.8
10. 00917 J. Murphy	183.0
11. 60558 D. Eble	175.0
12. 78556 G. Meyer	160.0
13. 77700 W. Mooney	157.2
14. 34649 S. Fink	153.0
15. 36130 G. Thomas	139.0
16. 28070 H. Warner	124.0
17. 24362 R. Powers	105.5
18. 15430 C. Sanford	104.0
19. 38289 J. Macay	102.0

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

Behold, you see before you an issue consisting almost 100% of contributions and efforts by others. The Nats results were pasted up (saves typing!) from copies of the Nats newsletter (published daily at the Nats by dedicated hard workers) furnished by Stan Chilton, and all photos were furnished by Stan. Ed Whitten did a super job of working up a detailed report of the FAI Finals results, and made sure I had a copy. By the way - Ed Whitten spent much of the summer CD'ing or co-CD'ing West Baden, the FAI Finals and one or more other FAI trials sessions. He also wrote reports of West Baden and the Finals for Model Aviation. Thanks, Ed!

West Baden Picture Story

These photos appear on page 2, if I don't goof. Three columns, listed top to bottom:

Left

1. Bill Shailor weighs in for an official flight.
2. Bill Hulbert and his FAI.
3. Dick Obarski's A ROG.

Center

1. Co-CD's John Martin (1) and Ed Whitten alertly timing.
2. Stan Chilton pater stick.
3. Stan Chilton's 16:42 Easy B.
4. Al Rohrbaugh and a flawless FAI.

Right

1. Dick Kowalski's FAI.
2. Richard Hardcastle prepares for a flight.
3. Stan Chilton FAI.
4. Paul Shailor's A ROG.

FAI Finals Picture Story

Photos on page 3, three columns:

Left

1. Bill Hulbert and 2nd place model.
2. Kowalski FAI
3. CD Ed Whitten "pushing paper".
4. Ray Harlan's 4th place model.
5. Erv Rodemsky with models.

Center

1. Jim Richmond with "Cat Walker".
2. Richard Doig's shop away from home.
3. Richard Whitten ponders strategy.
4. Dan Domina repairs in style.

Right

1. Dan Domina's model and box. Note window allowing view of models inside.
2. Bud Romak's model.
3. Ron Williams hard at work.
4. Bucky Servaites' model.
5. Dick Hardcastle's model.

Bucky's Blades

Bucky Servaites, 7660 Duffield Circle, Centerville OH 45459, has a number of replacement blade sets for the large rotary rubber strippers made by Ryszard Czechowski of Poland. The cutter blades have an inside diameter of .472" and o.d. of .812", and the price is \$5 per pair, no limit per customer. He has no strippers left, and is making no money on the deal - just doing a favor.

NFFS Top Ten

Each year the National Free Flight Society honors model designs and their creators by choosing outstanding models in various classes. Normally one indoor HLG and one indoor model is chosen, but this year two indoor rubber models were chosen. Let's have a round of applause for Dick Kowalski (Super Star, absolute World Record of 50:41) and Bud Romak (Grand Gram, winner of the '76 WGH). Clarence Mather serves as Chairman for the whole program which picked eight other free flight models in four FAI classes, two AMA power FF classes and two special classes. This year the special classes were rubber powered speed and A-1 Nordic. Jim Richmond served as chairman of the indoor section, and contacted a number of other indoor fliers for suggestions and nominations.

CONTEST CALENDAR

FLORIDA - Miami

Indoor sessions at the Goodyear Hangar, Opa Locka Airport, Nov. 20, Dec. 18, 1977 and Jan. 22, Feb. 19, Mar. 19, Apr. 16 and May 21, 1978. Verify site availability by calling 305-858-6363.

NEW YORK - New York City

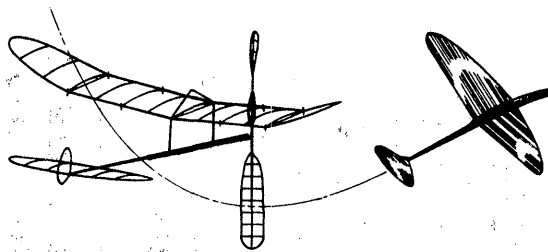
Indoor sessions (no HLG) at Low Library Rotunda, Columbia University, New York City, 9 am - 5 pm, Oct. 23, Nov. 13, 1977. Contact Ron Williams, 1364 Lexington Ave., New York NY 10028.

OKLAHOMA - Oklahoma City

Indoor contests at National Guard Armory, 200 NE 23rd St., Oklahoma City OK, Nov. 20, Dec. 18, 1977 and Jan. 22, Feb. 19, Mar. 19, 1977. HLG, Pennyplane, Easy B, Peanut Scale. Contact Al Bissonette, Aero Hobbies, 6238 SE 15th, Midwest City OK 73110.

INDOOR

NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

Most of the "meat" in this issue deals with the very controversial Cat. I HLG flight made last summer by Stan Stoy. His well-known "COOT" design made a series of very long flights in a room filled with air made very turbulent by air circulation fans. The record was allowed, and some fliers have challenged it. FF Contest Board Chairman Joe Boyle disallowed the record in a memo of Nov. 2, 1977. However, any such ruling must be by vote of the Contest Board; such action was not taken. Since then, a number of protests to Boyle's action (most such protests based on failure to use proper procedure) has resulted in a formal ballot being circulated to the Contest Board. At this time, a number of FFCEB members are lined up on each side of the question. If the FFCEB does disallow the record, it will then be morally obligated to define what conditions present in an indoor site are acceptable for record flying. While it may be possible that Stan has discovered a loophole in the rules, I am convinced that he has also produced a model with superior aerodynamic characteristics compared to present models. I hope that these flights can be a source of added knowledge without being a divisive force. Beyond a doubt, the rules matter will be sorted out as it was in the early '60's when microfilm-covered "drop" gliders held all the records after finding strong thermals over sunspots on the site floors. Let's all keep our cool and wish for wisdom on the FFCEB sufficient to write a good rule. For those who haven't tried it, writing good model competition rules is extremely difficult, and requires patience and cooperation from all members of any such rules-making body.

NIMAS Awards

It has been some time since this column has appeared, so perhaps a review is in order. A long time ago it was felt that NIMAS should have an awards system for indoor fliers - one which recognized performances out of the ordinary and yet not exceeding the national record for the model class. A three-tier system resembling the sailplane flier award system was set up. The qualifying times for Open fliers are listed below, and Junior times are 75% of the Open times. For more information, send a SASE for a NIMAS Award application sheet, which tells all.

Indoor Stick (Any class indoor model; single flight)

AWARD	Cat. I	Cat. II	Cat. III
Silver	10:00	20:00	28:00
Gold	12:30	25:00	25:00
Diamond	15:00	30:00	42:00

Indoor HLG (Best single flight of nine)

AWARD	Cat. I	Cat. II	Cat. III
Silver	0:24	0:45	0:55
Gold	0:30	0:55	1:05
Diamond	0:36	1:05	1:15

The following awards have been accumulating, waiting patiently to be announced:

Silver Cat. I HLG Award - 0:29.1, Richard Doig

Gold Cat. I HLG Award - 0:30.5, Richard Doig

Silver Cat. III Rubber Award - 30:59, Richard Doig

Gold Cat. III Rubber Award - 38:33, Richard Doig

Gold Cat. II Rubber Award - 26:05.5, Richard Doig

Gold Cat. II Rubber Award - 25:25.4, Richard Doig

NIMAS Aces

A NIMAS Ace is someone who has completed all three of the Silver, Gold and Diamond awards. Dan Domina's third place HLG time included a 1:05 flight to qualify for Diamond Cat. II HLG Award. He has previously qualified for Silver and Gold in Cat. II HLG, so this flight qualified Dan for Ace. Incidentally, Dan is just one flight away from Ace in both Cat. I and Cat. III HLG.

How Much Does INAV Cost?

A number of people have requested an occasional listing of membership and subscription costs for INAV, so it will appear more often than once a year. Until either postage or printing costs go up: NIMAS membership + INAV, \$3.50. INAV only - \$2.50. Those prices good for North American continent; for overseas subs: \$3.50/year via sea-mail, \$5.06 via air mail. The air mail represents just a straight feed-through of the postage differential, believe it or not!

A note on how to tell when your subscription will run out - the number in the upper left-hand corner of the address label represents the month of your last issue.

What's The Ceiling Height?

Most reporters are pretty careful to send the ceiling height along with contest reports, but let's try for 100%. In some cases I can look it up in past INAV's if the site has been reported on before, but it's better coming in with the other data.

"Ten Model" Nominations Wanted

Anthony Italiano, 1655 Revere Dr., Brookfield WI 53005 is the Chairman of the NFFS "Ten Models of the Year" committee for the 1978 selections. If you know of models that should be nominated, please send Tony the info now. Categories are: FAI Power, Wakefield, Nordic, Outdoor Rubber, Indoor/Outdoor HLG, Small AMA Class, Large AMA Class, Indoor Rubber, and any special awards nominations. Tony hopes to finalize selections as soon as possible after Jan. 1, 1978, so the need for promptness is apparent.

CONTEST CALENDAR

CONNECTICUT - Glastonbury

"Fighter Fiasco", Dec. 11, 1977; "Winter Wings", Feb. 12, 1978 and "Spring Fling" all are contests sponsored by the Glastonbury Modelers at the Glastonbury High Gym. The events include 5 scale classes, Tissue endurance, Penny-plane/Easy B and HLG. Contact George Armstead, Box 514, Glastonbury CT 06033, ph. 203-633-7836 for specific events at each meet, rules, etc.

FLORIDA - Miami

Indoor sessions at the Goodyear Hangar, Opa Locka Airport, Dec. 20, 1977 and Jan. 22, Feb. 19, Mar. 19, Apr. 16 and May 21, 1978. Verify site availability by calling 305-858-6363.

NEW YORK - New York City

Indoor sessions (no HLG) at Low Library Rotunda, Columbia University, New York City, 9 am - 5 pm, Dec. 18, 1977 and Jan. 8, Jan. 29, 1978. Jan. 8 session is Manhattan contest, others record trials. Contact Ron Williams, 1364 Lexington Ave., New York NY 10028.

NEW YORK - Rochester

Indoor sessions on 1st & 3rd Sundays each month, 1 pm - 5 pm, at the Kodak Office auditorium, 343 State St. in Rochester. Main emphasis is on father-son/daughter participation, with most activity in AMA Racer/Cub, Peanut Scale and Easy B. Contact Bob Clemens, 95 Shoreway Dr., Rochester NY 14612.

OKLAHOMA - Oklahoma City

Indoor contests at National Guard Armory, 200 NE 23rd St, Oklahoma City, Dec. 18, 1977 and Jan. 22, Feb. 19, Mar. 19, 1978. Contact Al Bissonette, Aero Hobbies, 6238 SE 15th, Midwest City OK 73110.

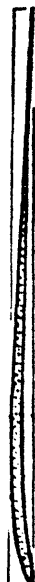
OREGON - Albany

Indoor contests Jan. 8, Feb. 12, Mar. 5, Apr. 2, 1978. Sponsored by the Willamette Modeler's Club, Inc. at the South Albany High School Gym, 3705 S. Columbus St., Albany Oregon; site has 42' ceiling with few obstructions. Contact Bob Stalick, 1120 Shady Lane, Albany OR 97321, ph. 503-928-8101, for contest details and rules.

TEXAS - Ft. Worth-Dallas

Tentative plans for contest at Dallas NAS Drill Hall, Feb. 5, 1978, 1 pm - 5 pm. Probable events: Penny/Easy B, Peanut, HLG. Contact Ed Turner, 3544 Granada Dr., Ft. Worth TX 76118, ph. 817-589-1519.

SMS AIRFOIL




1/8	1/4	3/8	1/2	5/8	3/4	7/8	1
.035	.042	.047	.051	.053	.054	.055	.054
1/8	1/4	1 3/8	1 1/2	1 5/8	1 3/4	1 7/8	2
.052	.049	.046	.043	.040	.037	.034	.031
2 1/8	2 1/4	2 3/8	2 1/2	2 5/8	2 3/4	2 7/8	3
.028	.025	.022	.019	.016	.013	.010	.008

AIRFOIL THICKNESSES AT 1/8 INCH APART STATIONS

BUILD WITH 0°, 0° INCIDENCE THEN WARP DOWN FLAPS 1/16 INCH

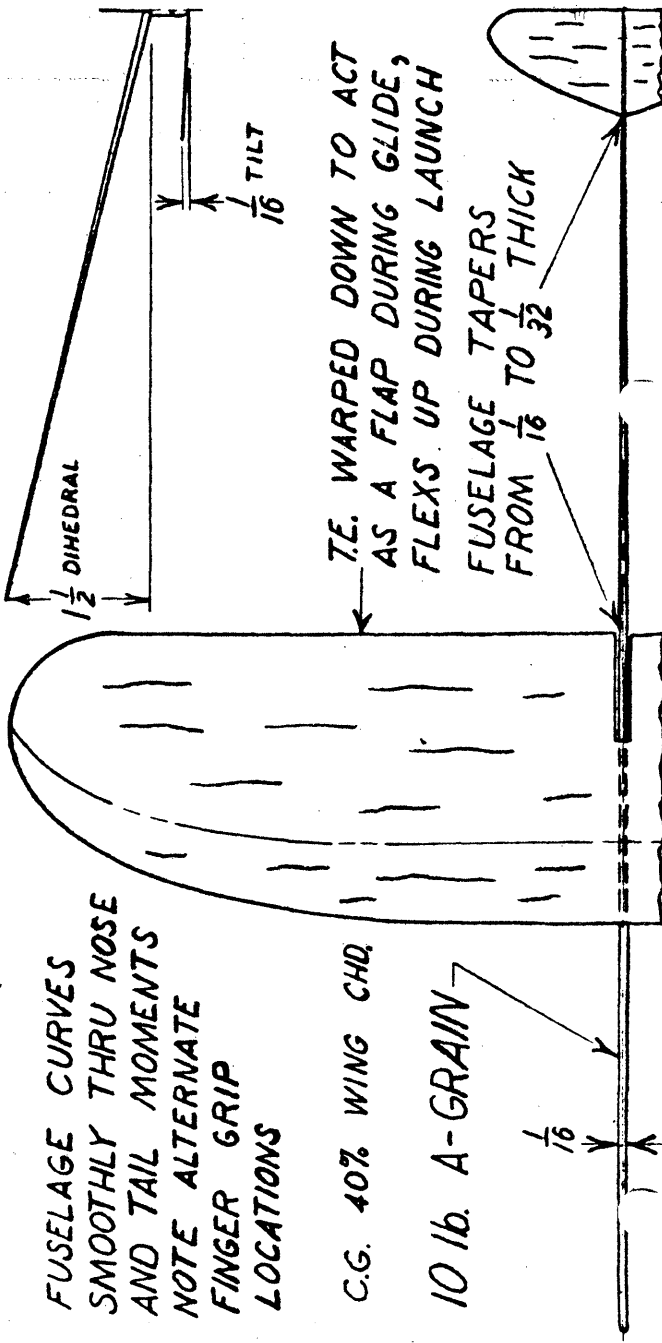
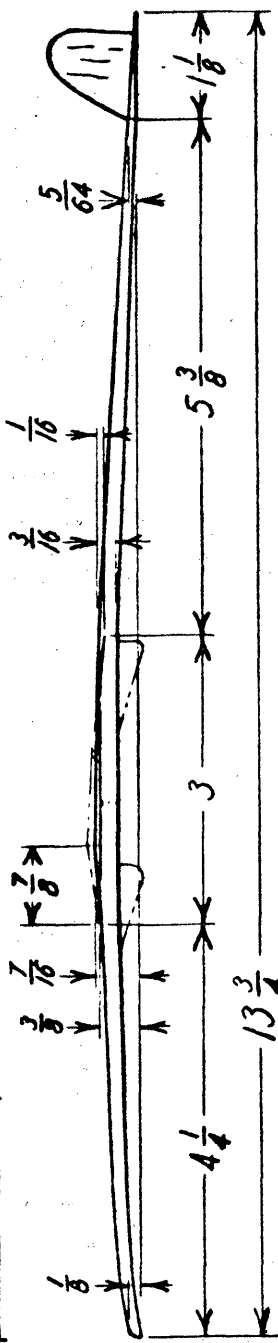
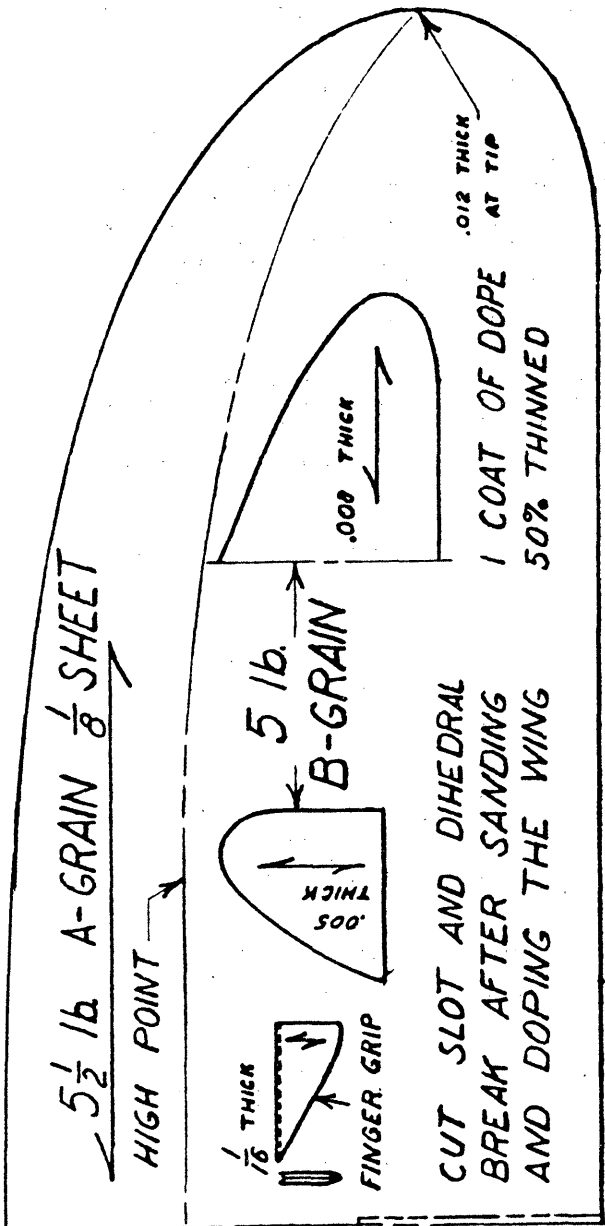
VERTICAL LAUNCH, 17 FT. DIA GLIDE CIRCLE

ASSEMBLY DRAWINGS 1/2 SCALE ALL OTHERS FULL SIZE



4

WEIGHT: 2.25 GRAMS
 PROJ. WING AREA: 31 IN²
 DESIGNED BY:
 MIKE & STAN STOY
 DRAWN BY STA. STOY



Bromley Hall #1311
910 S. Third St.
Champaign, Ill. 61820

Dear Bud,

The first thing that I must do with this letter is apologize for my long delay in writing it. I can only offer as my excuses the usual hectic circumstances involved in beginning a new semester of school and more importantly my lack of understanding of the stability characteristics of the Coot glider. To this second matter I have been directing a great deal of my time in an effort to answer your request for my thoughts on this matter. Unfortunately I have not been able to resolve a number of the more complex dynamics problems that this airplane and the turbulent gym have presented; however I didn't want to delay this letter any longer. I will at least attempt to present a few of the more straight forward reasons for the Coot's unusual performance.

I will begin by writing down the two questions that my comments will attempt to answer. Why was the glider, flying in a gym with apparently equal volumes of rising and falling air, able to take advantage of the ascending air without suffering equal losses from the descending air? In addition to the first question is the one of why the glider was not upset beyond the point of recovery even though the sight was extremely turbulent?

I think that the first comment that should be made is that the Coot has demonstrated excellent still air times, thus obviously possessing a good sink rate (32ft/39.6 sec = .808 ft/sec, March 1976, East St. Louis Armory, time doesn't include launch but does include ground effect). Without this low sink rate the Coot wouldn't have been able to have taken advantage of rising air to to such a degree as was possible. It is worth noting that even though the Coot possess an excellent sink rate it doesn't have a good glide ratio in its gliding configuration. The combination of a poor glide ratio with a good sink rate contributes to both stability and duration in an advantageous manner. This fact will be elaborated on later in my comments.

The next two features that contribute to the ability of the Coot to handle turbulent air, in addition distinguishes it from most other low ceiling gliders being flown today. I am referring to the design's size and weight. It has about 60% of the wing area and about 40% of the weight of more orthodox designs. These characteristics contribute to very low moments of inertia and a very low wing loading without significantly reducing its launchability.

The light weight of the glider prevents it from building up very much momentum at even the accelerated speeds encountered when flying through descending gusts. This low total momentum increases the decelerating and damping effects of the drag forces, which are relatively high as demonstrated by the glider's poor glide ratio. The high drag and low inertia contribute to a heavily damped phugoid mode (roller - coaster like flight path at constant angle of attack).

The low moments of inertia about the lateral (pitch) / longitudinal (roll) axis impact directly the glider's longitudinal/lateral dynamic stability. These very low moments of inertia permit the short period oscillations (angle of attack changes along a straight line flight path) to be quickly damped out by aerodynamically produced moments.

Bud Tenny comments:

I attended the record session where Stan's flights were made and observed both the conditions and the flights. To begin with, some commentary I've seen indicated a basic misunderstanding on the part of some people. Although there was a stupendous amount of air-conditioning, the room was closed and all air was being recirculated; net air displacement was zero. With six massive blowers directing air straight down, air splashed off the floor in all directions - there was no quiet air in the room. It must also be noted that there were no visible controls for the air system - the room is under continuous air circulation apparently controlled from a central point. Stan had no options - take it as is or leave it.

Speaking as a CD and as Assoc. VP, the entire contest procedure was "by the book". In fact, Stan jealously guarded that aspect of the event as much as the rest of us.

The first time I observed a really long flight, I was sure that chance played a major part - surely the glider "happened" to

The low wing loading (.079oz./sq. in.) permits the Coot to turn very tight glide circles (15ft. diameter). This is understandable if the fact that turning radius is directly proportional to wing loading is recalled. In addition to its low wing loading the short span of the Coot (12in.) reduces the spanwise velocity gradient. This reduces the adverse yaw, further contributing to the glider's ability to turn tight. This tight turning radius appears to have contributed to the exceptional performance of the glider by permitting it to turn inside of the rising cells of air that it encountered.

I have left for last the most common stability consideration. I refer to the longitudinal CG location which directly impacts the aircraft's static margin. The further forward the CG location is the more statically stable the aircraft is. With this in mind, the Coot's CG was advanced approximately 5% of the mean chord. This forward movement of the CG increases the slope of the pitching moment versus angle of attack curve. In other words, the plane generates a larger restoring moment per degree of angle of attack change. This means that the moments that are aerodynamically generated to damp the short period oscillations, resulting from external disturbances, are increased. As a direct result of this additional stability the aircraft's speed stability is increased. Speed stability can be understood as the tendency of the plane to remain at its trim air speed.

I think that each of the above mentioned points have contributed to the stability and performance of the Coot which enabled it to take advantage of the turbulent conditions present in the T.C.U. gym. As is the case of most designs no one factor is responsible for its performance but rather a blending of designed in features determine the overall performance.

Bud, this is as far as I dare go at this time in commenting on the glider's flight characteristics. I don't think that what I have said holds any great revelations. The points that I made don't answer the first question. In my opinion, an explanation of why the glider was able to take advantage of what appeared to be equal volumes of rising and falling air, as was especially true of the 64 second flights (3 total) which traversed almost 3/4 of the length of the gym, is hidden in the transient and flexible aerodynamics. It is my feeling that the extreme flexibility of the .003 to .008 of an inch thick tail surfaces contributed to the glider's stability by modifying its rigid $C_{m\alpha}$ curve. However, at present this is only a hypothesis. I am in the process of working out the details, which are rather involved. If my hypothesis can be verified I will send you details.

I hope that this letter is close to what you had in mind when we spoke at T.C.U. Thank you for your interest in this matter and for your time along with your patience.

Incidentally, the AMA approved the record on 8-25-77. There didn't seem to be any questions or hesitation. However, recently I have heard rumors that some protest have been lodged on some rather shaky grounds. If this is true no one has officially said anything to me as of 10-10-77.

Keep 'em up longer,

Stan
Stoy

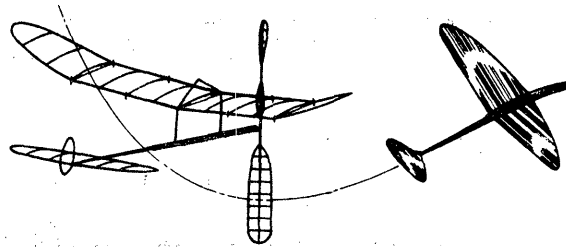
hit more up air than down air. After watching about 50 flights, I was convinced that the glider possessed aerodynamic characteristics not shared by other gliders which were flown (tried, anyway) in the same conditions. I also participated in attempts to fly a record-holding Pennyplane model. Even with very high power on a small prop and trim for relatively high speed flying, this model was helpless.

Since that night, it has often occurred to me that all indoor models could benefit from research into turbulent air flying, even if the conditions could never approach the magnitude of turbulence mastered by "COOT". I remember many a contest that had mostly turbulence rather than straight-line drift; the day would be spoiled and the fun gone. In retrospect, I'm sure my models could have done better with the little I now know about changing trim for poor conditions. Although it surely would take different designs for optimum turbulent-air flight, isn't it quite possible that the new design could do well in good air?

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



NATIONAL INDOOR MODEL AIRPLANE SOCIETY

Publication Dates

In order to alleviate some confusion for all of us, note will be made of the publication month as well as the date which appears in the masthead. For example this is the Jun/Jul '77 issue, published in Fe. '78. No doubt this will make the issue easier to understand when it is read as a back issue!

Update: Stan Stoy

Since the May '77 issue which dealt mostly with Stan Stoy's turbulent air IHLG record, a number of things have happened. First, the FFB upheld the legality of Stan's flights by a good margin. Shortly thereafter, at a Dec. 11, 1977 contest in East St. Louis, Stan won a Cat. I HLG meet with a score of 79 2/5 sec. After the meet, he flew two more 9-flight sequences for record trial purposes, and one of those sequences produced 79 3/5 for a new record again. The model used was a new "Coot" with 2" more span and a more elliptical leading edge; weight was 2.4 grams.

and a more elliptical leading edge; weight was 2.4 grams. Air in the site was dead calm and 50°F during the warmest part of the day.

On Jan. 16, 1978, Stan wrote Frank Ehling, Technical Director of AMA and requested that his turbulent air record be stricken from the official listing. He gave the following reasons:

1. I feel that its continued presence will only serve to irritate some competitive fliers and will not provide a constructive goal for competitors to attempt to better. Isn't this the real purpose of keeping records?
2. Modelers have decided that the tactic of turbulence rectification is not an option that they want available to the indoor flier, at least not for the purpose of establishing records.
3. It has served the purpose of bringing up for discussion the rather vague rules for indoor competition and record establishment. Its continued presence on the books will not further this goal.

Stan is to be doubly or triply congratulated. First, he perceived a weakness in the present rules which few people could have been persuaded to worry about. He then used the rule's weakness to demonstrate his point - and got our attention. Having gotten our attention, he then removed the burr from beneath our saddle. Finally, he sallied forth and re-captured the record in more traditional fashion! Good show!

Third NIMAS International Record Trials

In keeping with the practice of last year, the mouthful above would be shortened to THNIRT; there's gotta be a better solution! Besides, could we publish it when the fourth one comes along? Anyway, THNIRT is tentatively being set for June 23-25, 1978. More details and confirmation as soon as possible.

What Went Wrong With SNIRT?

Yes, it is late to be asking that question, but I must ask it anyway. A chorus of remarks, "Sure wish I had been there!" and "Wait 'til next year!" Well, when next year came along, SNIRT planners were reminded a bit of the well known graffiti: "Suppose they had a war and nobody came?"

Feedback was pretty low last year, but one comment was noted: "Can the date of the NIMAS Annual be announced earlier next year so vacations can be planned in January of February? The announcement above is a lot earlier, but may not be early enough. So what else kept everyone away from the fun and games?"

'78 Nats

The 1978 Nats will be at Lake Charles, La., the last week in July. Presumably, Indoor will be held at the 55'

Lake Charles Civic Center Arena. This is an excellent site with only one major obstruction - a scoreboard/speaker which caught many models in 1974. In 1975, it was covered by a plastic shroud which almost completely eliminated the problem. Top times have been 22+ with FAI Stick and 101.6 sec. in HLG.

Southwest Modelers Show

The 2nd Annual Southwest Modelers Show was held in Dallas Jan. 22-23, 1978. NIMAS again had a booth, manned by Ed Turner, Jess Shepherd, Mike Fedor and Bud Tenny. A number of people learned a lot about indoor from the slide show and display of models, photos and modeling paraphernalia. You (we) were very well represented, and Ed and Jess deserve much thanks for the leg work in making all the necessary arrangements for the booth.

Spread The Word!

On the front page of Section B of the Nov. 7, 1977 MIAMI HERALD, there appears a quarter-page spread with the title "They Found That Big 2nd Childhood in the Sky". This is a very well written review of the monthly indoor activity in Miami (Florida). Congratulations to the M.I.A.M.A. group for getting this coverage! Maybe some one from the group could share how they happened to accomplish the contact?

Easy B Times Soar

As John Martin mentioned in his report on SNIRT, Easy B is getting less easy all the time. Two of the higher U.S. times which have been reported to INAV are Stan Chilton's 16:42 at West Baden and Jerry Skrjanc's 17:42 (unofficial) at the May '77 Akron session. Rumor has it that Pete Andrews has done 20 minutes at Lakehurst, but Free Flight News (by Ian Keynes, England) reports that David Pym did 20:07 with an Easy B weighing .8 grams. The motor was a 16" loop of .048 pirelli weighing .87 g. launched with 2050 turns; model almost deadsticked. The prop was 14" diameter, and pitch was 22 1/2" + 4° incidence. Anyone else out there with good Easy B times?

Double-Covered Props?

Every so often, the subject of double-covered props comes up. Bob Champine experimented with this years ago, and as I remember, had no conclusive results. Has anyone else done anything with this kind of prop?

Here's How

It has been noted previously that an increasing amount of camera-ready material is being received. For those who wish to contribute in this very helpful fashion, here are some basic guidelines:

1. Typed material should be done on machines with a new or nearly new ribbon and Pica type. Set the left margin at 6 and the right at 62. Using no more than two characters after pressing "margin release", the right margin is at 64. (The copy will be 5.8" wide, max.)
2. Drawings and sketches: use black ink or extremely dark pencil lines. The new "wet ink" ball point pens such as Pentel Extra Fine are satisfactory, as are Pilot "Fineliner" or Razor Point" and the new Flair pens with similar very fine tips.
3. Style: Whatever turns you on. After contrast, which comes from using black ink and new typewriter ribbons, legibility and a good explanation are what counts.

It has been my experience that almost everyone who builds indoor models develops neat little techniques which make the task easier, faster or better in some way. All of us benefit when ever anyone shares their ideas.

FAI INDOOR REPORT

WCh Site Set

At the December '77 CIAM meeting, Romania withdrew from hosting the 1978 Indoor WCh. This late action caused a scramble to find a host, and a serious attempt was made

to complete arrangements for the event to be at Lakehurst. When all the costs were pulled together, the entry fee would have been prohibitively high. So England stepped in and agreed to host the '78 WCH at Cardington at the end of August.

Bill Hulbert Honored

One of the awards supposed to be made annually by the FAI Indoor Committee is the "most improved flier" award. Bill Hulbert was chosen for 1977 - his will be one of the names engraved on the perpetual Pete Andrews Most Improved Flier trophy when it finally becomes reality. Congratulations to Bill!

RECORDS? MAYBE!

The listings below are presented to help catch up and to provide a belated recognition for these fliers.

- Aug. 27, 1977 Sunnyvale (CA) Community Center (30')
 - Cat. I Jr. Pennyplane - 7:38.2, Marnie Meuser
 - Cat. I Jr. Novice Pennyplane - 6:53.4, Marnie Meuser
 - Cat. I Jr. Paper Stick - 7:38.2, Marnie Meuser
 - Cat. I Open Pennyplane - 9:25.4, Bob Meuser
 - Cat. I Open Novice Pennyplane - 8:09.0, Bob Meuser

- Oct. 2, 1977 Lakehurst NSA, Lakehurst, NJ
 - Cat. III Sr. A ROG - 15:51.5, Mark Drela

- Oct. 30, 1977 Goodyear Aerospace Hangar, Akron OH
 - Cat. III Open Cabin - 30:28.4, Ron Ganser

- Dec. 11, 1977 E. St. Louis Armory, E. St. Louis MO (31')
 - Cat. I Open HLG - 79 3/5 sec, Stan Stoy

CONTEST CALENDAR

FLORIDA - Miami
 AMA Cat. II contests at the Goodyear Blimp Hangar, Opa Locka Airport, Mar. 19, Apr. 16 and May 21, 1978, 9 am to 5 pm. Verify site availability by calling 305-858-6363 to be sure the contest is still on.

ILLINOIS - Chicago
 Indoor Fun Fly - Stock Delta Dart - with kits and rubber motors furnished (must use furnished motors) for Junior Novice, Sr.-Open Novice and Expert classes. Held at Forest View High School on Goebbert Rd. between Golf and Algonquin Roads; Feb. 28, 1978, 10 am to 3 pm. Rudy Schuh is CD, contact him at 267 E. Country Line Rd., Barrington IL 60010, ph. 312-381-4611.

MISSOURI - St. Louis
 St. Louis Indoor Flying Championships, Cat. II Class AA indoor contest, Mar. 19, 1978. HLG, Easy B, Pennyplane, Novice Penny (restricted to fliers who have never exceeded 5 minutes in official competition), Indoor Stick, Manhattan Cabin, Peanut Scale. Site is E. St. Louis Armory.

NEW YORK - New York City
 Indoor Record Trials Mar. 12, 1978, Manhattan Contest Feb. 26, 1978 and AMA Scale Contest Mar. 26, 1978 at Low Library, Columbia University, NYC. Ceiling height 105', flying times 9 am to 5 pm each day. Contact Ron Williams, 1364 Lexington Ave., New York NY 10028 for more info.

NEW YORK - Rochester
 Indoor sessions 1st & 3rd Sundays each month, 1 pm to 5 pm, at the Kodak Office Auditorium, 343 State St. in Rochester. Major emphasis is on father-son/daughter participation, with most activity in AMA Racer/Cub, Peanut Scale and Easy B. Contact Bob Clemens, 95 Shoreway Dr., Rochester NY 14612.

OKLAHOMA - Oklahoma City
 Indoor contests at National Guard Armory, 200 NE 23rd St., Oklahoma City, Mar. 19, 1978. Contact Al Bissonette, Aero Hobbies, 6238 SE 15th, Midwest City OK 73110

OREGON - Albany
 Indoor contests Mar. 5, Apr. 2, 1978, sponsored by the Williamette Modeler's Club, Inc. at the South Albany High School gym, 3705 S. Columbus St., Albany, Oregon; site has 42' ceiling with few obstructions. Contact Bob Stalick, 1120 Shady Lane, Albany OR 97321, ph. 503-928-8101 for contest details and rules.

TEXAS - Ft. Worth-Dallas
 Tentative plans for Dallas NAS contest fell through, due to scheduling difficulties. Shortly thereafter, contact was made at the Harry Stone Recreation Center in Dallas, (2403 Millmar) and an indoor session was scheduled for Saturday, Mar. 11, 1978, 1 pm to 5 pm. Events will be HLG, Pennyplane/Easy B and Peanut Scale. Contact Ed Turner, 3544 Granada Dr., Ft. Worth TX 76118, 817-589-1519.

NIMAS POSTAL MEET

The NIMAS Postal Meet seems to coast along on its own momentum - entries come in whether the announcement gets

out in time or not. So, entries for the 1978 NIMAS postal must be postmarked by midnight, May 8, 1978. Flights made as part of sanctioned contests are eligible, as are any flights made at informal sessions, so long as the flights are made and timed under conditions matching AMA Rules.

Events: Easy B, paper covered only, all-wood prop, solid motor stick and boom, no bracing.

HLG: AMA Rules except two ceiling classes. Class I - 18' to 25'; Class II - 25' to 35'.

Pennyplane: AMA Rules (be sure to process model).

General Rules: Free entry. Separate events may be flown at separate sessions, but all flights for a given event entry must be flown on the same day. Please note ceiling height for each entry, using FAI ceiling measure. Ceiling height is used to compute fudge factors for final scoring. Separate classes for Juniors in each event, anyone may enter. Send entries to Box 545, Richardson TX 75080.

MIAMA PROXY-MANHATTAN CONTEST

The M.I.A.M.A. club in Miami, Florida is staging a "proxy Manhattan Contest limited to everyone in the world". The contest is April 23, 1978, at the Goodyear blimp hangar at Opa Locka airport in Miami. Models will be proxy flown by members of M.I.A.M.A. Quickly send to Dr. John Martin, 3227 Darwin, Miami FL 33133 to obtain an entry form. It is hoped that the first prize will be a round trip to Miami for two which will include an all day fishing expedition in the Gulf Stream, a guest of honor appearance at the MIAMA annual banquet on Father's Day, and a blimp ride for two. If it is not possible to make those travel arrangements, trophies will be provided for the winners.

STATE OF THE ART

The model of the month is Mark Drela's Paper Stick model which set a Senior Cat. I mark of 14:37.6. His comments follow:

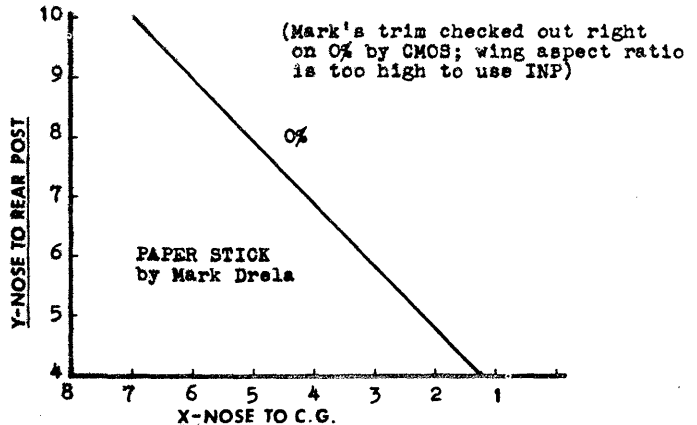
Enclosed is a 3-view of my paper stick which set a Sr. Cat. I record. Although the time is not exactly far-out, the model definitely has more potential. The record attempt was the model's first flight ever (not even a test hop was made). Pressured for time, I quickly assembled it, grabbed the nearest motor, wound it up and let her go. During the descent, the ship seemed to be diving and it landed with quite a few turns left. I couldn't try again as the person who brought me to the meet (a nice guy, really) was threatening to strand me in New York - I live in Philadelphia.

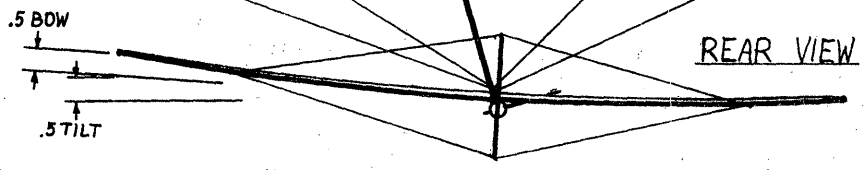
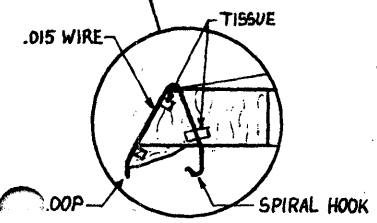
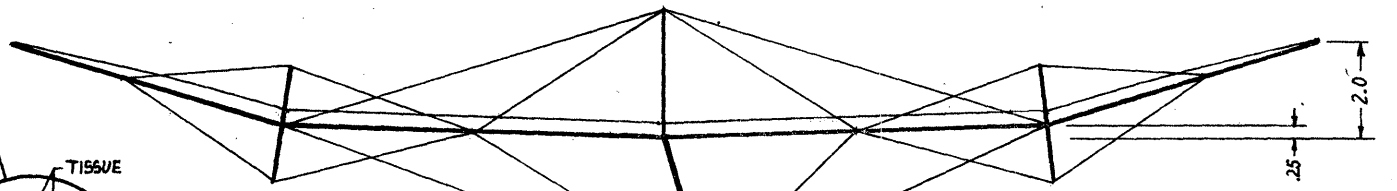
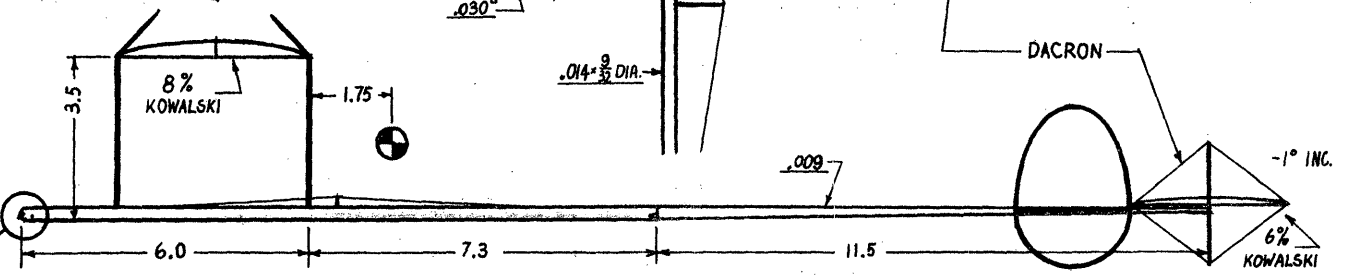
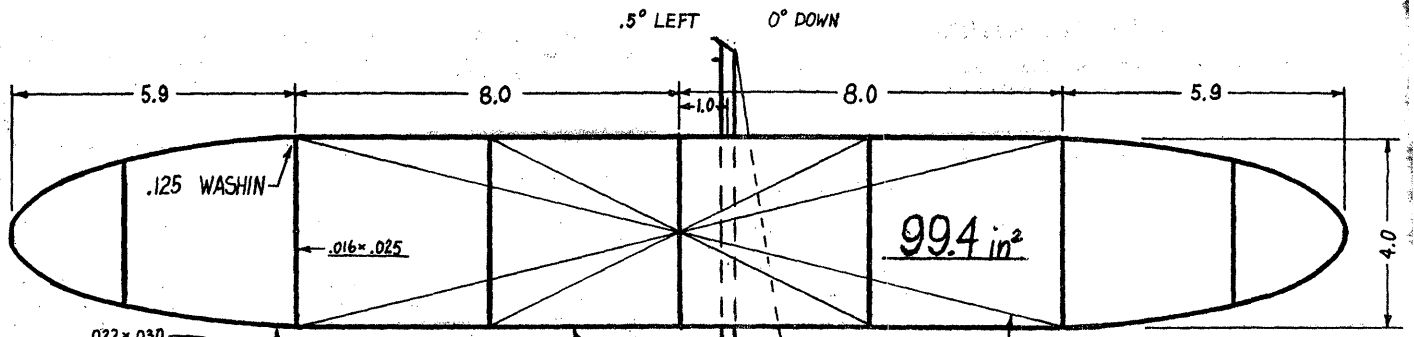
The heart of the model is the Jeff Annis torque-variable prop. It clearly gives an advantage in low ceilings. A model equipped with one can be launched safely with a torque that would cause it to ram the top of a high Cat. II site, if it used a conventional prop. As indicated on the 3-view, the pitch increases most rapidly with small changes in torque once a certain point is reached. The relation between pitch and torque is:

$$P \propto \tan(kQ + \theta)$$

where P = pitch, Q = torque, θ = blade angle at a given radius and k = degrees of torque bar deflection/torque unit x a/b (from sketch).

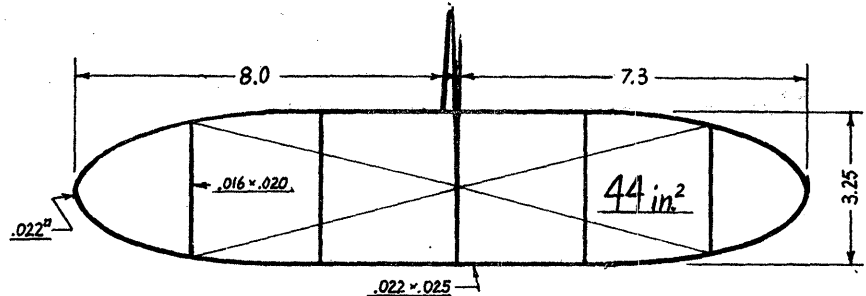
Anyway, the prop adjusts itself to maintain an almost constant RPM. This gives a fantastic cruise in addition to the slow climb. A similar design could do close to 10 minutes with about 12 feet of altitude (no ceiling contact). I plan to stay with the huge 18" prop, which gives an RPM somewhere between 50 and 60, while going to thicker rubber of greater weight.





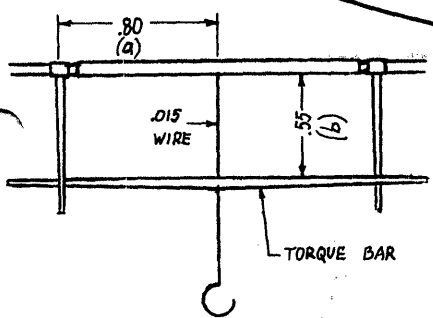
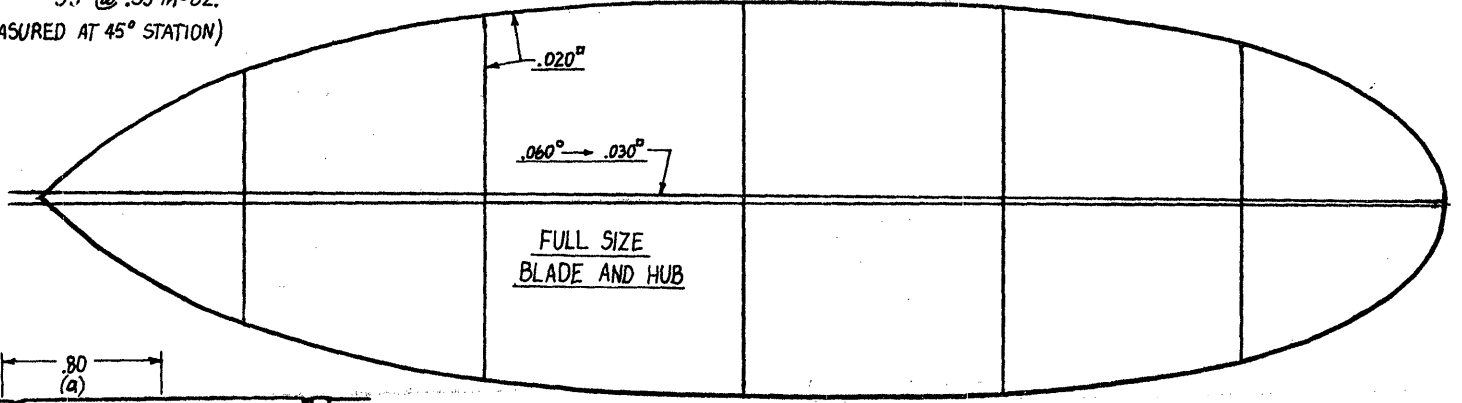
WEIGHTS, OZ.

WING	.0155
PRDP	.0088
REST	.0182
	.0425
RUBBER	.042



POWER
16.6 LOOP
~.060 PIRELLI

PROP
DIA. - 18"
PITCH - 24" @ 0 in-oz.
26" @ .10 in-oz.
55" @ .35 in-oz.
(MEASURED AT 45° STATION)



JEFF ANNIS'
TORQUE-VARIABLE
PROP

PAPER STICK
MARK DRELA AMA 49785
SINGLE FLIGHT - 14:37.6
SR. CAT. I RECORD

6-29-77

UNFINISHED BUSINESS

These two reports are about as late as this issue, but late or not, they give insights and info we haven't had before.

'77 Nats Commentary

by Clarence Mather

Here are my views on the '77 Nats: The site was large and the drift was not bad. The models wandered a bit but usually not really far. However, the lights really killed a lot of models. It wasn't just the lights but there was a cord parallel to the light support cable (or chain?). This cord was several inches from the cable so that many models turned into the light and the props then went between the cord and the cable, solidly snaring the model. I know three modelers who lost four mike jobs apiece! The hangar was interconnected with at least one other one so that the air was turbulent up high at times, but that was no real problem. The lights were the bad news.

Akron Notes

by Ron Williams

I drove out with Ed and Richard Whitten; we arrived Friday afternoon for practice. A few flyers were wandering about, watching the floor sweeper drive back and forth. The space was cleaner and clearer (of crates shelving, dumpsters and pallets) than it has been for years. Luxurious! The giant press was operating with such vulcan ferocity that one expected the first launched planes to shudder as the air and space reverberated from its thunder.

More and more flyers showed up, old acquaintances were renewed and new ones established with introductions all around. Anticipation and conjecture kept the conversations lively as notes were compared and the previous trials reviewed. Al Rohrbaugh kept everything all sewed up by keeping anyone within earshot in stitches.

With Saturday morning came the last arrivals, a quick test flight of a Manhattan and, suddenly, the air filled with microfilm ships. The weather was beautiful. By 10 a.m. there were 12 - 15 ships up. Cameras were clicking, rubber was being broken in, travel repairs were made and Ed Whitten set up shop to process the twenty flyers taking part. Occasionally Goodyear's giant press would remind us of heavier things but it was heard less and less through the week-end.

The outstanding flight of the first round was Jim Richmond's 37:48 flight that never got above 100 feet. It was an indication of things to come as he proceeded to break Pete Andrews' old record with a flight of 42:06 in the third round.

The first two rounds saw quite a few of the top fliers having problems getting all the way up, though times were generally high. 11 fliers had times over 36 minutes by the end of the day with Bill Hulbert, Dan Domina and Bob Gibbs doing it twice. Jim Richmond was over 40 minutes twice! Dick Doig credits this writer with a new record for Akron raft-er banging: 39 hits!

The second day was overcast with threatening weather. The Akron hangar has large gaps between the clamshell doors and the roof which, with a strong South-West wind, results in a circular air flow which is just plain hairy. Good luck, bad luck, steering, body English, everything was brought into play with Erv Rodemsky and Dan Domina pushing it the furthest. By round 5 the thunder and lightning had arrived. Dan went up right away for a 37:47 flight, high for the day. The rain roared the length of the hangar and pretty well brought the meet to an end. The rain and dripping brought out the covers and the conversation. Two flights were made in the sixth round but most everyone had long since packed up for the trip home.

FAI CONTEST RUBBER

by Bill Hulbert

My success in reaching my goal of making the FAI In-door Team is certainly at least partially attributable to the new FAI rubber. The demise of pirelli rubber has had us all wondering where and when a substitute would be available as we hoarded our meager supply of pirelli.

Jerry Skrjanc of Micro-X found for me a partial solution when he introduced me to his Tri-X (brand name by Micro-X for FAI rubber) at a record trials early last spring at the Goodyear Air Dock. I did some basement experimentation with Tri-X before the FAI Elims began, but did not use it seriously until West Baden.

At West Baden, Tri-X performed exceptionally well, giving me a second place next to Richmond. The cruise characteristics of Tri-X seemed very good; this impression was reinforced at the regional and the finals held at the Goodyear Air Dock.

FAI rubber does not seem to have the power curve that pirelli has. However the cruise curve makes up for much of this deficiency, particularly under low ceilings (100' or less).

On Oct. 30 we flew in the Air Dock again with the inside temperature about 60°F. Ron Ganser set his new cabin record with pirelli on the last flight of the day. We found that Tri-X seemed to lose even more on the power curve under lower temperature. On Nov. 12 with a garage temperature of 48°F I ran a number of comparative torque tests winding down similar motors of pirelli and Tri-X. The same motors were then tested in my basement at 74°F; the result is shown in the chart. A temperature about 50°F was necessary to simulate the conditions expected in the Romainan salt mine.

The results are almost self-explanatory. Pirelli and Tri-X are reasonably close in the power curve with Tri-X consistently lower by a small amount. The cruise portion is reversed with Tri-X crossing over the pirelli curve, which substantiated my flight experience.

The cold weather curves show the drop in torque (or power) by both motors. The power loss is much more pronounced with Tri-X, and the cruise portion fails to make up the loss.

In summation, I feel Tri-X offers an excellent substitute for pirelli in warm weather conditions and under lower ceilings. It does have a tendency to "grapevine" if not wound carefully. This has not been much of a problem. Good pirelli may never be totally replaced, but Tri-X (FAI rubber) offers excellent promise in the right conditions.

TOP TEN EASY B

Each year, the current Top Ten list is dropped after completion of the NIMAS Postal Meet and the new Easy B winners become the new Top Ten. From then until the next Postal, times may be submitted to "bump" into the current Top Ten listing. The current Top Ten are:

Easy B	Time	Ceiling	Fudge	Score
1. Clarence Mather	673.0	22.3'	1.253	843.3
2. Dick Hardcastle	756.0	31'	1.063	803.6
3. Stan Chilton	779.5	35'	1.0	779.6
4. Cezar Banks	535.0	22.3'	1.253	670.4
5. Jim Miller	482.2	24.33'	1.20	578.6
6. Frank Haynes	682.0	50'	.837	570.8
7. Bucky Servaites	423.8	24.33'	1.20	508.6
8. Ron Roberti	499.6	35'	1.0	499.6
9. Bud Tenny	414.0	42'	.913	378.0
10. Jim Clem	377.0	42'	.913	344.2
11. Mike Fedor	343.5	42'	.913	313.6
12. Ed Turner	327.0	42'	.913	298.5
13. Walt Van Gorder	244.0	24.33'	1.20	292.8
14. Jess Shepherd	266.0	42'	.913	242.9

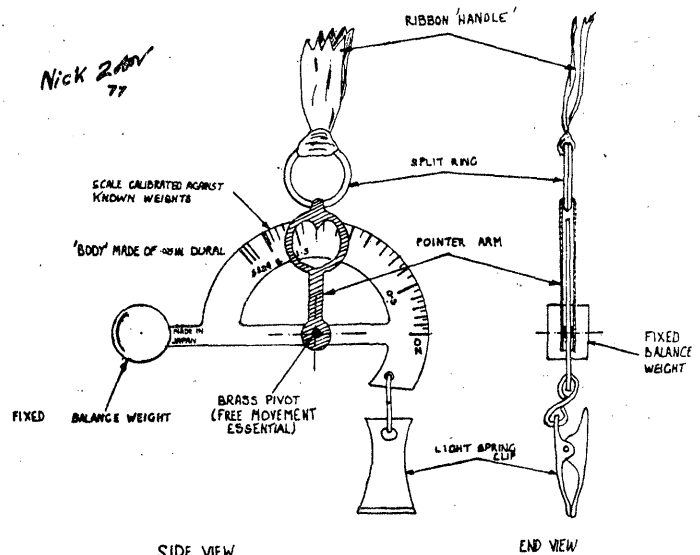
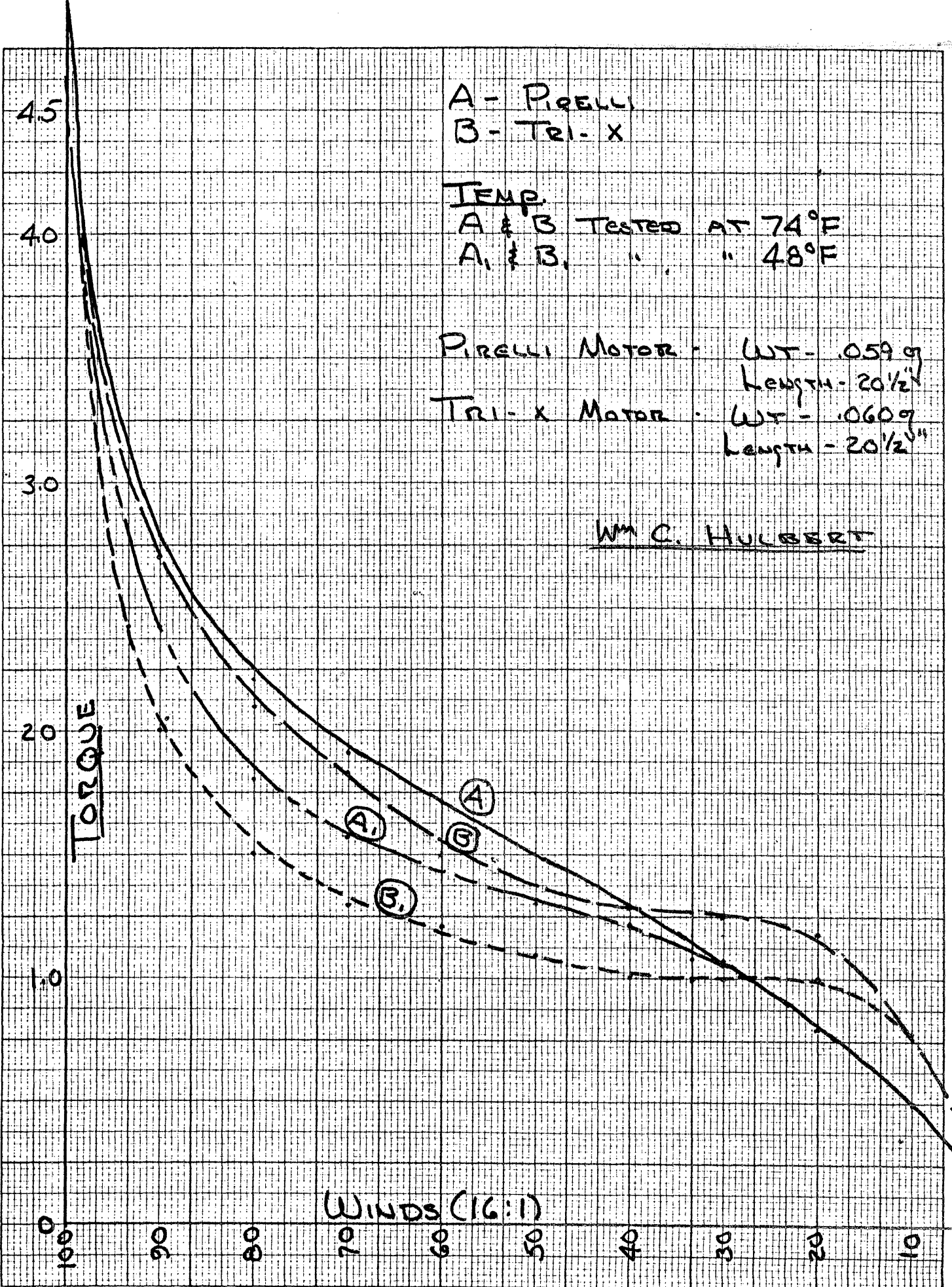


Fig 1. LIGHTWEIGHT POCKET BALANCE (FULL SIZE)

Dear Bud,

YOUR READERS MAY BE INTERESTED IN THIS POCKET BALANCE, VERY USEFUL FOR WEIGHING SHEET AT THE SHOP. THE ORIGINAL WAS BOUGHT IN HONG KONG FOR 72¢ AND WAS SOLD AS A LETTER BALANCE. SIMILAR VERSIONS COULD OBVIOUSLY BE HOME MADE. DRAWING ORIGINALLY PREPARED FOR RAFFMA NEWSLETTER ARTICLE.

Yours AYG
NICK 2077



A - PIRELLI
 B - TRI-X

TEMP.
 A & B TESTED AT 74°F
 A & B " " 48°F

PIRELLI MOTOR - WT - .059g
 Length - 20 1/2"
 TRI-X MOTOR - WT - .060g
 Length - 20 1/2"

WM C. HULBERT

TORQUE

WINDS (16:1)

100 90 80 70 60 50 40 30 20 10

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

New Members!

This listing, aside from an occasional newsletter that may have dribbled out, is probably the first notice these members have of their membership. The month listed is the anniversary date for each membership, that is, the month that new dues fall due. However, since the newsletters are behind, the actual due date is when an anniversary issue appears. For example, those listed below for Aug. '77 fall due when the Aug. '78 issue appears. Clear? Anyway, a belated welcome to the following members:

Members who joined in April, 1977

- RANDOLPH BOSTON, 961 Eastern Parkway Apt. E-10, Brooklyn NY 11213
- DARRYL H. LARKS, 1422 G St., Livingston CA 95334
- WALTER SEMKE, 147 Madison Rd., Scarsdale, New York
- JOHN J. WALCZAK, P8 Matt Apts., Culver Ave., Utica NY 13501

Members who joined in May, 1977

- JOE A. BROWNLEE, 106 Mae St., Starkville MS 39759
- LESTER GARBER, 5A Entry, 6 Graduate Circle, University Park PA 16802
- RAYMOND G. KROKER, P O Box 14056, Albuquerque NM 87111
- CURT STEVENS, 26752 Rabida Cir., Mission Viejo CA 92675

Members who joined in June, 1977

- RON LIMBRICK, 160 Cox Cr., Thunder Bay "P", Ontario, Canada P7 A7 K8
- DONALD F. MACE, 359 S. 119th E. Ave., Tulsa OK 74128
- CHARLES F. MIKL, 281 Van Damin Ave., Glen Ellyn IL 60137
- KEITH VARNAU, 4147 Wilson Ave., Castro Valley CA 94546

Members who joined in August, 1977

- Jim Jones, 36631 Ledgestone, Mt. Clemens MI 48043

Publication Date

This Aug. '77 issue is being published early in May, 1978, just in case the date on the masthead confuses you!

It Has Been Suggested --

That the newsletter publication dates be "caught up" with the real world by the expedient of publishing a single issue dated (for example) Aug. '77/May '78. While this might solve a problem of the newsletter's "image" as perceived by some readers - more than a few - this idea is distasteful to me. In addition, such a course would cause two problems. First, the new expiration date would have to be computed for each membership. Worse, each address image would have to be changed to reflect the new "due" month (number in the upper left-hand corner of the address block). Some images are on metal plates and some are on copier label masters, and each image also is kept on a file card. Anyway, the time to do all the updating would surely make the issue after the "makeup" issue late, and the whole cycle would start again!

NIMAS POSTAL MEET

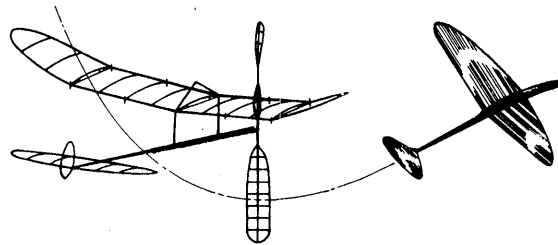
Due to the lateness of this issue, the deadline for entry in the 1978 NIMAS Postal will be extended to June 5, 1978 (postmark).

Spread The Word - Feedback

Dear Bud;

Regarding your "Spread The Word" item on newspaper coverage of indoor activities: There is no big secret on how to obtain media publicity. Any group or club desiring coverage can talk to their local papers and TV stations and explain about their models, flight performance, site location, dates and so on. Better yet would be to have a spokesman stop by the paper/station and show the news director (TV) or city editor some models of the type being flown. I'd bet that this would get some results, particularly in those metropolitan areas with more than one TV station or newspaper. We indoor freaks have really missed the boat, publicity-wise, and there is no really good reason for it.

Regards,
Bob Clemens



Change of Address

RICHARD DOIG, 1367 Briarwood Ct. Apt. 7, Union Lake MI 48085

It has been some time since a change of address has appeared in INAV, so some of the newer members may wish to know that a change of address will only be listed upon request. At least, it is a reasonably painless way to let other fliers know your new address - NIMAS has always been a friendly and close-knit group.

Recent Goofs

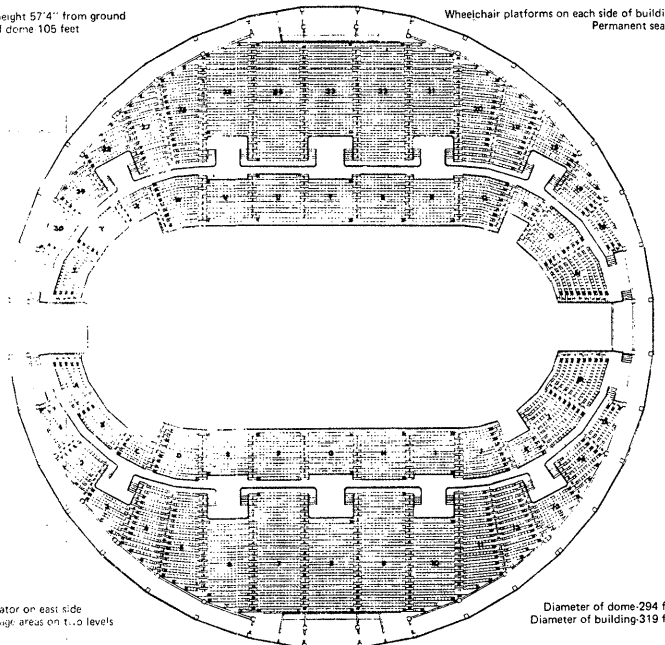
It has been noted that the A ROG photo on p. 2 of the April '77 INAV was identified as depicting Paul Shailor's model, but it was Richard Doig's model. Also, in the May '77 INAV, a number of NIMAS Awards were listed. The 6th one, Gold Cat. II, 25:25.4, was attributed to Richard Doig and should have been awarded to Bill Shailor.

1978 Nats Site

The plan view below may give an idea of the planned Nats Indoor site, if it reproduces well enough. The building specs are: top of dome - 105', diameter of the building - 319', diameter of the dome - 294'. A test of the site's conditions indicated excellent probability of having good to excellent flying conditions during the Nats.

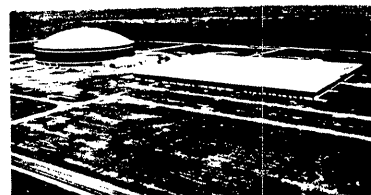
Eave height 57'4" from ground
Top of dome 105 feet

Wheelchair platforms on each side of building
Permanent seats



Elevator on east side
Storage areas on 1, 2 levels

Diameter of dome 294 feet
Diameter of building 319 feet



The Burton Coliseum

The ideal location with adequate facilities to accommodate

- Sports Shows
- Conventions
- Home Shows
- Trade Shows
- Rodeos
- Ice Shows
- Stage Shows
- Agricultural Exhibits
- Auto Shows
- Boat Shows
- Religious, Civic and Political Rallies
- Ice Hockey
- Circuses
- Military Shows
- Pageants
- Festivals
- Indoor Track Meets

New Pirelli?

The June/July '77 INAV contained a report by Bill Hulbert on FAI Rubber (sold as Tri-X by Micro-X). His report indicated that Tri-X performed very well, but that it lost power faster in cool conditions than Pirelli. Now comes word that new Pirelli of exceptional quality (based on tests of the original sample) may soon be available. More word on this as it is available.

Easy B Times

A recent issue mentioned high Easy B times around 20 minutes being achieved in England, and rumors that Pete Andrews had also done 20 minutes at Lakehurst. Pete's response was, "The best I did in Easy B was 19:58 in 1976. I had a mini contest back and forth with English flyers, and may try for more this coming summer. I am now into Manhattans - I used to love the old indoor cabins with built-up fuselage. The present indoor cabin is a farce to me - the present rules have no incentive or challenge."

Taft Free Flight Champs

The following note was received from Clarence Mather: The Taft Free Flight Championships have included Easy B and Novice Pennyplane events the last couple of years. I've CD'd those events but was never consulted about the Easy B specs. None were ever listed on their fliers and the AMA Rule Book leaves it open.

Most of us showed up with tissue covered models because that's what most Easy B contests require. However, a few entries were covered with microfilm, which was no advantage because the low lights tear up the film. The tissue models suffered from ultra-dry air, so some of us are trying Microlite covering this year. I would like all to know that such covering is not only allowed but should be encouraged at Taft because of the hot dry air. The weight saving with Microlite is negligible, but the absence of warp problems would be a big help.

FAI INDOOR REPORT

Proposed Program Approved

During March, 1978 a ballot was circulated to FAI Program participants. 53 ballots were returned, with only 9 "disapprove" votes. Reproduced below is the AMA memo to past program participants; the program details are all spelled out. Note especially the model specifications listed under "Local Contests".



Academy of Model Aeronautics

NATIONAL HEADQUARTERS 815 FIFTEENTH STREET N.W.
Washington D.C. 20005

1980 INDOOR TEAM SELECTION PROGRAM OFFICIAL SCHEDULE

Schedule

- 1978: Unlimited local contests.
One regional contest at each regional site.
- 1979: Unlimited local contests.
One regional contest at each regional site.

Local Contests

- At least three entrants required to hold a contest.
- Points will be accumulated, at AMA sanctioned contests, based on the contest report of the contest director. Through sanctioning the proper FAI meet forms will be provided.
- Model specifications: 20" minimum span - 2 gram maximum weight.
- No qualification level to go to Regional Contests.
- Program participants may enter as many local contests as they please; the single best contest counts.
- The present team and manager, if he placed fourth in the selection program, may pass the local contest and receive ten points for this program.
- Scoring: Total of two best out of six flights.
Top score counts 10 points.
Other scores are a percentage of these points based on an entrant's time divided by the winning time.

Regional Contests

- Six regional contest sites: East (N.J.), South East (FL), Midwest (OH or IN), Southwest (OK), Mountain (CO), and West (CA).
- Seventy-five percent of top score qualifies for finals.
- The single best contest is counted for team selection scoring.
- There is no limit on cross-zone flying.
- Scoring: Total of two best out of six flights.
Top score counts 100 points.
Other scores are a percentage of these points based on an entrant's time divided by the winning time.

Final Contest

- The finals will be held for a three-day period.
- Flying will be conducted by rounds, three rounds per day.
- Scoring: Total of two best out of nine flights.
Top score counts 1000 points.
Other scores are a percentage of these points based on an entrant's time divided by the winning time.

Final Selection

The team is selected by adding each competitor's points accrued in local, regional and final contests. The maximum score attainable is 1110 points.

Fee Structure

- The entry fee for each local contest: \$3.00.
- The entry fee for each regional contest: \$10.00 - (\$5.00 Jr/Sr).
- The entry fee for the final contest is: \$15.00.

There will be no travel funds awarded to top finalists in this program. As you can see, the program offers a great deal of flexibility to an individual's schedule. He can spread his flying over two years, or even accomplish all of it in one year.

GET YOUR FAI STAMP (\$5 VERSION) NOW!

CONTEST CALENDAR

FLORIDA - Miami

AMA Cat. II contest at the Goodyear Blimp Hangar, Opa Locka Airport, May 21, 1978. Verify site availability by calling 305-858-6363 to be sure the contest is still on.

NEW JERSEY - Lakehurst

Tentative dates for flying sessions at Lakehurst NAS: May 28, June 17, July 1-2, July 15, July 23, Aug. 6 and Aug. 20, 1978. July 1-2 session to be FAI Regional. Call 609-737-3522 on Friday before the meet to confirm site availability.

NEW YORK - Long Island

Cat. I contest at Nassau County Arena in Long Beach, L.I., New York, June 4, 1978, 8 am to 5 pm. HLG, Easy B, Peanut Scale, Indoor Stick and Pennyplane. CD Ed Whitten, P O Box 176, Wall St. Station, New York NY 10005.

TEXAS - Dallas/Ft. Worth

Cat. I Record Trials at Harry Stone Recreation Center, near Centerville Rd. and Millmar in Dallas, May 13, 1978, 9:30 am to 5 pm. Ed Turner, 3544 Granada Dr., Ft. Worth TX 76118, ph. 817-589-1519.

WASHINGTON - Kent

9th Annual Model Aeronautics Scholarship and Open Contest, July 8-9, 1978, at Boeing Space Center, Kent, Washington. IHLG and Easy B plus 14 FF, U/C, RC and Rocket events. For additional info write The Boeing Management Association, P O Box 3707, Seattle WA 98124, to the attention of Mr. Ted Caputo, ms 17-26, ph. 206-655-6130.

OFFICIAL RESULTS

Aeronauts' Autumn Armory Attraction Indoor Meet
Madison Street Armory, Chicago, Ill.
Dec. 4th, 1977

Indoor Hand Launched Glider- Jr.

- Dave Lindley :84
- Kris Warmann :55
- Lee Fuson :38

Indoor Hand Launched Glider- Sr.

- Mike Preston :93
- Gregg Miller :55

Indoor Hand Launched Glider- Open

- Chuck Markos 168
- Bob Warmann 90
- Kelly Simmers 89
- Mike Fennell 57
- Cliff Fuson 53
- Eric Anderson 47

Pennyplane- Jr., Sr., Open Combined

- Roy White 527
- Gordon Wisniewski 512
- Clarence Mills 491
- Leonard Danber 355
- Mike Fennell 329
- Howard Haupt 264
- Joe Pierce -

Novice Pennyplane- Jr.

- Dave Lindley 334
- Lee Fuson 258
- Chad Curth 174
- Brian Wolsey 49
- Kris Warmann 29

Novice Pennyplane- Sr., Open Combined

- Bob Warmann 409
- Joe Pierce 342
- Otto Curth 298
- Clarence Mills 146
- Terry Mrakava 136
- Gregg Miller -
- Eric Anderson -

Indoor Sport Scale- Sr., Open Combined

- Dave Bloom 144
- Charlie Sotich 132
- Howard Haupt 129
- Jim Fisher 109
- Don Lockwood 105
- Michel Melendy 72
- Eric Anderson 64
- Clarence Mills -

Don Lindley - Contest Director

827 Yorkhaven Road
Cincinnati, Ohio 45240
March 13, 1978

Dear Bud:

Here are the results of our contest held Sunday, March 12 at the Cincinnati Union Terminal which is 105 Feet to the ceiling. There was some drift which was bothersome to some fliers but most went up and avoided the walls.

HLG	EZB	Manhattan Cabin	
Bob Larsh 98.2	Mike Hulbert 13:24.2	Walt Van Gorder	7:30.6
Gill Robbins 93.2	Jim Miller 11:24.2	Jim Miller	6:28.0
Bucky Servaites 92.8	Walt Van Gorder 10:55.2	Bob Larsh	4:55.4

Novice Penny	Peanut	Static Flight	Flight	3 Flt total
Mike Van Gorder 9:47.8	Jim Miller (Pike) 1	1	1	3:41.6
Team Servaites 8:50.4	Jim Miller (J-3 Cub) 2	3	3	1:08
Walt Van Gorder 8:46.6	Jim Pulley (M-10) 3	2	2	3:31.6

Delta Dart (Juniors)

David Kastner	1:48.4
Mike Van Gorder	1:42.0
Joey Servaites	1:37.0

Times were not spectacular but there were some fairly good competition. As usual, the Junior event was hotly contested and the scores were very close. Peanut did not come out like it should have. The rules stated that if there was a tie between the static and flying, that the highest static score would win. That is why my Cub got a second in spite of an 8 second official. Mike Van Gorder applied for a national record with his Novice Penny flight. That kid is hard to beat. HLG doesn't look too good but the floor is rather restricted at the front because of an old information booth and newspaper stand. You can't have everything when you have 105 to the ceiling.

I hope you can get this in your next issue.

Sincerely,
Jim Miller

Report by Michael Warren

Flown in excellent conditions, this meeting had probably the best purely domestic indoor flying yet seen in the UK. As the scores show, the 30 minute barrier is no longer much of a problem. Only two of the 14 who flew failed to break the half-hour and on the first day alone there were more than 20 flights of 30 minutes or more.

Laurie Barr ended the first day in the happy and remarkable position of being able to ignore a flight of 35 minutes 15 seconds, having already done two better. Derl Morley was a strongly-placed second after three rounds, with two 35 minute flights, and Bob Bailey was not far behind.

The second day was spoiled by the hangar doors being opened in the early afternoon: two full hours were lost by the time the air had settled again.

John Blount, flying to retain his '74 and '76 team position had a promising start with a flight of 35 minutes 36 seconds on the first day. He looked set for something really good - possibly better - in the fifth round, when another flyer's steering line caught his model. It slid down the line for a full 30 feet before being released, and still managed a flight of over 33 minutes. Later attempts did not improve his position and it is quite possible that without that interference, John would again be in the team.

Ron Green (another '76 team member) put in the second best flight of the weekend in Round 5 with 36 minutes 57 seconds, leaving Bob Bailey needing a substantial last round flight to keep his team place. Bob immediately had a terrible hour or so, with prop stalls, damaged tail-planes and all manner of trouble. We had been warned that the hangar doors would be opened again at 6.40 pm and sure enough - dead on time - they started opening. There were two models in the air at the time (one of them was Bob Bailey's last, desperate attempt to keep his team place) and any number of models on stands or just being put away. It was very windy outside and a blast of cold air moved up the hangar, wrecking two of Geoff Lefever's models and damaging several others. Bob's model had started off almost dead centre in the shed and interestingly, eventually fell to pieces only a few feet inside, having been blown up and along the roof towards the open door. Since we had been warned that the shed was going to be opened again, it was curious that so many people still had their models out; end of trials numbness to blame, I expect.

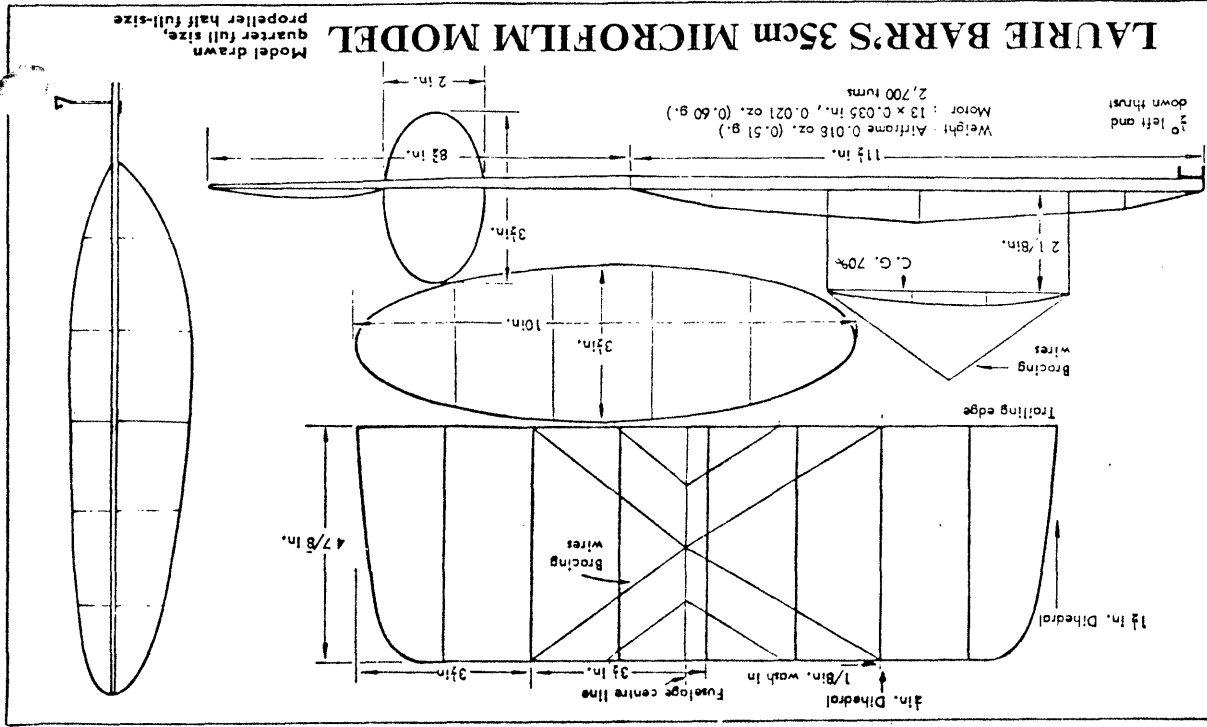
Dieter Siebenmann and Rene Butti were over from Switzerland getting some high ceiling practice, and flying the long moment arm models discussed by Dieter in the October '76 FFR. The next World Championships for Indoor are likely to be held in the salt mines at Slanic, Romania, and it is possible that Laurie Barr may, for health reasons, not take up his team place. In that event, Bob Bailey would move up into the team. - MCW

Results Best two flights of six, with three allowed each day

1 L Barr	35.15	38.37	35.17	21.42	33.49	8.29	=	73.54
2 R Green	32.20	33.51	30.23	31.00	26.57	7.30	=	70.48
3 D Morley	25.18	35.26	35.18	21.37	26.24	25.05	=	70.44
4 R Bailey	11.50	33.49	26.15	33.35	-	10.18	=	70.04
5 J Blount	24.27	31.33	35.36	30.35	33.01	-	=	68.37
6 B Aslett	28.07	31.50	34.03	13.20	27.01	12.41	=	65.53
7 R Monks	27.53	12.52	32.37	26.24	30.22	33.05	=	65.42
8 D Pynn	31.53	32.31	29.43	32.15	32.50	13.00	=	65.21
9 R Melville	1.48	30.18	32.57	27.03	31.08	22.08	=	65.05
10 G Lefever	30.58	7.33	29.01	24.53	29.33	30.43	=	61.42
11 R Parham	22.27	29.00	11.42	23.29	28.04	32.32	=	61.33
12 M Shepherd	29.45	23.12	24.00	24.17	22.41	26.37	=	56.22
13 A Spurr	22.35	17.35	31.31	19.55	22.09	19.04	=	54.06
14 D Richards	12.37	17.32	21.38	-	-	-	=	39.13

Visitors' scores

D Siebenmann	28.54	28.28	29.30	33.05	9.47	13.01	=	62.35
R Butti	12.23	17.27	24.38	26.12	-	25.25	=	51.37



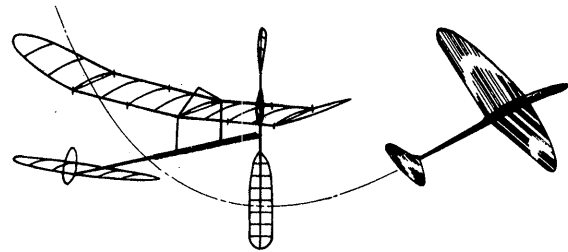
Laurie Barr's 35cm Microfilm Model
This model always impressed those fortunate enough to see it before its sad demise at the Nationals. Distinctive features included the large wing chord which largely overcame the severe rolling problems on high power, and the very long fuselage (over 20in. for a 14in. wing span), with a long stick. The model holds the 35cm record with 24:00 on 2700 turns (good bit of rubber - I'm told it originated from New Zealand).

Laurie did not give me wood sizes, but those that I have used are:-
35 x 24 tapering to 24 x 24 for the wing
30 x 24 tapering to 24 x 24 for the tailplane
10 thick for motor stick - 3/16 in. diameter
7 thick for the tailboom
Prop outline from 17 square with all ribs from 15 x 26
All the above dimensions are in thousands of an inch!

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



WHO MAKES THE RULES?

To a very large degree, you do! Almost all the AMA competition rules are the result of rules proposals submitted by fliers thru normal AMA channels. If you don't like our present rules, note the following excerpt from a letter sent to newsletter editors and all AMA special interest groups:

What this is leading up to is the need for competitors to participate in the rules-making process, especially concerning corrections or improvements for the next rule book. This is especially important now that the rule book is effective for two years, since it means that anything not liked has to be tolerated longer.

To the point: the current rule book is good through 1979. Yet to change the rules for the 1980-81 period, rules proposals have to be made this year, 1978! The deadline date is Sept. 1. There are specific requirements for submitting rules proposals and a standard form to be used. It was all detailed in the April 1978 issue of MODEL AVIATION magazine, pages 74-77, wherein the complete Contest Board Procedures were published, including the standard rules proposal form.

Copies of the procedures and/or the rules proposal form are also available from AMA HQ.

Editorial comment: Don't complain - put it on paper! By the way - one way to avoid writing rules you will regret is to try the proposed rule in competition for a year or so; a report of such a test and conclusions drawn can be submitted can be included as commentary with the resulting proposal. If past experience has proved that certain pitfalls predicted by opponents of your proposal simply didn't happen in practice, they will have to dream up new objections!

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

This issue is being published in mid-July, and contains a great number of items contributed by others, with all those items being submitted camera-ready. Note that some items have been reduced; this was possible because the copy was high contrast to begin with.

Credits For Aug. '77 Issue

"It's late - I'll do it in the morning." That is how page 3 of the Aug. '77 issue got off to the printer without the following information: The Laurie Barr 35 cm model drawing came from AEROMODELLER, and the report of the team trials for the British Team came from Northern Area News.

Subscription Rates

In response to numerous requests, INAV subscription rates are as follows: NIMAS membership including IVAV - \$3.50/year to any part of the North American continent; INAV only - \$2.50. INAV via first class seammil - \$3.50. INAV via Air Mail - \$3.50 plus postage cost differential, which is currently \$5.06 total annually. These prices will most likely increase after the Nov. '77 issue (or whichever issue has the financial report; one special issue at least is planned), since the recent postage rate increase will likely be followed by another postal rate increase for even fewer services!

Check Your Issues!

Now that the Postal Service has been mentioned, it has come to my attention that some subscribers have lost track of the issue publication due to the highly irregular publication schedule. As a result, some people have missed any number of issues without realizing it. All the following issues were published, beginning with Jan. '76: Jan, Feb, Mar, Apr/May, Jun, Jul, Aug, Sep, Oct, Nov., Dec. '76; Jan, Feb, Mar, Apr, May, Jun/Jul, Aug. '77. Check your issues to be sure you received all these and notify me of any missing ones. Please inform me of any missing issues and send .15 postage for each two missing issues.

No Membership Lists

At one time it was quite easy to produce a list of NIMAS members, since IBM printers and card punch equipment were "fringe benefits". Since that time, the membership list has existed only on groups of 3 x 5 index cards. It may not be too long until the list is transferred to magnetic tape so it will again be available for printout. Until that time, it simply is not feasible to produce any membership lists.

Records Correction

A relatively mild letter from Bob Meuser and addressed to "Doc Martin and Bud Tenny, co-conspirators for the dissemination of misinformation" spoke thus:

What is this baloney about "The records as of Jan. 1978..." included in the ThinkThnirt stuff? The list was obviously copied from the Feb issue of Mod Av, and was titled National AMA records as of 12/5/77, which is scarcely the same as "Jan 1978". It seems difficult for me to believe that you are unaware that all the following records got set to zero on Jan 1 1978:

Ornithopter, all categories, all age groups
Novice Pennyplane, all categories, all age groups

RECORDS? MAYBE

NASA Ames (Moffett Field), CA 4/30/78, Cat. III
Open Novice Pennyplane - 9:21.0, Bob Meuser
Open Ornithopter - 1:34.4, Bob Meuser

Glastonbury High Gym, Glastonbury CT, 35', Cat. I
Open Cat. I HLG - 82.0, Stan Stoy

FAI INDOOR REPORT

To date, no FAI Local or Quarter Finals dates have been received except the previously published Lakehurst dates. Thanks to Ed Whitten for the following report:

1978-79 FAI TEAM SELECTION PROGRAM

June 18, 1978 at Lakehurst (NJ) 156' Hangar 5....cold & windy.

'Local - 10 point' Contest:							Points
1) Pete Andrews	30:56	27:11	32:07	16:15	34:45	x	10.00
2) Bill Tyler	29:47	32:16	18:31	18:51	x	x	9.29
3) John Kukon	22:19	22:37	29:17	29:17	27:00	28:55	8.77
4) Richard Whitten	26:19	23:30	15:18	27:46	12:54	23:53	8.10

July 1-2, 1978 Lakehurst Hangar 5....'Regional - 100 Point' Contest. Weather predictions were for second day to have high winds and severe thunderstorms. Flyers were allowed to take as many flights on first day as they wanted, and most elected to take most. Jet stream was fierce above catwalk, and many 30 plus flights were dumped in the 20's by downdrafts near the partially open doors. Sunday proved overcast, calm...with the storm still to the south. Below, the second day's flights are underlined...conditions near perfect:

	Points
1) Pete Andrews	32:27 31:12 30:08 34:07 35:25 37:57 100.00
2) Bill Tyler	28:11 26:02 34:55 5:00 34:37 27:34 96.08
3) Bob Platt, Jr.	31:18 25:37 1:09 24:56 28:00 36:34 93.78
4) Dan Domina	32:32 32:47 14:40 31:09 15:21 34:23 92.81
5) Manny Radoff	6:00 8:50 7:10 26:13 29:08 33:52 87.05
6) Richard Whitten	28:09 22:58 28:40 8:39 19:02 31:52 83.64
7) John Kukon	26:30 30:08 8:03 22:25 7:09 x 78.26
8) Harold Crane	15:44 26:15 21:29 2:03 21:47 22:34 67.95

Many kept right on flying...and wished they could have included some of these later flights:

Manny Radoff did 34:57 and 27:59. Richard Whitten 35:06, 32:14, 35:07 and 36:16 to record his highest time ever. Dan Domina did 40:23 to record his highest time ever and enter the 40 plus club, 32:55 and 32:40. Bob Platt did 38:27, and Bill Tyler 34:30 and 37:25.

Sal Cannizzo distributed the new light brown Pirelli from Italy to those who had placed deposits with him last spring. Some of the first day's flights may not have been quite on target as flyers experimented. The rubber is of lighter density, with the same amount of weight giving about the same amount of torque. Plenty of turns could be wound in. It appeared to require .070 to equal the former .062; but a lot of experimenting needs to be done. The new stuff also seems to have more gliborki during the later part of the cruise. The East Coast Indoor Modelers have high praise for the rubber's potential and are very pleased with Sal's effort to obtain it.

The following article was printed in the newsletter of the Minneapolis Model Aero Club, "A Thomas/O'Leary Production", dated July 1978. John sent a copy hot off the press along with a request for info about NIMAS, etc. Hopefully, this is only a preliminary report, and some kind soul will share both full results and some photos so we all can know more about what sounds like the most successful NIMAS annual bash yet.

"THENE AT THNIRT"

by John O'Leary

Greg Thomas and I competed at the Third National Indoor Record Trials at the Northwood Institute Atrium, West Baden, Indiana on June 23, 24, and 25. Fantastic is the only word that can describe this most memorable event. Greg's wife Val and daughter Laurie travelled with us to Indiana in Greg's Chevy Van.

The Northwood Institute, presently a music college, was built in 1901 as a showcase, luxury, health spa hotel. The salient feature of this building is its atrium, i.e., the lobby. This is an enclosed, domed, cylindrical space that measures 200' in diameter and 96' high. Because of its age, the atrium has no modern air exchange or conditioning systems which affords almost laboratory conditions in which to fly indoor model aircraft. There was no discernable drift in the site; some fliers reported that the drift was self-correcting, i.e., if the model got close to a wall, such currents as there were would tend to center the model.

What makes this contest so unique? Well, first there is the caliber of the contestants. Modelers, especially free-flight, are the finest people on earth. Since we were fed and housed right in the contest site (and at a very reasonable cost), there was unbounded opportunity for hangar talk, advice, and smart talk. Such notables as Jim Richmond, past FAI World Champion; Bucky Servaites, many times National Champion; Al Rohrbaugh, past FAI Team Member; Charlie Sotich, Mr. Versatile from the IMAC (and super nice guy); Doc Martin of Peanut and AMA Scale fame, the CD and sponsor of the contest from the MIAMA Indoor Club; and many others too numerous to mention. At last count, there were (I believe) 37 contestants.

The contest was a NIMAS authorized AMA Record Trials. There were, I believe, nine new national records set. Memorable among these were the first day tie in Baby ROG at 12+ minutes between Bucky Servaites and Jim Richmond. Imagine, something with only 30 square inches of supporting surface accomplishing 12+ minutes! Both were microfilm models, of course, and Richmond's high aspect ratio model has to be the lightest, most delicate model ever engineered by the hand of man. Richmond went on to break the tie the following day. Another Mano el Mano confrontation developed between Cezar Banks, San Diego, and Walt Gorder, Cincinnati in Novice Pennyplane. The record-breaking oscillated between the two all day long, with Van Gorder coming out on top.

For complete, authentic reportage of THNIRT, please read Dave VTO Linstrom's column in some future MODEL AIRPLANE NEWS

Well, you ask, how did Greg Thomas and John O'Leary do?? Well, I'll tell you--Greg (the Blade) Thomas did just fine! He placed first in Peanut, flying his Lacey M-10 to 73 seconds, and second in AMA Indoor Rubber Scale with his Wittman Tailwind which had a single best flight of 71 seconds. Greg had top fidelity to scale and workmanship points in both Peanut and AMA Scale; had he been able to eke out 10 more second with his Tailwind, he would have bested Charlie Sotich who placed first flying a Peanut Evans Volksplane in both events. Congratulations, Charlie!

I entered Novice Pennyplane and Manhattan Cabin. I did reasonably well in Pennyplane with a best single flight of 8:51 (good for 4th, I believe) but was less successful in Manhattan with a 2:32 best time. It was a helluva contest, and I urge you to travel (800+ miles) and participate in next year's FNIRT, FAIRT, or whatever Doc Martin and Bud Tenny will choose to call it. Super!

LAST MINUTE NOTE

Since the THNIRT report above, one additional report has been received, along with some pictures. If anyone has any more pictures or additional comments about THNIRT, please drop me a line ASAP to say they are coming. The next issue will likely be a special "results" issue with THNIRT photos and additional commentary. The following issue is to be a NATS report issue. I fully expect to be at the NATS and will look forward to seeing anyone who makes the scene in Lake Charles, La.

CONTEST CALENDARNEW JERSEY - Lakehurst

Tentative dates for flying sessions at Lakehurst NAS: Aug. 6, Aug. 20, 1978. Call 609-737-3522 on Friday before the meet to confirm site availability.

	Time	Ceiling	Fudge	Score
<u>EASY B</u>				
1. Clarence Mather	644.0	22.3'	1.253	806.9
2. Ted Gonzoph	640.0	22.75'	1.24	793.6
3. Cezar Banks	587.0	22.3'	1.253	735.5
4. Frank Haynes	552.2	30'	1.08	596.4
5. Howard Haupt	445.6	22.3	1.253	558.3
6. Gordon Wisniewski	425.6	23.5'	1.22	519.2
7. Jim Clem	349.0	18'	1.394	486.5
8. Bud Tenny	345.0	18'	1.394	480.9
9. Bob Clemens	363.8	26'	1.16	422.0
10. Ed Turner	298.0	18'	1.394	415.4
11. Mike Fedor	263.0	18'	1.394	366.6
12. Steve Davis	217.0	18'	1.394	302.5

<u>CAT. I HLG (18'-25')</u>				
1. Mike Fedor	50.8	18'	1.39	70.6
2. Gordon Wisniewski	60.0	22'	1.136	68.2
3. Stan Stoy	64.9	24'	1.042	67.6
4. Jim Clem	42.0	18'	1.39	58.3
Jess Shepherd	42.0	18'	1.39	58.3
5. Steve Davis	42.0	18'	1.39	41.7

<u>Cat. II HLG (25'+-35')</u>				
1. Stan Stoy	82.0	35'	1.0	82.0
2. Bob Clemens	49.0	26'	1.35	66.0

<u>PENNYPLANE</u>				
1. Gordon Wisniewski	430.0	23.6'	1.22	524.6
2. Bud Tenny	296.0	18'	1.394	412.6

<u>NOVICE PENNYPLANE (Junior)</u>				
1. Mike Clem	168.0	18'	1.394	234.2

<u>NOVICE PENNYPLANE (Open)</u>				
1. Cezar Banks	329.0	22.3	1.253	412.2

STATE OF THE ART

The document below and the accompanying plan are very informative. In case you missed the small note, the plan is an ink tracing of a pencil drawing - true artistry!

MAIFAI 77

The attached drawing is rather "thick" with many erasures and changes as it became a one place data sheet on my FAI efforts this year. It represents the four month effort to qualify for the 1977 team trials. My first experience with the trials was in 1975. It was mostly a beginner's disaster. I decided to learn from that experience, be practical and to make a better effort for 1977. My reasoning went as follows:

First, try to come closer to the 1 gram weight limit through lighter construction, less glue and a smaller plane. The smaller plane could be sturdier and therefore easier to handle for my inexperienced hands. Parabolic shapes for strength - it's amazing how the wood seems to go around the parabolically developed forms almost by itself. The wing is simply braced, the compression ribs are just deeper and thicker. The airfoil is from the MIT wind tunnel tests published some time ago. It's reduced to a 4 o/o thickness for this group of planes. The rest of the construction is conventional. The rudder goes through a tissue reinforced hole in the stab film, to the boom. The stab leading and trailing edges are braced to about 1" out with balsa braces. The polyhedral is such that each wing section is a chord on a common circle.

I kept weight records on all components as I built, making 5 or 6 of everything, aimed at four complete aircraft and no plans to interchange components. The propellers were all built to the same layout, reversing it for positive or negative flare. The negative flare props seem less efficient as they tend to flare forward too much and to stall. The best prop follows Kowalski's pitch scheme of 31" - hub, 36" - @45% and 35" @ the tip.

The longest flight to date was at Akron: 34:17, the next at Lakehurst, 33:31. I've been flying FAI supplies rubber as stripped and sold by Jerry Skjranic (Micro-X), and some of Ray Harlan's WV (very variable Pirelli). The average is .062 x 1044-45 x 17" - 18" loops. The Akron flight was on 2000 winds of WV and landed with 150 winds. The Lakehurst flight (one of 3 - 30 min. + flights) was on 1800 turns of the FAI stuff. It dead-sticked from about 20 feet.

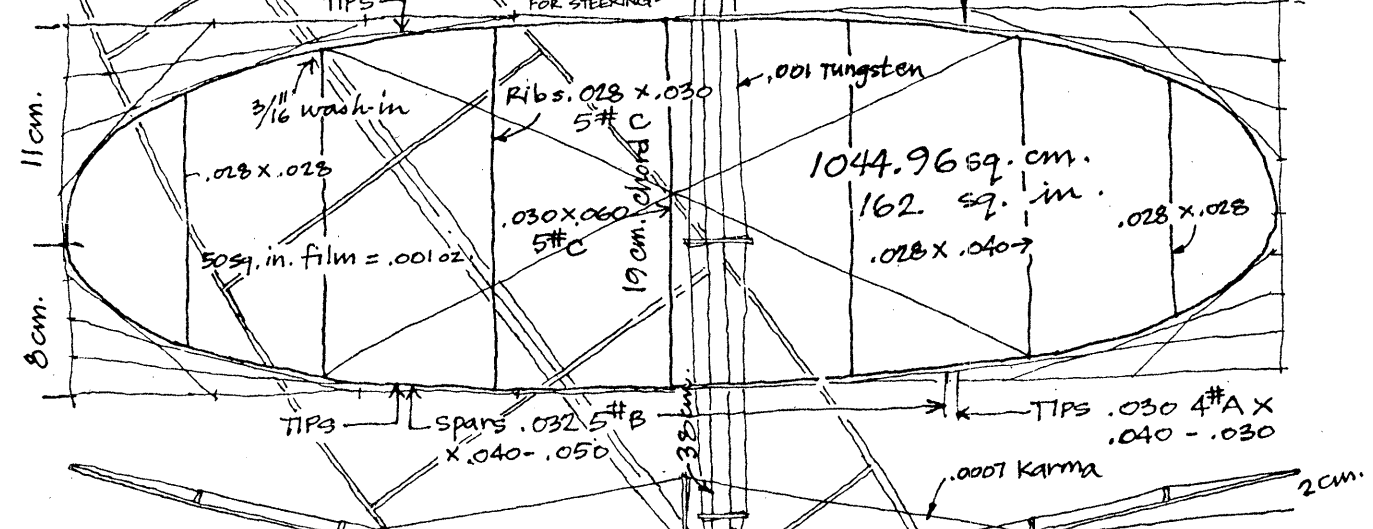
The planes are trimmed for maximum duration with 200 turns, i.e., for glide. They climb without a hitch when so trimmed. I tried some of Manny Radoff's great old Pirelli, but unfortunately went through the roof at 4 minutes or so.

I hope this info and the drawing will be of some use and inspiration to new-comers to FAI flying. I found the constant attention to detail in terms of weight analysis the most fruitful aspect of the building experience. The best tip I had was from Manny and was the basis for my glue formula: 50% Ambroid, 50% acetone and about 7 - 8 drops of DOP per 1/4 oz., MAGIC GLUE!

The biggest improvement in the planes' performance came from attention to rubber (testing, testing...) and propellers. The FAI-MX rubber requires winding-in very slowly with intermittent massage and smoothing of bunches to even them out. Treating this rubber like Filati or Pirelli results in very erratic performance. Also, the thinner stuff is pathetic.

B 640

- PROPELLERS: #1 NEG FLARE: 22 X 34.5 .008 oz.
 ** #2 POS FLARE: 22 X 34.5 "
 *** #3 POS FLARE: 21 X 36 "
 #4 NEG FLARE: 20.5 X 34.5 "
 * #5 POS FLARE: 21 X 34.5 "
 #6 SYMMETRICAL: 20.5 NOT BUILT



WING: 66.5 cm. flat

WING WEIGHTS
 BRACED FRAME ONLY
 #1: .0063 oz.
 #2: .0070
 #3: .0068
 #4: .0063
 BROKEN #5: .0070

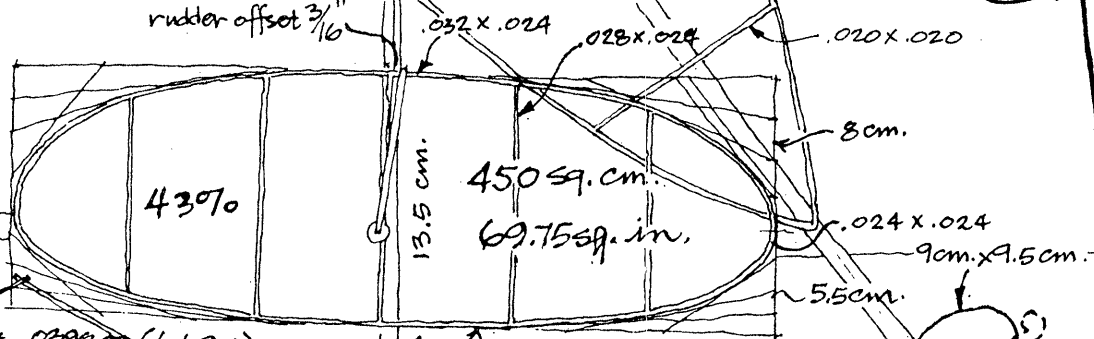
- FRAME ONLY
 STABS: #1-.003 ✓
 2-.0025 ✓
 3-.0024 ✓
 4-.0022 ✓
 5-.0032 ✓
 6-.003 ✓

- MOTOR STICK (BRACED)
 #1: .0112 oz. 4 3/4 # .012
 #2: .0108 oz. 4 3/4 # .012
 #3: .0103 oz. 4 # .015
 #4: .0102 oz. 4 # .015
 #5: .0112 oz. 5 # .011
 WT. WOOD

- TAIL CONES
 #1 .002 4 # .010
 #2 .0043 4 1/2 # .011
 #3 .0047 5 1/4 # .010
 #4 .004 4 1/2 # .010
 #5 .0048 4 1/2 # .010
 #6 .0047 4 3/4 # .010

REAR VIEW

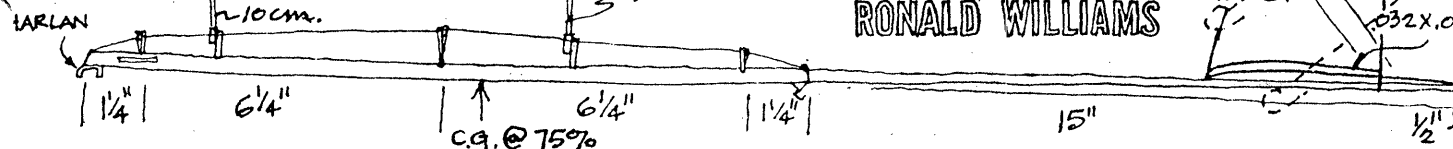
B440



FLYING ASSEMBLIES

- #3-.021 oz. +W#1 = .0296 oz (1.1 gm)
 #5-.0224 oz. +W#3 = .0424 " (1.2 ")
 #2-.022 oz. +W#2 = .0407 " (1.15 ")
 #1-.0204 oz. +W#4 = .0395 " (1.15 ")

RONALD WILLIAMS



MAYFAI 77

EPHEMERA GUTTULATA
 IRON FRAUDATOR
 EPHEMERELLA ROTUNDA

EPHEMERELLA
 "

DOROTHEA
 INVARIA
 ATTENUATA (ARG)

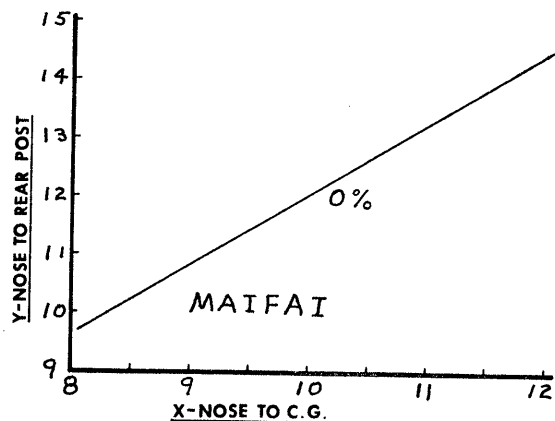
THIS IS AN INK TRACING OVER PENCILED BUILDING NOTES JUNE 1977

I found steering practice to pay off, with attention to keeping the balloon as close to the plane as possible (10 feet Max.) without, of course, touching the plane. Practicing a little meditation helps to keep the nerves down and having a mentor like Richard Whitten is a priceless advantage.

Sincerely,

Ron

Ron Williams



THIS IS HELP BUD TENNY WEEK (by Ed Whitten)

We all look forward, as members of NIMAS, to receiving INAV. It is disappointing to not receive it regularly every month.

Until you try editing, pasting up, keeping lists, and mailing out a newsletter on a regular basis, you can't really appreciate how much work goes into it.

INAV helps to unite us indoor modelers across the nation and all over the world. We need to help Bud to help us.

No. 1 - We should urge Bud to save time by stopping backdating his issues in an attempt to catch up. He can just give each a number and the current date. Bud can do what he thinks is proper as to how many issues constitutes a subscription/membership.

No. 2 - We can send in our contest results already typed. Be sure you type 5-3/4" wide columns...and no wider. You'd be surprised how much time this saves and how encouraging it is to an editor.

No. 3 - Supply Bud with articles, ideas, news...all typed to that 5-3/4" width.

No. 4 - Supply plans, inked, that fit within an 8 x 10 1/2 border.

We need communication of ideas, news, contest dates, etc. If you contribute to INAV, the news will come back to you four fold.

* * * * *

MANHATTAN FORMULA CABIN FLYING IN THE NORTHEAST

19 entries, possibly the largest field ever, showed up at Columbia University to fly in New York City's first Manhattan contest. They found the 105' Rotunda occupied, and had to fly in the old gym, 33'; weather was rainy and windy. Date January 8, 1978. MIAMA 4 gram rules prevailed, except that unlimited number of officials were allowed.

1) Pete Andrews	4:55.0	10) Aubry Kochman	1:33.1
2) John Triolo	4:37.8	11) Robert Geyer, Sr.	1:16.0
3) Richard Whitten	4:08.0	12) Robert Geyer, Jr.	1:14.0
4) Ron Williams	3:40.0	13) Dennis Domingo	1:12.0
5) Frank Haynes	3:35.2	14) Randolph Boston	1:08.3
6) Joe Nuszer, Sr.	3:15.0	15) Ichiro Sugioka	:37.0
7) Bob Meuser	2:51.5	16) Gerald Mallet	:10.0
(Proxied by Hardersen)		17) Bob Bender	x
8) Don Garofalow	2:36.2	18) Bill Sinram	x
9) Ed Whitten	1:44.8	19) Bill Tyler	x

A second Manhattan contest was promptly scheduled for Feb. 26, 1978. Same MIAMA rules and unlimited flights...a very popular idea... This time in the 105' high, 85' diameter Rotunda.

1) Bill Tyler	6:11.2	7) Frank Haynes	3:24.1
2) Pete Andrews	6:03.8	8) Aubry Kochman	2:45.0
3) Joe Nuszer, Sr.	5:50.0	9) Bob Geyer, Jr.	2:27.0
4) Don Garofalow	5:21.0	10) Randolph Boston	2:15.0
5) Bob Bender	4:08.2	11) Bill Sinram	x
6) Ron Williams	4:03.9	Gerald Mallet	x

April 19, 1978 at the LIAMAC contest in the Hicksville, L.I., N.Y., 50' Cantiague Park (9 entrants):

1) Pete Andrews	5:57.3	4) Bill Tyler	4:41.0
2) Frank Haynes	5:17.0	5) Joe Nuszer, Sr.	4:29.2
3) John Kukon	5:12.2		

COMING UP!!!!!! August 20, 1978...high ceiling Manhattan contest at Lakehurst NAS to New York 4 gram Official Manhattan Rules with unlimited number of official flights.

Send to Ed Whitten, Box 176, Wall St. Sta., New York, NY 10005 for back issues of STAR SKIPPERS with further Manhattan Formula news.

REPRINTED FROM STAR SKIPPERS JOURNAL

COLORING CONDENSER PAPER

BY BILL HENN

(ESW note: This fine article on dyeing condenser paper was intended by Bill Henn to guide the flying scale modeller. We can attest to the fine results Bill obtains. Manhattan builders can also doll up their ships a bit; Ron Williams' 'Gold Bug' is a beautiful, rich yellow. Many thanks, Bill, we appreciate your contribution.)

* * * *

Condenser paper is a non-porous, delicate and extremely light material whose primary use is as a dielectric in electronic capacitors. It also has gained a fair amount of popularity as a covering material for certain types of indoor models. In its natural state this paper has an unrealistic, off-white appearance which creates a problem when using the substance on scale models. In order to make condenser paper resemble the color of an actual aircraft it is usually necessary to dye the material.

After several unsuccessful attempts to color condenser paper, I finally developed the following method which is simple and works most of the time. The c-paper I used was obtained from Oldtimer Model Supplies. It was their lightest grade.

Prior to coloring the paper it will be necessary to construct a number of frames from scrap lumber. The larger the frames the more difficult will be the coloring operation. The frames I use measure 12" x 14" and are made from one inch square hardwood. Make sure the wood you use is rigid enough to resist flexing as the c-paper later shrinks.

Using a 50% mixture of white glue and water affix the c-paper to the frames. Be careful not to pull the paper too tight. About one half inch slack in the center of the frame is about right. If the material is too tight it will tear when it shrinks. Wrinkles will develop in the c-paper if it is applied unevenly or too loosely to the frame. Minor wrinkles can be removed from the finished product by pressing with an ordinary household iron set on low heat. Some experimentation may be necessary before you find the right amount of slack.

After the glue dries, the dye can be applied. I have tried a number of different dyes and colors with varying degrees of success. The results obtained using a 50% mixture of Yellow Higgins Drawing Ink and water were the most consistent. Using a soft one inch brush, paint the c-paper with the dye. Stand the frame vertically on its edge and pull the brush carefully across the surface of the paper without pressing. If the brush is well loaded with the dye it will not drag and tear the paper. When the c-paper is thoroughly wet take a ball of cotton approximately one and one-half inches in diameter and use this swab to distribute the dye evenly over the c-paper and to soak up the excess liquid. Because the c-paper has very little wet strength extreme care is necessary during this stage of the operation.

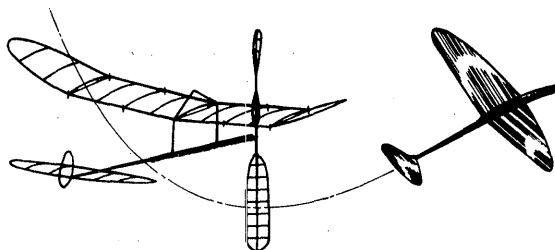
When the dye dries we hopefully will have a wrinkle free, uniformly colored piece of condenser paper on the frame which at a glance resembles yellow Japanese Tissue. The material can now be cut from the frame and applied to the model with your favorite condenser paper adhesive. I use a 50% or weaker mixture of white glue and water for this purpose also. If you desire to shrink the c-paper after it is applied to the model this can be accomplished to a limited degree by light steaming. Some shrinking ability will still remain in the c-paper even after being colored.

It is advisable to color a surplus of c-paper and store what is not used. If it is ever necessary to patch the model you will be assured of a close color match. Even though I carefully measure the proportions of dye and water, each batch of paper that is colored seems to have a slightly different hue.

After reading the foregoing you may reach the conclusion to stick with Jap Tissue. Admittedly Jap Tissue is more rugged and easier to work with but if you are intending to build a highly competitive scale model the reduction in weight resulting from the use of condenser paper may make the difference between winning and losing contests. My son, Billy, and I each built identical 20" wing span models of the Lacey M-10. The only difference was that he used tissue to cover his model and I used condenser paper. Billy's Lacey weighs 30 grams and mine weighs 26.5 grams. The lighter model consistently outflies the other by 15 to 20 seconds.

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Study and Choose

Each AMA member will soon receive his AMA ballot and a bill for the 1979 dues. It has been said before - you need not renew at the same time as you vote - so I just repeated it! With the packet will be an info sheet on the candidates, but I hope that each of you already knows the candidates (AMA Districts 2, 4, 6, 8 and 10 VP's are being elected, along with the AMA President). I have often urged informed participation in the AMA election, and was quite distressed over statistics such as these: only 13% of the members returned valid ballots, while another 2% returned late, incorrectly marked or blank ballots. I can only urge that you study the info sheet carefully and discuss the candidates with others. Inform yourself, then vote!

Support Earl Witt!

AMA members in odd-numbered districts can vote only for president, while even-numbered districts also need to choose a VP as noted above. The candidates for president are John Byrne (outgoing Dist. 2 VP) and Earl Witt (AMA Secretary-Treasurer). Both are capable men with wide experience in AMA and high-level management. My personal choice is Earl Witt, based on 12 years of acquaintance and admiration for his ability. I urge your added support for Earl Witt.

Coming Attractions

This issue winds up information on THNIRT, and the next issue will contain Nats and World Champs results, and Nats pictures. Except for the results, there will be no other WCh report or photos unless these are furnished by INAV readers. Meanwhile, note the following summary:

Jim Richmond	84:12	Great Britain	218:27
Bud Romak	81:22	U.S.A.	214:25
Ron Higgs	76:29	Canada	212:52
D. Siebenmann	74:53	Japan	210:38
Laurie Barr	73:57	Poland	205:21

Team Decals Available

If the image below turns out, you will be able to see the design of a decal available from Ray Harlan. The "78 USA" is red with the rest blue on a white background, thus making an attractive decal to add to your model box. Remember that INAV material is reduced - the diameter is 3 1/8". Unfortunately, I can't find Ray's note telling the cost, and Ray wouldn't like a midnight phone call! Ray Harlan, 15 Happy Hollow Rd., Wayland MA 01778.

CONTEST CALENDAR

FLORIDA - Miami
Contests at the Opa Locka Goodyear Hangar; Oct. 22, Nov. 19, 1978, 9 am to 5 pm. John Martin, 3227 Darwin st., Miami FL 33133.

NEW YORK - New York City

Record Trials at Low Library Rotunda, Columbia University, New York City; 9 am to 5 pm, Oct. 8, Oct. 22, Nov. 5, Nov. 19, Dec. 10, 1978. No HLG. Ron Williams, 1364 Lexington Ave., New York NY 10028.

OKLAHOMA - Oklahoma City

Indoor contests at National Guard Armory, 200 NE 23rd St., Oklahoma City; Oct. 29, Nov. 26, Dec. 17, 1978; HLG, Pennyplane, Easy B, Peanut Scale, AMA Scale; 9 am to 5 pm. Al Bissonnette, 6238 SE 15th, Midwest City OK 73110, ph. 405-737-1085.

THNIRT COMMENTS...

Dear Bud,

The Third Nimas International Record Trials, June 23/25, 1978 (and the first indoor meet I have attended as a participant since the Philadelphia Indoor Championship of March 1941)...is everything it has been reported to be, and more!!!

Besides the fantastic flying site at Northwood Institute, the 200' diameter x 98' high domed Atrium...the weather, the records set, the camaraderie, the meet management, & the observation possibilities, all, were incomparable.

The Thnirt pictures enclosed capture a small fraction of the activities Friday thru Saturday, the 23rd & 24th.

Some of the highlights for me were: Dave Lindley's 3 Jr. Records and "Index" First Place; the once-in-a-million A-ROG record-tie of 16:50.2 by Bucky Servaites and Jim Richmond; Jim Richmond's Cat II D-Stick record of 36:21.4 at 70' altitude (which, among other things, obsoleted my never-used "flight chart" by climbing at 30 RPM even and cruising at 28.8 RPM!!!!); Al Rohrbaugh's unique demonstration of "the 'Compleete' Indoor Modeler"; tips and reference from Dennis Jaecks; the seemingly effortless CD-ing by John Martin; meeting VTO's Dave Linstrum; discussions with Rich Doig, Bill Shailor & Jerry Skrjanc; & finally, the camaraderie with fellow Chicago Aeronuts, Charlie Sotich and Don Lindley.

Looking forward to next year's, what will you call it... F'Nirt.

Best regards,

Jack Carter

THE THNIRT PICTURE STORY

Thanks to Jack Carter and Dave Linstrum for furnishing the photo coverage of the 1978 NIMAS bash. The photos are numbered top to bottom, in columns from left to right, and credit to (C) or (L) as noted.

Left Column

1. Dennis Jaecks finishes windup and prepares to fly his bipe Pennyplane. (C)
2. Ron Ganser adjusts his ornithopter. (L)
3. Al Rohrbaugh's record-setting ornithopter makes a test flight. If you didn't go, see the architectural beauty you missed? (C)
4. Record listing at the end of flying Friday. (C)

Left Center

1. John Martin, organizer and CD, works with a well constructed Weyman Lepere. (L)
2. Cezar Banks with bipe Pennyplane which almost got a record - 13:38 - using the new FAI Rubber. (C)
3. Charlie Sotich prepares to fly Paper Stick model. (L)

Right Center

1. Bob Clemens works on Manhattan Cabin model. (L)
2. Jim Richmond with the 17:34.2 Atrium Insect. (C)
3. Rick Doig shows his Microlite covered Pennyplane. (L)

Right Column

1. Mike Van Gorder with his Easy B. (L)
2. Don (1) and Dave Lindley with Dave's elaborately braced Pennyplane - nice flier. (L)
3. Al Rohrbaugh makes a repair on his ornithopter; these birds must be both light and strong to take the beating generated by flapping wings! (L)
4. An ingenious "stuffing stick" designed by Dennis Jaecks to load Cabin motors - works well for Peanut Scale models, too. (C)

9. Cezar Banks	Open Pennyplane	13:35.0	.9903
10. Dennis Jaecks	Open Pennyplane	13:23.0	.9757
11. Al Rohrbaugh	Open FAI Stick	31:25	.961
12. Al Rohrbaugh	Open Paper Stick	22:31.2	.901
13. Al Rohrbaugh	Open HL Stick	31:25.5	.894
14. Al Rohrbaugh	Open ROG Cabin	22:35.8	.892
15. Dick Obarski	Open FAI Stick	28:49	.882
16. Rick Doig	Open FAI Stick	28:48	.8812
17. Bucky Servaites	Open HL Glider	119.6	.837
18. Bob Larsh	Open HL Glider	118.6	.830
19. Dick Obarski	Open Paper Stick	19:55.9	.821
20. Dick Obarski	Open HL Stick	28:49.5	.820
21. Rick Doig	Open HL Stick	28:48.3	.819

(116 Flights Made)

RESULTS FROM '78 NIMAS INTERNATIONAL RECORD TRIALS

FAI STICK

1. Al Rohrbaugh	31:25
2. Dick Obarski	28:49
3. Rick Doig	28:48
4. Bucky Servaites	21:51
5. Cezar Banks	21:36

(9 entries)

ROG STICK

1. Jim Richmond	17:34.2
2. Bucky Servaites	16:50.2
3. Al Rohrbaugh	16:00.0
4. Ron Ganser	15:45.0
5. Dave Lindley(JR)	*9:12.6

(7 entries)

HL STICK

1. Jim Richmond	*36:21.4
2. Al; Rohrbaugh	31:25.5
3. Dick Obarski	28:49.5
4. Rick Doig	28:48.3
5. Bucky Servaites	21:51.0
6. Cezar Basnks	21:36.6

INDOOR CABIN

1. Al Rohrbaugh	22:35.8
-----------------	---------

(3 entries)

ORNITHOPTER

1. Al Rohrbaugh	3:08.3
-----------------	--------

(3 entries)

PAPER STICK

1. Al Rohrbaugh	22:31.2
2. Dick Obarski	19:55.9
3. Charlie Sotich	17:58.2
4. Bob Clemens	12:43.0

(8 entries)

AUTOGYRO

1. Dave Lindley(JR)	*3:53.6
---------------------	---------

HELICOPTER

1. Dick Obarski	*8:47.6
-----------------	---------

MANHATTAN

1. Walt Van Gorder	*9:13.0
2. Dick Obarski	7:35.0
3. Ron Ganser	7:02.0
4. Bob Clemens	6:06.0
5. Bob Larsh	5:58.2
6. John O'Leary	2:24.6

(7 entries)

HL GLIDER

1. Bucky Servaites	119.6
2. Bob Larsh	118.6
3. Rick Doig	81.3
4. Mike Van Gorden(JR)	76.0
5. Brian Fulmer(JR)	68.7
6. Brad Fulmer(JR)	68.1

EASY B

1. Al Rohrbaugh	16:30.2
2. Walt Van Gorden	16:20.0
3. Jerry Skrjanc	16:12.9
4. Lester Garber	13:04.0
5. Bob Clemens	12:01.1
6. Mike Van Gorder(JR)	9:36.9

(11 entries)

PENNYPLANE

1. Cezar Banks	13:35.0
2. Dennis Jaecks	13:23.0
3. Rick Doig	10:42.3
4. Bob Mullins	10:18.0

(11 entries)

PEANUT SCALE (Pts./Model)

1. Greg Thomas	3/Lacey M-10
2. C. Sotich	5/Volksplane
3. Bob Clemens	6/Wright WP-1
4. Bob Clemens	6/BD-4

(9 entries)

NOVICE PENNYPLANE

1. Walt Van Gorder	11:09.9
2. Cezar Banks	10:53.0
3. John O'Leary	8:51.0
4. Mike Van Gorder	*8:43.2

(5 entries)

INDOOR SCALE

	Static	Flight	Total	Model
1. Charlie Sotich	77	90.0	167.0	Volksplane
2. Greg Thomas	81	71.2	152.2	Wittman
3. Bob Clemens	80	54.6	134.6	Farman
4. John Martin	71	47.4	118.4	Weyman-
5. Bob Clemens	66.5	30	96.5	Lepere
				Wright WP-1

RECORDS? MAYBE!

Third NIMAS INTERNATIONAL RECORD TRIALS, West Baden, Ind.

June 24, 1978

- JUNIOR ROG STICK - 9:12.6, Dave Lindley
- JUNIOR AUTOGYRO - 3:53.6, Dave Lindley
- JUNIOR Cat. I AUTOGYRO - 1:06.2, Dave Lindley
- OPEN ROG STICK - 17:34.2, Jim Richmond
- OPEN HL STICK - 36:21.4, Jim Richmond
- OPEN HELICOPTER - 8:47.6, Dick Obarski
- JUNIOR NOVICE PENNYPLANE - 8:43.2, Mike Van Gorder
- OPEN NOVICE PENNYPLANE - 11:09.9, Walt Van Gorder

Unofficial Record

Open Manhattan Cabin - 9:13.0, Walt Van Gorder

POSSIBLE WORLD RECORD

FAI Cat III Absolute Endurance - 36:21.4, Jim Richmond

THNIRT INDEX OF PERFORMANCE - 1978

	Model class	Time	Index
1. Dave Lindley	Jr. Autogyro	3:53.6	4.245
2. Dave Lindley	Jr. ROG Stick	9:12.6	1.676
3. Dick Obarski	Open Helicopter	8:47.6	1.168
4. Jim Richmond	Open ROG Stick	16:50.2	1.059
4. Bucky Servaites	Open ROG Stick	TIE	TIE
6. Jim Richmond	Open HL Stick	36:21.4	1.034
7. Al Rohrbaugh	Open ROG Stick	16:00.0	1.007
8. Ron Ganser	Open ROG Stick	15:45.0	.991

CEZAR BANKS' EASY B PROPOSAL

FF INDOOR EASY B RUBBER (OFFICIAL EVENT)

1. APPLICABILITY - no change.
2. GENERAL. Replace in entirety with following: "Except for the specific rules which apply directly to Easy B, the rules for FF Indoor Rubber, Hand-Launched Stick Model, shall apply."
3. Replace in entirety with following:

EASY B.

- 3.1 The model shall weigh at least 1 gram (.0353 oz.) without the rubber motor.
- 3.2 The projected wingspan, measured perpendicular to the stick, shall not exceed 18 inches (45.72 cm.).
- 3.3 The wing chord shall not exceed 3 inches (7.62 cm.).
- 3.4 The area of the horizontal stabilizer shall not exceed 50% of the projected wing area.
- 3.5 The distance from the front of the thrust bearing to the rear motor hook shall not exceed 10 inches (25.4 cm.).
- 3.6 A single direct drive (ungeared) rubber motor and propeller shall be used to power the model.
- 3.7 The motor stick shall be solid and made from a single piece of wood (the tail boom may be a separate piece).
- 3.8 The propeller diameter shall not exceed 10 inches (25.4 cm.).
- 3.9 Covering material: There shall be no restrictions on covering material.
- 3.10 The event is limited to monoplane models.

LOGIC BEHIND THE PROPOSAL

As evolution has wended its way, the term "EASY B" no longer applies to present competitive models because they are anything but "easy". With unbraced structure and tissue covering as called for by most contest directors, weights are approaching .7 grams. Only skilled and experienced indoor experts with good indoor wood resources can achieve this, and it seems ridiculous to call the resulting creations--some with "all wood" built-up props--"easy". Clearly, we should either change the name or change the rules.

If we change the name (to Difficult B?), we will probably continue to drive the weight down (don't ask me how!) and limit the appeal to only those few with a real talent for unbraced structure. I don't believe this was ever the intent or spirit of Easy B.

If, however, we change the rules and do it right, just maybe, EASY B will again describe a model not too hard to build and fly, yet challenging enough to allow a transition modeler room to grow before he tackles the more exotic indoor stuff.

I think the key to the latter approach is to impose a weight rule. I choose one gram because it still offers some challenge to building light but doesn't get ridiculous. Covering materials are unrestricted for two reasons:

1. Tissue shrinks badly in hot weather and warps the structure, whereas plastics (e.g. polycarbonate films) are almost immune.
2. The lighter weight of plastics allows the weight saving to pass to the structure wood, permitting, for example, stiffer and/or more easily obtainable wood grades.

Prop diameters are limited to ten inches because:

1. Ten-inch diameter and a weight-rule model will tend to discourage built-up props.
2. Ten-inch diameter may just spur some interesting propeller development. Notice that plastic or foam would be all right.

The dimensional rules are just to set the record straight on present EASY B sizes and to preclude freak configurations like tandems and biplanes.

Dear Cezar;

Thank you for the opportunity of reviewing your Easy B proposal.

I do not favor making Easy B an official event for this reason: any such action has always resulted in making

(CONT. P. 4)

the concerned event more attractive to the "expert" and thereby increasing the skill level required to compete. Also, a paper-covered Easy B is eligible to compete against Indoor Paper Stick for record purposes, which seems to duplicate a record category.

However, assuming that official status is desirable for Easy B, note that your proposed Sec. 3.9 allows and thus encourages use of microfilm covering. This works against the stated purpose of restoring the event as a beginner class. It seems better to require: "There shall be no limitations on covering material except that any plastic covering shall be limited to commercially available ready-to-use plastic sheet."

Note also, that it is impossible to create any beginner event without specifically legislating that only beginners are permitted to enter the event.

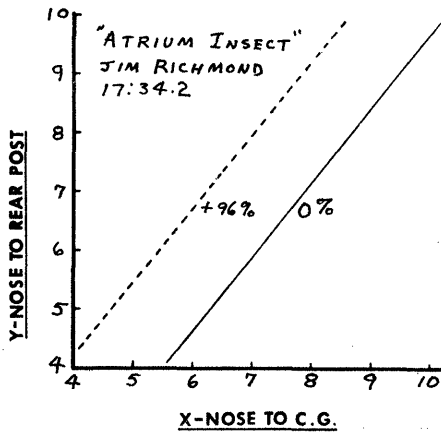
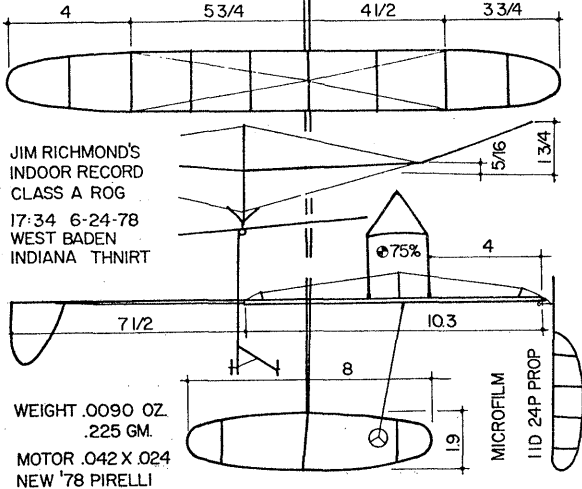
Other than the above, I basically agree with your aims and feel that I could easily support the rest of your proposal and would even look forward to a new beginning in Easy B competition. I particularly favor allowing new material experimentation in the prop area and the use of other than condenser paper for covering.

Best regards,
Bud Tenney

STATE OF THE ART

The three-view below showing Jim Richmond's record setting A ROG, is presented by the courtesy of MODEL AIRPLANE NEWS and Dave Linstrum. If our calculations are correct, the model was flown with a very high margin of stability - +96%.

the atrium insect



JOHN TRIOLO DOES 10:43 TO WIN FIRST LAKEHURST MANHATTAN CONTEST

Billed as 'The Battle of the Titans', the contest was just that. Walt Van Gorder came flying (literally) out of the Midwest to post 9 minute flights that led the pack all day. John Triolo, who had set a Lakehurst record of 10:25 on July 15th, was up against the girders as 7 PM marked the contest's end. So was Walt. Both got their best times of the day. John landed first at 10:43.0, and Walt at 9:57.2. Walt seemed more disappointed at missing 10 minutes than by losing to John. Quite a duel!

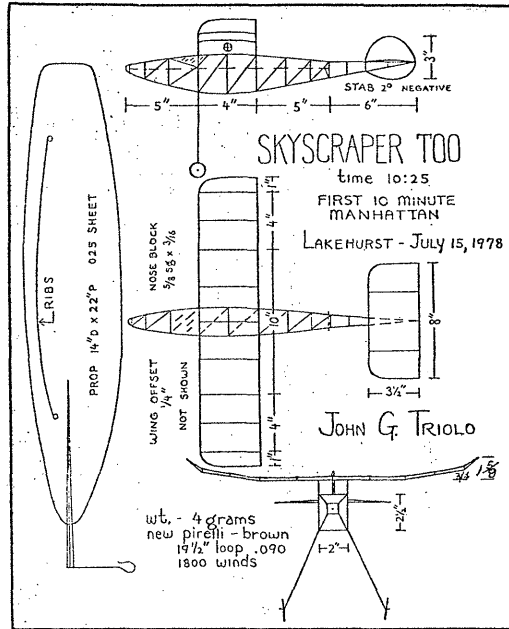
- | | | | |
|--------------------|---------|-----------------|-------------------------|
| 1) John Triolo | 10:43.0 | 6) Ron Williams | 7:55.0 |
| 2) Walt Van Gorder | 9:57.2 | | (Proxied by Mark Drela) |
| 3) Frank Haynes | 8:30.2 | 7) Bill Tyler | 7:52.1 |

- | | | | |
|--------------------|--------|--------------------|--------|
| 4) Pete Andrews | 8:22.0 | 8) Ed Whitten | 2:03.5 |
| 5) Richard Whitten | 8:02.1 | 9) Joe Nuszer, Sr. | x |
| | | 10) Manny Radoff | x |

Sponsored by Ed Whitten, cups were awarded to 5th place. High humidity caused problems, and more than one model had to have balsa wing braces to keep tips from flexing. The New York Official Rules sensibly allow this. They also allow the very popular innovation of an unlimited number of official flights.

How's this for contest statistics? 1 ten minute flight, 7 nine, 11 eight, 15 seven, 7 six, and 2 flights five minutes long...and this doesn't count several times not reported as they were lower than the contestants' best so far.

We really appreciate Walt's two friends, Bill and Don Asbury, who flew Walt and Mike Van Gorder in their Cessna 195 from Ohio. Incidentally, Mark Drela set an unofficial world's record with a 35 cm model. His average time of 26:22.7 beats Laurie Barr's record.



NATIONAL FREE FLIGHT SOCIETY

DEDICATED TO THE INTERESTS OF FREE FLIGHT MODELING



Dear Bud,

Please include as much as you can in your next column:

The National Free Flight Society has instituted the Free Flight Hall of Fame in order to give due recognition to those individuals that have contributed to the development/furtherance of Free Flight Model Airplane activities.

Nominations for 1979 are now in order and should be received by January 31, 1979. The nominations must include a detailed narrative regarding the many accomplishments over the years of the individual. Following considerations apply:

- Scientific developments directly attributable to model airplane developments.
- Designs that have formed a trend copied by many.
- Sportsmanship rapport on the field.
- Individuals who have, through their efforts, coagulated concepts/designs/edited down to written word understood by the average modeler.
- Nominees must be known to more than a handful modelers.

Nominations are now in order for 1979 selections for the National Free Flight Society 10 Models of the Year Awards.

Nominations are requested for: FAI Power, Wakefield, Nordic, Outdoor Rubber, Small AMA, Large AMA, Indoor Rubber, Indoor/Outdoor HL Glider, and special awards. Send nominations for Hall of Fame and Models of the Year to:

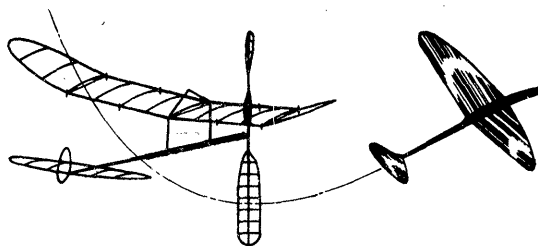
A. J. Italiano 414-782-6256 (Home)
1655 Revere Dr. 414-762-7000 (Office)
Brookfield WI 53005

Thanks.

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

This issue had many false starts, and if some dated material is noted, some of you may not have seen it. My office is a bit better organized so that I have located most of the backlog material, which means that upcoming issues may come closer together. Since the last issue, I have finished work on three major contracts, helped with final publishing details of a computer textbook, and been "father of the bride" for the youngest of the brood. If any of you have been there, you can appreciate how much turmoil is involved!

Total material on hand includes Nats pix and brief report, WCh pix and brief report, and much other material sent by the faithful and patient. As much of this dated stuff will be used in this issue as possible, with the leftover to appear in the next issue. Those who have asked for back issues, and other things, I haven't forgotten. Thank you for being patient!

A Question!

Joe Brownlee, a MS student in Aero Engineering, asks "What is the role of cyanoacrylate adhesives in indoor model construction?" Is anyone out there using Super Glue, Hot Stuff, etc. on indoor models (besides in field repair of HLG)? If so, tell us what you've learned. You have learned something if you use it, since this glue is one where good results definitely depend upon technique!

Who Knows About This?

The following interesting item was stolen from the "Buzzard Droppings" newsletter (Buzzin' Buzzards Club; Editor, Frank Scott):

We have read recently of several World Championship indoor models being destroyed when the helium balloons used on steering and recovery have burst when encountering objects. A possible answer to such setbacks is the use of a new "flying saucer" balloon now available from certain specialty shops (such as Cloud Crowd). Made of a tough metalized Mylar® film, these are much more puncture resistant than their rubber counterparts. Additionally, these balloons are not under pressure when inflated, thus cannot catastrophically burst if they should somehow be punctured.

'79 Nats

AMA has announced that the site of the 1979 National Model Airplane Championships will be Lincoln, Nebraska. More details have appeared in various issues of MODEL AVIATION, and will be summarized in the next issue. We have been furnished a photo of the Indoor site, which may appear in a future issue. Meanwhile:

Unofficial Nats Events

Terry Rimert, 467 Orange Ave., Baldwin FL 32234 has been appointed NFPS Unofficial Events Director. He will be delighted to accept volunteers to sponsor and run any unofficial events. Terry has requested that indoor flyers contact him if there is some possibility of developing any new Indoor events such as Indoor Helicopter, Ornithopter or Autogyro. Contact Terry ASAP so that good advance notice can be generated.

NIMAS POSTAL MEET

The 1979 NIMAS Postal Meet can be entered using any flights made in 1979, so long as those flights were made under conditions described by AMA Rules for the particular model class involved, (subject to the rules below). That is, the flights can be from contests or flying sessions, so long as they were properly timed and the other rules are met. (For example, HLG flights are scored as the best two of nine flights, so the entry for any event can't consist of the two best from one day's flying. It is permissible to enter HLG times from one session and Easy B times from another.) Postmark deadline for entry is May 7, 1979.

Events: Easy B; paper covered only, all-wood prop, solid motor stick and boom, no bracing.

HLG; AMA Rules except two ceiling classes. Class I--18' to 25'; Class II--25' to 35'.

Pennyplane; AMA Rules

General Rules: Free entry. Please indicate height of ceiling for each entry, using FAI ceiling measure. Ceiling height is used to compute fudge factors used for final scoring. Separate classes for Juniors in each event, anyone may enter. Send entries to Box 545, Richardson TX 75080.

CONTEST CALENDAR

AMA'S 2ND INDOOR POSTAL CONTEST--Jan./Feb./Mar. '79.

- °FLY anytime during January, February or March, 1979 and use more than one model per event if needed. Make as many official flights on different days as possible.
- °ANYONE 18 years old or younger may enter, from anywhere, and no AMA license is required. No entry fee is required.
- °USE any available site, and any ceiling height is OK to use since flight times will be adjusted to 35' using the NIMAS Fudge Factor. Flights made in 15' or lower ceiling will be fudged to 15'.
- °EVENTS are HLG and Hand-Launched Stick. Score the two best flights on any single day for HLG and use an all-balsa glider built by the contestant. STICK models are scored on the best single flight and the models may be any type of indoor model including AMA Cub, EZB, Pennyplane, AMA Stick, FAI, etc. Contestant must build his own models.
- °SEND RESULTS TO: Ed Whitten, c/o Academy of Model Aeronautics, 815 Fifteenth St., Washington DC 20005 before the end of April, 1979. AMA medals and certificates will be awarded to winners.

1979 NIMAS POSTAL MEET - Postmark deadline for entry is May 7, 1979, for flights made anytime in 1979. See text elsewhere for details.

FLORIDA - Miami

Indoor contests from 9 am to 5 pm in Goodyear Hangar at Opa Locka Airport in Miami, Florida. Dates subject to change, so call 858-6363 on Saturday before the meet to check. Peanut Scale, Indoor Scale, Easy B, Paper Stick, HLG and Junior Glider. Contact John Martin, 3227 Darwin St., Miami FL 33133 for more details.

ILLINOIS - Chicago

The 6th Annual Midwestern State Indoor Championships will be held at the Madison St. Armory in Chicago April 21-22, 1979. Low ceiling flying sessions will be held Mar. 18 and May 22, 1979 in the Girls Gym, Forest View High School, 2121 S. Goebbert Rd., Arlington Heights, Ill., 10 am to 4 pm. Contact Chicago Aeronauts at 2107 Center Ave., Northbrook IL 60062 for details on both of these activities.

INDIANA - Anderson

CIA Annual Indoor Meet, Mar. 18, 1979. Date taken from FF contest calendar published in The Turbulator, by Bob Klipp of the Thermaleers (St. Louis MO area). Contact for 1978 contest was Phil Sullivan, P O Box 2272, Anderson IN 46011.

MINNESOTA - Minneapolis

Indoor contests at Burnville Senior High Gym, Burnville MN, Noon to 4:30 pm, Feb. 25 and Mar. 25, 1979. Novice Pennyplane, Peanut Scale, Walnut Scale, HLG. Call Jack O'Leary, 612-888-6667; Terry Taylor, 612-535-4787.

MISSOURI - St. Louis

Thermaleers Fly-in, East St. Louis Armory on Feb. 25, 1979. NATO Day Indoor Championships, E. St. Louis Armory on Mar. 25, 1979. .34' site. For details contact Chris Matsuno, 8576 Ginger Ave, St. John MO 63114.

NEW YORK CITY - Columbia University

AMA sanctioned Record Trials, no HLG, Low Library Rotunda, Columbia University, 105' ceiling, 9 am to 5 pm on Feb. 25, Mar. 11 and Mar. 25, 1979. Mar. 11 is also a Manhattan Contest using NY official rules. Contact Ron Williams, 1364 Lexington Ave., NYC 10028, 212-722-5262.

OKLAHOMA - Oklahoma City

Indoor contest Mar. 18, 1979; National Guard Armory, 200 NE 23rd St., Oklahoma City, 9 am to 5 pm. HLG, Easy B, Pennyplane, Peanut Scale, AMA Scale. Al Bissonnette, 6238 SE 15th, Midwest City OK 72110, ph. 405-737-1085.

OREGON/WASHINGTON

Hawks Indoor Contest, Mar. 2, 1979, Interlake High School, Bellevue WA. WMC Indoor Contest, Mar. 4, 1979, South Albany High School, Albany OR. Contact Editor of "Bat Sheet", Tom Cashman, 2521 SW 323rd St., Federal Way WA 98003 for details.

TENNESSEE - Tullahoma

Indoor practice sessions at Motlow College Gym, Tullahoma, TN, Feb. 25 and Mar. 11, 1979. Indoor Contest at same site Mar. 25, 1979. Easy B, Pennyplane, HLG, Peanut Scale and AMA Scale. Contact J. Freeman, 1105 Bell Aire Dr., Tullahoma TN 37388.

THE INDOOR NATS

Burton Coliseum lived up to my personal expectations for the site, with good conditions (except for the humidity, which was expected but I tried to "wish" it away). Ceiling measurements made early in the day established it as a Cat. III site--105' high--which dashed my one slight hope for a really top-notch Cat. II site in the South.

The typical Nats begins with Paper Stick flights to test the air and to get these flights "on the books" so the mike ships can fly later in relative safety and better air. This Nats was no exception. Some drift turned up, so curtains and doors around the arena perimeter were closed; this stopped most of the drift. Soon, the all the various types of indoor models were up. The fliers soon began to "get the range" and many good flights were logged. Then, occasional drift showed up very close to the ceiling.

This was the first Nats since steering has been allowed in AMA contests where steering affected the outcome to any great extent. This year, Dan Domina's FAI model hit drift next to the ceiling which put his model in the bleachers on one flight. On the next flight, the same thing almost happened until Dan grabbed his balloon. At least four times Dan had to steer his model across the arena to the opposite side. It looked so easy!

The FAI Stick models were flown in rounds as part of the Team selection program toward the 1980 Indoor WCh. The resulting schedule affected fliers entering both FAI and AMA events; they had to watch their time very carefully to make all their flights on time during the contest.

Everyone flying any new site with over 90 feet of ceiling height wonders if any flights over 30 minutes will be made. Burton Coliseum should have allowed more than one such flight, but the rain and generally high humidity of Lake Charles made the air very heavy. Consequently only one flight exceeded the 30 minute mark. This was Dan Domina's steered flight, and the steering activity stopped the prop for about one and one-half minutes. The stopped-prop time was deducted from the flight total, to give only 29:26. The next longest flight was 26:16.4, logged by Clarence Mather. Paper Stick times were lower than expected due to their greater affinity for moisture from the air, so the winning Paper Stick time was only 17:47.2.

On Day Two, hand launched gliders filled the air from opening time until 2 pm. Besides the usual Sweepettes and modified Sweepettes, there were numerous original gliders. Paul Shailor set an early lead with his Sweepette and his 1:04.8 and 1:07.2 remained tops long after he logged them. Then Dale Segle scored 1:08.4 with his original design for the best single time; he was unable to get a backup flight long enough to win. Paul decided to try for high single time also. One of his remaining four tries turned the trick by landing after 1:09.0 minutes of flight. Paul's last toss just grazed the plastic shroud over the speakers and landed after only 59.9 seconds.

After 2 pm, Pennyplanes and Easy B models shared the air with the Indoor Scale event. The scale models flew at one end while Pennyplanes and Easy B's used the other end. The humidity scarcely bothered the Pennyplanes, which took the extra rubber weight in stride, but the paper covered Pennyplanes suffered more than the ones covered with Microlite. Several biplanes flew, but were less consistent than the winning monoplanes. The 14+ winning Easy B time wasn't bad, but didn't quite compare to flights of nearly 21 minutes reported in big hangars.

FAI INDOOR REPORT

Results From Team Qualification Trials

FAI REGIONAL, Lakehurst NAS, Lakehurst NJ July 1-2, 1978

			Total	Points
Pete Andrews	35:25	37:57	73:22	100.0
Bill Tyler	34:55	34:37	69:32	94.8
Bob Platt	31:18	36:34	67:52	92.5
Dan Domina	32:47	34:23	67:10	91.5
Manny Radoff	24:08	33:52	63:00	85.9
Richard Whitten	28:14	31:52	60:08	82.0
John Kukon	26:30	30:08	56:38	77.2
Hal Crane	26:15	22:34	48:49	66.5

FAI REGIONAL, Goodyear Hangar, Akron OH Sept.16-17, 1978

Jim Richmond	37:36	34:20	71:56	100.00
Ron Ganser	35:04	35:46	69:50	98.53
Bill Hulbert	36:06	33:25	69:31	96.66
Al Rohrbaugh	30:07	34:17	64:24	89.50
Dick Obarski	26:02	34:28	60:30	84.10
Ed Stoll	25:28	27:59	52:87	74.30

FAI REGIONAL, Ames Research Center, Nov. 25-26, 1978

Bud Romak	33:00	33:09	66:09	100.00
Bob Gibbs	32:26	32:03	64:39	97.48
Joe Bilgri	31:06	33:03	64:09	97.00
Bob Randolph	31:47	27:03	62:91	96.02
Clarence Mather	27:21	27:03	54:24	82.24
Cezar Banks	25:00	26:26	52:26	77.75
Andy Faykun	4:47	14:10	18:57	28.65

Report of CIAM Plenary Meeting

Ray Harlan attended the December CIAM Plenary Meeting after George Zenakis (regular FF delegate) was unable to attend. He circulated a report to the Indoor Team Selection Committee upon his return. His report is long and filled with commentary which helps to illustrate the politics of international modeling--a fascinating report! From this report we can note the following clarification of the existing steering rule (clarifications can be made now; rules changes must wait until 1983 for adoption).

Steering of Model

(a) Steering must only be used to avert collision with the structure of the building, its contents, or other models. Movements of the model must be primarily in a horizontal plane.

Note: If, in a timekeeper's opinion, a model's altitude change is approaching one half meter, or one meter for each 25 meters of altitude (whichever is larger), he will warn the competitor. Continued disregard of the timekeeper's warning will result in a terminated flight.

(b) A balloon(s) with its line attached or a rod 2 to 8 meters in length may be used to alter the course of the model, or to reposition it in another part of the flying space. There will be no time limit or restriction to the number of steering attempts, except that all steering shall be done from the front end of the model and never from behind.

(c) During the steering the propeller may get caught in the line/balloon(s)/rod and stop revolving. As soon as the propeller stops, a third watch (preferably a double button watch, that records the accumulative time) to determine the total propeller stopped time, which is deducted from the running total shown on the other two watches. If the steerer cannot disengage the propeller after steering, all 3 watches are to be stopped together, and the total propeller time deducted as detailed above.

(d) No (the word "no" is to be inserted here) re-flight is allowed other than if fouled by another model during steering.

(e) The decision to steer is the responsibility of the competitor and must be done by him. A physically handicapped competitor must arrange for a substitute with contest officials. In the case of poor sight, a medical doctor's affidavit certifying the competitor's corrected vision is no less than 20/40 for the better eye must be submitted to permit a substitute steerer.

(f) It is the responsibility of the timekeeper to observe the use of the steering equipment, and to warn the competitor if he is likely to endanger other models. If another model is fouled by the steerer, the fouled competitor has the choice of another flight. He must exercise this choice to his timekeepers no later than two minutes after termination of his fouled flight. If he chooses to restart, he must do so before his next official flight.

THE 1978 INDOOR NATS RESULTS

Event	Rank	Name	Time	Rank	Name	Time	Rank	Name	Time
#1 Indoor Launch	JUNIOR								
	1.	Dave Turgeon	1:47.4	1.	Mike Clem	7:03.6	1.	Mike Clem	7:03.6
	2.	Mike Clem	1:24.5	2.	Dave Lindley	5:14.9	2.	Dave Lindley	5:14.9
	3.	William Langley	1:23.5	3.	John Benepe	4:21.1	3.	John Benepe	4:21.1
	4.	Dave Lindley	1:17.6	4.	Susan Brown	3:51.8	4.	Susan Brown	3:51.8
	5.	Bryan Fulmer	1:17.4	5.	Bryan Fulmer	2:17.0	5.	Bryan Fulmer	2:17.0
	6.	Bradley Fulmer	1:14.3	6.	Carl Linstrum	2:10.0	6.	Carl Linstrum	2:10.0
	7.	Steve Spence	1:09.6	SENIOR			1.	Bob Boyer	8:10.2
	8.	Kris Lane	1:02.3	2.	Joseph Kubina	5:08.4	2.	Joseph Kubina	5:08.4
	9.	Draycott Hooke	0:51.2	3.	Peter Brown	4:02.0	3.	Peter Brown	4:02.0
	10.	David Hooke	0:47.6	4.	Linda Brown	3:36.2	4.	Linda Brown	3:36.2
	11.	Eric Vaughn	0:38.2	OPEN			1.	Cezar Banks	10:10.2
	12.	John Benepe	0:23.6	1.	Cezar Banks	9:50.4	2.	Louis Sutter	9:25.1
	13.	Joe Henderson	0:22.3	2.	Louis Sutter	9:25.1	3.	Charlie Sotich	9:02.2
14.	Frank Henderson	0:11.3	3.	Charlie Sotich	9:02.2	4.	Rolf Gregory	8:49.7	
SENIOR									
1.	Bob Boyer	1:50.1	5.	Richard Doig	8:49.7	6.	Earl Hoffman	8:30.2	
2.	Guy Larsen	1:35.8	6.	Earl Hoffman	8:30.2	7.	Rolland Anderson	7:32.6	
3.	Brian Petty	1:22.5	7.	Rolland Anderson	7:32.6	8.	Richard MacCleeve	5:57.0	
4.	Joseph Kubina	1:11.0	#6 Easy B						
5.	Robert Kubina	1:04.2	JUNIOR						
6.	Peter Brown	0:57.7	1.	Mike Clem	8:22.0	2.	Bradley Fulmer	7:43.0	
OPEN									
1.	Paul Shailor	2:16.2	3.	David Turgeon	5:44.0	4.	Stephanie Anderson	4:59.3	
2.	Dale Segie	2:11.8	4.	Kevin Loeffler	4:42.5	5.	Susan Brown	4:30.0	
3.	Stan Stoy	2:02.3	5.	Susan Brown	4:30.0	6.	John Benepe	2:55.0	
4.	Robert Dunham	2:00.8	6.	John Benepe	2:55.0	SENIOR			
5.	Dan Domina	2:00.2	1.	Bob Boyer	9:54.4	2.	Peter Brown	6:32.1	
6.	Frank Sharpton	1:59.9	2.	Peter Brown	6:32.1	3.	Linda Brown	4:16.5	
7.	Rudy Klumber	1:57.6	3.	Linda Brown	4:16.5	OPEN			
8.	Dick Mathis	1:53.9	1.	Stan Chilton	14:31.4	2.	Cezar Banks	13:44.5	
9.	Terry Rimert	1:49.0	2.	Cezar Banks	13:44.5	3.	Clarence Mather	12:37.2	
10.	John Sites	1:43.9	3.	Clarence Mather	12:37.2	4.	Earl Hoffman	11:51.7	
11.	Ronald Roberti	1:41.2	4.	Earl Hoffman	11:51.7	5.	Ronald Roberti	10:22.5	
12.	Larry McFarland	1:40.7	5.	Ronald Roberti	10:22.5	6.	Louis Sutter	9:26.0	
13.	Glenn Lee	1:38.0	6.	Louis Sutter	9:26.0	7.	Jim Clem	8:38.7	
14.	Gerald Guiles	1:35.7	7.	Jim Clem	8:38.7	8.	Jim Stewart	7:35.5	
15.	Phil Sullivan	1:32.6	8.	Jim Stewart	7:35.5	#8 Indoor AMA Scale			
16.	Daniel Belieff	1:31.1	JUNIOR						
17.	Greg Simon	1:29.2	1.	Dan Domina	16:35.0	2.	R J Dunham	16:09.0	
18.	William Schlarb	1:20.4	3.	Greg Simon	14:02.0	4.	Robert Dunham	12:07.0	
19.	Steve Geraghty	1:19.3	5.	Louis Sutter	9:13.0	6.	Richard Doig	6:16.0	
20.	Jim Thomerson	1:15.2	SENIOR						
21.	Bill Langley	1:13.6	1.	Dan Domina	52:56.0	2.	Clarence F. Mather	49:23.0	
22.	Jim Stewart	1:08.4	2.	Clarence F. Mather	49:23.0	3.	Cezar Banks	47:44.0	
23.	Charles Markos	1:05.4	3.	Cezar Banks	47:44.0	4.	William Shailor	46:47.0	
24.	Ronald Talley	1:04.2	4.	William Shailor	46:47.0	5.	Daniel Belieff	37:23.0	
25.	Charles Adams	0:44.9	5.	Daniel Belieff	37:23.0	6.	Charlie Sotich	35:17.4	
			6.	Charlie Sotich	35:17.4	7.	Richard Doig	32:53.0	
			7.	Richard Doig	32:53.0	8.	R. J. Dunham	18:53.0	

THE PICTURE STORY

(all photos on page 5 by Bud Tenny)

Left Column

1. Cezar Banks' Easy B was covered with dyed condenser paper, making it easy to spot while timing.
2. Charlie Sotich's venerable Volksplane.
3. Dave Hagen flew an unusual Easy B design.

Left Center

1. Robert Dunham prepares to make a Cabin flight.
2. Dan Belief plans his next launch.
3. Coors beer cans can be recycled another way--Bert Pond's modern compressed air engine uses three as a "fuel" tank.

Right Center

1. Shailor-designed biplane Pennyplane was flown by Richard MacCleery.
2. Jim Clem (r) helps Mike Clem wind for a Paper Stick flight.
3. Bill Shailor demonstrates "no push" Manhattan launch.

Right Column

1. Clarence Mather's DA-2 won Peanut Scale.
2. Stan Chilton gets FAI flight off.
3. Cezar Banks with a biplane FAI model.

* * * * *
Results of LIAMAC Indoor Championships, June 4, 1978, Long Beach, L.I., N.Y., 30' ceiling; Frank Haynes, Open Champion; Mark Trubowitsch, J/S Champion; John Carbone, Peanut Scale Judge:

HL Glider (O)

- 1) Dan Domina 64.0
- 2) Joe Nuszer, Sr. 62.9
- 3) George Meyers 61.0
- 4) Mark Dreia 58.3
- 5) Richard Whitten 54.0
- 6) Frank Haynes 49.6
- 7) John Kukon 29.0
- 8) Randolph Boston x

HL Glider (J/S)

- 1) Joe Nuszer, Jr. 60.0
- 2) Mark Trubowitsch 56.4
- 3) Dan Rees 42.2

Peanut Scale (J/S)

- 1) Dan Rees * 93 Points
 - 2) Bob Kenny * 93 "
 - 3) Mark Trubowitsch 90.4 "
- * Tie decided by flyoff.

Peanut Scale (O)

- 1) Frank Haynes 162 Pts.
- 2) Dave Rees 146 "
- 3) John Kukon 140 "
- 4) George Meyers 129 "
- 5) Bob Bender 113.6 "
- 6) Randolph Boston 93 "
- 7) Joe Nuszer, Sr. 67 "
- 8) Gus Munich 29 "

AMA HL Stick (JSO)

- 1) Richard Whitten 16:16.0
- 2) Dan Domina 13:49.2
- 3) Joe Nuszer, Sr. 9:50.0
- 4) Frank Haynes 9:14.2
- 5) Mark Trubowitsch 8:26.0
- 6) Mark Dreia 7:53.0
- 7) Dan Rees 2:06.0
- 8) Gus Munich x

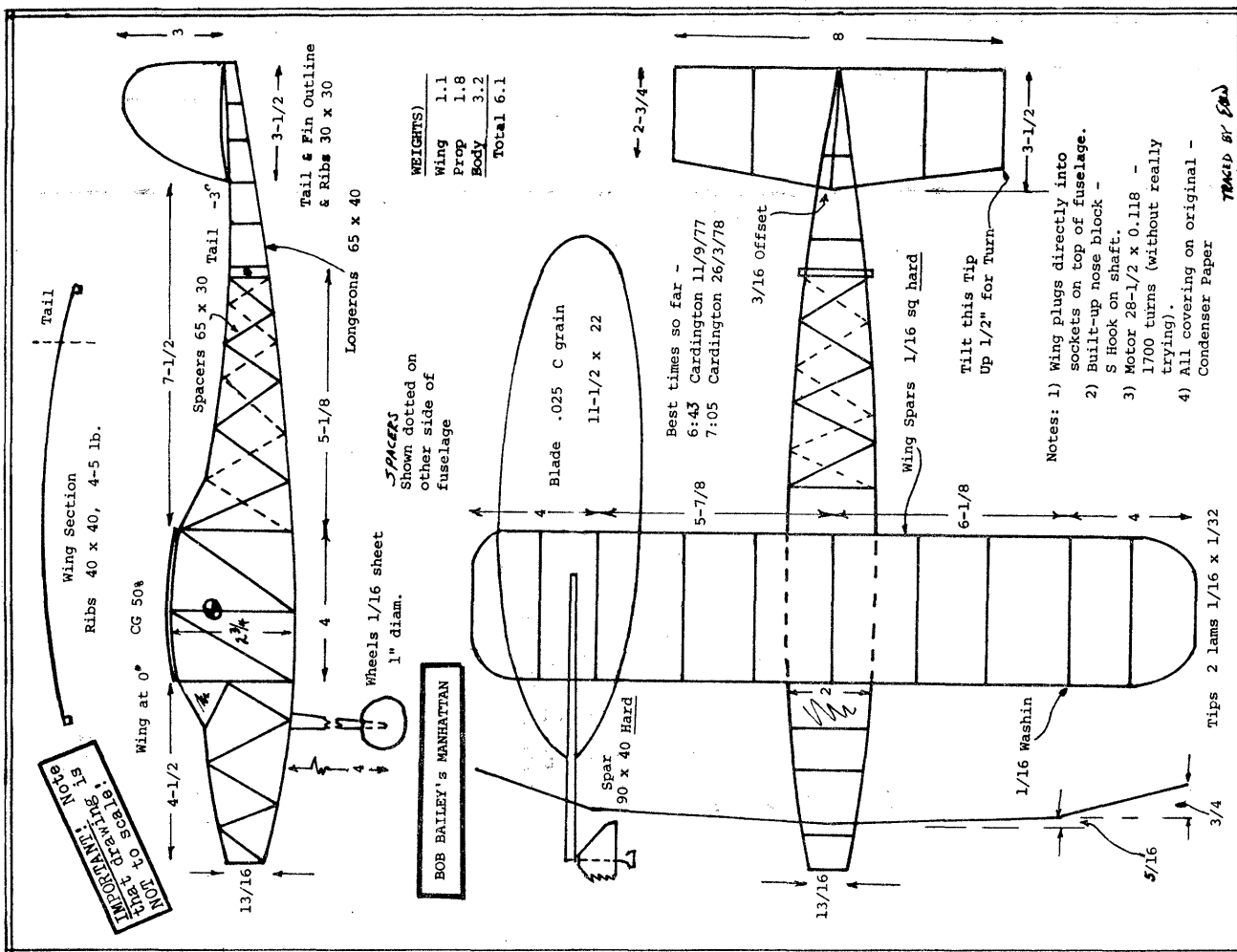
Penny Plane (JSO)

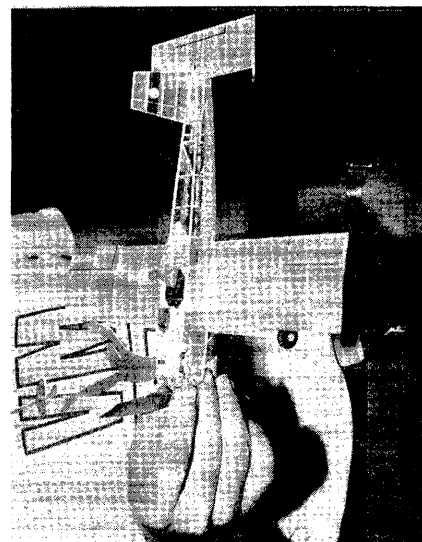
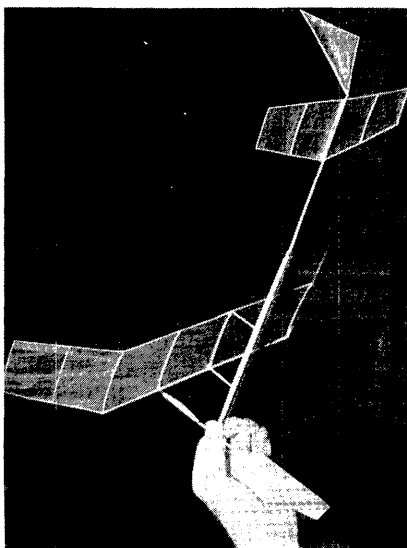
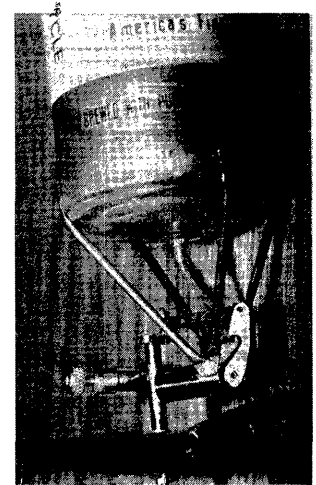
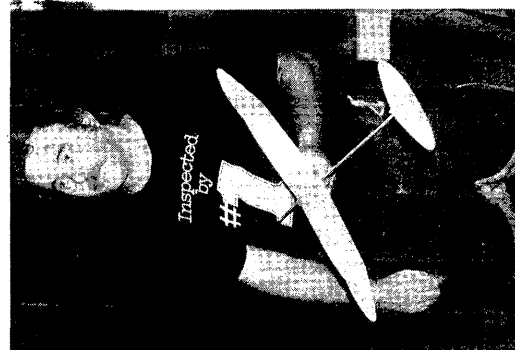
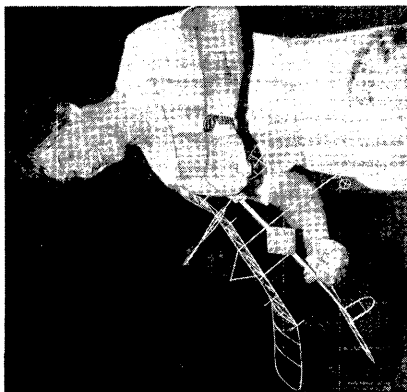
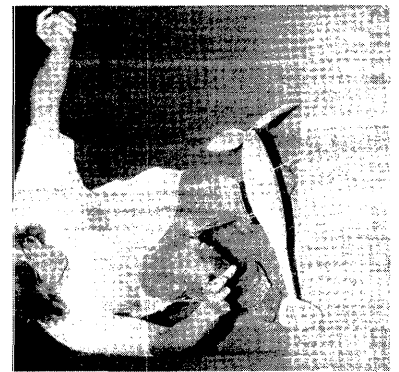
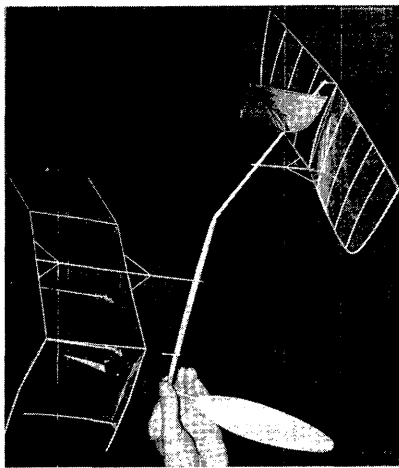
- 1) Richard Whitten 9:29.0 **
- 2) John Kukon 8:34.6
- 3) Frank Haynes 7:54.4
- 4) Joe Nuszer, Sr. 7:21.8
- 5) Mark Trubowitsch 6:02.6
- 6) George Meyers 5:45.0
- 7) Randolph Boston 4:25.0
- 8) Dave Rees 3:44.8
- 9) Dan Rees 3:31.4

Easy B (JS)

- 1) Joe Nuszer, Jr. 5:52.2
- 2) Mark Trubowitsch 1:32.3
- 3) Dan Rees 1:05.2

** Indicates new Open Penny Plane record (certificate already received).

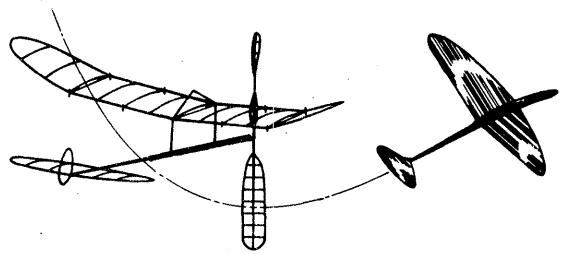




INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



RESULTS FROM THE 1978 INDOOR WORLD CHAMPIONSHIPS

1.	J. RICHMOND	US	41:49	36:52	42:53	31:16	-----	-----	84:42
2.	B. ROMAK	US	40:55	40:27	13:43	28:58	31:51	33:22	81:22
3.	R. HIGGS	CDN	35:16	39:44	9:18	30:57	14:37	36:45	76:29
4.	D. STEBENMANN	CH	13:05	30:32	37:23	8:34	32:32	37:30	74:53
5.	L. BARR	GB	11:03	37:23	24:54	15:15	36:34	1:13	73:57
6.	S. NONAKA	J	28:33	33:05	40:36	27:11	12:28	25:55	73:41
7.	J. MCGILLIVRAY	CDN	35:45	37:20	-----	25:42	36:19	34:44	73:39
8.	E. CIAPALA	PL	34:43	38:15	11:39	12:59	34:51	34:06	73:13
9.	R. GREEN	GB	6:40	29:28	33:44	22:38	39:18	10:36	73:02
10.	R. BUTTY	CH	34:37	28:52	37:17	24:31	27:03	33:23	71:54
11.	D. MORLEY	GB	30:45	32:57	38:06	31:00	25:41	33:22	71:28
12.	C. WOLTHOORN	NL	31:20	36:20	34:58	33:02	12:47	35:01	71:21
13.	V. KMOCH	YU	30:28	33:40	37:05	24:09	26:31	-----	70:45
14.	K. VOGLER	BRD	8:38	30:12	34:29	29:38	36:03	23:47	70:32
15.	Y. BANBA	J	34:33	35:27	39:22	25:01	30:23	-----	70:00
16.	W. HULBERT	US	34:39	26:38	23:48	33:10	31:49	34:38	69:17
17.	E. CHLUBNY	CZ	33:31	35:40	-----	22:52	32:22	-----	69:11
18.	J. DIHM	PL	32:58	30:55	34:17	31:44	6:15	-----	67:15
19.	T. MATSUZAWA	J	:14	35:40	27:03	31:17	30:09	22:44	66:57
20.	K. RYBECKY	CZ	32:23	10:39	9:06	29:34	33:21	30:49	65:44
21.	H. EROFEJEFF	SF	30:32	29:46	33:03	32:25	30:10	12:15	65:28
22.	C. COTUGNO	I	34:15	8:00	30:59	29:47	-----	0:20	65:14
23.	F. MIGANI	I	27:01	1:48	33:13	28:57	11:52	31:40	64:53
24.	R. CZECHOWSKI	PL	31:06	27:59	33:47	19:42	10:07	28:36	64:53
25.	S-O. LINDEN	S	16:18	24:00	32:54	20:50	31:34	29:41	64:28
26.	J. KALINA	CZ	11:48	29:47	30:03	31:40	31:16	26:00	62:56
27.	M. THOMAS	CDN	6:43	26:32	31:15	27:12	24:15	31:29	62:44
28.	K. NOTTELMANN	BRD	5:18	19:22	32:07	28:43	11:40	-----	60:50
29.	L. GABRIJEL	YU	26:07	33:28	-----	31:17	8:45	29:09	60:45
30.	D. DOMINA	US	23:14	11:23	30:33	14:00	25:51	29:53	60:26
31.	W. BEEKMEYER	NL	28:11	26:44	30:37	19:13	-----	-----	58:48
32.	H. RAULIO	SF	15:55	23:52	20:22	25:50	25:19	27:09	56:31
33.	G. MASCIULLO	I	16:24	23:03	24:08	26:56	28:18	9:31	55:14
34.	T. STRAZBERGER	YU	22:15	0:42	31:27	23:04	21:30	23:16	54:43
35.	S. PONTAN	S	16:24	15:39	27:31	25:04	22:47	21:15	52:35
36.	W. WETZEL	BRD	14:29	26:48	25:10	23:28	22:55	25:28	52:16
37.	M. SITAR	AUS	21:41	24:26	27:39	5:19	-----	-----	52:05
38.	T. FORSS	SF	17:36	20:47	22:32	27:05	16:27	6:46	49:37
39.	E. LIEM	NL	:47	19:07	25:42	20:02	23:48	19:36	49:30
40.	A. JONSSON	S	13:24	19:08	18:40	14:56	-----	-----	37:48

TEAM PLACINGS

NATION	TOTAL	NATION	TOTAL
1. UNITED KINGDOM	218:27 (GB)	8. ITALY	185:21 (I)
2. UNITED STATES	214:25 (US)	9. WEST GERMANY	183:38 (BRD)
3. CANADA	212:52 (CDN)	10. NETHERLANDS	179:39 (NL)
4. JAPAN	210:38 (J)	11. FINLAND	171:36 (SF)
5. POLAND	205:21 (PL)	12. SWEDEN	154:51 (S)
6. CZECHOSLOVAKIA	197:51 (CZ)	13. SWITZERLAND	146:47 (CH)
7. YUGOSLAVIA	186:13 (YU)	14. AUSTRALIA	52:05 (AUS)

1978 INDOOR WORLD CHAMPIONSHIPS

Cardington, England
by William Hulbert

I guess I have been working toward this trip since about 1960 when I was introduced to indoor modeling in Youngstown by Joe Hindes and some others. I became enchanted with Indoor and have since concentrated mostly on Indoor and on FAI Indoor especially.

The ability to use the Goodyear Air Dock has helped me very much. Previously, I had good success in lower ceilings, but could not cope with high ceiling flying without practice in higher ceilings.

In the few months prior to Cardington, I switched from FAI rubber to the new Pirelli which Team Manager Ray Harlan made available to the team. I then made one 40+ flight and a number of 38's and 37's at Goodyear and felt pretty good. When it was time to leave, I had an additional new model box and six completely tested models plus two spare wings.

The trip over became extremely hectic due to a baggage foul-up at Kennedy Airport. A 2 1/2 hour layover turned into a frantic scramble to make our Freddie Laker flight. My wife Jean and I recovered about the time we reached Gatwick Airport. Fortunately, all the team's models arrived in good shape.

Our trip from Gatwick, south of London, to Bedford, north of London, took most of a day because of problems in getting a van. We finally made it and caught up on our loss of a night's sleep and the effects of jet lag. A couple of days of rest plus sightseeing put us in good shape for test flying on Saturday.

The air dock at Cardington is one of two of identical construction. It was well cleared out, except for one small inflated blimp at one end. The blimp caused both Richmond and Romak anxious moments as their 40+ flights came down in that vicinity. We all had fairly good flying during the practice session, with a 37 minute flight concluding my day.

Air conditions were generally quite good during the meet, but on Monday the air deteriorated somewhat. I am convinced that the Goodyear hangar is the best spot in the world to fly because of it's large volume and 80' of clear girders at the top. In comparison, Cardington came to a fairly abrupt peak; a catwalk near the peak cuts down on flying room at maximum altitude.

I volunteered to fly first on Sunday and decided to put in a "safe" flight. Using a 17 1/2" loop of new Pirelli which weighed about .054 oz and had 1940 turns, I did 34:39 and was never in trouble. Jim Richmond and Bud Romak followed with great flights which established the standards needed to win. Dan Domina was plagued by problems which didn't leave him throughout the contest.

'79 Nats (Repeat)

My second flight with approximately the same motor had 2080 turns and promised excellent time as it leveled out next to the roof. To my amazement, it did not cruise--it immediately started down and landed in 25 minutes. I was stunned since I had flown this combination about a dozen times at Goodyear and Cardington. I found that the bracing wire on the leading edge at the left dihedral break had slipped. This caused excessive washin and high drag. Little things are so important! My third flight with another model and prop was underpowered and consequently I missed out on the best day.

On Monday, I felt I did fairly well considering that conditions were not quite as good so that more power was needed. The resulting higher prop RPM kept times down somewhat. The WCH was a great experience and certainly demonstrated to me that there is a world of difference between flying for yourself to make the team, compared to having the added burden of representing your country at a World Championship. I think that unless you have been there yourself, criticism of an individual or a team effort is ill-advised.

A controversy arose which I feel must be resolved in the near future. I feel that steering is essential and should not be eliminated. However, the use of steering to arrest or slow down the climb of an over-wound model should not be permitted. Also, Dan Domina demonstrated easily that you can lead a model to the roof by pushing on a peg ahead of the wing with the balloon string. A ruling of the FAI Jury rightfully eliminated the pegs, but some altitude limitation was still accomplished.

My only regret, besides not winning the Team Championship, was the lack of time to visit with other fliers and observe their models and building techniques. We were so busy test flying, making our own official flights and helping each other that we had little opportunity to visit.

The banquet did give us an opportunity to to meet some of the others, and was a fitting climax to a World Championship, with Jim Richmond getting the accolades he so richly deserved.

As a postscript, my models were packed with an inch of foam rubber around the boxes--and were destroyed on the return trip. Better than than on the way over! Oh, well, I was going to redesign for 1979 anyway!

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Hurry!

On the last page of this issue you will find an entry blank for the Fourth NIMAS Annual Record Trials (FNART - careful how you pronounce that!). Entry deadline is June 3, 1979. Due to the usual reasons, this issue is so late that it may be difficult to make entry on time. If you want to go, send the entry off and call 305-858-6363 to announce the pending arrival of the form. Please note--it isn't necessary to enter to attend the most fun-filled contest in the world--extra timers and helpers are needed for satisfactory operation fo this contest! Come ahead, and bring even an Easy B to putter with. Not only will you have more fun, but this increases your chances to really improve your own flying--someone is always willing to give help and advice.

Comments on Photos

It was originally announced this issue would contain pix from the '78 WCh. However, the photos which were in hand are silk finish color prints, and the film technician estimated over \$100 to copy them to black and white for publication. So, if you cover an event for INAV, please use black and white (first choice), or loan us the negatives for any color prints you take. The tech said that to make black and white prints from color negatives is quite straightforward and inexpensive, in contrast to any other approach.

This Issue

What happens when the company you work for gets new business faster than it can hire qualified persons to do the work? You cope as well as you can--and hope other commitments can eventually be fulfilled. Thus, this issue is at least one month later than planned. Bear with us, it has to get better!

Thank You!

Enough of you cared that I make it to FNART (careful) that an airline ticket for me was donated so I could fly up rather than drive (which I could have afforded, but did not have time to do). Thanks to each and every one of you who helped in this--I really was 'down' over the prospect of missing another NIMAS bash!

AMA has announced that the site of the 1979 National Model Airplane Championships will be Lincoln, Nebraska. More details have appeared in various issues of MODEL AVAITION, and will be summarized in the next issue. We have been furnished a photo of the Indoor site, which may appear in a future issue. Meanwhile:

Unofficial Nats Events

Terry Rimert, 467 Orange Ave., Baldwin FL 32234 has been appointed NFFS Unofficial Events Director. He will be delighted to accept volunteers to sponsor and run any unofficial events. Terry has requested that indoor flyers contact him if there is some possibility of developing any new Indoor events such as Indoor Helicopter, Ornithopter or Autogyro. Contact Terry ASAP so that good advance notice can be generated.

NIMAS POSTAL MEET

The 1979 NIMAS Postal Meet can be entered using any flights made in 1979, so long as those flights were made under conditions described by AMA Rules for the particular model class involved, (subject to the rules below). That is, the flights can be from contests or flying sessions, so long as they were properly timed and the other rules are met. (For example, HLG flights are scored as the best two of nine flights, so the entry for any event can't consist of the two best from one day's flying. It is permissible to enter HLG times from one session and Easy B times from another.) Postmark deadline for entry

is ~~May~~ June 7, 1979. (Final reminder - time extended in case anyone forgot due to lack of reminder. If you had otherwise planned to enter times flown up to May 7, you now have another chance.)

Events: Easy B; paper covered only, all-wood prop, solid motor stick and boom, no bracing.

HLG; AMA Rules except two ceiling classes. Class I--18' to 25'; Class II--25' to 35'.

Pennyplane; AMA Rules

General Rules: Free entry. Please indicate height of ceiling for each entry, using FAI ceiling measure. Ceiling height is used to compute fudge factors used for final scoring. Separate classes for Juniors in each event, anyone may enter. Send entries to Box 545, Richardson TX 75080.

A New HLG Record Coming?

Stan Stoy appeared at the '78 Nats with a folding HLG --that is, the wing folded to minimize drag during the launch. A number of persons watched with interest as he test-flew the glider (after making official flights with another, conventional glider). Since that pioneering effort, he and his brother Mike have done additional work on this concept. On April 12, 1979, at the 90' Madison Street Armory in Chicago, Stan was able to set a new record of 146.8 seconds to beat Bucky Servaites' Cat II HLG record by 4 seconds. Not long ago, Stan called me to tell me about this new bird, and to say he hoped to be at FNART. Just one more reason to attend--see Stan beat his new record with one more in a long line of innovations and advances in model aerodynamics! INAV will have more details on this glider in future issues; but how can anyone say FF is dead when we have this kind of talent pushing out the frontiers of our hobby/science?

EAST COAST INDOOR MODELERS NEWS FLASH
April 2, 1979

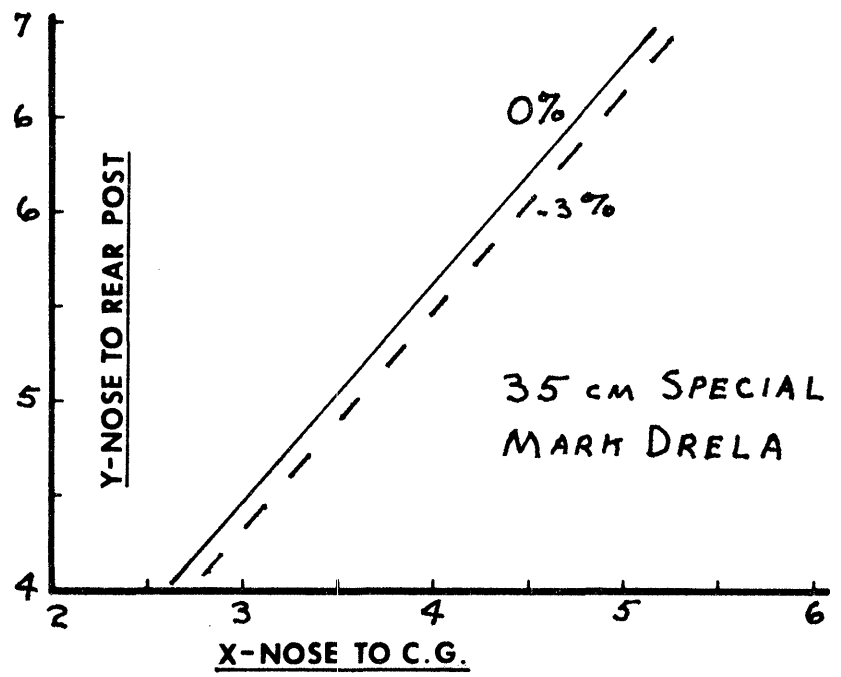
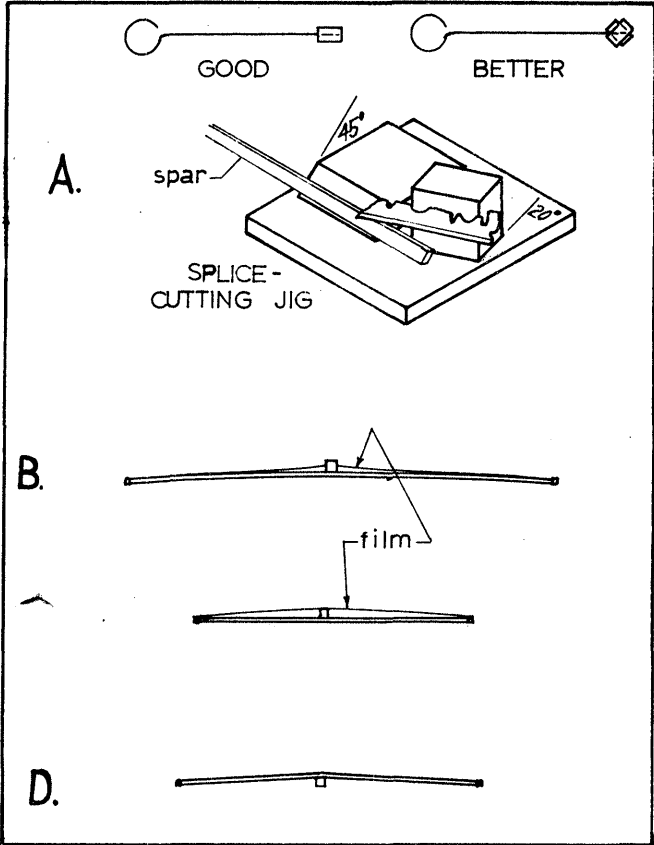
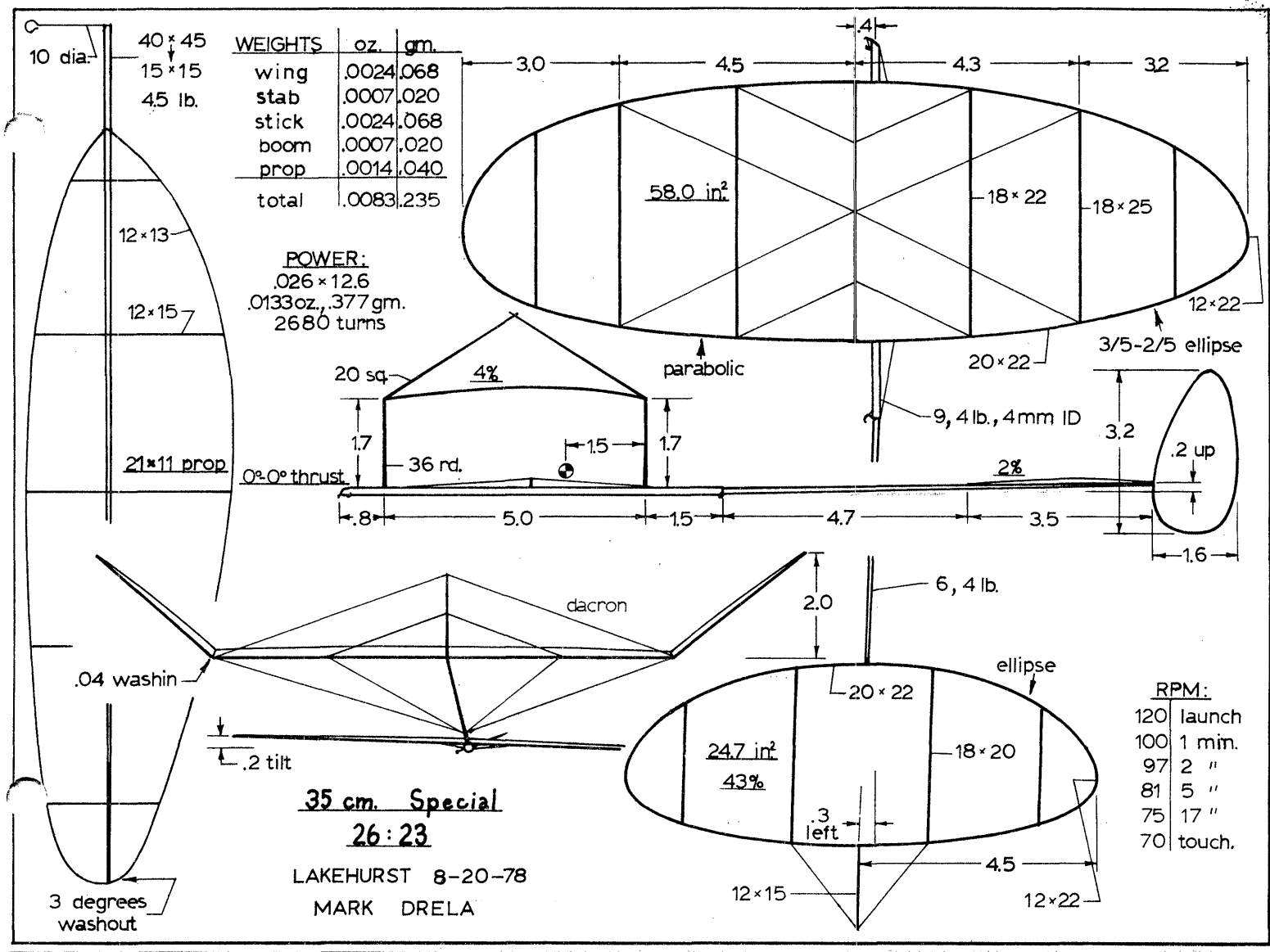
The East Coast Indoor Modelers, the oldest purely indoor club in the country, has announced its 1979 schedule of flying sessions at Lakehurst Naval Air Station's (New Jersey) Hangar No. 1. Present understanding is that Hangars Nos. 5 and 6 are unavailable.

May 6, 1979	June 30-July 1, 1979	Aug. 19, 1979
May 20, 1979	July 22, 1979	Sept. 23, 1979
June 10, 1979	August 5, 1979	Oct. 7, 1979

Special note of the following should be made:

- Ref. May 6.....This flying session will be held in conjunction with an indoor contest arranged by Hank Lykes, an officer at the base, for HLG, Peanut Scale, and CO2.
- Ref. June 30-.....This two day session is the scheduled July 1 FAI Indoor Team Semi-Final Contest.
- Ref. Sept. 23A two event contest will be held for Manhattans and Bostonians. Cups to first 5 places in each.

At all sessions, prior to the finals, a Local contest under the FAI Indoor Team Program may be held.



STATE OF THE ART

Dear Bud,

Included is a drawing of my 35 cm. model that managed to break Laurie Barr's record of 24:00. The flight was made during the August 20 session in Lakehurst under not the best of conditions. There was extensive air movement in the hangar at the time and the humidity was high (over 80%). I think the plane could benefit from a larger prop and more rubber. The weight can be brought down also, since the wood used for the model was not of the best quality. It appears that 30 minutes is not far away! By the way, if anybody out there is looking for something different or challenging, then the 35 cm class is for you. These planes are extremely economical; a single sheet of wood will make two motorsticks and two tail-booms. Also, compared to, say, an A ROG, they are far easier to build, fly, and handle. Try it, you'll like it!

Probably the most significant detail about this particular plane is the differential area in the wing in addition to the offset. The parabolic shape of the left wing concentrates more area in the tip than the elliptical shape of the right wing. This gives a plane that can bomb up under full torque without offset thrust, and with very little washin and stab tilt. An FAI with a similar setup needed only 1/16" washin to control the power burst. This can do nothing but help the cruise.

Mark DRELA

PROP FORUM

Opposite are sketches of alternate prop construction.

Sketch A shows a better way to orient rectangular spars. Instead of making the larger dimension go fore and aft, it is placed roughly perpendicular to the ribs by tilting each spar about 45 degrees. Since the spar can now properly resist lift forces on the blade, the prop will be stiffer for a given weight. A jig should be used to accurately cut the splice.

Sketch B shows the spar on top of the ribs. The spar is wet during covering so that the film adheres to the sides of the spar. The result is a faired-in spar and a turbulator on the top surface. The ribs should be of lower camber than normal.

C and D are a delight to use on smaller models, such as A ROG or 35 cm. The ribs are simply straight strips--faster and a heck of a lot easier to make than tiny curved ribs. In C, film going over the spar gives sufficient camber. In D, crack the "ribs" on a flat surface with the dull edge of a razor blade. Be sure to apply some cement to the top of the crack.

A LOOK AT YESTERYEAR

Curtis Janke relates the following bit of model history: Back in about 1929, the outdoor stick event was won by Don Burnham, with a twin pusher. He was dissatisfied with his times and developed a light tractor model, and won again the following year. Since it was really little more than an indoor model, this got a few people mad and they put in the first outdoor weight rule - two ounces per 100 sq. in. This got Burnham mad, in his turn, and he showed up the next year with a twin push-pull! I imagine there was no doubt about it being up to weight! The model reportedly flew well, but folded a wing in propwash from an Army plane giving an aerobatics demonstration. More to our interest, Don Burnham flew an indoor version in the indoor Nats. It was said that the model flew poorly due to a high wing loading; it is worth noting that in 1931, over 40 years ago, a fellow was flying a design that no one has even thought of since! How's that for progress?

INDOOR TEAM SELECTION IMPASSE

With "points" vs. "finals" having reached an impasse... has anyone suggested proving these methods simultaneously over the next 6 years by the process of preliminarily picking 2 teams, 1 by each method (in the first 15 months of each WC cycle); then, conducting a bonafide stateside WC dry-run at which time the final 3 U.S. Team members are determined?

If such side-by-side comparisons were made and analysed, perhaps the "results" would make even the best reasoned "rhetoric" superfluous!!!

If this becomes feasible to try...I would offer several other suggestions for the committee's consideration - a) the manager to be selected at time of the 15 month prelims by the current method, b) the stateside dry-run to be held in a "comparable" building to the WC building, c) the dry-run to be scheduled between 90 and 30 days prior to the WC, d) that dry-run competition be limited to half of each contestants plane inventory, but not exceeding 4, and e) the stateside WC dry-run format duplicate exactly the WC format.

Additionally, do we not need some kind of FAI Indoor Meet Schedule which is officially published and distributed to each eligible program participant in January of each year?

Jack Carter

CONTEST RESULTS

LIAMAC Cat. II INDOOR CHAMPIONSHIPS, Hicksville, NY
April 9, 1978 50'+ ceiling.

<u>Jr/Sr Easy B</u>		<u>Open Easy B</u>	
Joe Nuszer, Jr.	5:42.0	Bill Tyler	11:00.0
Mark Trubowitsch	3:58.9	Frank Haynes	9:50.4
<u>Jr/Sr Peanut Scale</u>		<u>Manhattan Cabin</u>	
Joe Nuszer, Jr.	133.4	Pete Andrews	9:08.6
Dan Rees	129.5	Pat Ciambrello	9:01.5
Mark Trubowitsch	81.2		8:23.0
<u>Jr/Sr HLG</u>		<u>Open HLG</u>	
Joe Nuszer, Jr.	77.0	Dan Domina	86.7
Mark Trubowitsch	74.4	Jean Paillet	73.3
Barry Paillet	74.3	Joe Nuszer, Sr.	71.7
Dan Rees	31.0	Jack Minassian	71.0
Dray Hooke	30.0	George Myers	57.7
<u>Indoor Scale</u>		<u>High Point</u>	
Dan Domina	173.5	Jr/Sr - Joe Nuszer, Jr.	Open - Joe Nuszer, Sr.
Jack Minassian	168.7	Autumn Indoor Model Airplane Meet, East St. Louis Armory	
Joe Nuszer, Sr.	162.0	Cat. I 34' ceiling, Nov. 19, 1978. Temperature 64°.	

<u>Open HLG</u>		<u>Senior HLG</u>	
Chris Matsuno	1:10	Tom Croft	1:02
Mike Joerms	1:06.6	<u>Junior HLG</u>	
Don Hickman	0:57	Jay Tryon	0:57.8
<u>Peanut Scale</u>		Austin Thomerson	0:39.4
Bob Klipp	193 pt.	Sam Evenson	0:26.4
Carl Fries	134	<u>AMA Stick</u>	
Jay Tryon		Dick Hardcastle	13:06.8
<u>Easy B</u>		Paul Tryon	9:29.0
Dick Hardcastle	8:46.6	Roy White	9:08.0
Tom Croft	8:15.0	<u>AMA Cub</u>	
Paul Tryon	7:06.0	Sam Evenson	0:32
Chris Matsuno	6:23.0	<u>Manhattan Cabin</u>	
Carl Fries	6:18.0	Joe Fierce	1:06.6
<u>High Point</u>		<u>Junior High Point</u>	
Chris Matsuno	14	Jay Tryon	7
Dick Hardcastle	11		
Tom Croft	11		

TOP TEN CEILING DODGERS

The Top Ten Ceiling Dodger listing began years ago as various fliers maintained an informal competition with the goal of posting the highest time in any particular site without touching the ceiling. Any model class may be used and the times are fudged to 35' ceiling. It is a fun way to develop high performance not related to the model's ability to survive ceiling contact.

Name	Time	Ceiling	Fudge	Score
1. Stan Chilton	1115	35'	1.0	1115
2. Tom Vallee	810	20'	1.323	1071.6
3. Robert Dunham II	1454	89'	.627	911.7
4. Hal Crane	682	20'	1.323	902.3
5. Dob Dunham	1357	89'	.627	850.8
6. Dick Hardcastle	653	23'	1.234	805.8
7. Bud Tenny	1275	89'	.627	742.9
8. Hewitt Phillips	528.2	20'	1.323	698.8
9. Howard Haupt	456	22'	1.261	575.0
10. Steve Lovens	433.2	20.5'	1.307	566.2

TOP NOTCH CAT. I & II SITES ARE AVAILABLE BUT NOT USED

Burton Coliseum, with a 105' ceiling, is representative of hundreds and hundreds of lousy indoor flying sites...because although we can put a man on the moon it seems beyond our skill to "utilize" only the top 100' of an otherwise optimum building!!!!

The 1979 Indoor Nats will be held under Pershing Auditorium's 51' ceiling...and thus it, too, becomes another lousy FAI Cat. III site by a mere 2'!!!!

My home site at Racine's Memorial Hall with a 40' ceiling...is yet another lousy AMA Cat II site by only 5'!

And one could go on and on and on.

Perhaps, if one did not build or fly long enough, one could document 531 such lousy indoor sites around the country. Is it really so complicated, as to make it impractical, to accurately time indoor flights in the top 100' of Burton Coliseum?

Jack Carter

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Nats Photos, Anyone?

Although I will be at the Nats briefly, for the NFFS Hall of Fame Banquet, I will not be able to get any photos of the Nats Indoor events. Anyone who takes photos and would like to share them, please drop me a line as soon as possible after the Nats to tell me they are coming. If you take other than black and white photos, please loan me the negatives so I can get prints made. Remember to mark or number them in some way and tell me who or what the photo represents.

FAI Team Qualification Results

Results from most of the local and regional meets are on hand, so far as I know. These will be presented in the next issue, perhaps with coverage of the Finals. Hopefully, the next issue will precede the Finals (set for Labor Day weekend), but I can't guarantee this. If you attend the Finals and take pictures, please read the paragraph above again and substitute "FAI Finals" for "Nats Indoor"!

Loose Ends

In a fairly recent issue of INAV, Ron Williams gave his formula for the glue he uses to build his models. In the formula he mentioned DOP, and some of you have asked for a translation. DOP = dioctyl phthalate, a plasticizing agent for all microcellulose-based plastics, which describes both our glue and microfilm. A note in passing--it is very easy for us to use terms like DOP which aren't exactly household words. I apologize for not flagging this abbreviation and translating it!

The Fourth NIMAS Annual Record Trials

A Brief History

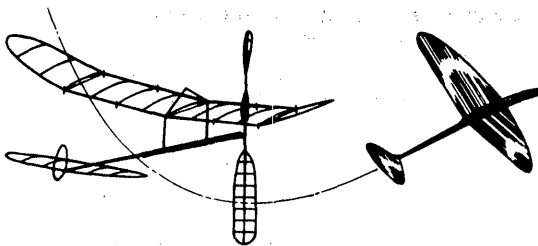
A number of questions which came up during the NIMAS banquet indicate that the following remarks would be of interest to most of the current members.

First, NIMAS was founded late in 1961 by Dave Copple, Joe Bilgri, Pete Sotich, Dick Kowalski, Chuck Tracy, Dick Black and Bud Tenny. A membership application blank which sometimes gets sent out in response to membership queries lists a number of goals and purposes for NIMAS:

1. To act as the voice of indoor fliers in the United States.
2. To promote indoor flying in any way, but especially by encouraging newcomers.
3. To act as a clearing house for comments on indoor rules change proposals.
4. To act as a point of origin for ideas that are becoming rules proposals.
5. To provide, when possible, information about changes in technology, advanced design data, and any other technological information about indoor models.
6. To provide news of indoor activity from around the world and encourage international activity whenever possible.

It was a fond dream for many of us that an annual meeting be held (much like the NFFS meeting at each Nats) so various NIMAS members could get acquainted or renew friendships which otherwise get carried on only by mail. Before FNIRT, SNIRT, THNIRT and FNART, only one meeting was held--at the 1962 Chicago Nats. AMA's Technical Director, Frank Ehling, asked that NIMAS determine how best to use the Stout Commercial perpetual trophy which he had just renovated. (Another Stout trophy was then and remains the award for Indoor Cabin at the Nats). On our recommendation, the Stout Commercial trophy is now awarded for high overall time in Indoor Stick at the Nats.

Not until the FAI Team Selection Program held in 1967 did a site suitable for the dreamed-of annual NIMAS bash appear. With advance knowledge (seldom available lately) that the 1968 Indoor World Championship was to be held in a 115' domed site in Italy, the atrium at West Baden was chosen as the most nearly matching site in the U. S. In later years, some Team Selection qualification meets were



held at West Baden, and some of us noted that the atrium would nicely support an annual NIMAS meeting and funfest.

John Martin stepped forward to ramrod the event and C.D. the meet. In discussions with others, John decided that the event should encourage relaxed, friendly flying instead of the increasingly cut-throat competition that even indoor meets were developing. The format came to be called the NIMAS Index--with each flight competing for the existing national record for the model and age class of the entry. Thus, an A ROG might beat an FAI Stick and a Novice Pennyplane might beat both of them! The key is to divide the contestant's flight time into the record time to compute the NIMAS Index. It worked!

The first two contests, FNIRT and SNART, had only a few entrants--but those few became ardent boosters of the event. Now, those who can't make the current meet any particular year will be seen to fidget a lot one certain week each year! When THNIRT rolled around, the entry climbed to 32 fliers plus various supporters, timers and family members. If the family doesn't enjoy model flying, there are other local activities for them.

The actual contest site (the atrium) is 200' in diameter and has just less than 100' ceiling height. This room is surrounded by an inner ring of hotel rooms, a corridor and an outer ring of rooms. As a result, the contest area is well isolated from weather disturbances. The major obstruction in the building is a central bandstand which once lowered from the ceiling. Below that is a pod resembling an inverted mushroom which used to catch many models.

The mushroom (nicknamed "toadstool" because it was poison to models!) has been shrouded by a sheath which Bucky Servaites devised and installed yearly. This year, Roy White added a plastic skirt around the top of the bandstand, and less than ten models were caught during the whole meet. Several models per hour had been the norm when only part of the structure was covered.

Besides the magnificent flying conditions, there is a very good dining room adjacent to the atrium. Thus, everyone can stay for the entire meet with no need to go outside the building unless they want to. At night, there is enough light filtering down from the lighted ceiling to allow flying of all except microfilm covered models; it is not unusual to see models flying at any hour. In fact, one is reminded of earlier Nats meets where one would miss a significant part of the activity simply by going to sleep!

FNART Competition Results

NIMAS Index Winners

<u>Contestant</u>	<u>Model Class</u>	<u>Age</u>	<u>Time</u>	<u>Index</u>
Mike Van Gorder	Novice Penny	Junior	*10:44.7	1.232
Jim Richmond	AMA HL Stick	Open	44:43.0	1.230
Mike Clem	Novice Penny	Junior	10:40.5	1.224
Walt Van Gorder	Novice Penny	Open	12:49.8	1.149
Don Lindley	Autogyro	Open	7:15.0	1.039
Stan Stoy	HLG	Open	**2:32.4	1.038

*A later flight was posted at 11:11.0

**A later flight series gave 2:40.2

Winners By Individual Class

It should be noted that the advance entry for FNART totalled only six people at the time the trophies had to be ordered. So, even though he had faith that the entry would increase, John Martin only ordered six engraved pewter mugs for the Index competition, plus one each for Manhattan Cabin and Easy B (these events do not have AMA record classes and thus do not compete in the Index).

If I really wanted to be mean, I would list the entry as it was made! The result would be long lists of names under each event, with no corresponding times shown. The contest format, which stresses beating an existing record to place in Index, encourages experimentation with various models to determine which class the flier has the

best chance of setting a record. Consequently, though entry was made in many events by most of the fliers, only a very few official flights are made in each event. So, as you peruse the results below, realize that many, many flights were made that were not entered on the Index timing form.

CLASS A R.O.G.

Larry Loucka	17:07.0	Dick Obarski	13:11.0
Ron Ganser	13:27.0	Dave Lindley	9:37.4
Rick Doig	13:16.6		

AMA H.L. STICK

Jesse Shepherd	13:58.0		
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F.A.I. STICK

Rick Doig	25:28	28:57	54:24
Dick Obarski	23:33	28:43	52:16
Jack Carter	26:27	20:31	46:58
Bucky Servaites	33:24*		
Gerry Skrjanc	24:28		

*Bucky flew other flights in the FAI Local, which did not get recorded in FNART notes.

AMA H.L. PAPER STICK

Stan Chilton	23:38.3	Rick Doig	16:01.5
Dick Obarski	20:52.0	Mike Van Gorder	16:01.0
Gerry Skrjanc	17:22.5	Jim Jones	7:26.0

UNORTHODOX EVENTS

<u>Helicopter</u>		<u>Autogyro</u>	
Don Lindley	2:56.0	Don Lindley	7:15.1
Dave Linstrum	2:12.0		

H.L. GLIDER

Stan Stoy	*2:32.4	Bernard Boehm	2:16.1
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*Stan's higher record flight was done the next day; the flights by Mike Stoy and Mike Jeorras were not captured in the notes for this report.

EASY B

Dick Obarski	18:52.1	Gerry Skrjanc	15:11.5
Stan Chilton	*18:43.3	Walt Everson	6:42.2

*Stan also made a challenged flight (see text) of 21:06.2 which was replaced by the listed time. His next high time was two days later, at 20:24.

MANHATTAN CABIN

Walt Van Gorder	9:41.6	Walt Everson	6:35.0
Larry Loucka	8:41.0	Roy White	5:39.0
Dick Obarski	8:00.3	Ron Ganser	5:13.0

PENNYPLANE

Cezar Banks	13:55.2	Gerry Skrjanc	11:22.0
Walt Van Gorder	*13:50	Mike Van Gorder	10:44.7
Gordon Wisniewski	13:35.2	Roy White	10:30.0
Jim Miller	11:30.2	Charlie Sotich	6:23.7

*Walt's time is approximate; I missed getting it.

NOVICE PENNYPLANE

Walt Van Gorder	12:49.8	Mike Clem	10:40.5
Cezar Banks	11:45.7	Gordon Wisniewski	10:06.4
Mike Van Gorder	11:11.3	Jeff Everson	9:36.0

PEANUT SCALE

Jim Miller	21/59 sec	Currie "Wot"
John Martin	26/51 sec	Kalnan K-5
Charlie Sotich	18/75 sec	Volksplane
John Martin	23/44 sec	Farman Jabaru
Jim Miller		Fike E

AMA SCALE

Charlie Sotich	51/67.6 sec	Volksplane
Jim Miller	54/75.6 sec	ITOH
John Adams	51/67.6 sec	Vickers Vincent
John Martin	50/46.7 sec	Farman Jabaru
John Martin		Weyman-Lepere
Gerry Skrjanc		Pilatus Porter

Additional Comments

Many of the times listed above were the result of determination and repeated attempts, but two of the times deserve more comment. First, Jim Richmond appears to be

very casual in his flying. His apparently effortless flight activity results from a tremendous amount of preparation. His "300" was the same one he used in 1978. Just as last year, the record flight was preceded by a midair collision which damaged the model. After the repair, Jim studied flight and rubber motor data, selected and wound another motor and launched the model. The model never came close to any part of the building, but had several near-misses with other models. The flight time (44:43) had never before been approached in any building smaller than a blimp hangar.

It is a mark of Jim's craftsmanship and skill that he needed no test flight after the repairs. This same skill was demonstrated two days later when he re-braced a FAI model wing, selected a motor, etc., and flew. The model was slightly overpowered and touched the plastic shroud. It did a massive tail slide to land short of the 33:24 mark set two days before by Bucky Servaites. After another data search and rubber selection, the model made the traditional 'no touch' Richmond flight and landed at 37:52.

The other record time worthy of note is Stan Stoy's HLG mark. The glider is a further development of the folding wing HLG Stan test flew at the 1978 Nats, but this machine has a three-panel fold to give a 9.5" wingspan at launch. At the top of the pattern, when the glider slows down, the wing unfolds for a smooth roll into level flight results (usually!). This glider was too light for the atrium ceiling, so Stan's flights did not make the best use of the ceiling height. However, when the wing unfolded to almost 100 square inches of undercambered surface, it came down mighty slowly!

Stan was accompanied by his brother Mike and Mike Jeorras, both with folding models of the same design. Mike Stoy's model was heavier so it got higher, making good flights. Since Mike had only one day of flying (Stan came early), he didn't really get the model trim just right. The interesting thing about this design is that it accommodated a different throwing style (Mike Jeorras') with little problem. Too often, HLG's seem to be one-man machines, but the 'Folder Mk VI' showed no such tendencies.

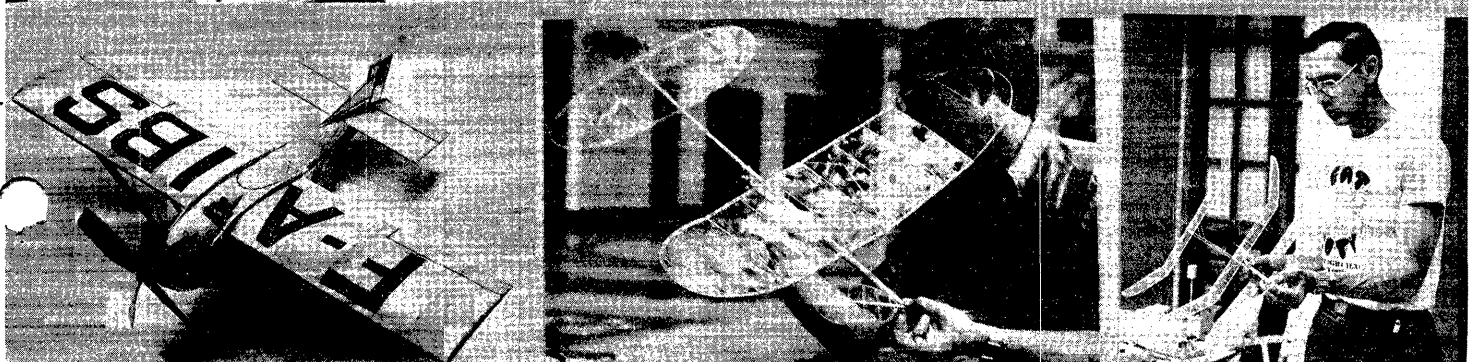
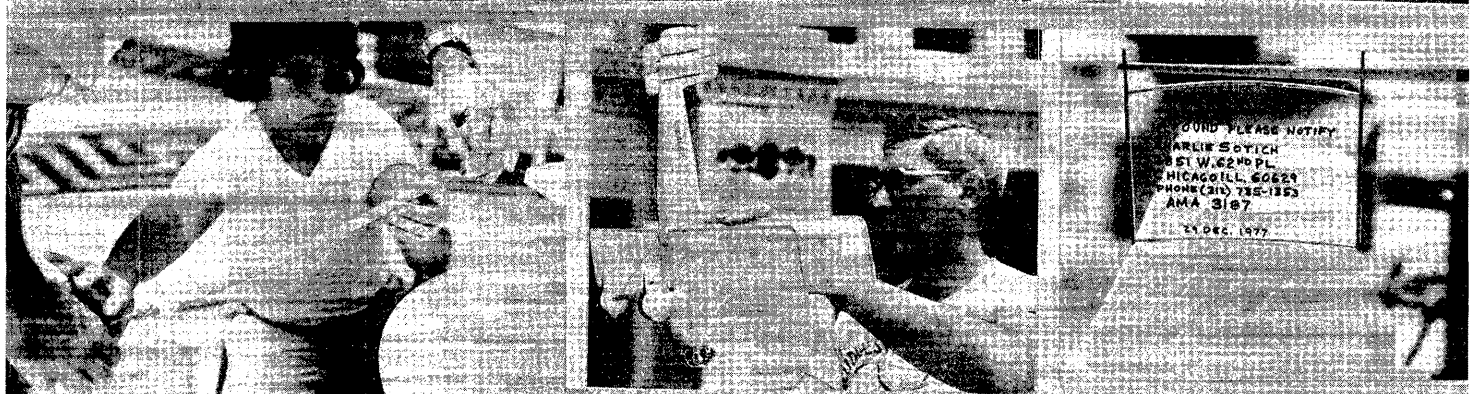
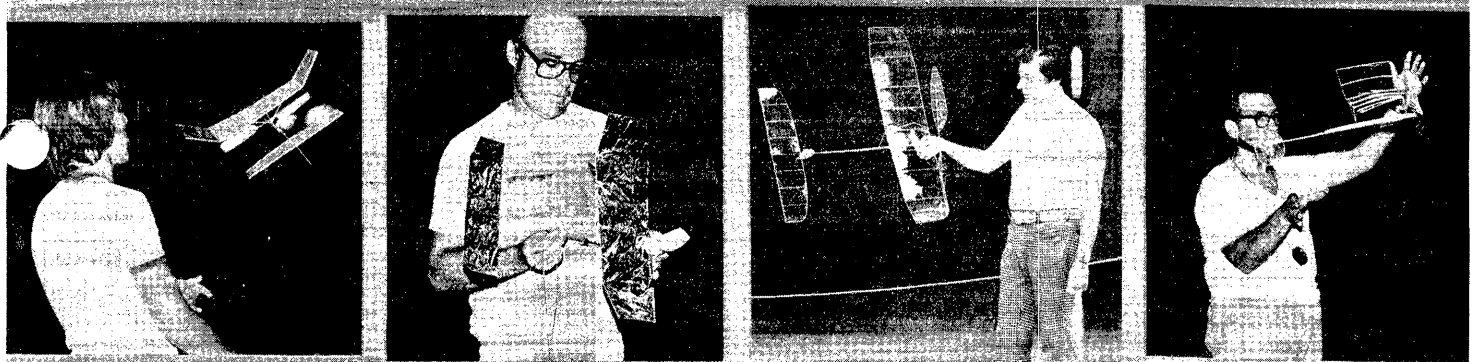
Two other pewter mugs were awarded--Walt Van Gorder won Manhattan Cabin with 9:41.8 and Dick Obarski won Easy B with 18:52.1. An AMA Scale score of 149.3 placed Charlie Sotich in the mug, while Jim Miller's Currie Wot Peanut Scale model copped the last available mug. Few people took photos of Charlie Sotich's Volksplane; everyone assumed that the whole world had seen the model! In fact, a record application for 'The Oldest Existing Peanut Scale Model' will be submitted, but there probably is insufficient evidence to verify the claim. A fellow Chicago Aeronut vainly tried to take up a collection to buy the model. He muttered something about a "burial party"...

The relative humidity in the Atrium was measured at 85% during much of the contest. In the Easy B event, an excellent 21 min.+ flight was made by Stan Chilton. Someone asked contest officials to check his wing chord. It failed--throwing out the flight. Stan opened his box and asked that his six other wings be measured. Only one passed and he used that wing to make an 18:42 flight. He then asked that the wing be checked again. It failed, but the flight was allowed to stand on the grounds that the model was legal before the flight. Stan then took the first wing to an air-conditioned room for half an hour, whereupon it passed. Meanwhile, Dick Obarski's model was processed for flight, and it passed before the flight by a slim margin. Later, an informal check showed that no other Easy B's at the meet would pass after long exposure to the high humidity! It is apparent that CD's should be given some kind of guidelines to cover such conditions.

On the third day, Stan Chilton brought out the original wing for a check. It passed and he made a flight of 20:24 just before the plastic shrouds were cut down. He had shortened each wing rib by 1/64" and then tightened the covering--just to be sure that the wing wouldn't 'grow' too large again!

In the other duration events, Cezar Banks and Walt Van Gorder battled over the Pennyplane record, with Cezar finally getting 13:55.2 on almost the last flight of the contest. Also, Mike Van Gorder and Mike Clem see-sawed over the Novice Pennyplane mark, but Mike Van Gorder prevailed at the very last. The next day, Mike Clem tried all day to top the new record and never quite made it.

Only one HLG besides the folders showed up, but Bernard Boehm's total of 2:16.1 was a classical demonstration of conventional HLG techniques. His launches were very repeatable, and used most of the available



ceiling height. It will be interesting to note the reaction of some HLG fliers to the advance in technology which Stan Stoy has demonstrated!

Other records were broken by margins insufficient to gain a winning Index:

Jr. A R.O.G. Stick--9:37.4; Dave Lindley Index = 1.035

Open FAI HL Stick--33:24; Bucky Servaites Index = 1.022

Jr. Paper Stick--16:01; Mike Van Gorder Index = 1.052

(An Index of 1.052 is a winning score, but no duplicate prizes were given.)

THE PICTURE STORY

All photos by Bud Tenny except as noted:

Top Line

Left--Stan Chilton's Easy B which made two flights over 20 minutes. Conventional design except for under-slung fin. (Jack Carter photo)

Center--Jesse Shepherd test flying a new FAI model; it was later damaged in a midair collision.

Right--John Martin really had to hustle to keep the "big board" up to date!

Second Line

Left--John Martin's Fike E never left the box and John was heard to ask, "How does anyone CD a meet and get any flights made?"

Center--Bob Mullins with his bipe Pennyplane.

Right--Cezar Banks with his bipe Pennyplane which really got a workout keeping ahead of Walt Van Gorder.

Third Line

Left--We kept telling Mike Clem to "wind it up", so he finally did. Here's the blastoff!

Left Center--Dave Linstrum brought kits and wood to the meet instead of models; this is one of three Banks' Novice Pennyplanes built as Dave led a class in building these models. The other ones flew better than Dave's model (Dave really didn't get time to trim it in).

Right Center--Jim Richmond shows off his World Record AMA "300". (Jack Carter photo)

Right--Jim Jones launches his Novice(?) Pennyplane on a test flight. Note unusual motor stick stiffener which was simply a sheet web atop the stick. The model still needed a bit of ballast!

Fourth Line

Left--Jeff Everson lends a helpful hand as Walt winds up his Manhattan Cabin model.

Center--John Adams lets the motor unwind while he ponders future strategy for flying his Vickers Vincent. The built-up motor on the model was very well done!

Right--Old habits die hard, so Charlie Sotich felt the need to ID his bipe Pennyplane on the fin.

Bottom Line

Left--John Martin's Farman Jabaru. It had a novel shock-absorbing landing gear.

Center--Bucky Servaites prepared to launch his FAI model.

Right--Charlie Sotich plans strategy for the next flight of his bipe Pennyplane.

RECORDS? MAYBE!

The following record listings represent the activity in the Northwood atrium during FNART. Note that some of the listings are followed by times which exceeded them and thus also qualify. (All the AMA records were granted except for *, which were not applied for.)

Junior A R.O.G. - 9:37.4, Dave Lindley
*Open FAI Cat. II FAI - 33:24, Bucky Servaites
Open FAI Cat. II FAI - 37:52, Jim Richmond
Open Autogyro - 7:15.0, Don Lindley
Junior Paper Stick - 16:01.0, Mike Van Gorder
Open HLG - 2:32.4, Stan Stoy
Open HLG - 2:40.1, Stan Stoy
Junior Novice Pennyplane - 10:40.5, Mike Clem
Junior Novice Pennyplane - 11:11.3, Mike Van Gorder
*Open Novice Pennyplane - 11:45.7, Cezar Banks
Open Novice Pennyplane - 12:49.8, Walt Van Gorder
Open Pennyplane - 13:55.2, Cezar Banks

World Record Applications:

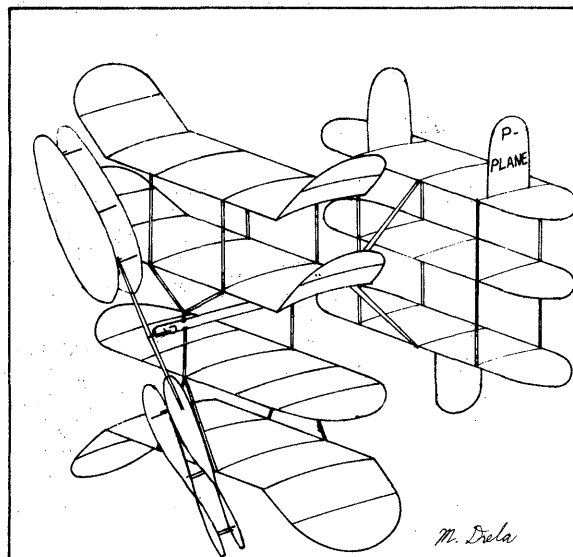
FAI Cat. III - 37:52, Jim Richmond
FAI Absolute Record - 44:43, Jim Richmond

****NOW HEAR THIS****

Some attendees at FNART indicated that they didn't hear about the dates for the contest in time to be prepared. TAKE NOTE: The Northwood atrium and facilities have been reserved for June 21-29, 1980 for the purpose of holding the 1980 Indoor World Championship (June 21-25, 1980, if approved) and VNART (June 26-29, 1980. No subscriber or NIMAS member now claim to be uninformed! Other details will be announced when firmed up.

STATE OF THE ART?

The model of the month is the result of a joint effort by McLean, Kukon, and Jaecks to produce the ultimate Pennyplane. As anyone can see, it is a rather conventional design and hence, no 3-views are provided; a sketch will suffice. The model is still in the developmental stage, however, and the performance figures are being withheld.



A CORRECTION!

A previous announcement of Lakehurst flying dates was in error, and the remaining dates listed below should be considered as official. It is still advisable for anyone planning to attend to call Dan Domina (609-448-2840) or Kukon (609-737-3522) on the Friday before any meet to confirm continued site availability. I apologize for any inconvenience caused by the previous announcement.

Aug. 22, 1979 Sept. 23, 1979 Oct. 28, 1979

COLUMBIA FLIERS IN TIGHT MANHATTAN FORMULA FINISH

At the March 11, 1979 4 gram contest at Columbia University's Low Library Rotunda the top three contenders jockeyed for final position. Going into the close it was Pete Andrews, Frank Haynes, followed by Bill Tyler. With the last model down, both Frank and Bill had passed Pete and the order was reversed. Unlimited official flights add unlimited tension right to the last minute.

Bill Tyler	5.49 grams	6:44.0
Frank Haynes	4.28 "	6:18.6
Pete Andrews	4.78 "	6:06.2
Bob Bender	6.55 "	4:46.5
Joe Nuszer, Sr.	4.33 "	4:28.3
Don Garofalow	5.06 "	4:04.1
Randolph Boston	4.80 "	3:57.6
Aubrey Kochman	4.90 "	3:28.0
Ichiro Sugioka	4.00 "	3:00.3

OHAUS SCALE

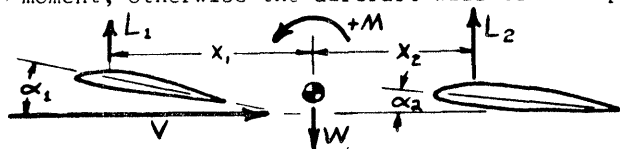
At the Manhattan Formula contest at Columbia University on March 11, CD Ed Whitten weighed all models with an "Ohaus 10-10 Precision Metric Reloading Scale, Model 1010-10 (capacity 101 g x .01 g)". The only reworking needed was to replace the pan with a weighted hook, a relatively simple task. A "reloading scale" is, of course, one intended for weighing out powder charges for cartridges used by a target shooter. Weighing at the contest went well. An extension of the arm to move the model further from the table would be an improvement if doing so did not upset the scale in some manner. Due to inexperience in using the scale, the CD did do a bit of fumbling with the micrometer poise. The scale was purchased wholesale from the Wilkens-Anderson Co. for about \$35.00. The Ohaus Scale Corp. is located at 29 Hanover Rd., Florham Park NJ 07932. Maybe a bit expensive, as compared to a balsa beam balance, the Ohaus scale gives exact weight as well as a go-no go reading, and it does not lose accuracy with humidity changes.

PITCH STABILITY OF CANARD AIRCRAFT

(dedicated to Clarence Mather)

Construction of model aircraft is mostly a black art. This is not to say that serious or fanatical competitors construct scale replicas of their opponents' machines and stick pins in them, but that we usually design on experience (ours or copying someone else's) rather than knowledge derived from basic scientific principles (this is known as engineering). The neophyte often has to construct many models to gain an intuitive knowledge of a model type; this is particularly true of the canard type of model aircraft. This is an effort to illuminate the principles behind "tail first" flight.

It is first necessary to construct a reference schematic (or a model) of our model (Figure 1). In the figure it can be seen that lift of the front wing (L_1), lift of the rear wing (L_2), and "weight" or inertia and gravitational force on the aircraft (W) are the only forces on the system. The relative wind over the wings (V) produces the lift, which may result in a moment about the center of mass. Obviously, there must be a moment, otherwise the aircraft will tend to pitch



down (dive) or up (stall). Less obvious is the fact

that a moment resisting any pitch change must be generated for stability. First, let us assemble the moment according to the sign convention on the figure.

$$M=0 = -L_1 x_1 + L_2 x_2$$

Lift on the wing is $L=qC_L S$

where C_L is the lift coefficient of the total wing, S the wing area, and q the dynamic pressure, related to the air velocity by

$$q = \frac{1}{2} \rho V^2 \quad \text{where } \rho = \text{air density}$$

For most airfoils (including those on indoor models) the lift coefficient is approximately proportional to the angle of attack (measured from the zero lift angle of the wing). Mathematically we say the derivative of lift with respect to angle of attack is constant.

$$dC_L / d\alpha = C_{L\alpha} \quad \text{thus} \quad C_L = \alpha C_{L\alpha}$$

$$\text{giving} \quad M = -C_{L\alpha} \alpha_1 S_1 x_1 + C_{L\alpha} \alpha_2 S_2 x_2$$

Here it is assumed that $C_{L\alpha} = C_{L\alpha}$ or both wings have about the same airfoils and geometries.

The stability criterion for the moment is

$$\partial M / \partial \alpha > 0$$

Neutral stability is $\partial M / \partial \alpha = 0$

$$\text{and so} \quad \partial M / \partial \alpha = -C_{L\alpha} S_1 x_1 + C_{L\alpha} S_2 x_2$$

Sticklers for accurate calculus derivation, please note that after the PROPER forms are followed you still get this result (perhaps with better dummy variables...). This gives us, with a bit of algebra

$$S_2 x_2 > S_1 x_1$$

This reveals how to construct the aircraft (wing placement). But we can also find from $M=0$.

$$C_{L\alpha} \alpha_2 S_2 x_2 = C_{L\alpha} \alpha_1 S_1 x_1$$

$$\text{and} \quad S_2 x_2 = S_1 x_1 (\alpha_1 / \alpha_2)$$

so that the stability criterion becomes

$$(\alpha_1 / \alpha_2) S_1 x_1 > S_1 x_1 \quad \text{or} \quad \alpha_1 > \alpha_2 !!!$$

This tells us that the angle of attack of the forward wing MUST be greater than the rear wing. A little thought tells us that this is true of ANY aircraft, canard, conventional, or tandem.

A more useful form of this principle is

$$x_2 / (x_1 + x_2) > L_1 / W$$

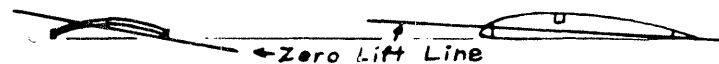
It is fairly easy to define the proportion of total lift generated by the front wing, and thus arrive at the cg location from the distance between wing aerodynamic centers.

This linearized derivation of stability ignored difference in lift curve slope between wings, but the interested can readily prove that these results are INDEPENDENT OF DIFFERENCES IN WING CONSTRUCTION. Of course, non-linear effects may introduce some deviation but they are almost always insignificant.

Now, it is easy to be led astray by some features of wing theory. The worst thing is that different airfoils (wings) have different zero-lift angles of attack. See Figure 2.

Typical Single-Surface Indoor Section

Typical Full Flat-Bottomed Section



Both wings are apparently at the same angle of attack, but due to the great camber of the left wing, it is actually at a higher angle of attack than the right one. Imagine these wings were part of a model and the left wing was in front. I have actually built an (extremely!) stable Manhattan Cabin along these lines.

I'm afraid I've already written too much, so to avoid Bud Tenny's ire I will refer any further questions to myself:

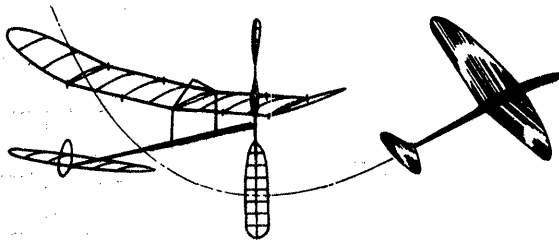
Walter Lounsbury, P.O. Box 1465, Rolla, MO
Zip 65401

It is a pity that canards are not in greater use in models, especially since we modelers are free of constraints which present full-size canard designers with some difficulties.

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



NATIONAL INDOOR MODEL AIRPLANE SOCIETY

Last Issue

Some of you noticed that the most recent issue (sent out just before the Nats) was dated Apr/May 1978. So I goofed again! It was intended that the issue be dated Mar/Apr 1978, but the midnight oil made things slippery and I slid right past March.

This Issue

Once again, you have an issue which is largely made up of material made available by faithful readers, with much of it camera-ready. It is the loyal support of so many people which makes it possible for INAV to continue. Thank you, and keep up the good work! At the moment, we need contest announcements for Contest Calendar and info about results from the contests afterward. Yes, I know you sent results from your contest last year, but this year I promise to try harder!

The Next Issue

Will contain full results of the 1979 Team Selection Finals, including several pictures. I have a formal report to peruse (can't share the full report, since it was written for AMA, but I can get the flavor), and some additional comments and data. If anyone wants to make it into print by submitting your very own report, now is the time! Also, maybe by then I will have worked up the long overdue report on the 1979 NIMAS Postal Meet. Not even I know who won yet!

!!Fast-Breaking News!!

Only one month after the fact: The top five fliers at the 1979 Team Finals were:

Ray Harlan	1110.00	points
Pete Andrews	1100.36	"
Dan Domina	1077.75	"
Erv Rodemsky	1045.3	"
Bill Hulbert	1015.31	"

Immediately after the contest, Dan Domina officially resigned his team position, which advanced Rodemsky to the Team and Bill Hulbert to official first alternate.

Comments on the 1979 Indoor Nats

We have no report from the Nats except for the published results reproduced below. Excellent coverage is available in the Nov. '79 Model Aviation, including good pictures. If any INAV readers took pictures, no one made them available.

Nominations Wanted!

Steve Geraghty, who lives at 194 Vista Del Monte, Los Gatos CA 95030, has volunteered to be the chairman of the NFFS Model of the Year effort for 1980. Nominations are in order for the following categories:

FLA Nordic Glider	Indoor Rubber
FLB Wakefield Rubber	Indoor/Outdoor HLG
FLC Power	Outdoor Rubber
Small AMA Power (1/2 A)	Large AMA Gas Power
Special Awards	

It's Never Too Early!

Every so often the rumor circulates that AMA will need to de-centralize the Nats, due to the extreme lack of suitable sites which combine the essential ingredients of a Nats site:

- Low cost housing including camp space for those who use a camper or van to make a family vacation.
- Adequate space for Free Flight, including chase and retrieval roads or facilities.
- A usable indoor site (we have had one or two recent Nats where the site really was not adequate, but other considerations weighed in favor of the overall accommodations).

- A suitable site for control line events (mainly area for multiple circles, all smoothly paved except for a grass or dirt combat circle).
- Multiple RC sites, separated by sufficient distance to permit simultaneous activity on all allotted frequencies at each site--Pattern, Soaring, Pylon and Scale.
- A central location for the AMA HQ operation.
- An active local group willing and able to pull together hundreds of details and arrangements which would be impossible for AMA HQ to manage.
- Numerous other smaller requirements!

Recently, I was "sounded out" by two different people on whether NIMAS would be willing and able to host the Indoor Nats if the AMA Nats had to be decentralized. It is never too early to think about such a thing; comments are welcome, pro or con, but especially comments which view the whole picture. It is not enough to simply say "It's a good idea!"; there are several very important concerns which require very careful thought. More in a future issue.

CONTEST CALENDAR

FLORIDA-Miami

The 1979/1980 Indoor season at Miami kicks off with Contest #1 on Sunday, Oct. 21, 1979 at the Opa Locka Goodyear Hangar, with meets to follow on Nov. 8 and Dec. 9, 1979. As usual, confirm the site availability by a call to 305-858-6363 the night before a meet. "Doc" Martin has expressed concern over the future of this site since the Dade County Commissioners have failed to deal with Goodyear on their new hangar and Goodyear is moving to Pompano Beach.

NEW JERSEY-Lakehurst

A contest for Manhattan Cabin and Bostonian (contact Ed Whitten, Box 176, Ball St. Station, New York NY 10005 ph. 212-724-0282 for rules on Bostonian models). One major difference between the two is that the Manhattan must weigh 4 grams and the Bostonian must weigh 7 grams.

NEW YORK CITY-Columbia University

Flying schedule for the Low Library Rotunda, Columbia University, is Oct. 7, Oct. 21, Nov. 4, Nov. 18, and Dec. 9, 1979, with more planned in 1980. In planning are some building instruction sessions for beginners and a special novice class called Blatter. Contact Ron Williams at 212-722-5262 for more info.

OKLAHOMA-Oklahoma City

The Sooner Free Flight Society begins their winter series of indoor meets on Oct. 14, 1979 at the National Guard Armory, 200 NE 23rd St., Oklahoma City. Events for all sessions are HLG, Pennyplane, Easy B, Peanut Scale and AMA Scale. Meets run from 9 am to 5 pm, and a nominal site use fee is charged. Other meets are scheduled for Nov. 25 and Dec. 23, 1979 and Jan. 20, Feb. 17 and Mar. 16, 1980. Contact Al Bissonnette, 6528 SE 15th, Midwest City OK 73110, ph. 405-737-1085.

A TRULY WORTHY AND MASSIVE EFFORT!

A band of dedicated NFFS members have assembled and produced "NFFS International 1979 Planbook", containing 109 plans plus text and articles describing models entered in the 1979 FF World Champs at Taft, California. This reference volume surely will become a collector item in years to come. It is available for \$10 plus mailing cost according to the following schedule: Book rate in U. S. - \$1, priority mail U. S., Canada and Mexico - \$2.50, Air Mail to Europe - \$3.50, Far East - \$5. All payment to be in U. S. Funds. Send orders to: NFFS Plans & Publications 4858 Moorepark Ave., San Jose CA 95129.

AN HISTORIC FIRST!

Other newsletters have had full-size plans, but INAV has not had the opportunity until now. Clarence Mather's report on the A-6 model flown by the San Diego Orbiters includes a full-size plan for one version of this fun model class.

1979 NATIONAL CHAMPIONSHIPS

#1 Event, Stick Category, Open

1 Stan Chilton, Wichita KS	27:15
2 Clarence Mather, San Diego CA	26:13
3 Daniel Belleff, Sykesville MD	23:41
4 Richard Hardcastle, Ballwin MO	23:40
5 William Shailor, Detroit MI	22:55
6 Dan Domina, East Windsor NJ	22:25
7 David Erbach, Lincoln NE	17:00
8 Charles Sotich, Chicago IL	11:46
9 Walter Erbach, Lincoln NE	2:09

#1 Event, Stick Category, Senior

1 Joe Kubina, Warren MI	9:44
2 Peter Brown, Stn Mtn GA	2:34

#1 Event, Stick Category, Junior

1 Mike Clem, Dallas TX	11:00
2 Bradley Fulmer, Mishawaka IN	6:40
3 Susan Brown, Stn Mtn GA	4:50
4 Karen Brown, Stn Mtn GA	3:34
5 David Brown, Stn Mtn GA	2:12

#2 Event, Paper Stick Category, Open

1 Stan Chilton, Wichita KS	17:50
2 Dan Domina, E. Windsor NH	14:17
3 Charlie Sotich, Chicago IL	13:38.5
4 Daniel Belleff, Sykesville MD	12:36
5 Ronald Roberti, Norman OK	11:13
6 David Erbach, Lincoln NE	9:08
7 Walter Erbach, Lincoln NE	8:09

#2 Event, Paper Stick Category, Senior

1 Joe Kubina, Warren MI	3:36
2 Peter Brown, Stn Mtn GA	2:32

#2 Event, Paper Stick Category, Junior

1 Mike Clem, Dallas TX	12:34
2 Bryan Fulmer, Mishawaka IN	6:45
3 Bradley Fulmer, Mishawaka IN	5:36
4 David Turgeon, Spring Valley, CA	4:34
5 Susan Brown, Stn Mtn GA	3:08
6 David Brown, Stn Mtn GA	2:08
7 Karen Brown, Stn Mtn GA	1:04

#3 Event, Cabin Category, Open

1 Dan Domina, E. Windsor, NJ	16:26
2 Robert Dunham, Tulsa, OK	15:28
3 Robert Dunham Jr, Tulsa, OK	9:40
4 David Erbach, Lincoln, NE	9:31
5 Walter Erbach, Lincoln, NE	8:34
6 Daniel Belleff, Sykesville, MD	6:50

#3 Event, Cabin Category, Senior

1 Joe Kubina, Warren, MI	9:18.7
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#3 Event, Cabin Category, Junior

1 Mike Clem, Dallas, TX	5:56
2 Bryan Fulmer, Mishawaka, IN	3:07
3 Carl Linstrum, Ft. Lauderdale, FL	3:02

#4 Event, FAI Stick Category, Open

1 Clarence Mather, San Diego CA	51:27
2 Dan Domina, E. Windsor NJ	48:26
3 William Shailor, Detroit MI	46:00
4 Richard Hardcastle, Ballwin MO	44:41
5 Daniel Belleff, Sykesville MD	38:41
6 Charlie Sotich, Chicago IL	27:07

#4 Event, FAI Stick Category, Senior

1 Peter Brown, Stn Mtn, GA	2:36
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#4 Event, FAI Stick Category, Junior

1 Mike Clem, Dallas, TX	23:14
2 Susan Brown, Stn Mtn, GA	10:30
3 Carl Linstrum, Ft. Lauderdale, FL	7:15

4 Karen Brown, Stn Mtn, GA	5:01
5 David Brown, Stn Mtn, GA	2:09

#5 Event, Pennyplane Category, Open

1. Richard Hardcastle, Ballwin, MO	11:27.0
2. Gordon Wisniewski, Greendale, WI	10:16.8
3. John O'leary, Bloomington, MN	6:44.0
4. Bob Boyer, San Diego, CA	6:31.7
5. James Clem, Dallas, TX	6:27.7
6. Robert Loeffler, Norman, OK	5:51.0
7. Roger Miller, Emporia, KS	4:22.4
8. David Erbach, Lincoln, NE	4:04.4
9. Jim O'Reilly, Wichita, KS	2:24.0

#5 Event, Pennyplane Category, Senior

1. Collin Dimaio, Los Angeles, CA	6:23.4
2. Billy Carney, Jacksonville, FL	5:15.8
3. Peter Brown, Stn Mtn, GA	0:23.2

#5 Event, Pennyplane Category, Junior

1. Mike Clem, Dalls, TX	6:50.4
2. Bradley Fulmer, Mishawaka, IN	5:34.0
3. Bryan Fulmer, Mishawaka, IN	5:25.6
4. Carl Linstrum, Ft Lauderdale, FL	4:54.5
5. John O'Reilly, Wichita, KS	4:05.0
6. Melinda Anderson, Goshen, IN	3:25.8
7. Karen Brown, Stn Mtn, GA	2:50.6
8. Susan Brown, Stn Mtn, GA	2:45.2

#6 Event, Easy B Category, Open

1. Stan Chilton, Wichita, KS	16:49.8
2. Clarence Mather, San Diego, CA	14:22.1
3. Richard Hardcastle, Ballwin, MO	13:51.0
4. Ronald Roberti, Norman, OK	10:20.2
5. Edmund Turner, Ft Worth TX	10:6.
6. Bob Boyer, San Diego CA	9:42.0
7. Carl Fries, Crestwood MO	9:06.0
8. John O'Leary, Bloomington, MN	8:56.2
9. Daniel Belleff, Sykesville, MD	8:42.
10. James Clem, Dallas, TX	7:15.
11. William Rogers, Stevens Pt, WI	5:13.
12. Fred Anderson, Goshen IN	4:31.
13. Linda Brown, Stn Mtn, GA	4:15.

#6 Event, Easy B Category, Senior

1. Collin Dimaio, Los Angeles, CA	7:27.4
2. Billy Carney, Jacksonville, FL	4:57.0
3. Peter Brown, Stn Mtn GA	2:34.6

#6 Event, Easy B Category, Junior

1. Mike Clem, Dallas, TX	6:54.2
2. Kevin Loeffler, Norman OK	6:45.5
3. Bradley Fulmer, Mishawaka, IN	5:43.2
4. Bryan Fulmer, Mishawaka IN	5:22.0
5. David Turgeon, Spring Valley, CA	5:04.4
6. Susan Brown, Stn Mtn, GA	4:56.4
7. Melinda Anderson, Goshen, IN	4:16.4
8. Karen Brown, Stn Mtn, GA	3:25.8
9. David Brown, Stn Mtn, GA	0:5.0

#7 Event, Indoor HL Glider Category, Open

1 Stan Stoy, Woodridge IL	98.2
2 Michael Stoy, Woodridge IL	94.0
3 Robert Dunham, Tulsa OK	93.2
4 Paul Shailor, Detroit MI	91.2
5 Anthony Vaughan, Edmond OK	91.0

6 Dale Segle, Wenatchee WA	90.6
7 William Schlarb, S Bend IN	86.8
8 Dan Domina, E Windsor NJ	84.9
9 Bob Boyer, San Diego CA	83.9
10 Gerald Guiles, Nat City CA	78.7
11 Daniel Belleff, Sykesville, MD	76.6
12 Michael Joerms, Westmont IL	76.0
13 Terry Rimert, Baldwin FL	71.5
14 Larry McFarland, Arlington TX	71.1
15 Ronald Roberti, Norman OK	70.7
16 Matt Gewain, Cerritos CA	68.2
17 Bruce Kimball, Seattle WA	66.6
18 Bill Langley, Kansas City MO	57.8
19 Richard Hawes, Omaha NE	57.1
20 Roger Miller, Emporia KS	11.4

#7 Event, Indoor HLG Category, Senior

1 Joe Kubina, Warren MI	76.8
2 Collin Dimaio, Los Angeles CA	68.4
3 Peter Brown, Stn Mtn GA	46.4

#7 Event, Indoor HL Category, Junior

1 Bryan Fulmer, Mishawaka IN	84.0
2 Mike Clem, Dallas TX	75.0
3 David Turgeon, Spring Valley, CA	71.8
4 William Langley, Plattensburg MO	71.0
5 Bradley Fulmer, Mishawaka IN	61.4
6 Draycott Hooke, Mountain Home PA	54.0
7 Eric Vaughan, Edmond OK	53.3
8 David Hooke, Mountainhome PA	39.4

#8 Event, AMA Scale Category, Open

1. Dan Domina, E Windsor, NJ	175.0
2. Don Srull, McLean, VA	154.4
3. Greg Thomas, Richfield, MN	150.20
4. Chas Sotich, Chicago, IL	142.2
5. Ron Roberti, Norman, OK	134.2
6. Bill Stroman, Norwalk, CA	128.3
7. Curt Sanford, Dallas, TX	116.1
8. Lloyd Wood, Florissant, MO	98.3

#8 Event, AMA Scale Category, Junior

1. Melanie Sanford, Dallas, TX	100.0
2. Stefanie Sanford, " "	96.0
3. Liz Sanford, " "	92.5
4. Susan Brown, Stn Mtn, GA	76.0
5. David Brown, Stn Mtn, GA	58.0

#8 Event, AMA Scale Category, Senior

1. Guy Larsen, Roanoke, TX	122.8
2. Peter Brown, Stone Mtn, GA	81.2
3. Tom Comparet, Los Angeles, CA	65.0

#9 Event, Peanut Category, Open

Sponsored by Peck Polymers

1. Clarence Mather, San Diego, CA	209.4
2. Don Srull, McLean, VA	135.9
3. Bob Willey, Lincoln, NE	135.2
4. Ron Roberti, Norman, OK	128.0
5. Charles Sotich, Chicago, IL	125.5
6. Gregory Thomas, Richfield, MN	120.0
6. Lloyd Wood, Florissant, MO	120.0
7. Curt Sanford, Dallas, TX	109.0
8. Charles Puckett, Mt Vernon, IL	108.6
9. Thomas Blakeney, Ft Worth, TX	104.
10. Fred Anderson, Goshen, IN	93.6

#9 Event, Peanut Category, Senior

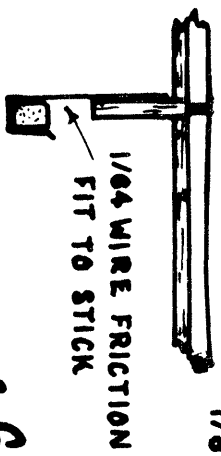
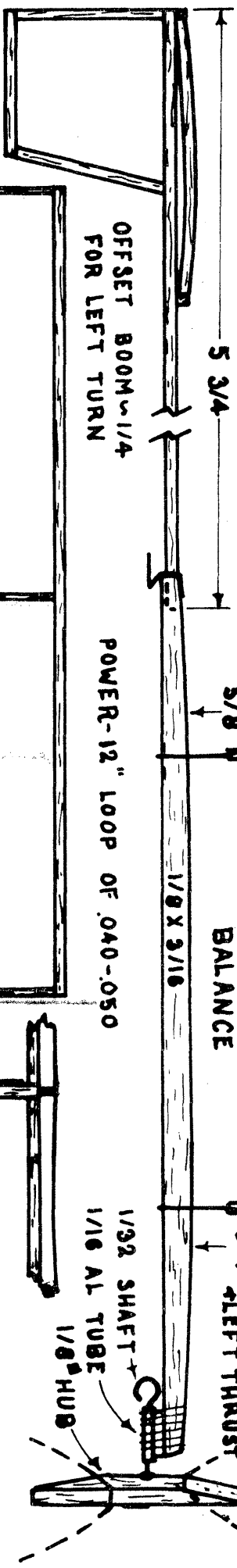
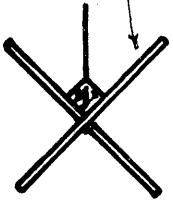
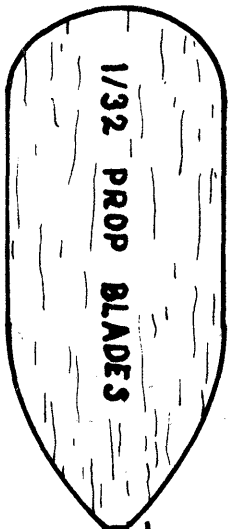
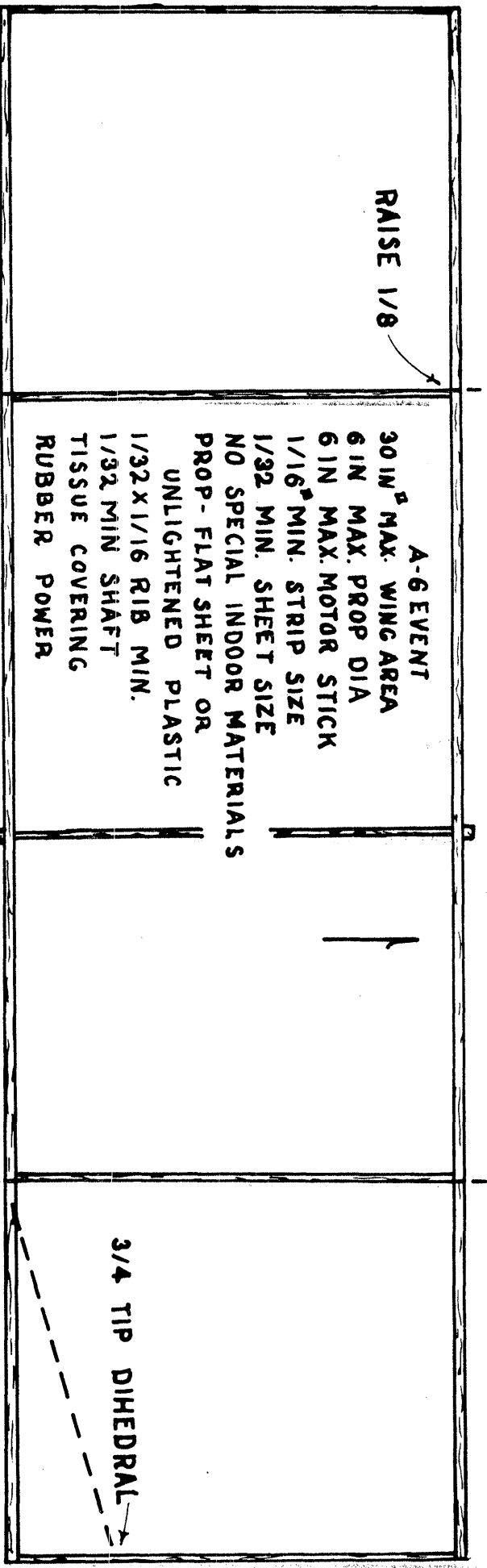
Sponsored by Sterling

1. Guy Larsen, Roanoke, TX	107.7
2. Collin Dimaio, Los Angeles, CA	106.8
3. Glenn Anderson, Goshen, IN	82.5
4. Peter Brown, Stone Mtn, GA	75.0
5. Tom Comparet, Los Angeles, CA	73.1

#9 Event, Peanut Category, Junior

Sponsored by Sterling

1. Melanie Sanford, Dallas, TX	99.2
2. Stefanie Sanford, Dallas, TX	89.5
3. Liz Sanford, Dallas, TX	87.0
4. Susan Brown, St Mtn, GA	64.0
5. David Brown, St Mtn, GA	54.7



A-6 Model

C. Mather

San Diego Arbiters

CONTEST REPORTS

Illinois Model Aero Club, Madison St. Armory, Chicago IL Feb. 11, 1979. Outside temp. 15°F, inside 62°F with some drift.

<u>Indoor HLG</u>		<u>Pennyplane</u>	
Open		Jr/Sr/Op.	
BOB Watson	2:05.0	Gordon Wisniewski	10:31.4
Stan Stoy	1:57.6	Charlie Sotich	9:02.6
Bernard Boehm	1:56.3	Dennis Jaecks	7:03.2
Bob Warmann	1:29.0	Clarence Wells	5:18.4
Mike Preston	1:26.8		
Chuck Markos	1:20.0	<u>Novice Pennyplane</u>	
Eric Anderson	0:42.6	Open	

Jr/Sr.		Bob Siedentorf	6:30.8
Kris Warmann	1:23.0	Eric Anderson	5:23.6
Brian Fulmer	1:19.6	Joe Pierce	5:10.4
Bradley Fulmer	0:59.0		
Aaron Markos	0:52.0	<u>Jr/Sr.</u>	
		Kris Warmann	5:40.0
		Brian Fulmer	5:06.0
		Aaron Markos	5:03.0
		Chad Kurth	3:44.0
		Bradley Fulmer	2:45.0

<u>Sport Scale</u>				
Open		<u>Scale</u>	<u>Time</u>	<u>Total</u>
BOB Siedentorf	"Baby Ace"	93	53.4	146.4
Charlie Sotich	"Volksplane"	72	69.6	141.6
Bill Gough	"Bucker Jungmeister"	83	43.0	126.0
Lewis Groebe	"1929 Monocoupe"	95	28.0	123.0
Don Lockwood	"Fike E"	59	56.0	115.0
Clarence Mills	"Davis DA-2"	64	47.2	111.2
Scott Wisniewski	"Pilarus Porter"	61	49.8	110.8
Eric Anderson	"Baby Ace"	59	15.0	74.0

<u>Jr/Sr.</u>				
Mike Siedentorf	"Lacey M-10"	76	15.0	91.0
Mike Gaynor	"Piper Cub"	52	7.3	59.3

THE A-6 MODEL

by Clarence Mather

The A-6 model is easy to build and requires none of the specialized indoor modeling supplies or techniques. Yet it flies well in small gyms and living rooms. Several flights of over three and a half minutes were made in a recreation center gym. Thus it offers satisfaction and a challenge to get the most from it. It is ideal for those after-the-business-meeting activities of clubs. Modelers inexperienced in indoor flying can learn indoor trimming techniques and how rather small changes can affect flight time drastically. The model is sturdy by indoor standards and can survive banging around ceilings and lights. It is strong enough to fly outdoors but we have not done so.

It may seem that there are too many constraints on design and construction of the A-6 model, but experience has shown that loopholes will be exploited to produce grotesque designs. Consider the current Pennyplanes for one example. The rules are:

1. Wing area 30 square inch maximum - the "A" part of the name.
2. Motor stick length and prop diameter 6" maximum - the "6" part of the name.
3. Minimum strip size 1/16" square and and minimum sheet thickness 1/32".
5. Rib depth 1/16", tissue covering, rubber power.
6. Prop can be plastic, used as purchased--no sanding for lightening. Prop can be made of flat sheet blades on a 1/8" square hub.
7. Prop shaft is 1/32" wire and the bearing is 1/16" aluminum tubing.

This is some of the reasoning used to arrive at the above rules: By specifying area we allow the modeler to experiment with aspect ratio and outline shape. However the higher aspect ratios pay a weight penalty because of the minimum size strips. The same holds for tail boom length and tail surface areas. The small model size allows them to be circled in very small sites and to be transported easily. The wood sizes and material availability were intended to encourage more participation. The prop diameter and motor stick length were kept small to give a compact model that was large enough to fly well. The prop and bearing are the hardest part of a model. A ready-made plastic prop is the simplest but we decided to allow the flat sheet wood type as well. The flat blades and sheet hub are easy to assemble and they perform well! It is quite easy to stick the prop shaft through the hub from corner to corner with good accuracy. The 1/32" wire and 1/16" tubing makes a smooth bearing arrangement which is simple to assemble. Using wires to hold the wing on the stick allows the modeler to slide the wing fore and aft for balancing and also to twist the wires to change the washin in the wing. Both adjustments are critical to indoor flying. The model flies well on a couple of rubber bands looped together to form a longer motor.

We sent out a plan and a piece of tissue with the monthly newsletter. Fudo Takagi stripped up some rubber

and offered a piece to anyone who came out with a model. Pirelli .040" to .050" wide worked fine for us. A number of different designs showed up including a high aspect ratio model and a canard. So far the rather standard type designs have done best.

The model is a good one to use with groups of beginners if guidance is available as in modeling classes. Peck Polymers sells a neat plastic thrust bearing which could be used instead of the aluminum tubing shown. It is sold with formed shafts which fit the bearing well for a smooth unit. For beginners, the plastic prop would be easier than the built up wood version. We didn't intend for the model to be for the rank beginner but rather for the club as a group activity.

THANKS TO FREE FLIGHT NEWS

The item reprinted below and the accompanying plan sheet were taken from Ian Kaynes' Free Flight News, 1/78 issue. Some minor activity in CO₂ has been rumored here in the U.S., but we have no specific reports.

A NEW INDOOR CLASS--CO₂ DURATION

by Geoffrey Lefever

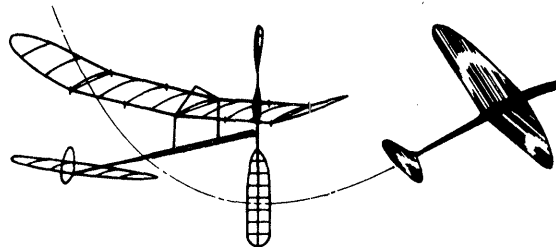
Last year for the first time, the Indoor Technical Committee held a contest at Cardington for CO₂ Duration. It is unfortunate that conflicting dates appeared in the modeling press; the result was only three entries. Ron Green was the winner and his best flight was 3:56. However, the Technical Committee is sufficiently confident in the appeal and performance of these models to provide three competitions for CO₂ Duration in the next season's indoor programme, including one at the Indoor Nationals.

At present, the class is without restrictions and is open to any CO₂ engine-powered models, the sum of the best two out of six flights to count. Although currently available CO₂ motors have a very modest power output, the models can produce a high performance when indoor model techniques are used to give a very light airframe. The models can be impressive at Cardington, although it must be admitted that they cannot perform anywhere else. The amount of flying that can be fitted into a day at Cardington is enormous, and this goes a long way to compensate for the traveling involved. Also, every day is a flying day and is largely free from the vagaries of weather which plague outdoor meetings.

The drawing opposite shows my own model which is the first of what I hope will be many. The construction and size and weight were something of a shot in the dark and were arrived at as follows. The model must climb to the top of the great shed--that is about 150 feet, take a fairly long time to get there and then produce a very acceptable glide. Obviously, the power to weight ratio must be very high. I set the balance at 1/2 oz motor, tank and prop, to 1/2 oz airframe. The engine speed adjustment could give a run of up to two minutes but at a fairly low power output. I hoped this would be sufficient for a steady climb. Finally, a one ounce model which needed a sinking speed on the order of one foot per second would have to be quite large or very clean aerodynamically. I wanted the model to fly slowly to reduce stresses and so Easy B-type construction was adopted. I wasn't sure if wing bracing would be necessary but the first hand launch resulted in massive dihedral--and so bracing was provided. No further problems were encountered. The wing and tailplane are both covered with lightweight Japanese tissue which was ironed between sheets of newsprint but not treated in any other way. The power unit is the 'Telco', one of two types currently in this country. Both types are similar in size and weight. The propeller I changed for one of greater area produced by Jiri Kalina's model factory in Prague. The fuselage is a simple box of light 1/32 inch sheet, the fin and wing supports are also 1/32 inch sheet. The motor is fixed to a 1/16 inch ply bulkhead with 'Zap'. I included 5° right thrust, but no downthrust. The fin is set at 5° right turn. Wing incidence in zero relative to the fuselage datum line and also the thrust line. The tailplane trailing edge is 3/8 inch above the top of the fuselage.

Once the wing was braced on site and the glide elevation established, no further adjustments were needed. With generous dihedral and a forward CG, the model climbed steeply in a rolling climb--it was rather reminiscent of a slow-motion old time 'Banshee' (For those old enough to remember such ships--Ed.).

With a good charge, the model levelled out just under the centre catwalk. The glide is slow and quite good. The best flight to date is 4:57 from a very good charge which gave a 2:30 engine run. With such a performance, there must be the basis for an excellent competition class. Why not give it a go?



INDOOR

NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

1979 INDOOR TEAM SELECTION FINALS

FLIER	1	2	3	4	5	6	7	8	9	TOTAL	FLYOFF POINTS	PRIOR POINTS	TOTAL POINTS
RAY HARLAN	40:57	35:15	43:48	-	-	-	-	-	-	84:45	1000.00	110.00	1110.00
PETE ANDREWS	38:57	36:05	44:59	28:43	26:57	17:48	-	-	-	83:56	990.36	110.00	1100.36
DAN DOMINA*	1:19	39:10	37:33	40:19	29:58	24:11	31:29	18:50	42:25	82:44	976.20	101.55	1077.75
ERV RODEMSKY	41:23	9:50	5:42	37:48	35:00	-	-	0:18	-	79:16	935.30	110.00	1045.30
BILL HULBERT	34:59	38:33	34:07	38:10	30:09	33:53	32:54	8:27	37:39	76:43	905.21	110.00	1015.21
RON GANSER	0:46	33:55	0:08	-	23:20	16:08	34:22	36:33	38:06	74:39	880.83	108.41	989.24
BUD ROMAK	31:38	35:13	-	34:50	35:36	30:29	34:38	31:42	36:36	72:12	851.92	110.00	961.92
BOB GIBBS	-	37:35	18:57	19:20	30:15	31:17	27:44	34:45	24:44	72:20	853.49	107.48	960.97
JIM RICHMOND	14:41	11:48	12:20	39:33	28:54	31:58	32:34	13:18	-	72:07	850.93	110.00	960.93
RICHARD DOIG	30:08	25:54	26:31	36:52	8:05	27:52	31:00	7:14	35:45	72:37	856.83	90.12	946.95
MANNY RADOFF	31:03	32:40	35:59	36:18	-	9:37	33:15	5:02	31:28	72:17	852.90	85.87	938.77
DICK OBARSKI	30:47	35:57	35:00	5:03	20:36	13:07	-	32:15	6:03	70:57	837.17	93.41	908.73
ED STOLL	32:39	14:10	33:09	35:47	17:25	14:00	28:11	30:11	-	68:56	813.37	95.36	908.73
PAUL TRYON	32:57	35:50	30:14	7:06	23:41	23:42	31:23	15:04	33:02	68:52	812.59	95.48	908.07
AL ROHRBAUGH	13:37	38:23	16:03	30:39	12:37	18:06	27:05	29:11	6:11	69:02	814.55	89.53	904.08
BUCKY SERVAITES	29:11	25:51	11:33	34:41	30:34	22:30	-	-	-	65:15	769.91	108.65	878.56
GERRY SKRJANC	18:59	33:02	31:29	-	-	1:27	19:24	-	-	64:31	761.26	82.67	843.93
BOB PLATT	35:04	10:01	7:10	26:09	27:02	11:14	2:26	11:05	-	62:06	743.74	102.50	835.24
HAL CRANE	10:29	28:59	23:42	27:20	24:04	22:51	-	-	-	56:19	664.50	109.14	773.64
CEZAR BANKS	-	-	-	8:03	-	-	-	-	-	8:03	94.99	91.20	186.19

*DAN DOMINA FORMALLY RESIGNED HIS OPPORTUNITY TO BE #3 TEAM MEMBER AT THE CONCLUSION OF THIS CONTEST.
ERV RODEMSKY IS OFFICIALLY #3 TEAM MEMBER AND BILL HULBERT IS THE #1 ALTERNATE.

NOTES ABOUT THE TEAM SELECTION FINALS

The following comments were gleaned from reports by Dick Kowalski and letters from Hal Crane. In general, the twenty "best" U.S. indoor fliers faced good to less than average conditions during a three-day contest with nine official flights allowed. Their final score was computed using the best the best two flights. Under the program guidelines, each flier entered the Finals with points which were accumulated at both local and regional qualification trials during the previous 20 months of the program, which began in January, 1978. Previous Finals had been scored on the basis of two of six flights, and no reason was given for the new nine flight/score two format.

The two reporters agreed that the first day had the best weather, but Hal noted that flights between 40 and 45 minutes occurred in rounds 1, 2, 4 and 9, while rounds 2 and 4 had the most flights between 35 and 40 minutes. The weather deteriorated on the second day with many thunderstorms across the state, even though only light rain fell at the hangar. Even in the good air of the first round, only 18 fliers put up flights, with 19 flights in round 2 (the most flights in a round). Of 142 official flights made in nine rounds, 6 were over 40 minutes and 27 were between 35 and 40 minutes. Many flights could have been longer if they had not descended into areas with obstructions on the floor.

The last day started with a strong inversion layer at about 125 feet which gradually lifted as the day progressed. In the seventh round, only Hulbert's 40:36 test flight was noteworthy, and the eighth round showed similar results. The real battle began in the ninth round. Since the fourth round the top three had been Harlan, Andrews and Rodemsky, but Domina posted 42:25 to add almost five minutes to his total which placed him in third. Hulbert also made a final strong effort which was scuttled by drift. At the end of the contest Domina resigned from the team slot, leaving Rodemsky in third and Hulbert as first runner-up. It can be noted that a number of others were also trying hard in the eighth and ninth rounds, with five fliers bettering their scores in those two rounds.

FAI QUALIFICATION TRIALS RESULTS

The listings below represent all the FAI results I have received. While it may not be complete, it will give an idea of the program as it progressed.

FAI Local Qual. Trials, Ames Research Center, April 29-30, 1978

Bud Romak	30:29	32:58	63:27	10.00
Bob Gibbs	19:00	31:23	50:23	7.94
Andy Faykun	22:18	18:21	40:39	6.41

Oakland Cloud Dusters Local Qual. Trials, Ames Wind Tunnel May 14, 1978

Bob Gibbs	26:31	31:26	57:57	10.00
Joe Bilgri	26:40	29:01	55:41	9.61
Bud Romak	29:10	24:15	53:25	9.22

Moffett NAS Local Qual. Trials, June 25, 1978

Erv Rodemsky	32:02	37:02	68:04	10.00
Bud Romak	36:57	30:45	67:42	9.89
Bob Gibbs	29:26	27:10	56:36	8.27

FAI Local Qual. Trials, Lakehurst NAS, June 17, 1978

Pete Andrews	32:01	34:45	66:46	10.00
Bill Tyler	29:47	32:16	62:03	9.29
John Kukon	29:17	29:17	58:34	8.77
Richard Whitten	26:19	27:46	54:05	8.10

FAI Regional Qual. Trials, Lakehurst NAS, July 1-2, 1978

Pete Andrews	35:25	37:57	73:22	100.00
Bill Tyler	34:55	34:37	69:32	98.82
Bob Platt	31:18	36:24	67:42	96.21
Dan Domina	32:47	34:23	67:10	95.45
Richard Whitten	28:40	31:52	60:32	86.03
John Kukon	26:30	30:08	56:38	80.48
Hal Crane	26:15	22:34	48:49	69.37

FAI Local Qual. Trials, William & Mary Hall
Aug. 18, 1978, 60' ceiling.

Bob Platt	23:53	25:50	49:43	100.00
Hal Crane	21:24	24:03	45:27	91.41
Bob Champine	18:44	14:10	32:54	66.17

FAI Regional Qual. Trials, Goodyear Aerospace Hangar,
Sept. 16-17, 1978

Jim Richmond	37:36	34:20	71:56	100.00
RON Ganser	35:04	35:46	70:50	98.53
Bill Hulbert	36:06	33:25	96:66	96.66
Al Rohrbaugh	30:07	34:17	74:24	89.50
Dick Obarski	26:02	34:28	60:30	84.10
Ed Stoll	25:28	27:59	53:27	74.30

FAI Regional Qual. Trials, Ames Research Center,
Nov. 25-26, 1978

Bud Romak	33:00	33:09	66:09	100.00
Bob Gibbs	32:26	32:03	64:29	97.48
Joe Bilgri	31:02	31:06	62:08	97.00
Bob Randolph	31:47	31:44	63:31	96.02
Clarence Mather	27:21	27:03	54:24	82.24
Cezar Banks	25:00	26:26	51:26	77.75
Andrew Faykun	4:47	14:10	18:57	28.65

FAI Local Qual. Trials, Los Angeles CA, March 4, 1979

Clarence Mather	17:38	19:41	37:19	10.00
Cezar Banks	20:19	15:31	35:50	9.60
Bob Randolph	16:52	17:57	34:49	9.34
Andy Faykun	13:34	16:28	30:02	6.34
Howard Haupt	13:41	-	13:41	3.67

FAI Local Qual. Trials, St. Louis MO, March 25, 1979

Stan Chilton	16:24	14:00	30:24	10.00
Dick Hardcastle	14:25	14:41	29:06	9.58
Paul Tryon	12:33	13:24	25:57	8.54

FAI Local Qual. Trials, Dallas TX, April 14, 1979

Ed Turner	9:39	9:10	18:49	10.00
Jesse Shepherd	7:00	9:00	16:00	8.50
Jim Clem	6:19	6:17	12:36	6.70
Dick Mathis	4:20	4:16	8:36	4.57

FAI Regional Qual. Trials, Miami FL, April 29, 1979
Goodyear Hangar, Opa Locka Airport, Miami.

Ray Harlan	23:34	18:27	42:01	100.00
Roman Szymula	18:27	16:54	35:21	84.13
Dave Linstrum	14:43	9:42	24:25	58.11

FAI Local Qual. Trials, Bedford TX, July, 1979
Bedford Boy's Ranch Gym, 26.5' ceiling.

Bud Tenny	9:40	12:03	21:43	10.00
Jesse Shapherd	10:12	8:10	18:22	8.45
Jim Clem	8:05	5:32	13:37	6.27

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

This Issue

An attempt has been made to pull together all the FAI Team Selection Program information on hand, with the hope that some overdue recognition be made of this continuing activity which allows the AMA to field a team for the Indoor World Championships held every two years. The issue has been under preparation for some time, due to very little of the material being camera-ready. Thanks again to those who continue to sent information for INAV, since no news medium can exist without news to publish!

Happy Birthday to NIMAS!

A brief historical note: NIMAS organization began in December, 1961, and INAV, which began as a local newsletter in March, 1961, was adopted as the official communication medium of the new organization a few months later. It is extremely gratifying to know that this effort has continued so long; one early member once opined that he had expected me to begin repeating myself after about six months! Continued input from many people has prevented such a necessity. Actually, it might be in order to reprint much more from earlier issues--some information never goes out of date!

Merry Christmas!

Christmas cards have already begun arriving, and it is once again good to hear from so many of you. Thank you for remembering, and we wish you the best. Keep in touch, and let's look forward to a brighter and better New Year!

Change of Address

Any NIMAS member who moves and wishes to notify his fellow members of his new address need only request that the announcement appear in INAV. Richard Doig has moved:

Richard Doig, 6 Canary Hill Dr., Pontiac MI 48055

NIMAS Awards

For years, NIMAS has had a special recognition award for those fliers whose performance is better than average but may not have set a national record for one reason or another. The system is patterned after the awards given for soaring pilots, with three levels of recognition for each ceiling category: Silver, Gold and Diamond. One of the most honored fliers is Dan Domina, who has gathered one or more awards for both gliders and rubber-powered models in all three ceiling categories. The record must be checked to see exactly how many awards Dan has, but he has qualified as Ace (all three awards in a single category) at least once. His latest application is for these flights made at the Indoor Team Finals at Akron:

Cat. III Silver Rubber Award - 40:19
Cat. III Diamond Rubber Award - 42:25

Congratulations to Dan Domina, and to the many other fliers over the years who have qualified. An upcoming issue will give more details of the Awards, and a list of all the honorees will be presented.

FAI INDOOR REPORT

Indoor Program Awards Prepared

Some time ago the Indoor Team Selection Committee designated two special awards for program participants, both to be perpetual trophies. The Merrill C. Hamburg Award goes to the flier racking up the highest score at each Team Selection Finals, and the Pete Andrews Outstanding Achievement Award is for that participant who demonstrates the most improvement in his personal state-of-the-art as he competes for a team berth. The committee owes a special debt of gratitude to Hardy Brodersen for his design of these trophies, and to Jim Jones for his construction of the trophies. Hardy has rare artistic design talent and Jim is well known for his craftsmanship, so these should be really beautiful awards.

Indoor Team Selection Committee News

Recent activity (since the Finals) of the Indoor Committee include the following:

Erv Rodemsky has been confirmed as the recipient of the Pete Andrews Outstanding Achievement Award. This is a perpetual trophy to be awarded to the flier deemed "most improved" in each team selection program.

Ray Harlan, outgoing committee chairman, received the Merrill C. Hamburg award for high score at the Team Selection Finals.

Bill Hulbert was confirmed by the committee as the manager for the 1980 U.S. Indoor Team.

Jim Richmond has been unanimously elected by the committee as the new chairman.

CONTEST CALENDAR

FLORIDA-Miami

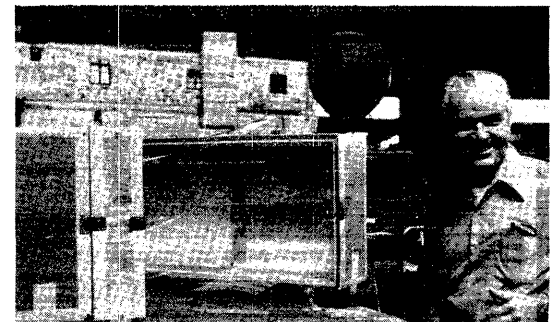
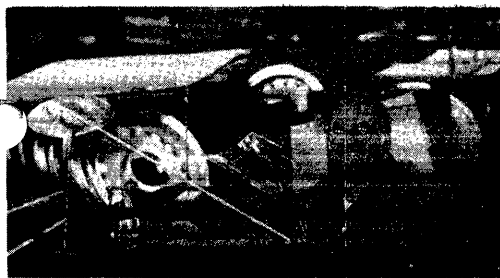
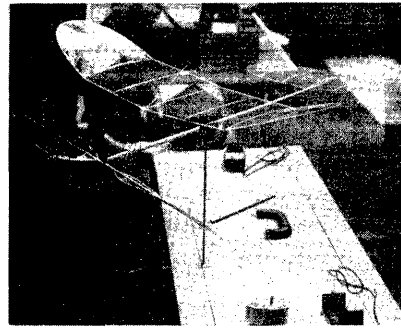
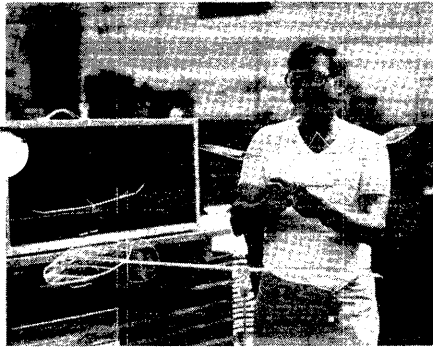
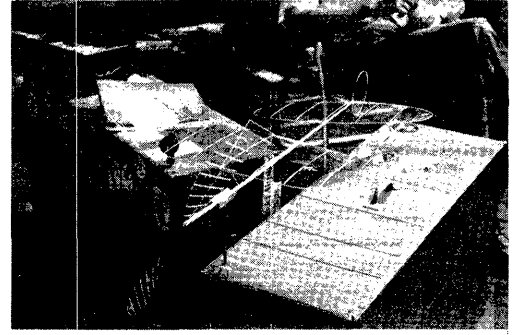
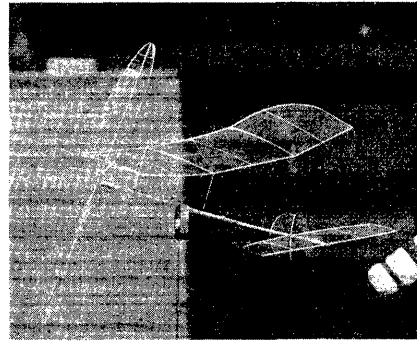
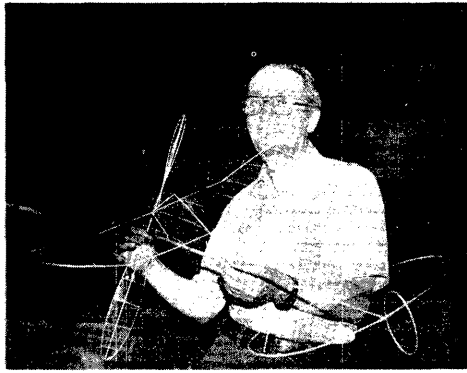
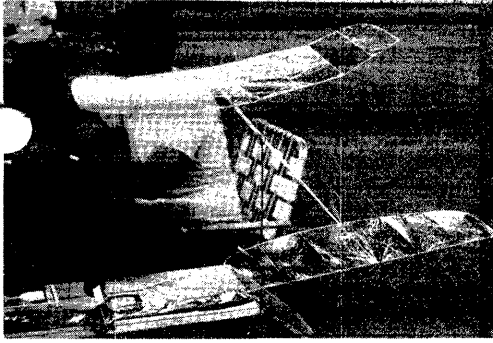
The 1979/1980 Indoor season at Miami kicked off with Contest #1 on Sunday, Oct. 21, 1979 at the Opa Locka Goodyear Hangar, with meets following on Nov. 8 and Dec. 9, 1979. 1980 meets are planned, but "Doc" Martin has expressed concern over the future of the Opa Locka site since the Dade County Commissioners have failed to deal with Goodyear on their new hangar and Goodyear is moving to Pompano Beach. For latest news about 1980 contest schedules and site availability, call 305-858-6363.

MINNESOTA-Minneapolis

Cat. I indoor contests are planned by the Minneapolis Model Aero Club and the Minneapolis Piston Poppers, running from Noon to 4 pm on Jan 27, Feb. 17 and Mar. 23, 1980. The site is Burnsville Senior High School gym, with 33' ceiling and floor space equivalent to 3 standard gyms. For further details, contact Jack O'Leary at 1147 Kell Circle, Bloomington MN 55437, 612-888-6667.

MISSOURI-St. Louis Area

Indoor Contests at the East St. Louis Armory, East St. Louis IL on Dec. 23, 1979 and Jan. 20, Feb. 17 and Mar. 29-30, 1980. Site is AMA Cat. I, and times for the Dec. 23 contest are 9 am to 5 pm CST. Events are HLG, Easy B, Pennyplane, Microfilm Stick, Peanut Scale, Novice Pennyplane and Delta Dart. For more details, contact Jim Bennett, 324 Helfenstein, St. Louis MO 63119, ph. 314-962-5271.



NEW YORK-Rochester

Indoor sessions at the Kodak Office auditorium, 343 State St., Rochester, 1st and 3rd Sunday each month, 1 pm to 5 pm. This site has a 26' smooth ceiling, and more details can be had from Bob Clemens at 716-392-3346.

OKLAHOMA-Oklahoma City

The Sooner Free Flight Society begins their winter series of indoor meets on Oct. 14, 1979 at the National Guard Armory, 200 NE 23rd St., Oklahoma City. Events for all sessions are HLG, Pennyplane, Easy B, Peanut Scale and AMA Scale. Meets run from 9 am to 5 pm, and a nominal site use fee is charged. Other meets are scheduled for Nov. 25 and Dec. 23, 1979 and Jan. 20, Feb. 17 and Mar. 16, 1980. Contact Al Bissonnette, 6528 SE 15th, Midwest City OK 73110, ph. 405-737-1085.

OREGON-Albany

Indoor contests will be held at the South Albany High School, 3705 South Columbus St., Albany, on Jan. 13, Feb. 17, Mar. 2 and Mar. 30, 1980, 9 am to 3 pm. Ceiling is 42'. Events: Old Timer Scale, Earle Moorehead Event, W.W.I Scramble, Beginner's Duration. For detailed rules, contact Bob Stalick, 5066 NW Picadilly, Albany OR 97321, ph. 928-8101. Old Timers are rubber powered replicas of Old Timer or Antique gas models, Earle Moorehead models are rubber powered models not fitting any other event, WWI Peanut models qualify for W.W.I Scramble, and beginner duration models have 24" max span and unmodified commercial plastic props.

THE PICTURE STORY

The photos were furnished by Hal Crane and Richard Doig. Credit lines on Crane's photos, all others by Doig. Note some photos from July Regional meet. For the photo nuts: Doig photos black and white prints from ASA 400 Kodacolor print film, most shot without flash. Crane photos also from color negatives.

ROW 1

Left - The typical Richmond stance--winding and flight preparation from a comfortable chair. Jim hung on all flights the first day.
Center - Bud Romak's launches all show intense concentration. Crane photo.
Right - Photo from July Regionals; Paul Tryon did well on first time in a high ceiling.

ROW 2

Left - Pete Andrews shows off his beautiful bird. Crane photo.
Center - Beautiful model by Ron Ganser. Photo looking toward south end of hangar and showing some of the small buildings which made steering critical.
Right - Dan Domina's model. Note extreme stab tilt; stab twisted flat relative to wing during climb.

ROW 3

Left - Smiling Dick Obarski had one flight which hit 39 times and still landed safely.
Center - Model by Richard Doig. Torque meter has snap-in mounting to box.
Right - Very nice box by Cezar Banks; models arrived with minimal damage.

ROW 4

Left - Erv Rodemsky shows off his distinctive design. No chance of timer mistaking another model for this one!
Center - Ray Harlan with his winning model.
Right - Al Rohrbaugh's models flawlessly constructed as usual.

ROW 5

Left - Photo from Regional meet - Ron Ganser's area had aircraft wheels everywhere; these were gone for the Finals, but illustrate unusual hazards.
Center - Photo from Regionals - a mid-air by Tryon and Obarski, both models undamaged.
Right - Bob Gibbs' three-section box holds six models.

STATE OF THE ART

The Star Walker by Jim Richmond

Exhibit VI: Description of Richmond 52 Min 14 Sec Record Attempt FID-32D

Outdoor atmospheric conditions on the day of the record flight were warm and breezy with partly cloudy skies. The temperature was 75-80°F. The relative humidity was 60-70% and the wind was 5-15 MPH. There was some turbulence in the air inside the building during the entire day, partly due to some outside doors being open at times. The drift rate of the air was also regarded as higher than normal.

The model was the current holder of the FID-32C World Record having made a flight of 44 Min 43 Sec two months

before in the Atrium of Northwood Institute at West Baden, Indiana. As a result of this it was believed that the model could exceed the FID-32D record also and attempts were made on two other occasions in the Good-year Aerospace Hangar. Atmospheric conditions were very poor at these times and the model was severely damaged due to collisions with the building structure. The necessary repairs caused the weight of the model to increase but even so the wing loading of this very light model remained lower than any other known indoor model.

Numerous attempts were made during the day with most flights being aborted due to the drift or turbulence. Fortunately the model was not severely damaged during these attempts.

Then at 7:45 PM with conditions deteriorating as the air started moving from the effect of the cooler evening temperatures, the last possible attempt was made. The rubber motor was wound to 2000 turns using a 10:1 geared winder. Initial winding torque was .70 inch ounces but turns were backed off to 1950, producing a launching torque of .45 inch ounces. The model was hand launched into flight at a moderate climb angle and it proceeded upward smoothly with a slight southerly drift. At 50 feet the model ran into a turbulent shear layer in the center of the building. This layer was caused by the upper air drifting northward while the lower air was drifting southward. The model was buffeted about in this turbulence and after several minutes while hopes of a good flight were vanishing, the model finally found some calm air on the west side of the building. It then proceeded to climb up and as it did so it worked its way back toward center and above the turbulent layer. A slow drift toward the north end of the building then took place as the model proceeded to its peak altitude of 155 feet.

The initial propeller speed was 35 RPM. After 11 minutes of climb the propeller speed was recorded at 33 RPM. The model reached its peak altitude at the 18 minute mark where it remained for 11 minutes. During its slow descent the propeller was once more clocked at 29.5 RPM.

The drift during the climb carried the model first south about 35 feet and then north about 90 feet. During the descent the model picked up the southerly drifting air and returned slowly toward the launch site. By this time the shear layer had abated and was no longer a problem. The model slowly descended to a clear area on the floor just 15 feet from the launch position.

Examination of the model after landing revealed that the motor had 198 turns remaining unused. The overall average propeller speed for the flight was 29.8 RPM. Total turns expended during the flight were 1752.

THE STARWALKER - A WORLD RECORD

by Jim Richmond

The absolute world record. The longest indoor flight ever made. In a lifetime of modeling an ultimate goal to be sought but perhaps never achieved. Although I suspect it isn't generally recognized as such, the attainment of the absolute world record is an achievement ranking at or above that of winning the world championship. After all, you don't generally find the current world champion's plane on display at the Smithsonian or his name in the Guinness Book of Records.

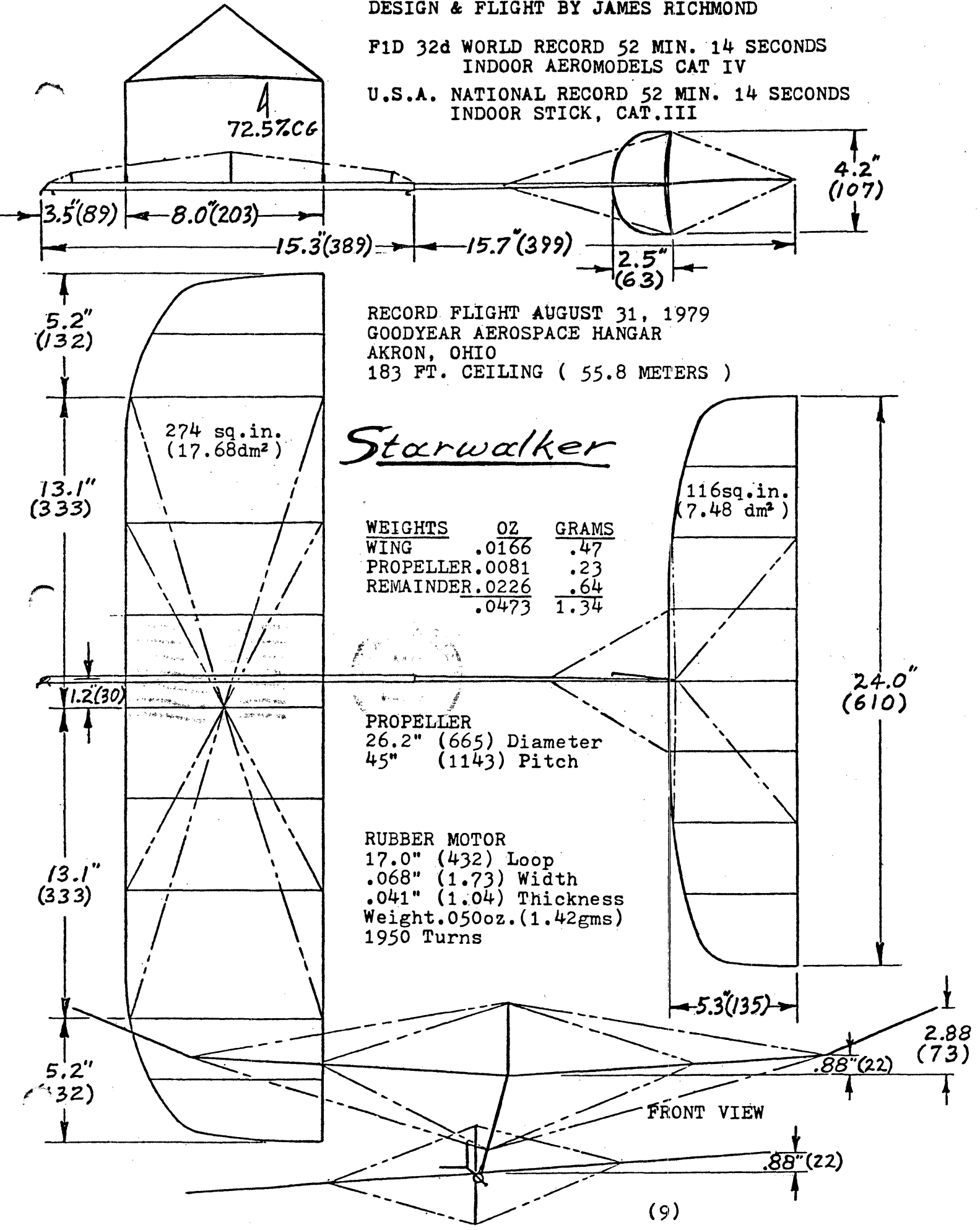
This plane was designed and built in the winter of 1977-1978 for the specific purpose of making world record attempts. Its success at breaking existing records (three world and three national records to date) has been a surprise even to me since I regarded it as sort of an interim design--an expanded version of my FAI ships. The primary reason for its excellent performance is simply that its flight wing loading of .0096 g/in² is less than that of any other competitive model even built (at least insofar as my historical records indicate). Of course the plane has a few other good characteristics besides light weight. It is a pleasure to fly in still air with its slow motion operation but its delicate structure and slowness are a detriment in the turbulence and drift of Akron. It took three days of determined effort to finally get one good flight up and down in one piece. But that time the plane was a patched up mess. Well, there were a few other flights one might call good--including one over 50--but these weren't record breakers.

Oh yes, the plane has one nasty trait. It refuses to do a good performance without first getting smashed and then patched up. Each record and the non-record 50 were preceded by such events.

DESIGN & FLIGHT BY JAMES RICHMOND

F1D 32d WORLD RECORD 52 MIN. 14 SECONDS
INDOOR AEROMODELS CAT IV

U.S.A. NATIONAL RECORD 52 MIN. 14 SECONDS
INDOOR STICK, CAT.III



72.5%CG

RECORD FLIGHT AUGUST 31, 1979
GOODYEAR AEROSPACE HANGAR
AKRON, OHIO
183 FT. CEILING (55.8 METERS)

Starwalker

WEIGHTS	OZ	GRAMS
WING	.0166	.47
PROPELLER	.0081	.23
REMAINDER	.0226	.64
	.0473	1.34

PROPELLER
26.2" (665) Diameter
45" (1143) Pitch

RUBBER MOTOR
17.0" (432) Loop
.068" (1.73) Width
.041" (1.04) Thickness
Weight .050oz. (1.42gms)
1950 Turns

FRONT VIEW

IS NOW THE TIME?

During discussions over hosting the Indoor World Championships at West Baden, the question was raised: "Will NIMAS run the meet?" John Worth, with perfect accuracy, noted that NIMAS is only a newsletter. No matter what bonds to NIMAS and each other that we feel, this is an inescapable and undeniable conclusion. No matter that we at long last have an annual meeting and are being considered as an advisory group to AMA's Executive Council, we are, from a functional standpoint, only a newsletter with an editor who has far too little spare time left to do the job right. We simply have no organized group to assume such a task and no previous organizational experience with such activities.

Hardy Brodersen, the man who may have had more beneficial influence on NFFS than any other single individual, offered this suggestion: if all NIMAS members, especially those who might be upset at the above description of our organization, are willing to work, we could become a real organization. We could elect some officials who would be empowered to act for us. Someone from our ranks could assume the job of making a technical report of the 1980 WCh just as was done by NFFS for the 1979 FF WCh at Taft, California. There are so many things that could be done--if we have the will to organize and desire strong enough to see that they get done. In now the time?? If not, will we ever find the right time? Perhaps this type of organization is not what NIMAS members want. From my own viewpoint, NIMAS members could benefit from additional organization, with designated people to handle routine items besides INAV which are not now being done. It is up to you--let's have some feedback!

ENGLISH FAI TEAM CHOSEN

The English FAI Team was chosen at Cardington on Aug. 26-27, 1979, with the following results:

Dave Pym	40:40	36:36	77:16
Bernard Hunt	36:45	35:26	72:11
Laurie Barr	35:36	35:44	71:22
Martin Shepherd	33:19	35:05	68:24
Derl Morley	35:03	30:00	65:03
Geoff Lefever	31:30	33:30	65:00
Ray Monks	32:00	30:33	62:33
Bernard Aslett	31:27	30:19	61:46
Ron Green	30:31	30:19	60:50
Reg Parham	27:27	30:28	57:55

THE 1980 AMA NATIONAL MODEL AIRPLANE CHAMPIONSHIPS

Late word received just as this issue went to press is that the 1980 Nats will be held at three sites in Ohio--Wilmington, Dayton and Cincinnati. RC Pattern, Pylon, Scale and all Control Line events will be held at Wilmington; FF, RC Soaring and Helicopter will be held at Wright Field in Dayton and Indoor will be held at the University of Cincinnati.

CONTEST CALENDAR

CONNECTICUT - Glastonbury

The Glastonbury Modelers will have an indoor flying session at Glastonbury High School Gym, 8 am to 1 pm, Mar. 9, 1980 and an indoor contest Apr. 13, 1980 from 8 am to 5 pm. Contest events are IHLG, WWI Peanut, WWII Fighter, Peanut Scale, O.T. Gas Scale, Flying Scale, Tissue Endurance and Pennyplane/Easy B.

FLORIDA - Miami

The contest series by the MIAMA club continues with meets set for Mar. 23, Apr. 20 and May 18, 1980. These meets will be held at the Goodyear Hangar at Opa Locka Airport in Miami. Check with John Martin at 305-858-6363 to confirm site availability.

MINNESOTA - Minneapolis area

The Minneapolis Model Aero Club will hold a Cat. I indoor contest at Burnside Senior High Gym, Noon to 4:30 pm on Mar. 23, 1980. Events: Peanut Scale, Walnut Scale, Novice Pennyplane, and HLG. For more info contact John O'Leary, 11425 Kell Circle, Bloomington MN 55437.

MISSOURI - St. Louis Area

Indoor Contest at the East St. Louis Armory, East St. Louis IL on Mar. 29-30, 1980. Site is AMA Cat. I, and events are HLG, Easy B, Pennyplane, Microfilm Stick, Peanut Scale, Novice Pennyplane and Delta Dart. For more details, contact Jim Bennett, 324 Helfenstein, St. Louis MO 63119, ph. 314-962-5271.

NEW YORK - Locust Valley

Indoor Record Trials are scheduled at Friends Academy, near the intersection of Duck Pond Rd. and Piping Rock Rd. in Locust Valley, L.I., New York. The event

is on Mar. 15, 1980, 11 am to 5 pm at the Boy's Gym. Gym shoes are required; the site is approx. 33' at the peak with a 60' x 72' floor.

NEW YORK - New York City

The Columbia Indoor Miniature Aircraft Society has scheduled Record Trials at the Low Library Rotunda at Columbia University, 116th St. and Broadway. Events are set for Mar. 2 and Mar. 16, 1980, 9 am to 5 pm. On Mar. 16 a contest for Manhattan Cabin and Bostonian Cabin will also be held. For more info contact Ron Williams at 212-722-5262.

NEW YORK - Rochester

Indoor sessions at the Kodak Office Auditorium, 343 State St., Rochester, 1st and 3rd Sunday each month, 1 pm to 5 pm. This site has a 26' smooth ceiling; more details can be had from Bob Clemens at 716-392-3346.

OHIO - Akron area

The Cleveland Free Flight Society has scheduled an indoor flying session for the Brookpark Armory (23' ceiling) at Engle Rd. South of Snow Rd. at Rt. 71 on Feb. 22, 1980. A contest will be held at the same site on Feb. 29; both events are for 6:30 pm - 10 pm and the contest will have Easy B/Pennyplane, FAC Peanut, Jetco or Peck ROG, Stock Plan Scraps and Super Modified Scraps. If enough interest is shown, they hope to repeat this format on a monthly basis. Contact Larry Loucka, 5667 Delta Circle, Willoughby OH 44094 for more details.

OKLAHOMA - Oklahoma City

The Sooner Free Flight Society contest series continue at the National Guard Armory, 200 NE 23rd St., Oklahoma City. HLG, Pennyplane, Easy B, Peanut Scale, and AMA Scale are held; times 9 am to 5 pm. Next meet Mar. 16, 1980. Contact Al Bissonette, 6528 SE 15th, Midwest City OK 73110, ph. 405-737-1085.

OREGON - Albany

Indoor contests are planned by the Willamette Modelers Club for Mar. 2 and Mar. 30, 1980 at the 42' ceiling South Albany High School Gym, 3705 S. Columbus St., Albany OR. Contest times are 9 am to 3 pm and the events are: Easy B, Pennyplane, HLG, Old Timer Scale, Earle Moorhead Event*, WWI Scramble* and Beginner's Duration*. *For rules of these events and other meet details, contact Bob Stalick, 5066 N.W. Picadilly, Albany OR 97321, ph. 918-8101.

TENNESSEE - Tullahoma

The Coffee Airfoilers will hold an indoor contest at Motlow College near Tullahoma TN on Mar. 16, 1980, from 8 am to 5 pm, with Indoor Scale, Pennyplane, HLG, Easy B, Peanut Scale.

TEXAS - Ft. Worth/Dallas

Tentative plans for Cat. I indoor contest at Bedford Boy's Ranch, Bedford, Texas on Mar. 16, 1980, Noon to 5 pm. Contact Jess Shepherd at 817-282-3770 for more details and final confirmation. January event yielded two records plus Open Easy B time of 7:35 by Walt Kulzer and HLG time of 0:61.8 by Mike Fedor.

THE LAB

For some new readers who haven't seen it, this column is devoted to reporting on various scientific approaches to our hobby. The subject of hall meteorology is greatly neglected by all but a few indoor fliers. When the chips are down at (for example) the World Championships, the difference between winning and losing may lie in how well the team members can "read" the air and plan a strategy.

A STUDY OF AIR MOVEMENT--LAKEHURST #5

by Ron Williams

The drift, its idiosyncrasies, directions and changes is the subject of endless conjecture and discussion at Lakehurst flying sessions. My background is in the field of architecture but it hasn't seemed to do me any good in analyzing the situation until recently. During the last team trials I finally noticed that the ridge vent was open (it was always so) and not only was the light coming in, but so was the wind!

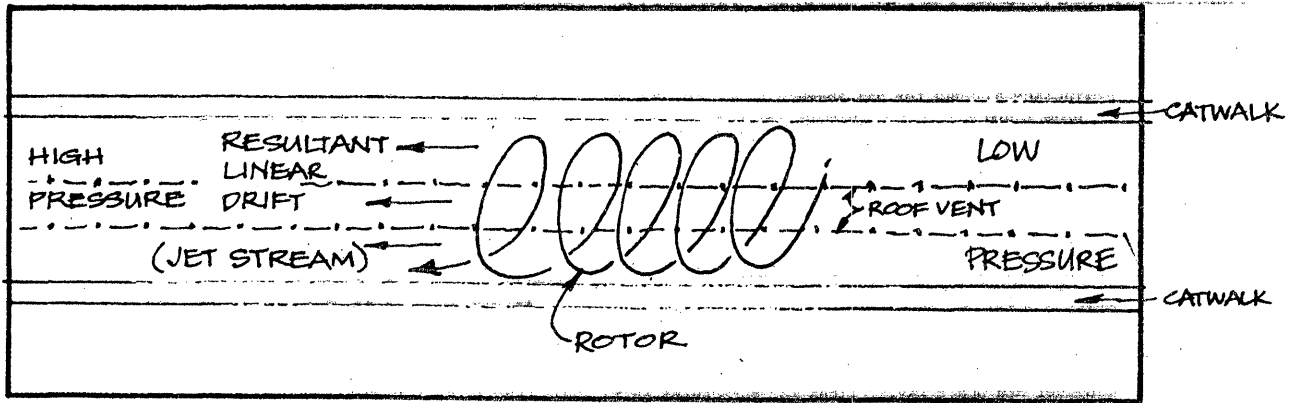
I decided to pay a bit more attention to my plane and took a few mental notes. Later, with pencil in hand, committed the situation to paper and the basic pattern began to emerge. The diagrams outline the simplest aspects of the situation and could be a model for further analysis, such as what effects the assembled group of fliers have on the air movement. (We have found that this is very considerable in the Rotunda at Columbia University.) I'm planning to try some experiments with a bubble machine when I get a chance. I also look forward to diagramming the situation at Akron.

DRIFT AT LAKEHURST HANGAR #5

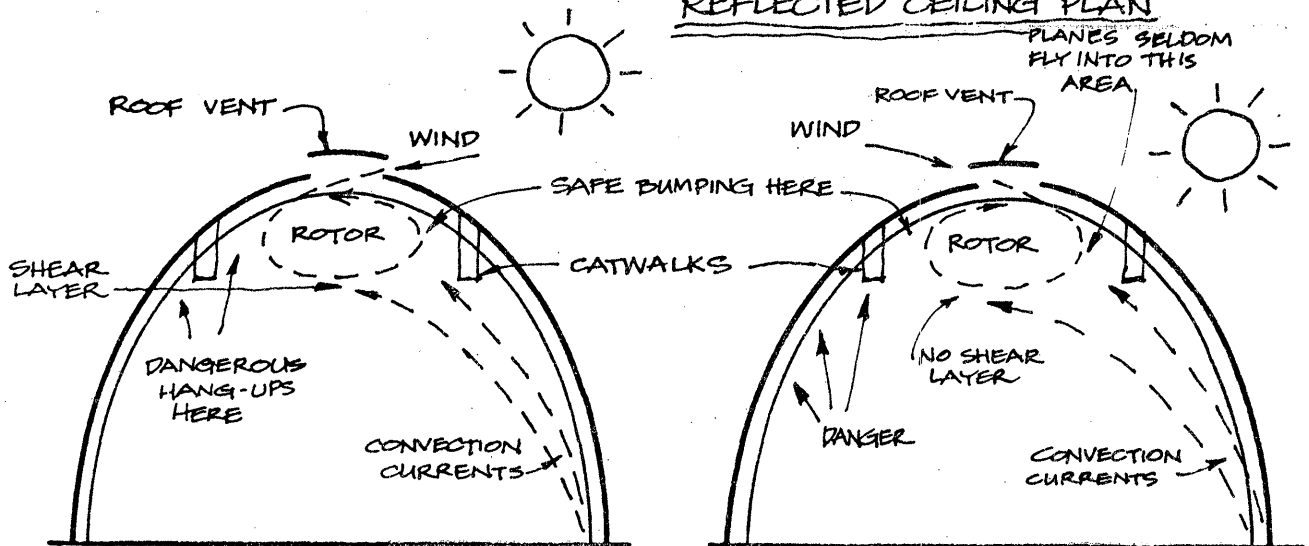
9 AUGUST 1977

NORMAL (PERPENDICULAR)
WIND OUTSIDE CREATES NO
LINEAR DRIFT INSIDE

QUARTERING
WIND (SW)

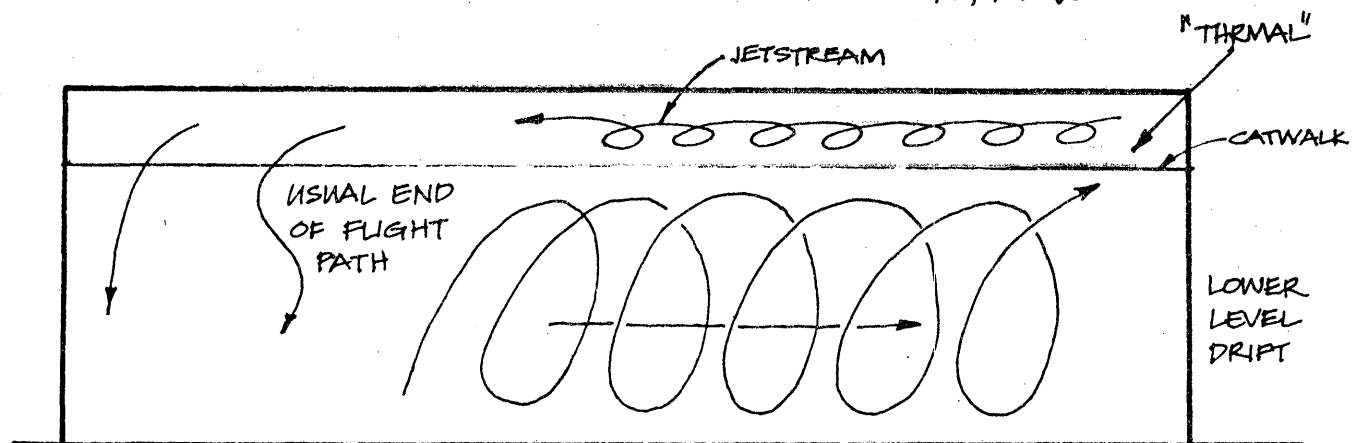


REFLECTED CEILING PLAN



SECTION WIND FROM SSE, S,
SW, WEST

SECTION WIND FROM E, NE,
N, NNW



LONGITUDINAL SECTION

NEXT STEP: INCLUDE FLYERS AND THEIR LIGHTS (HEAT)
NOTE: RELATIONSHIP BETWEEN WIND CHANGES AND DRIFT

WORLD'S GREATEST INDOOR MEET:

(8 DAYS OF INDOOR FLYING - 3 MEETS IN ONE!) ①

JUNE 20-21 WORLD CHAMPS, JUNE 25 PEANUT GRAN PRIX

JUNE 23-24 NIMAS VNART

NORTHWOOD INSTITUTE, WEST BADEN INDIANA. U.S.A.

CALENDAR OF EVENTS: EVENT NUMBER ONE: WORLD FLD INDOOR CHAMPS:
 Fri. June 20 Check in. Vans ferry teams from Louisville or Chicago Airports.
 Sat. June 21 Practice all day for all teams.
 Sun. June 22 Rounds 1 and 2
 Mon. June 23 Rounds 3 and 4
 Tue. June 24 Rounds 5 and 6 Evening Banquet & Prize Giving. Turn in Peanuts on this day before 10:00 AM (unless other arrangements) for Gran Prix Wed.
 CONTEST DIRECTOR: DICK KOWALSKI

EVENT NUMBER TWO: FIRST WORLD PEANUT GRAN PRIX CD: BUTCH HADLAND
 Wed. June 25: 9 A.M. to 9 P.M. all day peanut meet (See application).

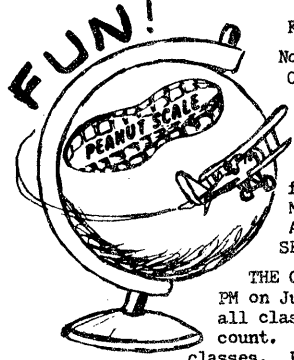
EVENT NUMBER THREE: VNART: 5th NIMAS ANNUAL RECORD TRIALS: CD: BUD TENNY
 Thurs. June 26 All day (9AM to 9 PM) The lightweight indoor classes: Cabin, ROG Stick, Paper Stick, FAI Stick, HL Stick, Ornothopter, Autogyro, Helicopter.
 Fri. June 27 All day (9AM to 9 PM) The heavier indoor classes: Penny, Novice Penny, Manhattan, Bostonian, Easy B. (Any lighter model can be flown today for record-but not for index- at owner's risk). Turn in scale models today by noon for tomorrows scale day.
 Sat. June 28 Glider and Scale Day. Times for each event to be announced at meet commensurate with number of entries we receive. 8 AM to 7 PM
 8 PM will be VNART AWARDS BANQUET. SCALE: CO2, Elec., AMA rubber,

Peanut Flying Aces type Word War One mass launch event, and ROG Scale Speed event for any Peanut..not just raceplanes. These last two events will; be flown to peanut rules same as Gran Prix (AMA Rule 53 in brochure).

AMA RULES APPLY TO ALL ABOVE EVENTS EXCEPT RULES THAT APPEAR IN THIS BROCHURE.

BRING YOUR NO-DOZ, AND HAVE LOTS OF REST BEFORE COMING! YOU WON'T GET MUCH SLEEP.

AIR CONDITIONED MOTEL: Lane's Motel Box 224 French Lick 47432 1-812-936-9919
 West Baden Springs Motor Inn. Box 38 West Baden 47469 1-812-936-9995
 Plush accommodations: Sheraton Hotel, French Lick Indiana.



FIRST WORLD PEANUT GRAN PRIX June 25 1980
 Northwood Institute, West Baden Indiana, U.S.A. ②
 Contest Director: Clive (Butch) Hadland, UK
 Director of entries, and proxy flying: Mike Arak
 10900 SW 61 Ct. Miami, Fla. 33156
 Sponsor: MIAMA indoor club AMA 986, Miami Fla.

THE TIME: Proxy entries must send in application form below by MARCH 31, 1980
 Models must be presented at Northwood before 10:00 A.M. on JUNE 24, 1980. ALL ENTRIES SHOULD HAVE SENT IN ENTRY FORM BELOW BY JUNE 10, 1980.

THE CONTEST: The flying will be from 9:00 AM to 9:00 PM on June 25 1980. Multiple entries are permitted in all classes at \$1.00 each, but only your best effort will count. As in the Model Builder contest we will have 5 classes. Pioneer, WW I (1914-1918), Golden Age (1919-1939), WW II (1939-1945), & modern. MIDNIGHT AWARDS GIVING: ::

Proxy entries are encouraged. If you need a proxy flyer, check the box on the entry form, and get it to MIKE ARAK by March 31, 1980. We will assign a proxy flyer to your plane, and you can both make the necessary arrangements. THE RULES: Other side of this sheet has the rules. You can build to a 13" SPAN, or a 9" overall LENGTH.

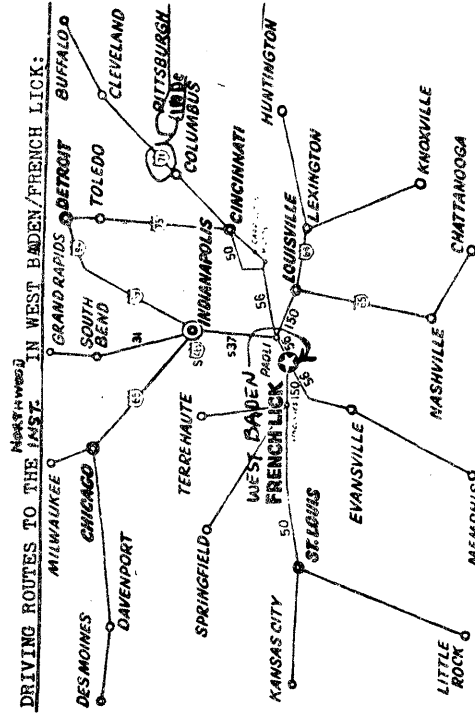
PLAN AHEAD - A FULL WEEK OF INDOOR - JUNE 20-28 '80 ON PROXY ENTRIES - ALL ARRANGEMENTS FOR ENTRY AND FLYING MUST BE MADE BY THE ENTRANT.

BOSTONIAN RULES:
 Wing: Max. 3" chord, 16" span.
 Prop.: Max 6" diam. Rubber power
 Weight: Min., 7 grams
 Overall Length: 14" from prop. bearing. (Or less)
 Fuselage: Min. box 1 1/2 x 2 1/2 x 3 inches.
 No motor sticks.
 Windows: 1" sq. Front & both sides.
 Rigid & fixed L.G. 3/4" diam. wheels.
 R.O.G. unlimited flights.
 Charisma factor 1 to 1:1 to be multiplied by 3 best flights.

WORLD INDOOR CHAMPS, COSTS
 \$ 150.00 for five days & Banquet
 Fri. to Tue. night's lodging
 Breakfast Sat., Sun., Mon., & Tue.
 Lunch " " " " " " " "
 Dinner Fri., Sat., Sun., & Mon.
 Banquet Tue.
 These costs are the same for entrants or for supporters, or workers.

WORKERS NEEDED, PLEASE MENTION IF YOU ARE AVAILABLE WHEN YOU SEND IN YOUR ENTRY FORM.

5TH NIMAS ANNUAL RECORD TRIALS JUNE 26, 27, 28, 1980
 THE VNART
 NORTHWOOD INSTITUTE; WEST BADEN INDIANA 1-812-936-9971. All the indoor fraternity is well aware of the annual gathering that indoor devotees here muster. The method of measuring the ceiling height is presently under consideration for no other reason than to be consistent ... AMA & FAI methods of measuring produce different dimensions. The NIMAS "Index of Performance" will be calculated on the list of times printed below. If not CAT II times they are at least "Site Times". We hope this problem will exit.
 THE NIMAS RECORD TRIALS: Every type of indoor model is flown and recognized. This is 12 AMA classes, and 7 other classes. Individual trophies to Manhattan, Bostonian, AMA, Elec. & CO2 Scale, Easy B, Peanut Speed, and Peanut #1 mass launch. All other classes are eligible for famous Index of Performance glass bottom pewter Mugs. The "Index" is based on the comparison of how well your best flight compares to the national record. USA There are no limits on the number of flights you make, and no limits on the number of classes you enter. The schedule on page one of this brochure has all the events listed. AMA rules apply to all classes except the rules that are printed in this brochure.
 NORTHWOOD INSTITUTE: The Atrium is a domed room 98' high by FAI measurements, and 108' high by AMA measurements. (Don't ask). The dormitory rooms surround the Atrium. This is an old college, and not plush, or air conditioned. Bring many of the creature comforts you will be wanting with you. There is plenty of activity for the entire family at nearby French Lick.

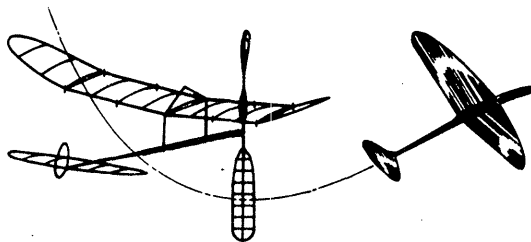


West Baden is just a few miles from French Lick, Ind. Here are the distances from the principle cities: Chicago 275 miles, Detroit, 397 miles, Cincinnati, 142 miles, Cleveland 390 miles, St. Louis 208 miles, Nashville 240 miles, Indianapolis 108 miles, Louisville airport (Nearest airport with car rental facilities) 68 miles.

MORE RULES NEXT TIME!

INDOOR

NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



THE 1980 INDOOR WORLD CHAMPIONSHIPS

The following summarizes previously issued information and adds the latest information received from AMA Hq.; the information comes from bulletins circulated by AMA to all countries expected to be interested.

The 1980 Indoor WCh will be held in the Atrium of Northwood Institute, West Baden, Indiana, June 20-24, 1980. The Atrium ceiling is just under 33 m high, and is FAI Cat. III.

Supporter fees are \$100, which includes 5 nights lodging beginning June 20, 4 breakfasts and 4 lunches beginning June 21, 4 dinners including June 20 and one banquet on June 24, 1980. All rooms are double occupancy. The entry fee also includes souvenir items and the official program. For supporters who wish to obtain lodging elsewhere, but attend the banquet, the fee is \$50; otherwise a fee of \$25 will allow attendance at the WCh without lodging or banquet.

The Chairman of the Jury is Mr. Ian Kaynes of Great Britain; other proposed members are Peter Allnut of Canada and Bucky Servaites of the United States.

The competitors, their supporters, and others who purchase the complete WCh meal and billeting package will be given first consideration, in that order. The package covers a period beginning June 20 and includes the night of Tuesday, June 24. If, after June 1, there are rooms available at Northwood Institute, rooms will be sold on a piecemeal basis at the discretion of the registration staff.

Meals are served at the cafeteria at the site, and paid for with meal tickets. Meal tickets are obtained in your kit when you buy a competitor or supporter package. Meal tickets may also be purchased by individuals on a cash basis at the cafeteria. The Banquet is available only through the packet or through advance Banquet ticket sales for \$25 per person. Meals for the NIMAS events following the WCh (June 25-29) are arranged for through Dr. John Martin, who will be available at the site for your requests.

The Atrium will be open 24 hours daily. Test flying is allowed any time except during competition hours.

Caution: Saturday, day and night, is the only official testing day. You may test on Friday, June 20, at your own risk: work will be in progress to drape the beams and prepare the flying site. Testing before June 20 is possible, with special arrangements with the organizer and at your own risk. The site plan appears below, showing locations of:

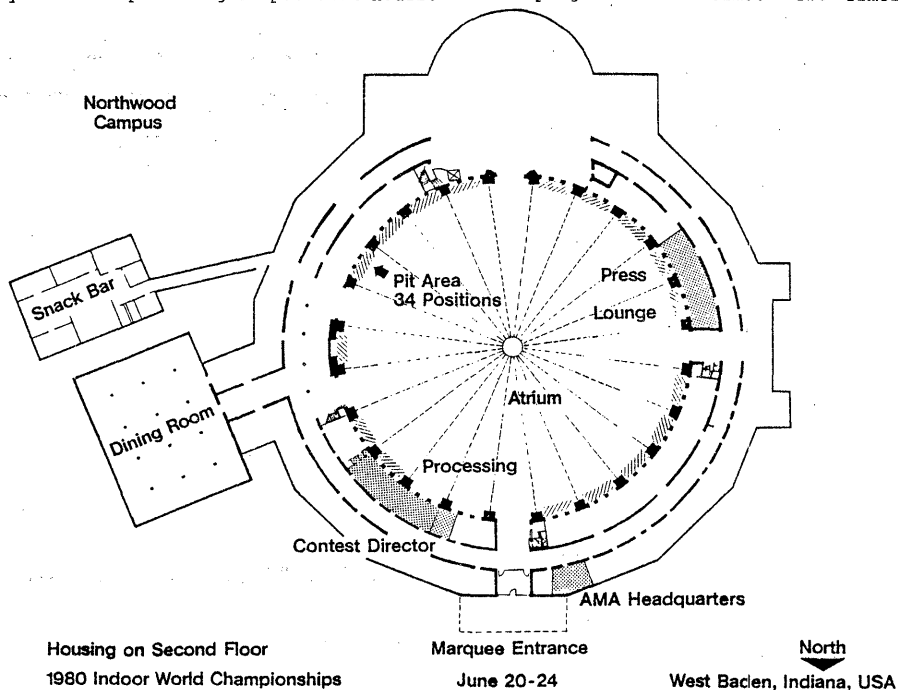
- Contest Director
- Processing
- 34 pit areas
- Lounge
- Press
- AMA Headquarters

The pit areas will be around the perimeter of the Atrium, at the wall in the bays between column bases, two competitors per bay. This provides about 18 feet of width, and up to 8 feet out from the wall for two men. Suitable tables and chairs will be provided.

The Processing room has access to the Atrium via three doors. Processing equipment will include an optical measuring system in which the model may be placed either on a stand, or hung. An additional measuring system will be provided in which the span is measured between two hanging marks. Weigh will be measured on a GO-NO GO balance.

This excellent site is limited only in floor space. To make this manageable and as fair as possible to all fliers, there will be an Air Traffic Controller on the floor at all times. It will be his function to disallow a launch at any place on the floor at any time. His judgement will be informed by the air traffic above the selected launch position, and by the safety of the model to be launched and the models already in the air. His determination is final, and will be made in response to a flyer or his Team Manager indicating his intention to place his model in a specific flight circle at a particular time. It will be up to the flyer or his Team Manager to decide upon alternatives.

There will be two timers assigned to each team, 3 men or less, for each country entered. This automatically determines that one team can have only one flight in progress at a time. Two Timers are required for



each flight. The Timers are provided in pairs, with relief personnel in reserve. It should be possible to launch a flight immediately at the conclusion of another flight, without delay. Timers will be required to keep to the side of the floor area and will not be allowed chairs, lounges or other encumbrances to the floor area. They may use pillows. Binoculars will be provided and will be used at the option of the Timer, or at the request of the Flyer.

Balloons and other equipment will be provided by the orgainzer. This equipment may be used for steering or for retrieving a model from some part of the architecture of the site. The use of this equipment for retrieving will be only with the permission of the Air Traffic Controller. Rules governing steering will be according to the 1979 FAI Sporting Code, Sec. 1 and 4a.

Official flying: Sunday, June 22; Monday, June 23; Tuesday, June 24. There will be two flights per day: Flying is from 9 am to 9 pm. The first flight of each day must be launched by 3 pm; the last flight each day must be launched by 8:30 pm, including any second attempt.

Weather conditions: In late June the outside temperatures in West Baden usually range from a low of 60° Fahrenheit (15.56° Celsius) at night to 80°F (26.67°C) during the day; the humidity is usually from about 40% to 90%. Inside the Atrium (contest building) the temperature range over 24 hours is about 65°F (18.33°C) to 75°F (23.9°C).

Additional details

In addition to the pit area already described, you may utilize your rooms for repair work. If there is an urgent need we can open additional rooms for major or prolonged repair or model building programs. Some low ceiling space can be utilized for preliminary trim flights (the theatre area - see the South (top) of the site diagram.) A Microfilm tank is provided.

Spectators: No one except the flyers and Team Managers are allowed on the floor, other than Control personnel and Timers. Spectators will be kept behind barriers at the Atrium entrances. They may observe the competition from there or from balcony openings on the second floor, or from the second floor room windows. (Windows must be kept closed, however.)

Photography restricted: No flash or artificial lighting is allowed. For your information, there is very good available light for photographic purposes up to late in the evening. Other photographers have had good results with fast film and long lenses.

Refreshments: A Snack Counter (serving simple food and Beverages) and a Bar (serving beer and mixed drinks) will be open during contest hours.

THE 1980 AMA NATIONAL MODEL AIRPLANE CHAMPIONSHIPS

The 1980 Indoor Nats will be held in the University of Cincinnati Fieldhouse, which has a smooth arched concrete ceiling with maximum height of 64'. The following schedule has been announced for the Indoor events:

Sunday, Aug. 10, 9 am - 2 pm - HL Glider
2 pm - 9 pm - Easy B, Pennyplane
4 pm - 9 pm - AMA Scale, Peanut

Monday, Aug. 11, 9 am - 9 pm - AMA Stick, Cabin,
Paper Stick
9 am - 9 pm (by rounds) FAI Stick

FAI INDOOR REPORT

New Program Set

Previous FAI Indoor Program participants recently received details of the program to select the 1982 U.S. Indoor Team. Anyone wishing to obtain a copy of the full report should write AMA Hq and request it. This is a brief summary of the program provisions:

Schedule: 1980 - Unlimited local contests (10 points).
One regional contest in each zone.
1981 - Unlimited local contests.
One regional contest in each zone.
Single site Fianls.

Program Entry: Program entry is accomplished by sending \$3 to AMA Hq c/o Micheline Madison, or by entry at a local meet. The entire qualification process may be accomplished in 1981 if desired. A special provision has been made for fliers who have previously qualified in an Indoor program and live far from a regional meet may (this is still subject to final approval) pay certain fee and penalties and enter the Finals directly.

Model Specs: Wingspan between 20" and 25.6", weight 1 g minimum, 2 g maximum.

Local Contest Specs: 3 entrants min., no limit on local contests entered, \$3 entry fee each local meet, all entrants may fly in regional, score total best two of six flights, winning score gets 10 points with other flight totals receiving proportionate points. Best local score only counted at Finals.

Regional Contest Specs: 3 entrants min., 75% of winning score qualifies entrant for Finals, best single regional score counted at Finals, no restriction on cross-zone entry. Score best two of six flights, top score gets 100 points, other scores proportionate points. Entry fee \$10, \$15 if no local meet entered.

Final Contest Specs: The single site Finals will be conducted over a three day period with three rounds per day. Scoring best two of nine flights, top score gets 1000 points, other score proportionate. Entry fee \$15, unless (subject ot approval) entrant lives more than 500 miles from the closest regional contest. Then fee is \$35, and 75 points will be awarded. For entrant who flew in local meets, the maximum score entering Finals would be 85; for one who flew in a regional meet, max score on entry is 110. Maximum score for program is 1110 points.

LOG-IN OF NATIONS ENTERING 1980 INDOOR WCH

According to information on hand as of this issue, the following teams are reported to be chosen to represent their countries (finals times shown if known):

GREAT BRITAIN

Dave Pym	40:40	36:36	77:16
Bernard Hunt	36:45	35:26	72:11
Laurie Barr	35:36	35:44	71:22

JAPAN

Yasutoshi Banba (1978 team member)
Suyoshi Yamazaki
Takaji Matsuzawa (1978 team member)
Shigeyoshi Nonaka (tentative team manager)

HOLLAND

Rodenburg (1978 team manager)
Kees Wolthoorn (member previous teams)
Edward Leim (member previous teams)

CONTEST CALENDAR

ARIZONA - Phoenix

This may be too late, but there were plans to hold a Record Trials some weekend in April or May at the NAU dome in Flagstaff, Arizona. The site ceiling wasn't given, but the building elevation of 7000' could be expected to penalize some model classes. Contact Hermann Andresen, 738 E. Palmaire, Phoenix AZ 85050, phone 602-977-8759 for information.

FLORIDA - Miami

The contest series by the MIAMA club continues with meets set for Apr. 20 and May 18, 1980, at the Good-year Hangar at Opa Locka Airport in Miami. Check with John Martin (305-858 6363) to confirm the date.

NEW JERSEY - Lakehurst

Present tentative dates for Lakehurst flying season (Hangar 1) are: May 4, May 18, June 6, July 5-6, July 20, Aug. 3, Aug. 17, Aug. 30-31 and Sept. 21. Contact Dan Domina, 6 Meadow Lane, East Windsor NJ 08520, phone 609-448-2840 for site confirmation each time and for more information.

NEW YORK - New York City

The Columbia Indoor Miniature Aircraft Society has scheduled Record Trials at the Low Library Rotunda at Columbia University, 116th St. and Broadway. Events are set for May 18 and June 1, 1980, 9 am to 5 pm. For more info contact Ron Williams at 212-722-5262.

NEW YORK - Rochester

Indoor sessions at the Kodak Office Auditorium, 343 State St., Rochester, 1st and 3rd Sunday each month, 1 pm to 5 pm. This site has a 26' smooth ceiling; more details can be had from Bob Clemens at 716-392-3346.

TEXAS - Ft. Worth/Dallas

Cat. I indoor contest at Bedford Boy's Ranch, Bedford, Texas on May 4, 1980, Noon to 5 pm. Contact Jess Shepherd at 817-282-3770 for more details.

WING RIB TEMPLATE : SIMPLEX 5% TO .34 CHORD, SIMPLEX 3%
 REVERSED .34 CHORD TO T.E.



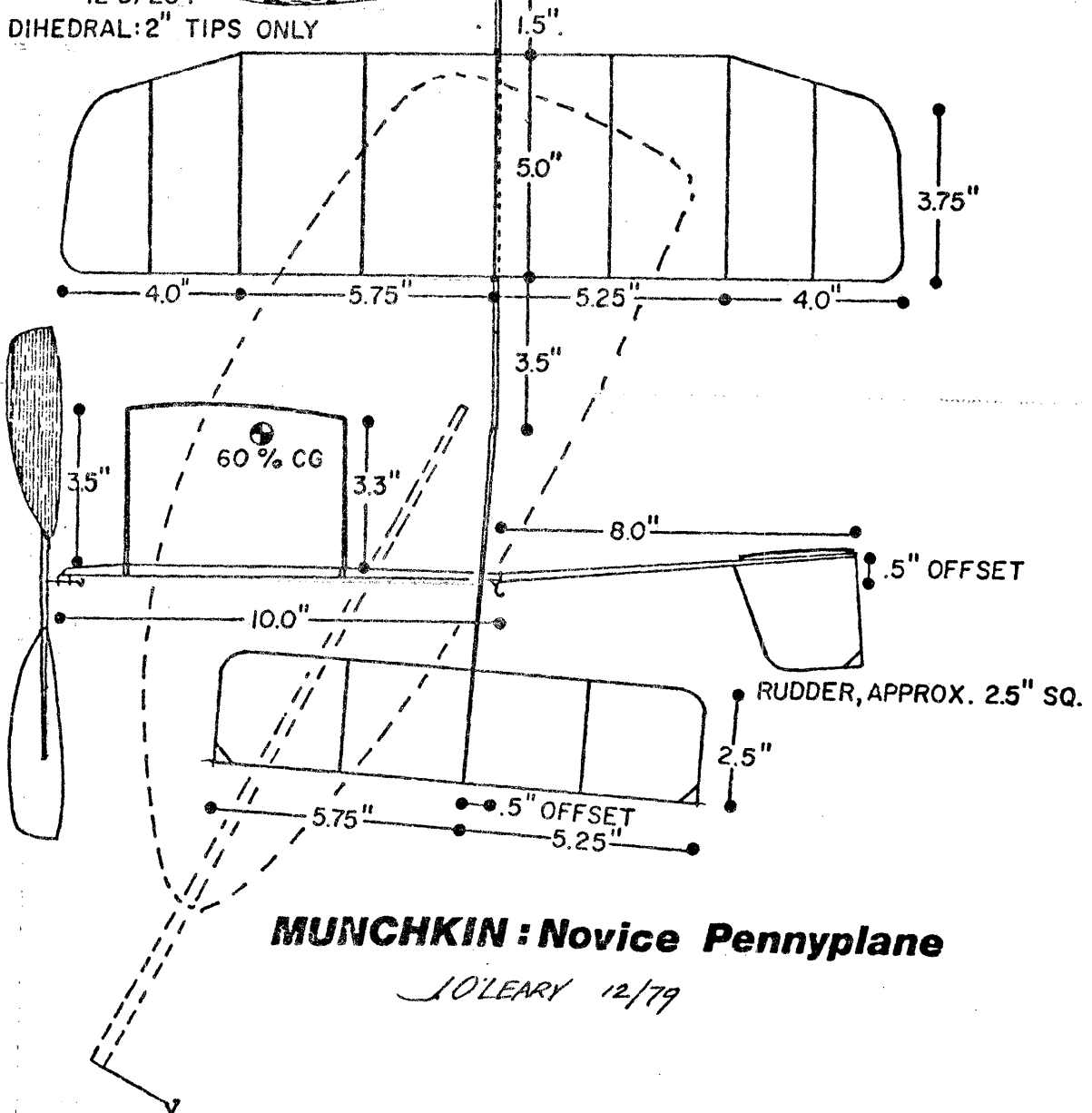
STAB RIB TEMPLATE : 2% SIMPLEX

5.0" 2.0"

PROP: 1° DOWN
 1° LEFT
 12"D/26"P



DIHEDRAL: 2" TIPS ONLY



MUNCHKIN : Novice Pennyplane

JOLEARY 12/79

The model of the month is "Munchkin", a Novice PP by John O'Leary. The drawing is reproduced directly from John's very well done newsletter "The Minneapolis Modeler". The following text was also "lifted" from the same source.

As you can see, "Munchkin" is an eclectic, state-of-the-art design. With the possible exception of the airfoil, there isn't one single innovative feature about this aircraft, and it has many borrowed features: wing tip shape and tip dihedral from Banks and Meuser, the underslung rudder goes back to the '30's, prop shape ala C. Banks, etc. The stab at 30% wing area may be smallish, but according to a N.F.F.S. Symposium report* smaller stabs are allegedly most efficient dragwise albeit less forgiving, stallwise. The airfoil seems to work well in Cat. I, or marginal Cat. II sites, but I've gone to a 4% simplex leading edge, 2% simplex trailing edge, reversed for good Cat. II sites.

The contest record includes a third place at the '78 THNIRT, West Baden (8:51), a third places at the '79 USFFC, Taft (5:49) and many local firsts. "Munchkin's" bigger brother, 7.5 in. wing chord, microlite covered, took third place at the '79 Lincoln Nats. Construction follows current practice. Generally 6 pound balsa was used with the exception of the wing cabane, the prop spar and the motor stick. C-grain was used for motor stick, prop blades, and wing and stab ribs. A or AB grain was used for lifting surface outlines. A Harlan thrust bearing makes things run smoothly up front. The prop was formed on a Jim Jones, 26" pitch, heat resistant fiberglass prop form. The plane builds light and had to be ballasted to bring it up to the required 3.1 grams.

If you are interested in building the Munchkin, I can dig up a blueprint of the wing and stab outlines, or answer any questions. For those of you wishing to try this event, I heartily recommend Bob Meuser's No-Nonsents design and the related article which appeared in MODEL AVIATION about three years ago.

*W. Erbach, 1973 N.F.F.S. Symposium Report

ATTENTION, PEANUT FLIERS!

All you can imagine that you would want to know about Peanut Scale models--and didn't know who to ask! At least, that is what appears in "Peanut Power", a magnificent book by Bill Hannan. It is published by Historical Aviation Album, P O Box 33, Temple City CA 91780, and sells for \$7.95 plus \$1 postage. This book is very refreshing in approach, and very well laid out to include more topics about Peanuts than I knew could exist. It is filled with superb artwork and photos, but the tone of the book is set by the cover photo. Can you imagine a close-up of an elephant's trunk with a Peanut Scale model perched on the curled-up trunk? This photo, in full color, is so clear that whiskers on the trunk stand out clearly! Even if you don't now indulge in the peanut races, you will enjoy the book.

NIMAS CONSIDERED AS SPECIAL INTEREST GROUP

The AMA Executive Council is planning on how to involve the many modeling special interest groups such as NIMAS and NFFS in AMA affairs as advisory groups. Stan Stoy attended the AMA Executive Council meeting at the 1979 Nats as the NIMAS representative. He also attended the meeting to testify on behalf of holding the 1980 Indoor WCh at West Baden. He made this report of the SIG meeting:

The Special Interest Group portion of the meeting caught me by surprise since its purpose was to come up with guidelines for recognition of Special Interest Groups. My notes show that they were:

1. Membership must be open to all AMA members.
2. A list of members and any officers must be presented to AMA.
3. The organization should have a means of communicating with its members such as through a newsletter.
4. A copy of the By Laws must be presented to AMA. At my request these were defined to be nothing more than a list of purposes.

I think that after reading the latest issue of INAV, the only one of these that will be at all difficult to meet will be the membership list. I say this simply from the point of view of putting such a list in suitable form.

Or--What You Learn by Reading "The Hangar Pilot"

In the October '79 issue, John Martin published the gem shown below:

Archaeopteryx: Flying or Grounded?

It came, Harrison B. Tordoff says, "like a bolt of lightning."

He was looking with a friend at casts of fossil specimens of a small, winged dinosaur called Archaeopteryx; he had just heard Yale University paleontologist John H. Ostrom describe his controversial theory asserting that the creatures must not have been able to fly. Tordoff's friend, remarking on the specimens, pointed out that they were so well preserved that the asymmetrical shape of the individual feathers was quite obvious. To University of Minnesota's Tordoff, that asymmetry meant one thing: Archaeopteryx could fly.

In the March 9 Science, Tordoff and Alan Feduccia of the University of North Carolina explain their reasoning: The central support that runs the length of a typical feather is called the rachis; on either side the interlocking barbs form a sheet known as a vane. When the two vanes are identical or nearly the same size and shape, they are called symmetrical; when one vane is much reduced, as in the wing feathers of modern flying birds, they are called asymmetrical. The asymmetry is important in the wing's aerodynamics--the narrow leading edge gives each feather an airfoil cross-section. In modern birds, Feduccia and Tordoff say, the degree of asymmetry corresponds to their flying abilities. The feathers of very strong fliers have extremely narrow leading-edge vanes; in poor fliers, the asymmetry is less obvious and the feathers of flightless birds are symmetrical.

When they examined Archaeopteryx specimens, the researchers found that the feathers are "clearly asymmetric with the outer vanes reduced as in modern flying birds." The shape of the feathers "seems to show that Archaeopteryx had an aerodynamically designed wing and was capable of at least gliding." If the Archaeopteryx could not fly, the authors assert, their feathers, like those of modern flightless birds, would have reverted to a symmetrical shape.

The finding counters the controversial theory by Yale's Ostrom, which is based on other structural aspects (and "a paleontologist's viewpoint", says ornithologist Feduccia) and which claims the animals could not fly but instead used their wings to capture insects. Say the researchers: "Any argument that Archaeopteryx was flightless must explain selection for asymmetry in the wing feathers in some context other than flight."

* * * * *

EAST COAST INDOOR MODELERS - 10/28/79 - LAKEHURST - 165'
Hangar No. 1 - CD; Ed Whitten - Scale Judge: Ron Williams

BOSTONIAN - 7.0 grams Minimum Wgt. (CF x total 3 best)
Bob Bender 9.8g 1.070CF 68.3-75.4-80.0 - 239.4 score
Frank Haynes 10.1g 1.040CF 49.5-55.0-56.0 - 166.9 "
Joe Nuszer 7.6g 1.080CF 43.5 x x - 47.0 "
CF - Charisma Factor All flights - ROG

MANHATTAN - 4.0 grams Min. AMA HL Glider - 2 flights
John Kukon 4.33g 7:32.0 Joe Nuszer 93.4
Pete Andrews 4.63g 7:05.0 Johnny Kukon (JR) 75.6
Joe Nuszer 4.80g 6:51.0 Mike Gilbert (JR) 47.0
Don Garofalow 5.07g 5:51.0 Pat Ciambrello 35.6
Bob Bender 6.56g 5:28.0 Randy Boston 26.1
Frank Haynes 4.29g x

AMA PEANUT SCALE - HL - Rule #52
Frank Haynes Lacey M-10 85 static 103.5 sec - 188
Bob Bender Martin MO-1 92 " 56.0 " - 148
Don Garofalow Cougar 95 " 44.8 " - 140
Gene Sellers Fike E 65 " 50.0 " - 115
Pat Ciambrello Fike E 71 " 22.0 " - 93
Brian Sellers (JR) DeHaviland 58" 34.8 " - 93
Randy Boston Piper Cub 48 " 40.0 " - 88
Pat Ciambrello Andreason 70 " 13.6 " - 84
Don Garowfalow Lacey M-10 ** 36 " 132.8 " - 76**
Pat Ciambrello Pietenpol 72 " x " - 72
Brian Sellers (JR) Cougar 67 " x " - 67
Larry Peters Dayton Wright 37 " 11.1 " - 48
Mike Gilbert (JR) Lacey M-10 28 " 16.0 " - 44

** Don's 'ghost' received .3 scoring factor; all others received 1.0. * * * * *

3. FF PEANUT SCALE ALTERNATE RULES— INDOOR AND OUTDOOR (PROVISIONAL)

1. **Applicability.** All pertinent AMA regulations (see sections titled Sanctioned Competition, Records, Selection of National Champions, and General) shall be applicable except as specified below.

2. **General.** Open to any scale model of a man-carrying heavier-

than-air airplane of no more than 13 inch wingspan.
3. **Documentation:** Peanut Scale is an attempt to have an official fun event. These rules encourage a broad spectrum of aircraft types, new and old. Therefore, standard scale documentation may be difficult to obtain. Models may be built from kits, old kit plans.

PEANUT SCALE (ALTERNATE) SCORE SHEET

Name _____ Address _____
AMA No. _____
Total Static Points:
Total _____
Place _____

Type Aircraft _____
G. Dihedral Scale _____
Up to 6 degrees increase 3
Over 6 deg. or no photo, drawing, or scale 1
H. Stabilizer Outline: Scale _____
Slightly enlarged or no view 3
Greatly enlarged 1
I. Minus Points: Deviations from scale to aid flying performance, moving wing back, simplifying fuselage cross-section or outline, enlarging rudder, leaving off struts, etc., and all other non-scale aids. Each Minus 2 pts.
J. Bonus Points: Minus 2 pts.
Aircraft type: Low wing or canard 1
Biplane 1
Triplane 3
Orrplane 5
Quadroplane 8
Helicopter 8
Flying boat or floats 9
Construction: 2 per wing
Scale number of wing ribs 1
Scale number of stab ribs 1
Hinged ailerons 1
Hinged rudder and elevator 1
Oval or round fuselage cross-sec. 1
Wheel spats or pants 1
3 dimensional pilot figure 1
3 functioning propellers 3
3 functioning propellers 3
Dummy engine nacelle and/or any radial engine 1 ea.

FLYING SECTION:
1 2 3 4 5 6 7 8 9
NO ATTEMPTS ALL FLIGHTS R.O.G. (Except autogyros and seaplanes) (Place)

Total of Best Two Flights
Equals Flying Points
Equals Total Points
Equals Flying Points
Equals Total Points
FINAL PLACE: _____

magazine plans, commercial plans, homemade plans drawn from old photos, or accurate drawings. Three-view drawings are not required, but are necessary for maximum scale points.
4. **Final Placing** in contest is determined by giving equal weight to the model's static score, and flying ability.
5. **Flying Section:** 9 official flights, no attempts. Total of 2 best flights count. Indoor Peanuts should rise-off-ground except float planes, flying boats, and autogyros which can be hand-launched. Plane gets points according to position in flying.
6. **Static Section:** The "Judging Criteria" on the score sheet is used to determine the static score. Extra consideration is given to heavy, hard-to-train, and unusual models to keep them competitive.
7. **Scoring:** Points earned from flying section, and static section are added. Lowest scores determine better positions. This procedure serves a 50/50 balance between looks and flying.
8. Ties are decided by giving better position to model with best static score.
9. **Unlimited Entries** are allowed per entrant, each entered separately. However, only the best one counts. In postal contests, participants submit their best two-flight total time, and their static score from the "Judging Criteria" on the score sheet. Final placing is determined from this data.

INDOOR AMA CEILING CATEGORY II RECORDS

As of November 2, 1979

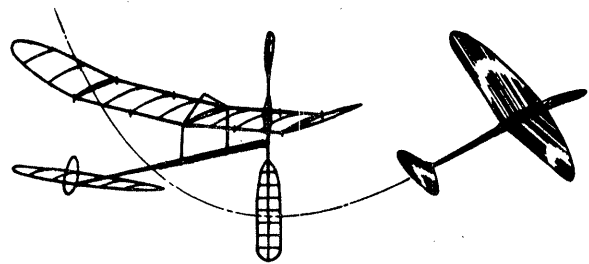
Event	Age	Time	Held by	Date
ROG Stick	Jr.	9:37.4	Dave Lindley	6/21/79
	Sr.	11:09.0	Richard Whitten	6/2/77
Paper Stick	Op.	17:34.2	Jim Richmond	6/24/78
	Jr.	16:01.0	Mike Van Gorder	6/22/79
	Sr.	19:34.2	Tom Sovo	7/25/72
HL Stick	Op.	24:16.0	Jim Richmond	7/30/76
	Jr.	18:21.2	Jimmy Clem	8/6/73
	Sr.	29:31.0	Richard Whitten	7/30/76
ROG Cabin	Op.	44:43.0	Jim Richmond	6/21/79
	Jr.	11:41.8	Gregory Simon	7/27/71
	Sr.	15:42.2	Tom Sovo	8/6/73
Autogyro	Op.	25:19.8	Ron Ganser	6/3/77
	Jr.	3:53.6	Dave Lindley	6/23/78
	Sr.	5:20.2	Charles Martin	12/29/75
Helicopter	Op.	7:15.0	Don Lindley	6/23/79
	Jr.	6:20.8	Joel Fonsler	4/28/74
	Sr.	4/47.8	Ronald Ganser	8/29/71
Ornithopter	Op.	8:47.6	Dick Obarski	6/23/78
	Jr.	NO Record	Established	
	Sr.	NO Record	Established	
HL Glider	Op.	3:08.0	Al Rohrbaugh	7/23/78
	Jr.	2:10.2	Darryl Stevens	8/7/77
	Sr.	2:32.6	Gary Stevens	8/7/77
FAI Stick	Op.	2:40.1	Stan Stoy	6/22/79
	Jr.	18:21.0	Jimmy Clem	8/6/73
	Sr.	29:31.0	Richard Whitten	7/30/76
Pennyplane	Op.	37:52.0	Jim Richmond	6/23/79
	Jr.	11:11.0	Mike Van Gorder	6/22/79
	Sr.	10:03.8	Richard Whitten	6/3/77
Novice PP	Op.	13:55.2	Cezar Banks	6/22/79
	Jr.	11:11.0	Mike Van Gorder	6/22/79
	Sr.	4:41.0	David Nault	1/6/79
	Op.	12:49.8	Walter Van Gorder	6/22/79

CHANGES TO EASY B RULES

The following information summarizes the recent changes to the Easy B class. Following the usual 'NART' format, the changed rules would be employed at VNART. Serious consideration is being given to holding a class for the standard paper-covered Easy B's and another for the new class. The most likely criterium is that of the number of entries; if enough entries are made, we most likely would provide a separate trophy. Note that the new rules are official rather than supplemental, giving national record status to the Easy B class.

Changes to Easy B characteristics:

1. Minimum weight of one gram without rubber motor.
2. Maximum prop diameter of 10".
3. No restrictions on covering material.
4. Monoplane models only.



INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

A special effort is being made to get this issue in the mail in time for U. S. members and subscribers to receive their copy before leaving for West Baden. Of course all of you are going to West Baden? Anyhow, the stuff which follows will concentrate on VNART, the WCH and that Super Week. Other stuff is used as filler as needed. Thanks to anyone who contributed material in this issue.

VNART Details

Travel, arrivals, etc: Although many fliers seem to be planning to come via Chicago, it is assumed that most will be arriving at Louisville, KY sometime on Friday June 20. The M.I.A.M.A. club has secured a large van which will make three trips between West Baden and Louisville on June 20, leaving Louisville Airport at 2:00 pm, 6:30 pm and 12 pm. In addition, a regular bus leaves Louisville (downtown, on Muhammad Ali Blvd.) at 12:30 pm for French Lick. The telephone at Northwood Institute is 812-936-9971, in case you are stranded. In Louisville, Burr Stanton, 512-425-1915 is a contact who is helping to coordinate travel to the meet.

Competition and prizes: It will be allowed for one contestant to win two trophies in the Index competition, and one of the other non-Index events. Pewter mugs, suitably engraved, are the prizes for the following:

NIMAS INDEX (all indoor record classes)
Ten mugs, for first ten places.

NIMAS COMPETITION (first place only)
Manhattan Cabin
Bostonian Cabin
Easy B (original event)
Easy B (new rule event)
AMA Scale
Power Scale (CO₂)
Peanut Scale (MIAMA Rules)
Peanut Scale Speed
Rubber Speed
Mass Launch (WWI Peanuts)

Social Activities: The MIAMA Club will be tending an open bar, open for most of the time. Some sort of relatively informal symposium on indoor topics will be hosted by Dave Linstrum. Doc Martin plans to bring his movies of past events, besides filming this one for posterity. No doubt other activities will spring up also. Don't plan on much sleep all week!

EASY B Rules At VNART

In case you didn't notice, trophies are listed for both the old standby Easy B event (same rules as always at XNARTs), plus the new rules which became effective in 1980 for AMA Easy B (an official records class). It should be noted that for the 1981 XNART, the new rules Easy B event will be a part of the INDEX competition. (Since the Nov. 1979 record list is used as a base for the INDEX, there are no comparable times for the new rule models in VNART competition.)

After finally getting an official version of the new Easy B Rules, I decided that there was so much difference that it was entirely in order to fly the "old" event also. I thought we instituted the new two-year rules cycle so the Rule Book would be available for the new year (like in January). Instead, my rule book came after June 1, 1980!!

NOTE

The Dec78/Jan79 INAV carried a statement of what I thought the new rules were. Instead, this is really what was passed:

8.2 Easy B Characteristics

- a. The projected wingspan, measured perpendicular to the motor stick, shall not exceed 18 inches (45.72 cm).
- b. The wing chord shall not exceed 3 inches (7.62 cm).
- c. The area of the horizontal stabilizer shall not exceed 50% of the projected wing area.
- d. The motor stick shall be solid and made from a single piece of wood. (The tail boom may be a separate piece.)
- e. Propeller. The propeller blades shall be constructed entirely from wood, with the following exception: special novice or beginner events can be set up for local contests by permitting the use of commercial plastic propellers, provided advance notice is given in contest announcements.
- f. Covering material. There shall be no restrictions on covering material.
- g. The event is limited to monoplane models.

TRANSLATION

What the above rule means is that the new rule Easy B can be a solid stick model, microfilm covered, with full bracing, including motor stick if needed. The original proposal which started the change imposed a one gram weight limit, which would have been a somewhat different "ball game" than this rule establishes. OK, so now we have two sizes of Hand-Launched Indoor Stick models, which may well be suitable. After all, this size of model will fit neatly in a box that will fit under any airliner seat, so you have no excuse for not entering at least one event at VNART!!

Stuff From NFFS

NATIONAL FREE FLIGHT SOCIETY

DEDICATED TO THE INTERESTS OF FREE FLIGHT MODELING



NFFS

1980 MODEL OF THE YEAR AWARD WINNERS

F1A	Robin	Mike Pantham (Great Britain)
F1B	Floater	Itzhak Ben-Itzhak (Israel)
F1C	Summerwind	Doug Galbreath
#A Free Flight	Toothpicks	Gil Morris
Large Power	Shocair	Mark Woodrey
Outdoor Rubber	Lanzo Stick	Chet Lanzo
H.L. Glider	Zingara	Paul Lagan (New Zealand)
A/1 Nordic	Tadpole	George Xenakis
Indoor Rubber	Starwalker	Jim Richmond
Indoor Glider	Folder	Stan Stoy
Special Award	Pop Up Stab	Carl Goldberg
Special Award	Hot Stuff	Bob & Bill Hunter
Special Award	Clock Work Timers	John Tatone

***** THIS IS FOR IMMEDIATE RELEASE; print as soon as possible.

Nominations will be open for the 1981 awards until 12/31/80

Steve Geraghty
194 Vista Del Monte
Los Gatos, California
U.S.A. 95030

CONTEST CALENDAR

NEW JERSEY - Lakehurst

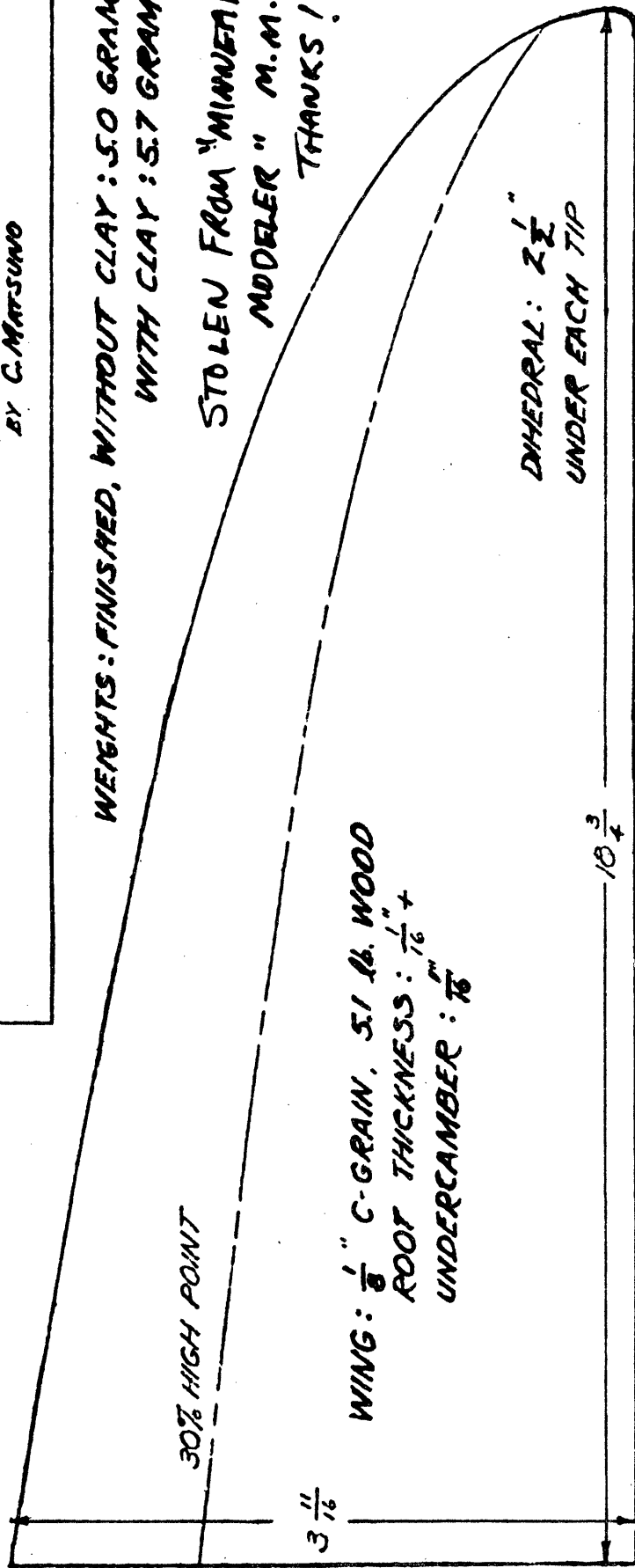
Present tentative dates for Lakehurst flying season (Hangar 1) are: July 5-6, July 20, Aug. 3, Aug. 17, Aug. 30-31 and Sept. 21. Contact Dan Domina, 6 Meadow Lane, East Windsor NJ 08520, phone 609-448-2840 for site confirmation each time and for more information.

E. ST. LOUIS #15 CATEGORY I HLG

BY G. MATSUO

WEIGHTS: FINISHED, WITHOUT CLAY: 5.0 GRAMS
WITH CLAY: 5.7 GRAMS

STOLEN FROM "MINNEAPOLIS
MODELER" M.M.A.C.
THANKS!



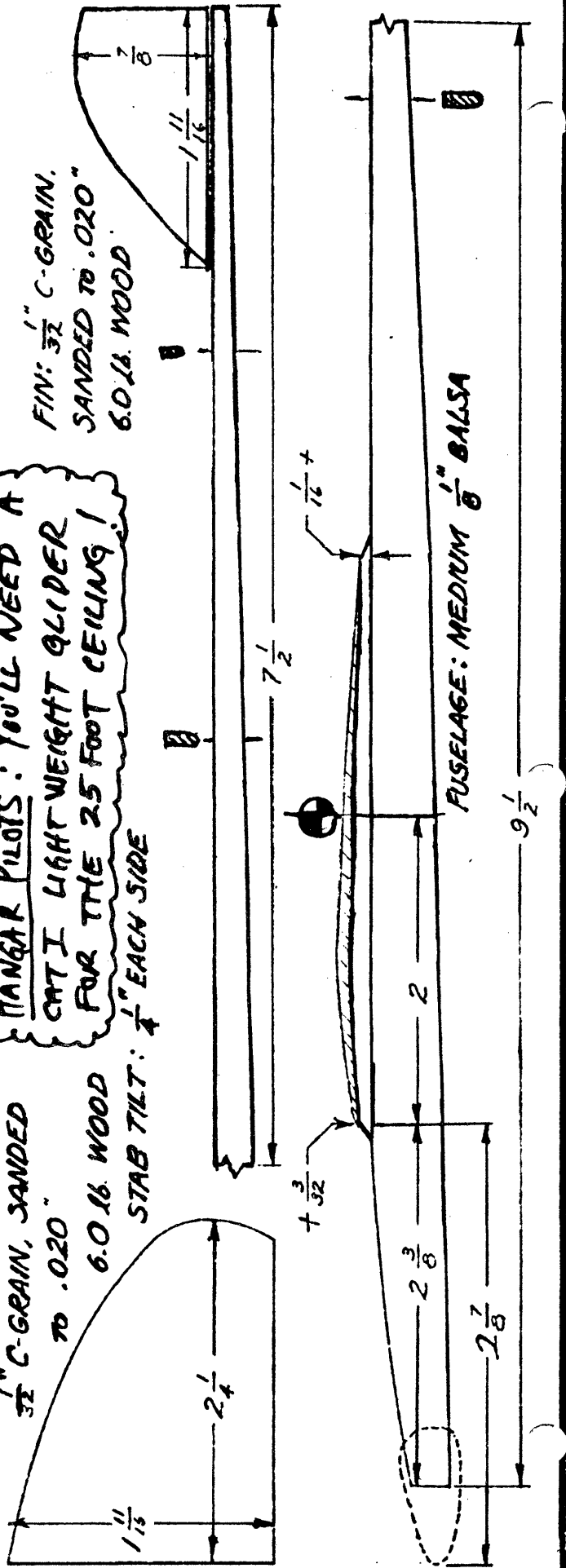
WING: $\frac{1}{8}$ " C-GRAIN, 5.1 LB. WOOD
ROOT THICKNESS: $\frac{1}{16}$ " +
UNDERCAMBER: $\frac{1}{16}$ "

DIHEDRAL: $2\frac{1}{2}$ "
UNDER EACH TIP

HANGER PILOTS: YOU'LL NEED A
CAT I LIGHT WEIGHT GLIDER
FOR THE 25 FOOT CEILING!
STAB TILT: $\frac{1}{4}$ " EACH SIDE

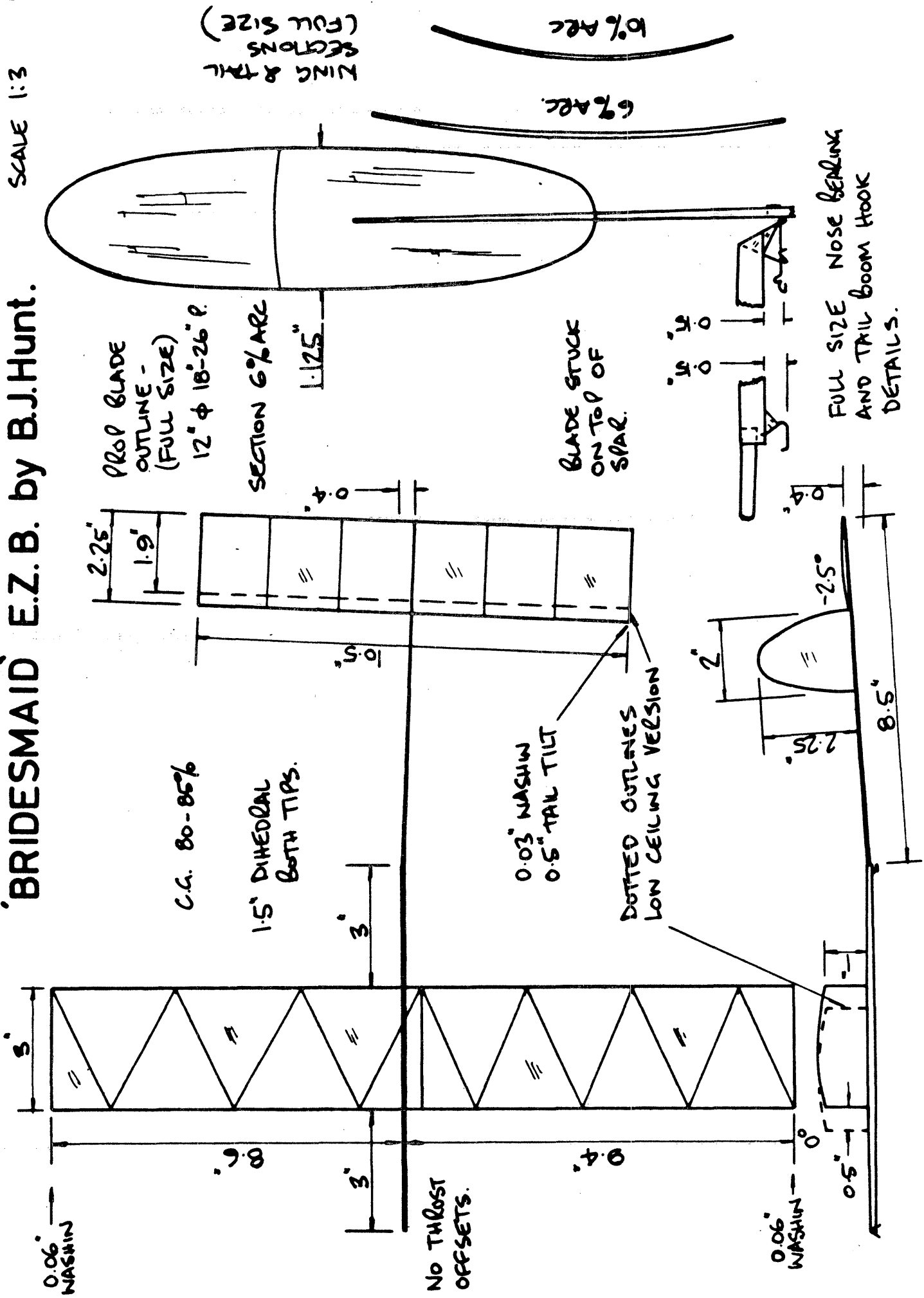
$\frac{1}{32}$ " C-GRAIN, SANDED
TO .020"

FIN: $\frac{1}{32}$ " C-GRAIN,
SANDED TO .020"
6.0 LB. WOOD



'BRIDESMAID' E.Z. B. by B.J.Hunt.

SCALE 1:3



0.06" WASHIN

5'

6'

3'

NO THROST OFFSETS.

4'

0.06" WASHIN

0.5'

C.A. 80-85%

1.5' DIHEDRAL BOTH TIPS.

0.03" WASHIN
0.5" TAIL TILT

DOTTED OUTLINES
LOW CEILING VERSION

2'

2.25'

-2.5°

8.5'

2.25'

1.9'

PROP BLADE OUTLINE - (FULL SIZE)
12" ϕ 18"-26" P.

SECTION 6% ARC

1.125"

BLADE STUCK ON TOP OF SPAR.

1/8" 0

1/8" 0

FULL SIZE NOSE BEARING AND TAIL BOOM HOOK DETAILS.

WING & TAIL SECTIONS (FULL SIZE)

6% ARC

6% ARC

1979 NIMAS POSTAL MEET

So far as I can determine, the following comprises all the entries received for the 1979 NMAS postal meet:

Event	Time (sec)	Ceiling (ft)	Fudge	Score
<u>Novice Pennyplane</u>				
Cezar Banks	517	22.3	1.253	647.8
Clarence Mather	397	22.3	1.253	497.4
<u>Easy B</u>				
Cezar Banks	790	22.3	1.253	989.9
Dick Hardcastle	784.2	31.0	1.063	833.3
David Hagen	823.1	36.0	0.986	811.6
Clarence Mather	603	22.3	1.253	755.6
<u>Junior Easy B</u>				
Mike Archibeque	426	22.3	1.253	533.8

STATE OF THE ART

Chris Matsuno's glider, developed in a Cat. I site in East St. Louis, was somewhat downplayed by Chris since it nearly always comes in second. To put that into perspective, we must realize that first place is usually Stan Stoy!

We have the plan page third-hand, so to speak--Doc Martin published "our" version in THE HANGAR PILOT, after the MIAMA Contest #6 had to be moved to a Cat. I site when the Goodyear Hangar became unavailable. As you can see, Doc took the plans from THE MINNEAPOLIS MODELER, (John O'Leary's neat one), and John acknowledges using TURBULATOR (McDonnell-Douglas FF Club newsletter) as a source. After all that, all of you may have seen it anyway, so why bother?

Chris comments on the glider: "The glider is fairly conventional in construction. The wing is a bit unusual in that some undercamber was sanded in, and then the wing was scored lightly at the high point with an X-acto blade, then cracked and glued to increase the undercamber slightly. This may also make the wing more rigid. The wing halves are symmetrical. Making the inboard wing slightly bigger than the outside wing has often caused me problems in trying to get the glider to turn as tightly as desired, so I have given up on this quite common practice. After gluing the dihedral, the wing is first glued to a small pylon, which is then glued to the fuselage. This is due to laziness. It's a lot of trouble to get the top of the fuselage sanded just right to fit the undercamber while retaining the proper decalage. This method is a bit simpler. The stab is glued to the top of the fuselage. I have never understood why most HLG's have their stabs glued to the bottom of their fuselage. The stab was built oversize, then cut down to the size shown while trimming. The model has fairly positive stability. The nose is quite short. This seems to improve stability and aids the transition. I neglected to weigh the fuselage before assembly, but would guess that it is made of about 7 to 9 lb. A-grain. Both wings have a bit of washout at the tips--about 1/16" on the left, a bit less on the right. About 1/32" left rudder deflection is used, and the stab TE's are warped up a bit less than 1/32". Launch is straight ahead, about 60 degrees or so up. Best official flight has been 36.8 sec., best two-flight total 72.0 sec. Not Coot-class, but respectable. In pre-Coot days, it would have been AMA record-competitive.

Why fly this when you could do just as well with a Coot (average arms, now)? I guess there's just something psychological about being able to put a HLG right next to the ceiling. In fact, if my analysis of the max altitude attainable by a Coot vs. a conventional HLG at E. St. Louis is accurate, this HLG has an edge."

STATE OF THE ART

Bernard Hunt is one of those Cardington fliers who have almost pushed the Easy B state-of-the-art out of sight. His "Bridesmaid" design is presented here, freshly extracted from the pages of FFN - FREE FLIGHT NEWS, by Ian Kaynes. Any FF'er who doesn't get this newsletter is missing really top-notch coverage of FF activity in England, with a sprinkling of models and articles from the rest of the world. Bernard comments:

E-Z-B is arguably the most popular indoor competition class in this country, both at Cardington and the various low ceiling venues-- there were 22 entries at the last event at Huddersfield.

I started flying the class just two years ago and have built about 20 models in arriving at the design shown here in both high and low ceiling versions. Both models have good contest records with 6 first places and 7 seconds out of 17 contests entered.

The fascination of E-Z-B for me arises from the fact that it is an unlimited weight class in which the achievement of low structural weight offers the prospect of increased duration at the expense of increased flexibility (from the unbraced structure) which tends to make the model difficult to fly. I have reached the conclusion that a relatively stiff (and therefore heavy) model is required for the high ceiling of Cardington to give a good safe climb pattern into the roof but for low ceiling events where the models are very lightly stressed, ultra light weight is the target.

The high ceiling version features a very large, highly cambered tailplane and the use of upthrust (wing and motor bearing at 0° means that in the normal flying attitude there is approximately 3° upthrust) to control the initial climb pattern which is very steep and safe. I use a selection of 12" diameter propellers of various pitches from 18" for cold, wet conditions to 26" for (rare) hot, dry conditions. My best time is 19 1/2 minutes--I suspect with the help of "good" air--but 18 1/2 minutes has been achieved regularly.

The low ceiling version features a smaller tailplane and all round lightweight construction to give a weight in the region of 0.7 grams. The use of "Andrews style" wing ribs and an extra thick spar on the right wing leading edge gives a very stiff wing for its weight which resists tuck-in on launch. The tailboom is made very stiff and the tailplane is highly cambered and very floppy to achieve safe stall and dive recovery. This is necessary to cope with the rather turbulent conditions near ground at most low ceiling events. I generally use very low rubber weights (0.4 grams) and a high propeller pitch/diameter ratio (2.2:1) to slow down the climb. I have tried bigger diameter propellers (13 1/2" and 15") but found no benefits to offset the inevitable increase in model weight and reduced stability. A useful reduction in weight to 0.65 grams has been achieved on one model using a 6" motor stick which was quite practical with the normal 10" loop of rubber normally employed. My best official times are 9:33 under a 20" ceiling and 11:22 under 33" ceiling without ceiling scrubbing in either case.

Notes

The high ceiling version is drawn but the low ceiling version has the same layout, except that the tailplane is 10" span and 1.9" chord, with the wing posts moved forward 0.5" to maintain the CG position. The much lighter structure is reflected in the following data:

	High Ceiling	Low Ceiling
	(Weights in grams)	
Wing (spars .08, ribs .07)	0.32	0.28
Stick	0.28	0.18*
Boom, fin and tailplane	0.19	0.13
Prop	0.22	0.12
	1.01	0.71
*0.12 for a 6" stick.		
Rubber 17" loop	0.85	10" loop 0.40
Structure (sizes in thousands of an inch)		
Prop spar	8 lb. 63x63 to 32x32. square section	5 lb. 63x63 to 32x32 square section.
Blades	4.5 lb. C grain 16 to 10 at tip.	4 lb. C grain 7
Shaft	13 music wire.	10 music wire.
Wing spars	4.5 lb. 72 deep x 30 to 40x30.	4 lb. 72 deep x 30 to 40x30
Ribs	4.5 lb. C grain 60 deep x 16.	4 lb. C grain 40 deep x 16.
Tail spars	4.5 lb. 30 deep x 25.	4 lb. C grain 20x20.
Ribs	4.5 lb. 30 deep x 16.	4 lb. 22 deep x 16.
Stick	5 lb. 200 deep x 100 to 150x60.	5 lb. 190 deep x 80 to 110x50.
Bearing	13 music wire.	10 music wire.
Gusset	5 lb 15 thick.	5 lb. 13 thick.
Boom	4.5 lb. 100 deep x 75 to 40x40.	4 lb. 90 deep x 70 to 40x40.
Wing Posts	8 lb. 63x63 to 32x32.	5 lb. 63x63 to 32x32.
Covering	Micro-X ultra-light condenser paper, stuck Cowgum in petrol.	

APPLICATION OF CYANOACRYLATES TO INDOOR MODELS

by Don Lindley

A recent question from Bud Tenny in News & Views about the application of the cyanacrolate cements (Krazy Glues) in our area of modeling shocked me. I guess it was not unexpected that transfer of technology from one area of expertise might be slow, but it had not occurred to me that there would be a question whether there was any application other than repair of gliders. To preface a discussion of techniques, it might be useful to stand back and take a look at the unique properties of cyanacrolate cements as they apply to our hobby. I will attempt to note only those properties which are markedly different from classic model cement and segregate them into desirable and undesirable categories. This is, of course, dangerous, because properties which would be desirable in one application might be undesirable in another.

Desirable Properties

1. Not affected by most modeling solvents.
2. Fast cure.
3. Will bond plastics, metals, and other unusual materials.
4. Very high strength.
5. High penetration in light indoor wood.

Undesirable Properties

1. Sensitivity to humidity levels during curing.
2. Sensitivity to temperature levels during curing.
3. Difficulty in controlling migration of cement.
4. Plugging of dispenser tube.

I will not touch on the dangers of using the cements, since these are adequately covered in the instructions. Believe!

It might be surprising that I list the fact that cured cement is not affected by most solvents as desirable. I have found that this property allows me to do things which would otherwise be difficult. For instance, small posts can be cemented to microfilm wing and tail structures to support the bracing wires.

If the bracing has to be moved, the model cement on the wires can be softened with thinner without affecting the wing structure or the microfilm because the cyanacrolate acts as a barrier to the migration of the thinner through the wood, and is itself not soluble. Hollow motor sticks and booms can be spotted together on the seams to hold them in position while the seam is cemented with conventional glue. Complex structures can be tacked together in jigs and then cemented with conventional cements off the bench. Post and cabane structures can be built and the wing cemented to them with model cement. Then the wing can be repaired by simply dissolving the conventional cement and removing the cabane and wiring. A vertical post can be cemented to the tail boom at the leading edge of the stabilizer using cyanacrolate and the stab incidence changed without losing the reference of the post to fuselage position. Other applications become obvious as you start using this unique property.

The fast curing properties of cyanacrolates are widely advertised and should bring to mind many applications. However, as noted before, I use this property principally as a temporary joint to align the structure for conventional glues. Why? Because the cyanacrolates are very heavy and our light, porous wood tends to soak up too much. Also, after the wood has become saturated with the cement, its bending characteristics are drastically changed which tends to cause stress concentrations in the structure. Wood saturated with these cements is also very hard to sand without undercutting the adjacent wood parts which have no cement in them. However, when a quick repair is needed to get back into the air at a meet, all bets are off.

The third desirable property noted, bonding unusual materials, is less obvious. Want to glue tiny pieces of teflon wire insulation to your prop shaft to improve the thrust bearing? Want to glue an extension to a bracing wire to give that extra half-inch needed to rig the wire washin in the left panel? Want to really bond the wire axles to the landing gear of a baby ROG? You're home free. Please note that the surfaces must be surgically clean. A fingerprint on the nichrome wire will give a bad bond. Clean everything with #400 sandpaper and acetone and keep your fingers off until the cement has cured. I can't tie a knot in nichrome, but I can overlap an eighth of an inch and glue it with the same result. I think the weight difference is negligible. Incidentally, for a joint like this, the glue is not dropped on the joint. Both pieces are wetted

and then laid together for the bond. Its lighter and easier than to try to control the flow of cement. An aluminum tube may also be cemented to Vacuformed plastic wheels and cowls.

The penetrating properties of the low viscosity cyanacrolates have been discussed from a negative aspect (weight), but these same properties can be used to an advantage. For instance: instead of using a plywood scab to keep the rear peg hole of a scale model from wearing oversize, simply put a drop of cyanacrolate in the hole and let the wood absorb it. This will harden the wood with less weight penalty than the ply. Similarly, a tap hole in balsa can be hardened in this manner and then threaded like hardwood. A soft propeller spar that causes flutter can be stiffened by just wetting its surface with these cements.

Now to the bad parts. These cements all require a certain amount of humidity to cure. You may find that in an extremely dry house (Chicago in the winter) your glue won't cure. Simple: breathe on the joint just as if you were warping a surface. The moisture in your breath will start the curing cycle. They won't cure in a cold place. Same solution as above unless very cold, in which case a lighted cigarette or pipe held several inches below the joint will kick it off. Another problem is too much humidity. This may waterlog the structure and prevent penetration of the cement. We learned this at Lake Charles last summer. Dry it out with a cigarette before gluing.

Controlling the migration of the cement in critical areas is a real problem. Since it will not travel across water, this can be used to control the flow. Also, limit quantities applied. More on this later.

The single most irritating problem is the tendency of these cements to clog the tiny capillary tube used for application. A wire used to clear the tube will eventually cement itself in place and it will always collect a skin of cement which has to be removed before use. Squeezing the bottle until the tube is clear and then releasing to suck the remaining drops back into the bottle accelerates the hardening of the glue in the bottle. Lately, I've had good luck with rapping the bottom of the bottle on the workbench when I set it down. This accelerates the cement in the tube back into the bottle from its own mass and gives me good results. But buy the extra length of tube and keep it handy.

The most frustrating problem in the use of these cements is getting really small amounts where they are needed without dripping a lot more into your lap (no more comment on that). I believe it was Larry Renger who started me down the right track on solving this problem. He suggested using the eye of a needle to hold the minute drops pulled from a big drop on the bench. This worked, but the eye of the needle got plugged and was too hard to clean. The I came up with a Mark II version which works well for me. Stick the point of the needle into the end of short piece of 1/8" dowel and break the eye in half. This leaves a tiny fork-shaped end on the needle which will hold a really miniscule amount of cement from its own surface tension. When the open end of this fork is pressed against the joint, the cement transfers over. When it gets fouled, it is simply pulled between the teeth (make sure it's dry first, dummy) and the residue peels off. Try it, you'll like it.

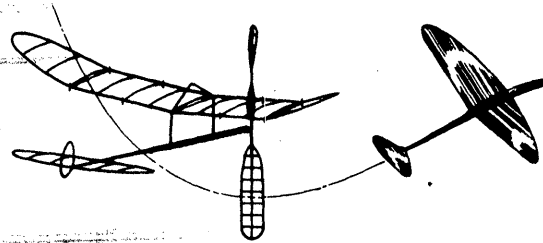
I've tried to cover some of the techniques and problems I've discovered. Each of you will have much more to contribute after you've lived with this material for a while. Talk to people in other areas of modeling and engineering. There are literally thousands of new materials and processes waiting to be applied to problems that have been bothering us for years. Have you tried Kelvar bracing, carbon fiber composites, and egg carton styrofoam? Fifty minutes isn't the ultimate any more than thirty was twenty years ago.

WHAT'S DEADSTICK?

Almost everyone who flies indoor models finds out that "deadstick" means that the motor has unwound to the point where it no longer pulls the model. Hal Crane offers this story illustrating a possible origin for the term:

In 1940 I was at the Grafton, Mass. airport for a lesson when I saw a new 65 hp. Taylorcraft approaching downwind, wheels "down" and deadstick. The wooden prop had stopped horizontally by luck. The proud new owner was lost and out of gas, but he landed downwind with no roll. You see, there was a foot of snow and we were using skis! Original definition: a stopped wooden prop is a dead stick!

INDOOR



NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

INDIVIDUAL STANDINGS

Flier	Country	1	2	3	4	5	6	Total
1. Erv Rodemsky	U.S.A.	9:57	<u>36:23</u>	7:35	24:28	11:37	<u>35:36</u>	71:59
2. Jim Richmond	(Champ)	7:29	32:54	7:56	20:28	<u>36:17</u>	<u>35:12</u>	71:29
3. Rene Butty	Switzerland	<u>35:34</u>	33:24	21:01	34:11	33:23	<u>35:06</u>	70:40
4. Edward Ciapala	Poland	27:03	15:12	26:49	29:46	<u>33:50</u>	<u>35:55</u>	69:45
5. Bernard Hunt	England	31:26	7:50	24:37	<u>34:46</u>	30:44	<u>34:31</u>	69:17
6. Dave Pymm	England	33:04	<u>35:47</u>	14:41	9:52	9:15	<u>32:38</u>	68:51
7. Ray Harlan	U.S.A.	11:36	<u>35:49</u>	11:56	8:33	<u>32:13</u>	10:28	68:02
8. Dieter Siebenmann	Switzerland	11:57	<u>31:20</u>	19:26	<u>34:54</u>	<u>32:25</u>	19:21	67:19
9. Andras Vogel	Switzerland	14:54	<u>34:38</u>	<u>32:06</u>	19:29	24:44	26:46	66:44
10. Pete Andrews	U.S.A.	<u>33:15</u>	11:58	22:37	<u>33:23</u>	30:52	0:46	66:38
11. Laurie Barr	England	<u>35:26</u>	15:37	18:39	<u>30:08</u>	9:27	17:59	65:34
12. Ron Higgs	Canada	29:29	<u>31:43</u>	6:11	26:05	<u>33:41</u>	8:30	65:24
13. Otto Rodenburg	Netherlands	29:57	<u>31:38</u>	<u>33:38</u>	27:52	0:07	0:34	65:16
14. Pentti Nore	Finland	<u>31:50</u>	9:12	21:45	30:47	25:39	<u>31:33</u>	63:23
15. Edmund Liem	Netherlands	13:02	<u>31:00</u>	17:21	30:15	30:44	32:05	63:05
16. Harri Raulio	Finland	5:40	27:42	<u>30:31</u>	27:08	<u>30:53</u>	5:07	61:24
17. Ryszard Czechowski	Poland	7:40	<u>31:11</u>	20:18	12:14	<u>30:23</u>	25:46	61:34
18. Sylwester Kujawa	Poland	9:53	<u>30:12</u>	22:05	28:40	<u>30:58</u>	29:16	61:10
19. Milan Sitar	Australia	0	26:34	1:19	<u>27:18</u>	11:36	<u>32:14</u>	59:32
20. Jack McGillivray	Canada	27:40	9:45	9:12	<u>30:38</u>	12:33	<u>28:19</u>	58:57
21. Carlo Cotugno	Italy	25:41	17:18	9:19	<u>28:17</u>	25:25	<u>30:30</u>	58:47
22. Germano Masçiuullo	Italy	23:08	26:00	21:19	<u>27:56</u>	<u>28:56</u>	21:24	56:52
23. Takaji Matsuzawa	Japan	<u>27:34</u>	<u>29:42</u>	25:30	6:01	27:16	5:46	57:16
24. Cornelis Wolthoorn	Netherlands	23:48	<u>28:47</u>	22:51	25:27	21:55	<u>25:37</u>	54:24
25. Chris Thomas	Canada	<u>26:19</u>	<u>26:37</u>	19:07	3:19	25:53	13:20	52:56
26. Klaus Nottelmann	West Germany	23:18	13:03	17:28	<u>26:23</u>	<u>26:06</u>	26:06	52:29
27. Yasutoshi Banba	Japan	3:00	19:07	0	<u>24:07</u>	0	<u>27:27</u>	51:34
28. Tsuyoshi Yamazaki	Japan	<u>25:09</u>	24:27	17:55	<u>26:23</u>	5:29	6:17	51:32
29. Marcos Angel Molo	Argentina	14:38	21:36	<u>24:22</u>	9:22	22:46	<u>25:16</u>	49:38
30. Allen Edwards	Australia	21:03	<u>22:05</u>	11:52	15:30	6:53	<u>26:23</u>	48:28
31. Alfred Klinck	West Germany	21:39	<u>23:36</u>	19:25	22:53	10:36	<u>24:14</u>	47:50
32. Nereo Beggiato	Argentina	5:38	<u>18:44</u>	12:31	14:07	<u>28:15</u>	3:26	46:59
33. Edwardo Grippo	Argentinian	14:35	<u>21:34</u>	<u>23:55</u>	2:35	20:39	13:32	45:29
34. Timo Forss	Finland	14:32	5:22	<u>21:56</u>	10:49	<u>19:34</u>	3:01	41:30

TEAM PLACINGS

1. U. S. A.	206:39	7. Finland	166:17
2. Switzerland	204:43	8. Japan	160:22
3. England	203:42	9. Argentina	142:06
4. Poland	192:29	10. Italy	115:39*
5. Netherlands	182:45	11. Australia	108:00*
6. Canada	177:17	12. West Germany	100:19*

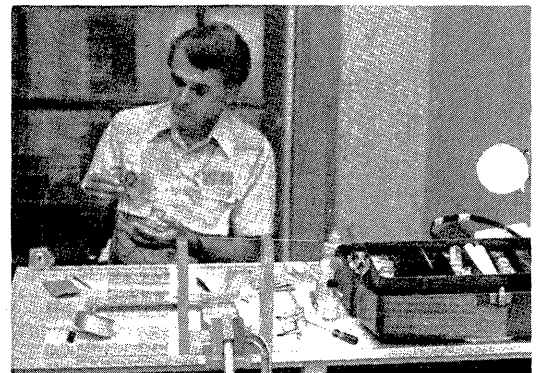
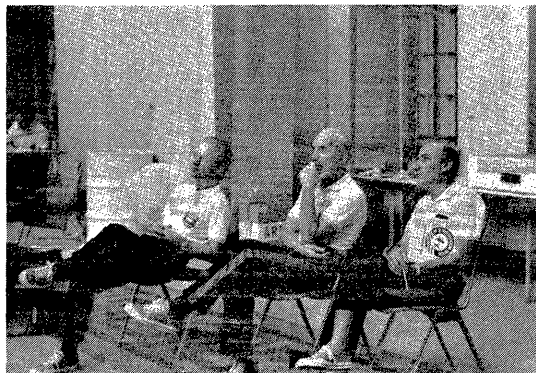
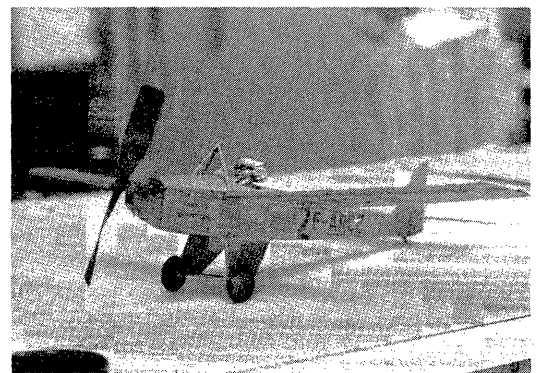
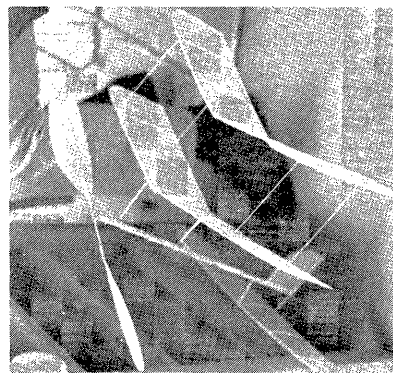
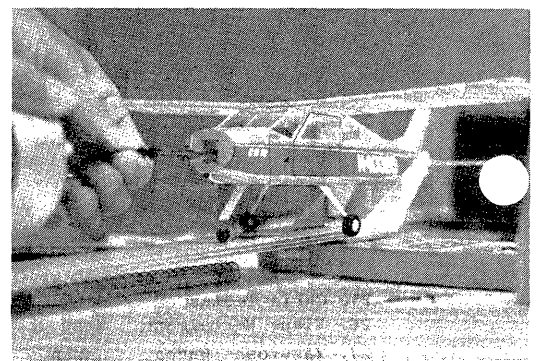
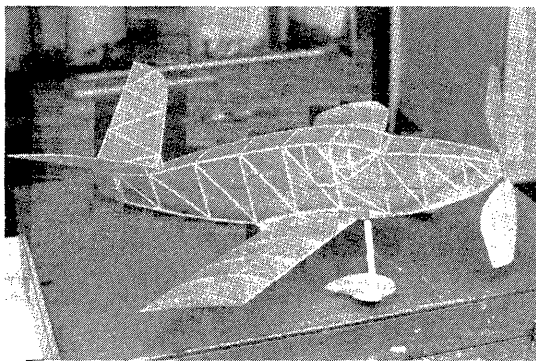
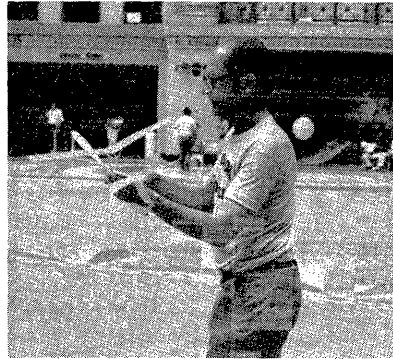
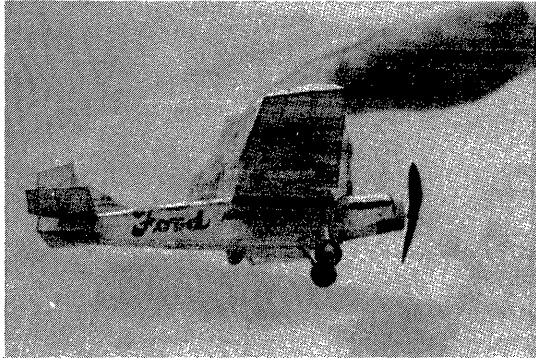
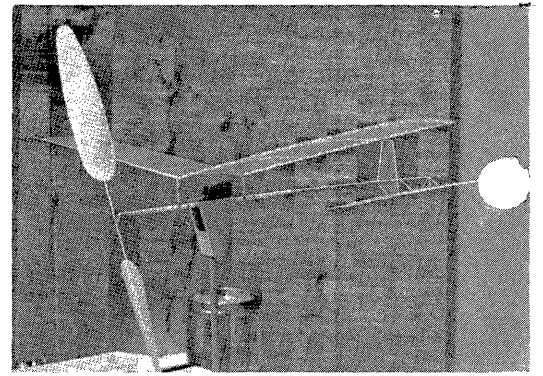
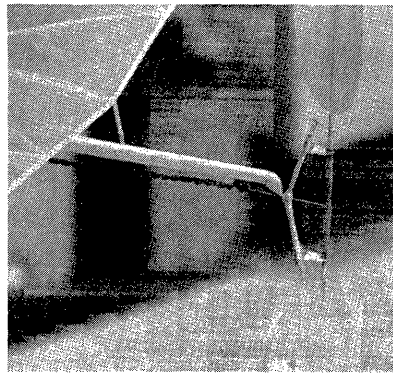
*Two-man Teams

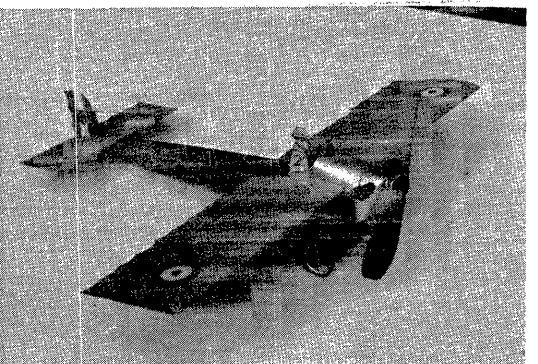
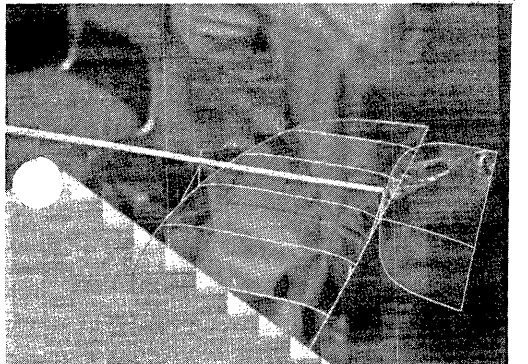
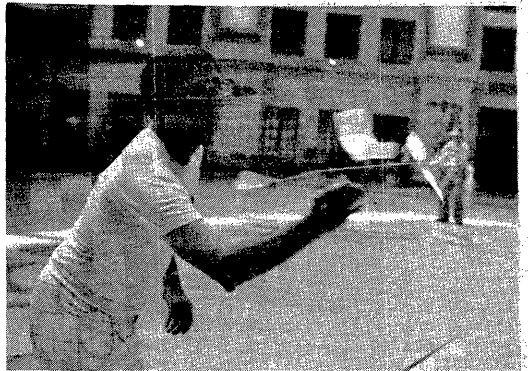
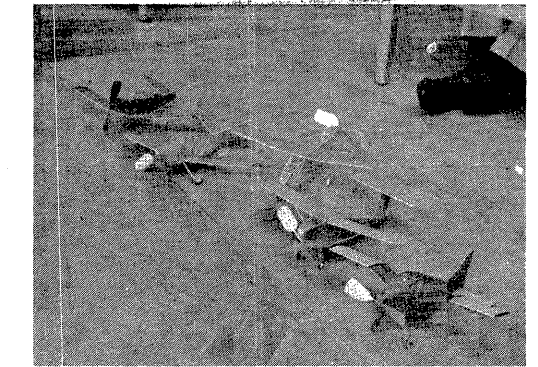
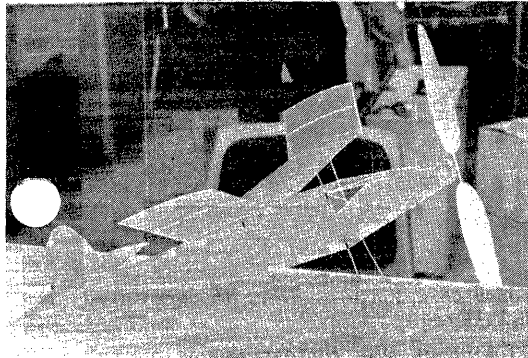
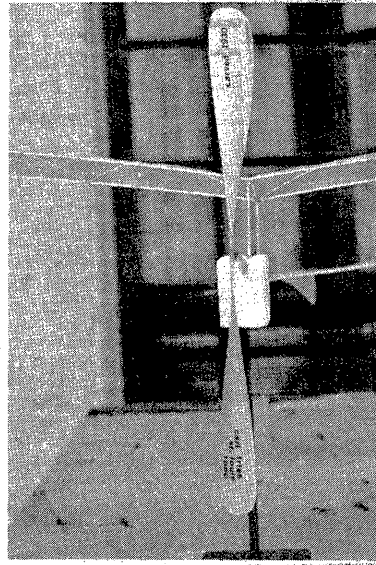
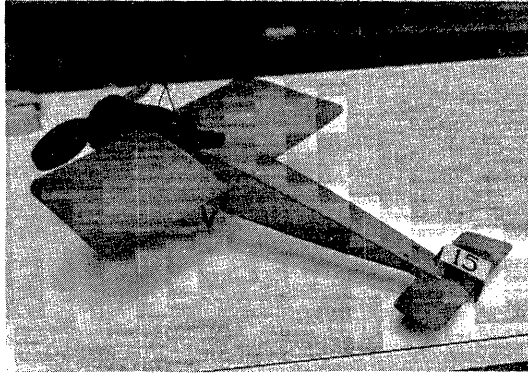
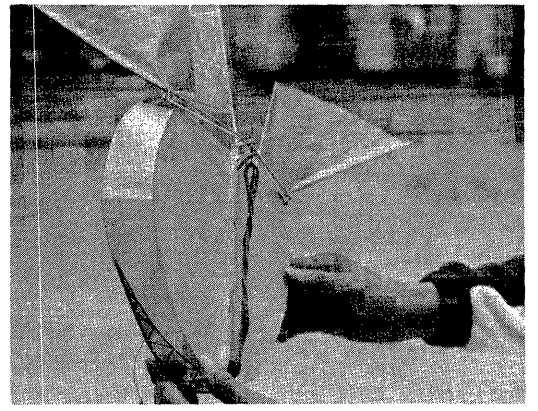
THE 1980 INDOOR WORLD CHAMPIONSHIPS

For the most part, everyone began arriving June 20, 1980 for the most exciting and perhaps the most important Indoor World Championships ever held. Fliers from 12 nations, team supporters, AMA officials and many enthusiastic U. S. volunteers settled in to put on what may have been the most harmonious World Championship in the history of the event.

Ian Kaynes of Great Britain, Chairman of the International Jury, noted that the competitors, volunteer timers and the AMA officials had staged an outstanding meet. "All the Jury had to do was view the meet and write a report," Mr. Kaynes said. Normally, the jury resolves protests over official rulings, unsportsmanship conduct

of competitors and similar matters which can arise during a World Championship. Other Jury members were Peter Allnut of Canada and Bucky Servaites of the United States. All agreed that one other point was proved by this contest: it is not necessary to fly Indoor World Championships in a dirigible hanger. That is the importance of this meet, since there is a strong prejudice toward large hangars for world championship caliber indoor flying. Therefore, many countries without dirigible hangars have been reluctant to bid for an Indoor World Championship, and host countries have been hard to find. Perhaps now countries with convention sites having about 100' ceilings will now plan to host future events.





Most of the competitors were enthusiastic over the contest site. "Our" Atrium at Northwood Institute has been accepted as one of the best, if not the best indoor site in the world. The annual NIMAS flying get-togethers have given us the experience needed to handle a WCh at West Baden, and we can be proud of the effort put forth by many NIMAS members and others. Last year, as a number of us reviewed the positive results obtained from shrouding the infamous mushroom, John Martin decided the time was ripe to try for a WCh. He was right!

Those of us who are familiar with the Atrium and the surrounding facilities find it easy to see why the competitors had such a favorable reaction. Those who aren't acquainted with the facilities are also missing a great show every year, not just this year. The competitors and others who attended the 1980 World Championship were immersed in their own particular form of modeling activity 24 hours a day. In particular, those with limited access to good flying sites in their own country found the Atrium's good air conditions and 24-hour-a-day availability represented a unique opportunity.

For many people who were not flying in the WCh, and for their families, the extra time after official flying sessions meant opportunities for bull sessions or other social activities. This meet was certainly a golden opportunity to get acquainted with international visitors.

Right off the bat, this World Championship was different. Despite the facts that this was a U. S. site and the U. S. Team was familiar with the site and the flying conditions, we led the last half of the pack for much of the meet. In fact, not even Jim Richmond, flying to defend his title as World Champion, started out well. Melody Doig made the action summaries summaries shown below; these show that the Swiss and British fliers led until the middle of the last flying period, with the Dutch following in third place until all the fifth flights were in.

Best Two of Two		Best Two of Three	
Flight	Totals (seconds)	Flight	Totals (seconds)
Switzerland	9707	Switzerland	11188
United Kingdom	9550	United Kingdom	10739
Netherlands	9492	Netherlands	9972
Canada	9093	Poland	9458
United States	8338	Canada	9093
Japan	7739	United States	8997
Poland	7271	Finland	8896

Best Two of Four		Best Two of Five	
Flight	Totals (seconds)	Flight	Totals (seconds)
Switzerland	12163	Switzerland	12228
United Kingdom	12037	United Kingdom	12037
Netherlands	10845	United States	11731
United States	10514	Poland	11180
Canada	10346	Netherlands	10773
Poland	10030	Canada	10598
Finland	9438	Finland	9931

The British fliers have always done well, but 1980 was only the second year for Switzerland to have a full team entered. Poland and Canada have also done well in recent WCh competition. The early poor U. S. showing gave rise to anxiety for both the U. S. team members and the spectators. Jim Richmond had noted on Saturday (final practice day) that it is always easier if one has a good start, since any other standing results in clouded thinking about flight and competition strategy. So, for whatever reasons, the U. S. team had to play "catchup" for much of the meet.

To a limited extent, weather played a part in the early contest results. The weather was slightly cooler than normal for that time of the year, and Day One conditions were not quite ideal. There was a big scare on Day Two, when it began raining before official flying began. For a while, it looked as if the whole day could be scuttled, but about mid-afternoon the front slipped past and the fourth flights were made in nearly normal conditions. Day Three was the warmest of the three and the U. S. had a chance to catch up.

Time dragged on that afternoon for almost everyone. Rodemsky's fifth flight, was involved in a collision just as it began to show promise of repeating his earlier 36+ time. Pete Andrews' sixth flight stalled to the floor twice, ending his chances for a better flight. Harlan's sixth needed steering; he caught the model from the wrong side of the motorstick, and tangled the prop in the balloon string. Scratch two. Erv's second attempt on his fifth, fouled, flight also needed a steer and got caught. Erv's last flight was all we had left.

Meanwhile, Jim Richmond's last two flights had pulled him from near last place to first; he was World Champ one more time. He had to worry a lot for about three hours over whether he would keep the title; six fliers had some chance of beating him.

After quite a wait, Rodemsky prepared to fly. He had almost solved the launch stalling problems that his models had shown on previous flights, and the model went almost too high. He needed about 33 1/2 minutes to boost the U.S. score high enough to win the Team title, and just over 34 minutes would make him World Champion. The model seemed bent on hanging, as it drifted close to every possible obstacle. Meanwhile, two other excellent competitors chose to fly and there had been some concern about possible collisions. One of these competitors developed a minor problem and withdrew to repair. Ciapala (Poland) got off a clean launch and his model passed Erv's model safely on its way to an excellent flight.

Finally Erv's model was low enough to be out of danger. At last, applause marked the time as Erv's model, still hanging on, brought the U. S. total into the winning slot. At this point, the model looked as if it might go all the way, and finally it did. Erv Rodemsky, on his first team billet, had won it all. That is, he had all the marbles if he could keep them! Ciapala's flight was still looking good, with enough altitude to perhaps win first place. In addition, there was a good chance that Czechowski, a former World Champ himself, might get a really good one. Czechowski's total was not enough to expect him to take first place, but really good flights by both Ciapala and Czechowski could still get the Poles another team championship. Besides, both Hunt and Pymm had one flight left.

One by one, the flights went off and came down. When it was over, Rodemsky was World Champion, Richmond was second, and the U. S. had finally won the Team Championship (the C. S. Rushbrooke Memorial Trophy) again. Erv had also logged the longest single flight, so he took home the Ernie Kopecky Memorial Trophy too. After all that, the banquet was an anticlimax. Not only was this one of the finest Indoor Championships ever, it certainly was the most suspenseful!

The smooth functioning of this contest is due to the leadership of Hardy Brodersen (contest manager), and Dick Kowalski's calm CD'ing. Ed Stoll and Al Rohrbaugh led a cast of dozens of volunteer timers who worked long hours. Bob and Gloria Champine worked long and hard to tabulate all the scores, checking and re-checking as needed. Your editor had the honor to serve as Air Traffic Controller, assisted by Reg Parham of England. Our job was to regulate the model launching in such a way as to assure that no collisions were the direct result of an unwary launch. We felt that those relatively few collisions which did occur could not have been foreseen. That is, virtually all collisions took place at altitudes near the very top of the air space. Due to the tendency of models to center themselves while they were near the top, the "soup" of models constantly thickened as long as the models were able to cruise at the top. Once any model started down, it seemed pretty safe.

It should be noted that regulation of model launch times is not new. Hungary used a rigid policy of no more than four models airborne at one time at the 1966 WCh. This meet was for 90 cm unlimited weight FAI models, and the site was a 98' cube! In view of a very successful meet for seven teams, something would have been very wrong if we couldn't fly twelve teams in more than three times the cubic volume!

One personal observation: this contest had a very large proportion of fliers who were unable to control their models at launch. I'm not sure why this happened, but it made for grey-haired traffic controllers! When we would OK a launch from a given spot (we did not tell a flier when or where to launch; we only OK'ed their choice of launch site and time), it was with the expectation that the model would have a "normal" launch trajectory. Models that did not often caused a near miss during flight launches! It was the general consensus of most observers that this one model characteristic is very easily controlled, and we were disappointed to see such a

large number of world-class fliers who didn't.

It is usually very interesting to note model design trends at World Championships, and this was no exception. Each of the two teams that led the pack for four rounds introduced an important new technology for indoor duration flying. Bernard Hunt and Dave Pymm used torque-controlled variable-pitch propellers, and the Swiss flew models greatly resembling the Archaeopterix design flown two years ago by Dieter Siebenmann. This model design, with two "generations" of development, had been refined to the point of having performance potential beyond the normal indoor model design trends. While it may seem far-fetched to refer to a design refinement as "new technology", I believe that this trend can be developed to a point of dominance in international competition.

The new Swiss models sported a smaller stabilizer with much higher camber in comparison to the original. In fact, the new stabilizers had higher camber than the wing. Siebenmann credited this idea, or at least his reasons for using it, to an obscure aerodynamics study published many years ago. It may be some time before we have a discussion of the new Swiss models' aerodynamic setup, but several flight characteristics were apparent. Many critically trimmed indoor models will stall and tail-slide away from an obstacle, losing altitude which may not be regained. Further, in low-level turbulence (at either launch or touchdown), these same models will also have drastic reactions to the rough air. The Swiss models climbed "on rails" and settled slowly, in level attitude, when striking an obstacle or encountering low-level turbulence. Some observers noted that these models were landing with more turns than is usually expected for long and consistent flights such as those logged by Rene Butty, who placed third overall. Rene sheepishly acknowledged that they still were trying to determine the optimum rubber size! How much more time could have been made under these same conditions? Also, it is worth noting that Andreas Vogel (9th place) had a Swiss torque-variable prop which was somewhat lighter than the ones flown by Hunt and Pymm, but he didn't get it zeroed in soon enough to use in the Championships.

The British models were mostly standard except for shorter moment arms (needed to compensate for the heavier propeller). These models were specifically designed to accommodate the lower ceiling height of the Atrium (just under 100', compared to over 160' for their home site at Cardington). The two added dimensions of flight trim--maximum high pitch and selection of proper cruise torque values in the motor--were sorted out by Hunt and Pymm in time to get 5th and 6th places overall. This is very good performance for a new technology! While torque-variable propellers have been tried before, Pymm and Hunt used computer simulations to greatly speed model development, and they acknowledged that other fliers before them had been close to good results.

The rest of the models flown, with one exception, were quite normal in design practice, with many good flights logged by fliers from around the world. Otto Rodenburg, from the Netherlands, had models inspired by the Swiss designs, but he hadn't quite gotten them zeroed in. Of the standard models, Jim Richmond, Ray Harlan and Erv Rodemsky had the best flying ones.

I feel that the countries with no high ceiling sites at all (Argentina and Australia) are to be congratulated. Although these countries did not do well in the overall standings, these fliers worked very hard to adapt their models to this "high ceiling" (in comparison to 6 meters that the Argentina fliers have, for example), and their results speak well for their competitive spirit.

A personal note: It was a very great pleasure for me to be able to attend this contest, and I congratulate each and every competitor for the outstanding spirit of sportsmanship and gentlemanly conduct each displayed. It made my own job a pleasure instead of the nightmare it could have been without this outstanding conduct.

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

The material in this issue deals almost entirely with the events of the only (to date) full week of indoor activity ever to occur. Even so, not all the results from that week are here; the Peanut Grand Prix results I have were such poor copies that, without a better background in what actually occurred, I can't decipher exactly how to report the results. Perhaps by the next issue John Martin will have reported the Grand Prix in "The Hangar Pilot", or will have given me a more readable set of results and enough back-

ground to report the event. I took many pictures, especially close-ups of scale details, but I didn't have the overall action in hand.

To top that off, when I started to paste up all my comments along with the photos, there was about seven pages of stuff! Consequently, the report of West Baden 1980 will cover two complete issues, probably separated by about two weeks. This move will also give me space for some three-views and other info related to the BIG week of Indoor.

THE PICTURE STORY

Page 2, Column 1

1. Cezar Banks trims his biplane Pennuplane, but no flight times were recorded.
2. Ford AT-7 scale model, owner/flier (proxy entry??) not known.
3. John Triolo's "Better Fly"; earlier versions would not, but this one flew nicely if not long enough.
4. Mike Clem with his Right Flier; winner of INDEXT scoring and placed 4th against all comers.
5. Three really nice gentlemen from Argentina; (l-r): Marcos Molo, Nereo Beggiato and Edwardo Grippo.

Page 2, Center Column

1. Close-up of torque-variable prop on Easy B model. No visual differences from FAI props except size.
2. Mr. Micro-X, Lew Gitlow, comes out of retirement to fly a bunch of nice models.
3. Obviously enjoying himself, Erv Rodemsky receives the C. S. Rushbrooke Memorial Trophy from AMA President Earl Witt.
4. Turn this one 90° clockwise to see Hardcastle's Pennuplane--no center posts! Clever wire bracing held top wing in place even in full-power launches.
5. Edmund Liem, Holland, with his 2nd place Pennyplane.

Page 2, Right Column

1. Top Easy B by Otto Rodenburg of Holland. Underslung stab has very small area, and adjustable incidence.
2. Ouch! Mike Van Gorder had a bike accident, still wound'em tight enough to win place in INDEXT.
3. Neat Tri-Pacer Peanut by Bob Clemens; winding stooge wound accommodate everything up to Wakefield models.
4. Farman Moustique by Bill Hannan; Peanut Scale model had individual, detailed spark plugs!
5. Here's Bob Clemens at work; Scale is his bag and he flew several Peanuts and AMA Scale models, also had 3rd place Bostonion.

Page 3, Left Column

1. Finland's Team (l-r) Timo Forss, Pentti Nore, Harri Raulio, Harri and Pentti flew on previous teams.
2. Moraille Sournier, by Butch Hadland. Model is very light in spite of completely opaque paint job. Very pretty model.
3. Top Manhattan Cabin by Walt Van Gorder. Walt is a really intense competitor, also got 2nd in Easy B.
4. XNART "regular", Dick Obarski, gets off an Easy B.
5. Close-up of Swiss tail feathers. Note very high camber; adjustable stab. Tail boom unplugs to give very compact model boxes.

Page 3, Center Column

1. Our HERO! Roy White saved dozens of models a day by taking casual strolls in the iron-work. Much credit also to Mike Stoy, on other end of safety line.
2. Oldest living prop! Carl Fries carved this one under a shade tree in 1930's. Recently restored; still can power a model very nicely.
3. Erv's model coming down on the string; Erv on right, Pete Andrews helping and Warren Williams praying. Hal Crane photo.
4. Carlo Cotugno (l) and Germano Masciullo prepare an official flight. Italian Team members several years.

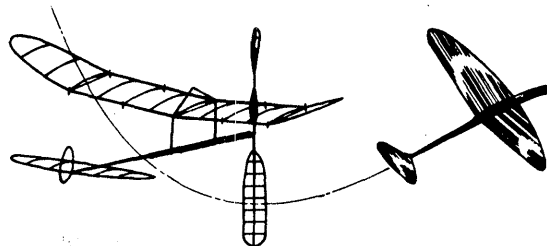
Page 3, Right Column

1. Bottom view of Japanese "fun" ornithopter. A close look will reveal teeth and eyeball; model flew, just barely, with fish-flutter movement of vanes.
2. Two of Polish Team; Kazimierz Lapinski (l), manager and Edward Ciapala.
3. Bostonion line-up for "charisma" judging; models are rated in comparison to each other and a multiplier between 1.0 and 1.1 is used to enhance flight time for total score. Models by (l-r) Tony Sutter, Triolo "Better Fly", Triolo "Nother Thing", Bob Clemens and Terry Mrakava.
4. Jeff Everson heaves his Pennyplane.
5. Another Hannan Moustique; also with sparkplugs.

INDOOR

NEWS and VIEWS

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****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

This Issue

Here is a lot more stuff on the biggest modeling week there ever was. John Martin came through with a good report on the Peanut Grand Prix, and there is at least one plan (I haven't tried to fit it all together yet, so I'm guessing) from the Big Show. I do know that the cost of two pages of photos (last issue) was a real shocker! I hadn't tracked film costs, and the plates had gone up also. Anyway, most of the pertinent stuff is here, and any other snippets will dribble in.

The Next Issue

So far (several weeks after the Nats), I have zero Nats results, and only a few comments from one or two guys who flew there. Any results you care to send will be greatly appreciated!

A Terrible Oversight!

Sometimes it is possible to do your job too well! At the 1980 Indoor World Champs, Don Lindley and his crew were in charge of the site facilities--all the special arrangements pertaining to the building and any extra equipment such as helium, balloons, and the extra string of lights around the mushroom. Since nothing went wrong, nobody (including all the reporters and myself who wrote about the meet) noticed. Don, I am sorry we all took your efforts for granted. You and the others did a terrific job! Of course, we could not miss the almost constant efforts of Roy White and his anchor man Mike Stoy as they retrieved many models from the clutches of the West Baden iron, but just to set the record straight, the rest of the crew was John Martin, who handled food and housing. In addition, Burr Stanton served as volunteer contact man at Louisville, Kentucky, and Charlie Sotich coordinated transportation from Chicago, the other major arrival point.

THE FIFTH NIMAS ANNUAL RECORD TRIALS (VNART)

That idea whose time has come--annual NIMAS get-togethers--really came along in 1980. With both a World Championship and the Peanut Grand Prix happening in the same week as our meet, we really had a show! As usual, the site was the Atrium of Northwood Institute, with some of the same people attending as in past years, but many new ones also came.

Besides the usual group of "regulars", we had other people attending: contestants, officials, volunteer timers from the WCh and the Grand Prix also made it a week to remember. By the time all the Peanut Scale models had flown in the Grand Prix, many people had been submerged in their favorite sport/hobby for six days, and had barely gotten started! Of course, not all the officials, teams and helpers from the Championships and Grand Prix stayed for VNART; some left muttering about short vacations, etc. Some people just have no stamina!

Anyway, with fliers from six countries ready to fly their numerous models, VNART got under way. What do you say about an indoor meet where flying of some sort goes on 24 hours a day, and where flights are made in all the official AMA classes and numerous unofficial ones? Someone flew in at least one these events: AMA Stick, FAI Stick, A ROG, ROG, Paper Stick, HLG, Pennyplane, Novice Pennyplane, two classes of Easy B, Helicopter, Ornithopter, Autogyro, AMA Cabin, Manhattan Cabin, Bostonion Cabin, rubber powered and CO₂ powered AMA Scale, Peanut Scale, Peanut Scale Speed, and Mass Launch (WW I Peanuts). As usual, some of these events had had only one or two entrants trying for record times, and some of had as many as fifteen entrants. We sorted out all this activity by using the NIMAS Index scoring.

Index scoring pits the contestant's times against the current AMA record classes for that event by computing the ratio of the flight time and the record time. For example, if the flight does not exceed the the record, a typical score might be .997; a record breaking flight might have a score of 1.045.

Since some model classes don't have national record status, such as indoor scale, the models are flown normally--against each other--as usual. Similarly, models which might have a record class if they were official events, such as Manhattan Cabin models, also are flown in direct competition. So, the total VNART results are a mixture of Index points and "real" times or scores. Obviously, the Index results can represent a great mix of model types, and since Junior record times may be relatively low compared to Open times, Juniors often win many of the Index prizes. It has become traditional for the NIMAS prizes to be handsome engraved pewter mugs, which certainly stand out on trophy shelves!

As an example of the variety of Index winners, here are the 1980 winners:

Flier	Age	Model	Time	Score
Mike Clem	(Jr.)	Pennyplane	12:07.4	1.084
Dave Lindley	(Jr.)	Autogyro	4:08.4	1.064
Lew Gitlow	(Op.)	Helicopter	9:12.2	1.054
Dave Lindley	(Jr.)	A ROG	10.02.4	1.0405
Mike Van Gorder	(Jr.)	Novice P/P	11:00.4	1.043
Mike Van Gorder	(Jr.)	Paper Stick	16:25.2	1.025
Stan Stoy	(Op.)	HLG	2:43.4	1.021
Mike Clem	(Jr.)	Paper Stick	16:12.6	1.012
Dick Obarski	(Op.)	Paper Stick	24:14.0	.998
Dick Hardcastle	(Op.)	Pennyplane	13:53.0	.997

Each of the other events (direct competition) had only a first place mug, so here are the other winners:

Peanut Scale Speed--Martin Varney, Owl Racer, 22.47 mph
 AMA Rubber Scale - Butch Hadland* - 160.7 pts.
 AMA CO₂ Scale - Butch Hadland* - 172.0 pts. Peanut Scale - Butch Hadland*
 Manhattan Cabin - Walt Van Gorder - 9:39
 Bostonion Cabin - John Triolo - 2:55.6
 Botched B** - Dick Hardcastle; 19:01
 Real Easy B** - Otto Rodenburg* - 19:32

*Foreign contestants as follows:
 Otto Rodenburg - Netherlands
 Butch Hadland - United Kingdom

**The new AMA record class for Easy B received much unfavorable comment, with the general idea that the rule created something that ought not be called "Easy B"; the most printable names for the event were Bungled B or Botched B. To avoid maligning a certain insect, the CD chose to log the event as Botched B. In the same vein, "Real Easy B" used the original rules unchanged.

The outcry against Botched B notwithstanding, several microfilm-covered, fully braced new rule Easy B's were flown, even by those who were decrying the desecration of the Easy B event as we knew it. Never mind! Otto Rodenburg's really nice Easy B easily outflew the Botched Bs. Early predictions suggested that a winning Botched B time could be as high as 25+ minutes, so one can presume that either the Botched B fliers really didn't get into the competition, otherwise, the event is challenging enough that the models will have to develop more to beat the real Easy B models.

With three days of 9 am to 9 pm flying, and all-night test flying and informal competition, it would take a book with several authors to tell the whole story. These items come to mind:

The Real Easy B event was to be a "shootout" between top U.S. fliers and the visitors; with a spread of 1:24 between 1st and 5th, it certainly was!

1. Otto Rodenburg - Holland - 19:32
2. Walt Van Gorder - U.S.A. - 19:10.4
3. Yasutoshi Banba - Japan - 18:54.0
4. Dave Pymm - England - 18:46.0
5. Bernard Hunt - England - 18:08.2

Hunt and Pymm used torque-controlled variable-pitch propellers on their Easy Bs, similar to those used on their F1D models during the World Champs competition (5th and 6th individual placing).

A replay of WCh competition--in the VNART FAI Stick class--the top three fliers were Bernard Hunt (U.K.), 36:47; Dave Pymm (U.K.), 35:42; and Rene Butty (Switzerland), 35:32. Hunt was the only one of these fliers who bettered his WCh score (34:46). This was one event was another battle between VP props and the sophisticated Swiss design. We will see both these approaches again!

Manhattan Cabin and Bostonion Cabin--both brainstorms of Ed Whitten--are very similar events in that both types of model require a "box" of certain dimensions to be part of the fuselage crosssection, and both classes have a minimum weight specification and maximum flying surface and propeller dimensions. Bostonion is both heavier and smaller, with an element of appearance judging included. That is, all Bostonion models in a contest are judged against each other for "charisma"; the resulting charisma factor, between 1.0 and 1.1, is multiplied by the flight score for final score. In comparison: the top Manhattan time was 9:39 vs. 2:45 for Bostonion. Bostonions are supposed to be pretty; Manhattans just fly well.

HLG was a one-sided battle again; Stan Stoy, flying his folding wing machine, placed in Index by besting his winning time from 1979 by a few seconds; Bernie Boehm made his usual flawless demonstration of classical HLG style and technique to finish 22 seconds behind. Note: this is no put-down of either Stoy or Boehm! Stoy has proven to all his own expertise with the non-folding machines, and it should be a real battle if both were flying either folding or non-folding gliders.

VNART's Peanut replay saw many of the same really neat Peanut models in another battle; the two AMA scale events were hard-fought and colorful. One comment worth of note: Hadland's win of both AMA and CO₂ Scale was with the same model. It was balanced with the CO₂ engine, trimmed to match with the rubber motor and prop, and initially test-flown with rubber. Later, the CO₂ engine and prop (on a separate noseblock) was substituted. This was a big model--20" span, and again proved that the Lacey is hard to beat.

Depending upon your viewpoint, the Peanut Scale Speed event was hilarious or a sacrilege. Props were clipped, rubber motors were doubled in size, and other mayhem was committed in the name of competition. The race course started on a table, and ended at a line 80' away. Starting with a (supposedly) no-push take-off, some models wandered a bit, others did well. Butch Hadland's Peanut Lacey showed obvious reluctance to race; it swerved first one way and then the other, shearing one wing or the other on the closest obstacle. Finally in a massive protest of such indignities, the model whipped a hard 180° turn and sheared both wings as it tried to hide in an open drawer of a nearby table!

As usual, three Juniors (Mike Clem, Dave Lindley and Mike Van Gorder) dominated the Index competition. Don Lindley noted during the awards ceremony that all three would "graduate" to Senior class for the 1981 VNART; it is time for more Juniors to appear!

It should also be noted that Mike Clem and Mike Van Gorder won in spite of handicaps. Mike Van Gorder came to the meet with a bandaged and splinted right hand; he experienced a bike accident the week before. Then, soon before his winning flight, Mike Clem was winding a big motor for his Right Flier biplane when the torque meter blew up and pieces of the torque rod and pointer draped themselves around the bone of his right middle finger. After some ice treatment, Mike decided to forego a trim to a nearby medical clinic in favor of continuing to fly.

Although Dennis Jaecks observed the WCh and flew in one of the after-midnight sessions (times over his record time), he did not stay for VNART. Perhaps his schedule will permit him to fly next year. His model activity has been dormant for a while, but he says he was inspired by seeing the WCh.

Doc Martin's 24-hour bar always had a good attendance and one wonders if some people ever slept!

It was a pleasure for me to meet Bill Tyler and Wally Simmers, both of whom attended this VNART. Both flew good looking models, and Wally threw HLG's like a youngster. He complained about being an "old man", but I wish I could throw a glider that hard! In the old-timer category, Carl Fries had a carved wooden prop dating from 1930. He had restored it to like-new condition, and flew it on one of his models. There are not many contests where one of the props is older than the contestants!

Dave Linstrum organized some sort of recreation for each night. Your editor was invited to display his ignorance, and recapped a research paper from an early NFFS Symposium on predicting model altitude by analysis of

model performance and torque curves. Butch Hadland gave a really good symposium on Peanut Scale building and flying (proved his credentials later by winning most of the Peanut events). Other events included slide shows on Junior activity (Roger Wathen) and some info about the man-powered crossing of the English Channel.

The Grand Finale of VNART was to be the Mass Launch, held after the banquet. At last word this reporter had, three bold models were to appear. Later, a burst of applause from the somewhat dark Atrium confirmed the launch --but how do you judge a mass launch???

PAPER STICK		NOVICE PENNYPLANE	
Dick Obarski	24:14.0	Cezar Banks	11:56.0
Rick Doig	22:19.0	Walt Van Gorder	11:11.4
Ron Ganser	20:25.0	Mike Van Gorder	11:00.4
Dick Hardcastle	19:20.0	Warren Williams	10:43.0
Chuck Markos	17:25.2	Douglas Barber	9:43.0
Mike Van Gorder	16:25.2	Mike Clem	8:26.6
Mike Clem	16:12.6	Tony Sutter	8:15.0
Tony Sutter	14:34.8		

PENNYPLANE		REAL EASY B	
Dick Hardcastle	13:53.0	Otto Rodenburg	19:32.0
Edmund Liem	13:16.4	Walt Van Gorder	19:10.4
Larry Loucka	12:12.6	Yasutoshi Banba	18:54.0
Mike Clem	12:07.4	Dave Pymm	18:46.0
Gordon Wisniewski	11:58.0	Bernard Hunt	18:08.2
Mike Van Gorder	11:40.0	Dick Obarski	17:35.6
Charlie Sotich	11:36.0	Jerry Skrjanc	15:54.0
Warren Williams	11:33.4	Bob Mullins	15:21.0
Walt Everson	10:23.8	Marge Koschutnik	15:16.4
Tony Sutter	9:50.2	Lew Gitlow	13:50.2
		Robert Skrjanc	12:39.0
		Tony Sutter	11:42.0
		Gordon Wisniewski	11:17.4

FAI STICK		BOTCHED B (New Rule Easy B)	
Bernard Hunt	36:47	Dick Hardcastle	19:01.0
Dave Pymm	35:42	Jerry Skrjanc	16:50.0
Rene Butty	35:32	Shitioshi Nonaka	15:17.0
Cezar Banks	35:31	Dick Obarski	13:26.4
Bernard Aslett	34:00	Douglas Barber	12:17.0
Yasutoshi Banba	31:44		
Otto Rodenburg	31:29		
Jack Carter	29:50		
Cornelis Wolthoorn	29:35		
Edwardo Grippo	28:21		
Dick Hardcastle	27:48		
Ron Ganser	27:36		
Chuck Markos	23:22		
Edmund Liem	21:44		
Nereo Beggiano	5:08		

HLG (Juniors)	
Brian Fulmer	1:52.2
Bradley Bulmer	1:18.5
(Open)	
Stan Stoy	2:43.4
Bernie Boehm	2:21.8

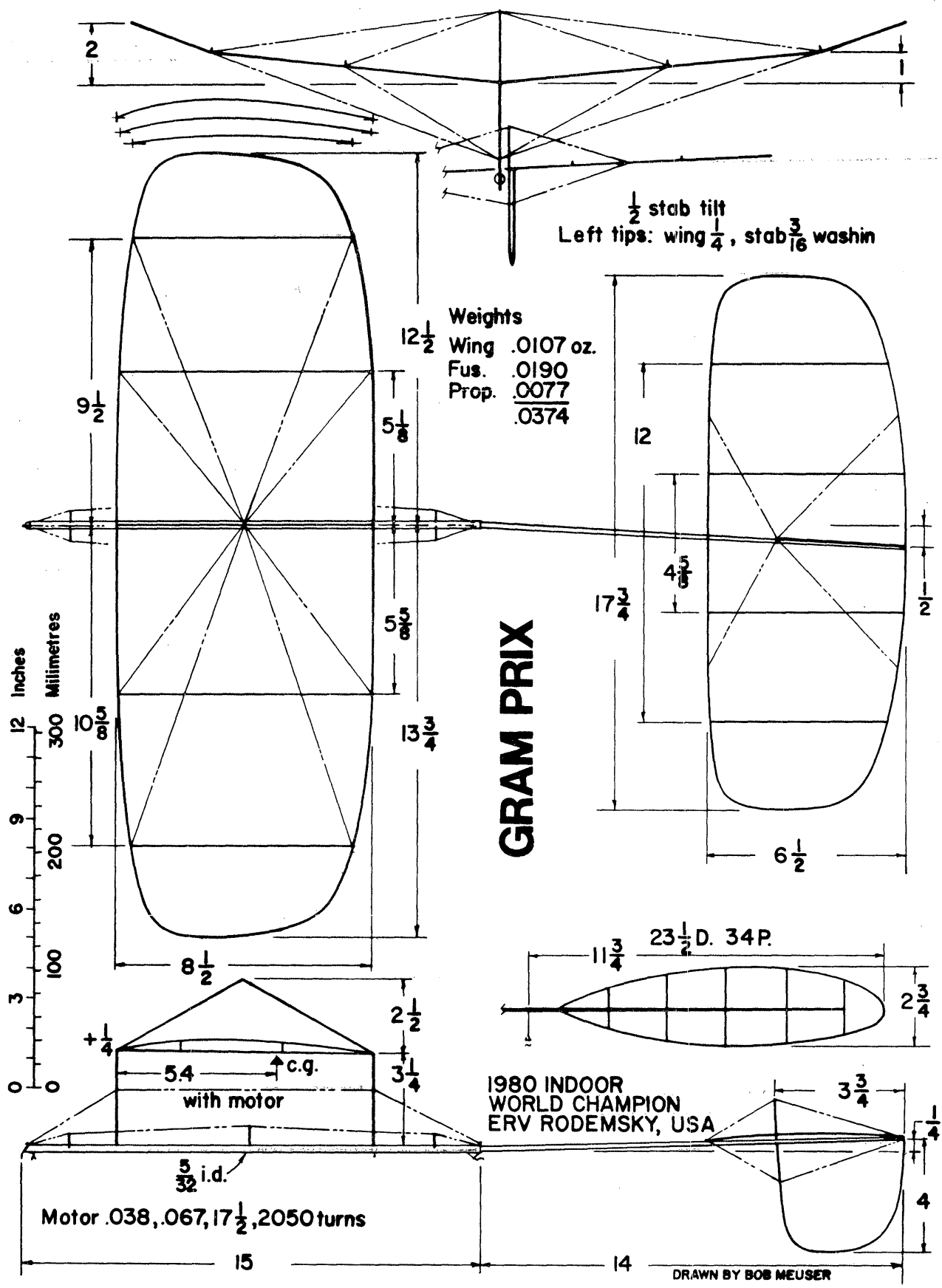
MANHATTAN CABIN		BOSTONIAN CABIN	
Walt Van Gorder	9:39.0	John Triolo	110.87 sec
Ron Ganser	8:55.0	Terry Mrakava	121.98
John Triolo	8:43.0	Bob Clemens	110.87
Tony Sutter	5:29.2	Tony Sutter	93.15
Chuck Markos	4:42.6	John Triolo	84.14

AMA SCALE (rubber)				
Model	Scale	Flight	Total	
Butch Hadland	Lacey M-10	93.0	67.7	160.7
Phil Cox	Vagabond	86	57.3	143.3
Floyd Miller	ITOH	75	57.3	132.4
John Adams	Vickers Vincent	75	57.3	132.3
John Martin	Alco	81.5	50.0	131.5
Hopkins	Waterman	80	41.2	121.2
Marcos Molo	Stormovik	72	47.2	119.2
Louis Varney	F.W. 152	67	44.8	111.8
Mike Collins	Eastbourne		22.1	

AMA SCALE (CO ₂)				
Model	Scale	Flight	Total	
Butch Hadland	Lacey M-10	93	79.0	172.0
Bob Clemens	Jabaro	83	75.5	158.5
Phil Cox	Aeronca	92	32.6	124.6
Carl Hedley	Moustique	43	59.4	102.4

PEANUT SCALE				
Model	Scale	Flight	Total	
Butch Hadland	Lacey M-10	4th	4th	8 pts.
Marcos Molo	Santos-Dumont	5th	3rd	8 pts.
Bernard Aslett	Waterman	2nd	9th	11 pts.
John Martin	Cessna	6th	5th	11 pts.
Briggs	Farman	1st	12th	13 pts.
Bernard Aslett	Nesmith Cougar	11th	1st	13 pts.
John Martin	Ansaldo	8th	6th	14 pts.
Harvey Hopkins	J-3 Cub	12th	7th	19 pts.
Harvey Hopkins	Waterman	10th	11th	21 pts.

CONTEST CALENDAR
FLORIDA - Miami area
The MIAMA club has scheduled their winter sessions at the 28' Miami Dade South College. Contest events no longer include HLG and Paper Stick and have added Old Time Baby ROG using the 1930 ALMA rules:
Motor stick 8" max, rubber loop 10" max, two wheels 1/2" dia. min that turn, paper covered.
Call 858-6363 to confirm these dates on the day before the meet: Oct. 19, Nov. 16, Dec. 14, 1980 and Jan. 18, Feb. 15, Mar. 15, April 19 and May 17, 1981.



GRAM PRIX

1980 INDOOR
WORLD CHAMPION
ERV RODEMSKY, USA

DRAWN BY BOB MEUSER

HOW IN THE WORLD DID THAT HAPPEN?

A number of us were shocked when we discovered what the new Easy B rules were. How can the reasonably elaborate AMA rules-making procedure go so far astray? I'm not entirely sure, but part of it was total neglect on our part. The past 18 months have been very hectic for me, but in retrospect, not so hectic that I couldn't have taken time to read my copy of MODEL AVIATION. All the proposed rules, cross proposals, etc., were printed there for all AMA members to read. If we did, no one said anything or made any comments about the new Easy B rule to the FF Contest Board member from their AMA District. As a result, the FFCB members had to vote as best they knew how. As a former FFCB Chairman and Dist. VIII FFCB member, I can tell you that it's a very lonely thing to have to vote on rules proposals with no guidance from the members of your District. In some cases, I was able to see the guys from the FT. Worth-Dallas area and poll them in person. However, that left the rest of Texas and all the other five states in District VIII without a voice on the rules they would have to fly by.

Since I'm trying to straighten up and do this job right, I promise to try to alert all of you to future rules changes as they come up. However, that won't get the job done! Even if you like every pending proposal outlined below, you can't just keep quiet. It may well be that someone else in your District really hates the new proposal that you like. If he writes to your FFCB man and tells him what a bad rule it is, that may be the only input your FFCB man gets. Since he is supposed to vote according to the wishes of fliers in his District, you may lose out because you kept still. Speak out, or don't gripe about the new rules!

The following brief comments outline the rules proposals currently being considered by the FFCB; only those rules which affect Indoor are covered:

FF-82-1 Adopt FAI Ceiling Categories and FAI Ceiling Measurement procedure.

FF-82-2a Adopt FAI Ceiling Measurement procedure.
(if FF-82-2a passes):

FF-82-2b Keep current AMA rules rather than wipe the slate clean and starting over.

FF-82-4 Eliminate Easy B event.

FF-82-7 Eliminate present Pennyplane event and replace it with present Novice Pennyplane event.

FF-82-9 Eliminate present size limitations on IHLG.

FF-82-12 Redefine Easy B so the model has 18" x 4"-maximum wing, 18" max length, solid stick and boom, paper covered, 1/2 penny weight, stab area 50% of wing max, same prop as current (1980) rules, wood strut wing bracing permitted.

FF-82-13 Create new B Stick class with same sizes as in FF-82-12, except no covering, bracing, weight limits. (Event to be provisional for trial.)

Now that you know about these proposals, you need to know what's next. The FFCB's Initial Vote phase must be completed by December 1, 1980, so time is already fairly short to give input to your FFCB rep. Here's who you write:

District

I	Henry Struck, RFD 2, Hamburg, Old Lyme CT 06371
II	Bradley Bane, 60 Lkae Ave. Lyndonville NY 14098
III	Rudy Kluiber, 2021 Lakeland Ave., Lakewood OH 44107
IV	Joe Boyle, 219 Shenandoah Rd., Hampton VA 23361
V	Bonny Jenkins, 3112 E. Haines Rd., Memphis TN 38118
VI	Chris Matsuno, 8576 Ginger, St. John, MO 63114
VII	Phil Klintworth, 715 Rutgers, Rochester MI 48063
VIII	Mark Valerius, 2302 Pomeran Dr., Houston TX 77055
IX	Jerry Murphy, 2432 Astron, Colorado Springs CO 80906
X	Joe Norcross, 413 Cameron, Hanford CA 93230
XI	Ernie Linn, 16558-121st Ave., SE, Renton WA 98055

FAI INDOOR REPORT

New Program Set

Previous FAI Indoor Program participants recently received details of the program to select the 1982 U.S. Indoor Team. Anyone wishing to obtain a copy of the full report should write AMA Hq and request it. This is a brief summary of the program provisions:

Schedule: 1980 - Unlimited local contests (10 points).
One regional contest in each zone.
1981 - Unlimited local contests.
One regional contest in each zone.
Single site Finals.

Program Entry: Program entry is accomplished by sending \$3 to AMA Hq c/o Micheline Madison, or by entry at a local meet. The entire qualification process may be accomplished in 1981 if desired. A special provision has been made for fliers who have previously qualified in an Indoor program and live far from a regional meet may (this is still subject to final approval) pay certain fee and penalties and enter the Finals directly.

Model Specs: Wingspan between 20" and 25.6", weight 1 g minimum, 2 g maximum.

Local Contest Specs: 3 entrants min., no limit on local contests entered, \$3 entry fee each local meet, all entrants may fly in regional, score total best two of six flights, winning score gets 10 points with other flight totals receiving proportionate points. Best local score only counted at Finals.

Regional Contest Specs: 3 entrants min., 75% of winning score qualifies entrant for Finals, best single regional score counted at Finals, no restriction on cross-zone entry. Score best two of six flights, top score gets 100 points, other scores proportionate points. Entry fee \$10, \$15 if no local meet entered.

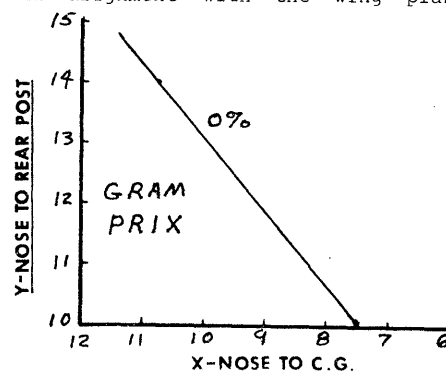
Final Contest Specs: The single site Finals will be conducted over a three day period with three rounds per day. Scoring best two of nine flights, top score gets 1000 points, other score proportionate. Entry fee \$15, unless (subject of approval) entrant lives more than 500 miles from the closest regional contest. Then fee is \$35, and 75 points will be awarded. For entrant who flew in local meets, the maximum score entering Finals would be 85; for one who flew in a regional meet, max score on entry is 110. Maximum score for program is 1110 points.

STATE OF THE ART

For years I have been trying to get a three-view of Erv Rodemsky's models--any of them! Take a good look at the plan page, since it may be another ten years before you see another one.

Part of the story behind this model, and Erv's big win at the WCh, is the number of different designs that Erv makes. Erv has an extremely active design talent which works overtime; he can hardly wait to try out the next idea he gets. This led to Joan's comment "Erv's hobby isn't building models--he builds jigs!" A number of us were kidding Erv at the WCh when we saw that he had three totally different models out on stands for most of the meet. Shortly before his winning flight, I asked him "When you win this meet, which of these designs will you claim is responsible?" His reply was: "This way I can publish three designs!"

Although the wing planform is less distinctive on Gram Prix than on other Rodemsky designs, there are a number of interesting features. First, note that the wing airfoil tapers drastically in thickness from the wing root to the tips. This was an attempt to reduce tip drag without giving up area or creating a structure of unusual shape which is harder build. Note also the 23 1/2" prop diameter and dual stick bracing. The motor stick has a conventional V-post bracing system, but there is also a removable single-wire brace which attaches permanently to the wing posts and hooks over the thrust bearing in front and an extension of the rear hook. Finally, note that the offset boom sets the angle of the rudder, but that the stab is attached so it is in alignment with the wing planform.



This is a report on one part of the trilogy of the last week in June 1980 at West Baden, Indiana - "The World's Greatest Indoor Meet." The other two parts - World Championship FID meet (which the USA won) and the V NART - 5th NDMAS Annual Record Trials - have been reported, more or less in detail, in various publications.

The 1st World Peanut Gran Prix was the world's first 24-hour contest, an event even the most stout-hearted contestant did not go the full time. (Martin, Brown, Sorich, Molo, Adams, and a few others got in at least 20 hours. We need a bit more training to go the full route.)

More than 60 airplanes from 6 countries comprised the 1st World Peanut Gran Prix, many of them proxy flown. Boy, did we have FUN!! We said this thing was going to be the best indoor meet in the history of indoor flying, and more than 200 people will tell you -- IT WAS. What do you do for an encore? I'm glad I was there for those memorable 9 days in June.

Old Doc spent most of his time off the floor, running the indoor social center, CLUB MIAMI, with its contribution to Icarus House - the retirement complex for old indoor modelers.

My impressions of the week: Always several planes in the air day or night, always a discussion group buzzing away on the atrium floor.

The contrast of the serious, nervous world of FID competition with the later relaxed, carefree peanut and V NART competitors. The incredible bad luck - for 2 days - of both Jim Richmond and Erv Rodensky until their breakthrough on the final flight of the final day. A Hollywood script finish - a Jack Armstrong, Buck Rogers, All-American Boy finish - almost too corny. The precision and thought behind the Swiss team effort, the magnificent long sleek beauties with the completely interchangeable parts. The imaginative variable-pitch props of the British team. The lack of disharmony, NO PROTESTS!! The revelation that smaller sites can be excellent for World Class meets. The Linstrum contribution: talks after dinner, movies in the theatre, informal symposia, TV coverage with informed, cogent dialogue that keeps popping up, at odd times, on national TV. Nor "look at these guys playing with kid toys," but a 5-minute piece with torque meters, rigging and ballooning techniques, variable props and a fine interview with Erv Rodensky.

After all the excitement of the World Champs, the Peanut contest seemed very relaxing. While proxy pilots were opening boxes, Butch Hadland and his crew of Jack Niederhauser and John Adams tackled the judging of more than 60 airplanes. Mike Arak supervised the proxy entries - some of which did very well in the final standings, and at 9:00 a.m. the flights began. Timers and Scorers included Roger Wathen, Jose Tellez, Paul Tryon, Don Lindley, Russ Brown and Walt Van Gorder. Two features contributed to the many flights logged: (1) Multiple entries were permitted in all classes (but only your best entry counted); and (2) after your official series of 9 flights (best 2 count), you could re-enter the same plane for a buck.

We had 11 entries in Pioneer, 5 in WW I, 22 in Golden Age, 5 in WW II and 22 in Modern. Because of low warplane entries, we are combining WW I and WW II planes in one class ("Warplanes" - no liaison or personnel planes) and are adding a new class (Weirdo) - that includes multi-engines, amphibian and flying boats (no cubs on floats), autogyros, helicopters, triplanes and quadraplanes.

The rules used were the AMA alternate provisional rules that balance flying and looks by giving each a 50/50 balance. Bernard Aslett of England built two models - each to a different philosophy. His Waterman gosling Racer was as super-detailed as any scale model I've ever seen and, because of all the detailing, was a bit on the heavy side. His Nesmith Cougar was a feather by comparison, and sacrificed some details for lightness. The Cougar flew 2:28 to win the high time trophy and finished 8th in Modern.

Bernard's Waterman had the second best scale score and finished 2nd in Golden Age, behind Bill Haman's Moustique.

Here are some notes on Bernard's remarkable Waterman Racer: Wing had excess of 250 pieces of .013 balsa, sliced ribs, hollow box spars, laminated outline. Engine (42 pieces) .010 aluminum sheet rocker arms, cowd held by a buckled belt, full complement of instruments in dash. Fuselage longerons .050 sq. covering, black Japanese tissue and black enamel. Propeller: 6-1/2" diameter, 6" pitch. Finished weight, with ballast, 6.8 grams. Did 41 sec. R.O.G. Power: .100 x 15" loop.

Some details on Aslett's Cougar: Higgins Ink sprayed condenser paper covering. Prop is 6" diameter and 10" pitch bent sheet blades around a 4" diam. can. Wt. 2.5 gm. plus 0.5 gm. ballast. Power: 20" loop of .050. Best time so far: 3:15.

The top scale point trophy went to Paul Briggs for his super-detailed 1910 Farman Monoplane. Although it didn't fly too well, the scale portion of the score brought him a 3rd in Pioneer.

RESULTS:
(P) = Proxy

PIONEER CLASS - (3 didn't fly)

Butch Hadland's beautiful Morane Saulnier clipped wing racer was complete to a map mounted on the dash. It won 1st over the 14-BIS of Argentina's Marcos Molo. The Pioneer class seemed to have the most detailed, but the poorest flying, models in any class.

Entrant	Plane	Static Score	Rank	Flight Score	Rank	Total	Country
1. Butch Hadland	Morane Racer	293.2	2	1:09	3	5	UK
2. Marcos Molo	14-BIS	232.5	4	1:38	1	5	Argen.
3. Paul Briggs	1910 Farman	301.5	1	:29	7	8	UK
4. John Martin	14-BIS	211.2	6	1:25	2	8	USA
5. Mike Arak	14-BIS	256.	3	:19	8	11	USA
6. Benno Sabel(P)	1919 Clerget	217.5	5	:33	6	11	W.Germ.
7. Benno Sabel(P)	Bleriot Canard	115.3	8	1:09	3	11	W.Germ.
8. Marcos Molo	Demoselle	199.5	7	:59	5	12	Argen.

WORLD WAR I - (2 did not fly)

Jim Miller's detailed little Bristol Scout beat out Doc Martin's Ansaldo in this battle of biplanes.

1. Jim Miller	Bristol Scout	226.8	1	1:14	2	3	USA
2. John Martin	Ansaldo SVA-3	137.5	4	1:30	1	5	USA
3. Paul Briggs	Fokker D-8	216.	2	:27	4	6	UK
4. Mike Colling	Siemens	141.	3	:28	3	6	UK

GOLDEN AGE - (5 didn't fly)

Bill Haman won this very popular class (proxy flown by Charlie Stotch), over Bernard Aslett and Jim Miller. Golden Age and Modern have the finest flying Peanuts, and are the most popular classes.

1. Bill Haman(P)	Moustique	220.5	2	1:31	2	4	USA
2. Bernard Aslett	Waterman Racer	299.	1	1:21	5	6	UK
3. Jim Miller	J-3 Cub	170.5	6	1:33	1	7	USA
4. John Martin	Cessna A-W	172.2	5	1:25	4	9	USA
5. Bob Clemens	Avro 560	208.	3	1:03	7	10	USA
6. Roger Aime(P)	Yellow Canary	138.	12	1:23	3	15	France
7. Jack Little(P)	Ford 2-AT	192.	4	:27	12	16	USA
8. Bob Clemens	Waterman Racer	165.7	7	:38	11	18	USA
9. John Martin	Bonzo	140.	11	:56	8	19	USA
10. Don Lindley	J-3 Cub	120.	15	1:21	5	20	USA
11. Paul Briggs	Waterman Racer	135.	13	:56	8	21	UK
12. Carl Hedley	Moustique	105.	16	1:09	6	22	USA
13. Bill Warner(P)	Cycle plane	161.5	8	:16	15	23	USA
14. Tony Sutter	Pietenpol	146.2	10	:17	14	24	USA
15. Walt Everson	Jungmeister	152.2	9	:11	16	25	USA

16. Bill Criss	Fellanca	90.	17	:49	10
17. Dan Walton(P)	Cessna C-37	127.	14	:20	13

WORLD WAR II - (2 did not fly)

Mike Arak's museum quality Liaison Piper YO-59 nosed out Chu swift Peck P-51 Mustang.

1. Mike Arak	Piper	247.5	1	:48	2	3	USA
2. Chuck Marcos	P-51	161.	3	:58	1	4	USA
3. Jack Little(P)	Farracuda	185.5	2	:06	3	5	USA

MODERN - (4 did not fly)

Here's where the flight times were really fantastic, 'cause EVERY FLIGHT in this meet was rise off ground (R.O.G.) and anything over a minute is sensational! Jim Miller's little Vagabond outscored Jack McGillivary's biplane and Butch Hadland's famous Lacey M-10.

1. Jim Miller	Vagabond	192.	3	3:16	3	6	USA
2. Jack McGillivary/Isaacs Fury		185.2	4	2:19	5	9	Canada
3. Butch Hadland	Lacey M-10	262.5	1	1:39	10	11	UK
4. Gordon Roberts(P)/Ole Tiger		202.5	2	1:41	9	11	USA
5. Gordon Roberts(P)/Fike E		157.5	7	2:19	5	12	USA
6. Bob Clemens	Bede-4	174.2	6	1:56	8	14	USA
7. Jim Pulley	Lacey M-10	129.5	11	3:02	4	15	USA
8. Bernard Aslett	Cougar	116.25	15	4:23	1	16	UK
9. Dan Walton(P)	Ord Hume	140.	9	1:39	10	19	USA
10. Walt Everson	Found	81.25	18	3:38	2	20	USA
11. Carl Hedley	Vagabond	140.	9	1:21	14	23	USA
12. Bob Peck(P)	Cougar	119.	14	1:39	10	24	USA
13. Mike Colling	Ganagobie	150.	8	:44	18	26	UK
14. Tony Sutter	Ganagobie	120.2	13	1:33	13	26	USA
15. Walt Everson	Found #2	58.5	19	2:03	7	26	USA
16. Chas. Roth(P)	Lacey M-10	129.	12	1:10	15	27	USA
17. Bill Criss	Cougar	102.	16	:52	16	32	USA
18. Mike Colling	Quail	95.	17	:45	17	34	UK

Engraved glass-bottom mugs were awarded to 1st and 2nd place in each class, and 3rd place Peanut plaques were donated by Bob Peck, who also was generous with lots of merchandise and his Peanut kits. Bill Haman also contributed several of his Peanut Power books and a vintage Flying Aces. We also received merchandise donated by Micro-X (Jerry Skrzanc) and rolls of contest rubber from FAI Supply Company. THANKS TO ALL OF THESE CONTRIBUTORS!!

If there was a trophy for the Grand Peanut - which there wasn't - it would have been won by Butch Hadland's Lacey M-10 that finished 3rd in Modern class. I'll let you figure it out!! It had the best marks for static score and flight time of the 50 planes that flew from England, USA, Canada, Argentina, France and Germany.

The Miami Indoor Aircraft Model Association was very pleased at the response to their event and plan to make this an annual 24-hour event.

At 5:00 a.m., there were still some contestants staggering around the Atrium but none lasted until the 9:00 a.m. finish. Better luck next year!!

Sixty-three pilots gathered at the Awards Banquet that night - V NART and Peanuters. Hadland & Paul Briggs outdid each other at convulsing diners with their jokes. At the end of all the food and festivities, someone moved that the meet be extended one more week. On a voice vote, the motion passed unanimously and then, sadly, we all went home. Boy, did we have FUN!!!

SWIPED ANOTHER!

The material below appeared in EL TORBELLINO, the newsletter of the San Diego Orbiters, which is ably edited by Howard Haupt.

Indoor Tips From The World Championship

by Warren Williams

1. Winder ratio from 10 to 20 to one. The English team used 10 to 1 exclusively and they took 15 to 20 minutes to wind their models - thus preventing the rubber from overheating. They also used very short loops and wound to max turns. 50% of the time they would break the rubber. They claimed it was due to the hot weather.

2. Most of the Europeans used a torque meter--winder holder--platform for transporting or transferring wound rubber to model.

3. Most modelers used "O" rings; some rubber, but most were made from 1/16" ID nylon tube sliced. The English use a brass rod for hanging and cooking their nylon "O" rings at 250° until the nylon turns clear and transparent, then remove they quickly before they melt. This process rounds off the sharp edges.

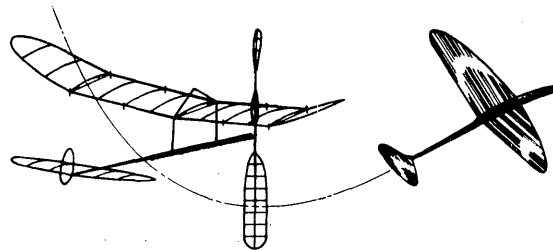
4. Non-slip rubber tie--Tie a loose knot of thread, loop loose knot around the two ends of the rubber, secure thread loop and tie. Glue V end of rubber with Hot Glue. Secure both ends of rubber by squeezing together. Tie rubber loop back of glued ends and run knot up to end.

5. Shrinking condenser paper: wet newspaper and place condenser paper on top. Turn condenser paper over and wet other side. Dry paper over hot iron and flatten with hand.

6. Curing microfilm: Use 5% acetone and 95% water; spray onto sheet of microfilm. (Cezar Banks also notes that the 5% acetone solution is good for loosening tight film.)

7. Patch--use small rubber tube to suck up paper backing after attaching patch.

8. Straight boom seams--tack glue fat end with thread--roll thread around tube to close seam--tack glue seam--remove thread and finish gluing seam.



INDOOR

NEWS and VIEWS Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080

****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

This Issue

This issue has a new look, because it is being produced on a new word processor system I have access to. At the time this is being written, I may not have settled exactly on the print wheel to use and on the exact text format. So, like a chameleon, INAV may shift slightly for a while. Eventually, I will acquire the necessary hardware to produce INAV entirely at home, which should go a long way toward speeding up production and reducing the late issue problems.

On the subject of late again, this issue was delayed by an extraordinary spurt of long work hours, compounded by several fruitless searches for materials, both camera-ready and raw material, which had been misplaced during the general scurry to find all the back issues. Some day!!

Another new look: your mailing labels. Just as a reminder: all labels are now paper labels, printed fresh for each mailing on a word processing system. A typical label appears below:

Joe Blow 0-10
666 Wind St.
Gust City WC 77777

The number in the upper right-hand corner means that Joe's membership expires with the issue dated October 1980 (not an issue mailed that month). The change from just the number of a month appearing in the label is to make it easier to handle membership lists both now and in the future when the entire list will be computerized. Actually, this machine is a computer, and when my home computer system is operational I will be able to transfer the lists directly to the new computer.

A Friend Passes On

I recently received a letter from Dorothy Gonzoph with the bad news that Ted had died on August 12, 1980 of cancer. Ted was active in the Denver area for many years, and served from the start on the FAI Indoor Committee. I knew him as a gentleman and an enthusiastic and innovative modeler. One of his last hopes was to be able to attend the 1980 Indoor WCh at West Baden, but he was simply too ill to stand the trip. Those of us who knew him will miss him.

The Bureaucrats Strike Again!

In recent months, some issues sent to overseas addresses have been returned to me with the note that international mail regulations require mail to be enclosed in an envelope. Therefore, overseas issues will need to be folded to fit a small envelope. Any other scheme will produce an item too heavy to mail with one stamp (the ones which go by air mail.) In fact, I may have to search very hard to find a source of envelopes light enough so that an envelope plus one issue is not over one-half ounce in weight!

New Rates For INAV

It was mentioned in a recent issue that printing costs have risen significantly. A rough guess, without wading through ledger sheets for the past 18 months or so, has been that the extra costs built into NIMAS membership fees to service various NIMAS services has been carrying the ball, since there has been no time to perform those services, hence no costs have been incurred. Not only that, but some savings have accrued from sending double issues, which saves some postage costs.

By now, the "rough guess" method is sounding a warning that expenses are beginning to outstrip income. Therefore, beginning with the renewal notices which accompany this issue, NIMAS membership fees will go up to \$4.50. Overseas air mail subscribers will also see an additional increase in postage rates when the new US international mail rates go into effect.

AMA Elections

All AMA members should have received their ballots by the time this issue is received. As usual, I hope that each member will avail himself of the opportunity to vote in this election. I will make no recommendations regarding the VP races; I have been too far out of touch with the Executive Council membership lately. Besides, I really have no business suggesting anything for other than District VIII! However, Homer Smith is both a FF'er and an excellent administrator, with years of experience in every facet of AMA business. I commend him to you.

A Correction!

The plan for Erv Rodemsky's WCh winner (JUL/AUG '79 INAV) showed a motor stick diameter of 5/32", the correct diameter is 5/16".

More On Easy B

Tom Vallee wrote to chide me for using the term "botched B" in reference to the new rule Easy B models. He noted that the FFCB members had doubtless done their very best, especially in view of the relative vacuum they have had to work in, rather than being given good feedback from the indoor community. I can certainly relate to that point of view; my own FFCB experience was also pretty much in a similar vacuum. However, we must also remind ourselves and the FFCB that one basic item of consideration for any rules proposal is that no models should be made obsolete if this is at all possible. Instead, the FFCB made obsolete all models all over the world, in the most popular single indoor model class ever developed! Not only that, but this action was taken on the eve of a World Championship, where models from all over the world would be gathering to participate in the VNART event to follow the WCh.

It can be argued that the Contest Board did not require Easy B models to be covered with microfilm and use external bracing; however the effect is the same if these features are not specifically ruled out. For, most certainly, those models built using microfilm and bracing will indeed trounce other models which do not. Even if we note that paper covered Easy B models made higher times than the new rule models at VNART, we must also note that Earl Hoffman has flown one of these new rule Easy B's for 26:07, and the point is proven. For more on Easy B and other rules matters, please see the section on AMA Rules Proposals below.

The Back Issue Situation

The text below is taken from a letter responding to one of the more patient NIMAS'ers who hadn't received the back issues that he had requested some time back. It sort of explains why no one had received requested back issues until very recently. Now that this item is beginning to move, wait a few weeks. If you are still waiting for your back issues, drop me a card and remind me, since I may not have found your original letter. Also please remind me which issue your subscription began with.

I'm sorry that I have taken so long to answer your letter, and to find time to do something about getting the back issues situation in line. The problem is that the back issues were scattered all over the office in boxes and file drawers, etc. In turn, this made the problem one of finding one block of time in which about 10 sets of loose pages from various issues could be collated into a stack of complete issues, then collating individual issues into stacks of back issues. Thank God not all issues needed collating!

Not only did my own schedule have to find the time, but that time had to dovetail with the schedule of the girl who helps me with the newsletter each month. Last Saturday, it all came together; we started at 9:30 am and I took her home about 4:45 pm, after working steadily all day long. We took half an hour for lunch, but otherwise, we only took two five minute breaks!

So you see that I wasn't just goofing off--the whole job had to be done in one pass, because, if we had ever stopped, the problem of storing the partially assembled and collated issues far exceeded any other problem.

Now, all that is left is to find out the postal rates and how they will let me send up to 20 ounces of paper in one package! If I can't do it any other way, I may have to box them and send them by UPS. So, I should be getting your back issues, along with those for other disgruntled people, on the way. After that, I will have lots more shelf space in the office!

More Contest Rules Proposals

The rules proposals sketched briefly below are in addition to the ones mentioned in the Jul/Aug '79 INAV. As before, you should contact the Free Flight Contest Board member in your AMA District and tell him how you want him to vote on each proposals.

FF-82-14 Eliminate Junior, Senior and Open age levels for AMA memberships and substitute Novice, Sportsman and Open. The new competition categories would be based on skill levels, and the contestant would select the skill category he would enter for each class at a contest. Only one National Record would be established for each class.

FF-82-15 Prohibit structural bracing in Easy B. Note: This applies to the current "new rule" Easy B.

FF-82-21 Require indoor ROG classes to take from a position of at least two points touching. This restores the original provision which was dropped inadvertently when the General section of the Rule Book was up-dated.

FF-82-22 Adopt FAI definition for official/unofficial flights.

FF-82-23 Use best single flight for record purposes in FAI Indoor class.

FF-82-24 Use FAI steering rules for AMA contests.

FF-82-25 Allow of unlimited number of models in AMA Indoor competition classes.

FF-82-26 Clarify competition rules for FAI Indoor models flown in AMA competition. FF-82-27 Adopt FAI definition for end of flight.

FF-82-28 Record only nearest whole second for Indoor Rubber model flights.

Indoor Nats Planning

Among the flurry of letters mentioned in the Nats report elsewhere were a number of letters circulating between a number of concerned NIMAS and AMA officials. Many of these letters dealt with making a positive, well planned approach to the 1981 Indoor Nats. A number of these people also are current Nats Committee members. One result of all this is that much soul-searching has already taken place and meetings have been held which may already have defined that the 1981 Indoor Nats may be held in conjunction with SNART (Sixth NIMAS Annual Record Trials). We can probably look forward to almost as big an event as we had at West Baden in 1890!!

SNART Announcement

The material reproduced below was furnished by John Martin in time for the last issue, but there was no room. In light of the announcement elsewhere about the strong likelihood of having the Nats as a part of our show, this material will probably be revised somewhat. So hang tight and we'll see what develops.

World Peanut Gran Prix and SNART

** PLAN AHEAD **

Now is the time to start looking forward to participating at the Second World Peanut Gran Prix on June 26, 1981, in West Baden, Indiana. We prefer you to show up for the fun, but if you can't make it, be sure to send a proxy entry (or more). We have given a lot of thought to this aspect of the meet and are trying to improve methods of shipping, flying and returning these precious models. In addition, we want everyone who participates to have a souvenir of the meet, and COMPLETE results so he can see how he and his friends fared, and can improve on his weaknesses for subsequent contests.

The classes of model are slightly different for '81:

- Category I Pioneer - up to World War I
- Category II Warplanes - combined WW I and WW II aircraft, excluding liaison, sky cyles & personnel planes that were very similar to civil aircraft (You KNOW the ones we mean!)
- Category III Golden Age - between the Wars (I and II)

Category IV Modern Age - after World War II

Category V Weirdo - this includes multi-engined planes, flying boats (not cubs on floats), amphibians, auto gyros, helicopters, triplanes or quadraplanes (NO canards, pushers, or flying wings, unless they are also one of the above categories). The reason for excluding the latter weirdos is - they fly too well.

Planes entered in the Weirdo class can also be entered in its other class - pioneer, modern, etc.

As most hangar pilots know, you can enter more than one plane in any category, but only your best effort counts.

The meet itself is the only 24-hour meet ever scheduled - The Peanut Le Mans, the 24 Hours of Peanut, the 2nd World Peanut Gran Prix (choice of any 2 titles).

Here is the complete schedule for the 1981 indoor meet at West Baden, Indiana:

SNART (6th NIMAS ANNUAL RECORD TRIALS)

1. Wednesday, June 24 - 9 to 9 - "Heavier" indoor models - Penny and Novice Penny, Easy B - old style and new, Manhattan Cabin, Bostonian.
2. Thursday, June 25 - 8 to 8 - all lighter indoor classes - all HL stick types, ROG stick and cabin, helis, Orno. & Auto. 9 P.M. - Banquet & SNART Index awards - Bud Tenny CD
3. Friday, June 26 - Glider and Scale Day - 7 a.m. to 8 p.m. - alternate times all day for gliders and scale models - this worked well last year. AMA, CO₂, Peanut Scale, Peanut Speed, Mass Launch Peanut Events.
4. 8 p.m. June 26 to 8 p.m. June 27 - the 24-hours SECOND WORLD PEANUT GRAN PRIX. Saturday, 9 p.m., Scale and Glider Awards Banquet.

If you think it a bit premature to have all these plans, you are wrong. Model builders are the worst procrastinators I have ever seen. I'll bet many will be staying up late next June 25, trying to finish a peanut for the contest. You now have all snowy winter long to search through your files of 3-views and build that super scale job you have always planned on building. What devilishly clever weirdo will you concoct? What long-flying modern, what battling warplane? By the way, PLEASE get them finished in time to do lots of trimming. After a few trim sessions, you may get it flying real well, or realize that this turkey should be decommissioned (stepped on).

We here at MIAMA Hq. are working up a detailed application form, complete with many helpful hints as to how to pack your proxy with minimal chance of breakage. If you feel you will be entering next year's (1981) SNART and the 2ND WORLD PEANUT GRAN PRIX, send for your application and entry form NOW. You may not get it right away, because we are still adding information, but it will get to you soon. Last year, we had over 60 airplanes from six countries.

WRITE TO:

DR. JOHN MARTIN - MIAMA
3227 Darwin Street
Miami, Florida 33133

NATIONAL FREE FLIGHT SOCIETY

DEDICATED TO THE INTERESTS OF FREE FLIGHT MODELING



May 29, 1980

PRESS RELEASE

PRESS RELEASE

PRESS RELEASE

The National Free Flight Society has announced the recipients of the Free Flight Hall of Fame Award for 1980. These noted individuals have in many ways contributed to the development and continuity of free flight model airplane activities throughout the U.S.A. and the world. The Society is proud to recognize their achievements.

Louis Garami (Deceased)
Innovator of many model building techniques and designer of many small models.

Ben Shereslaw
Developer of the famous Bantam engine and designer of many esthetically pleasing model airplanes.

Henry Cole
A rubber model proponent who created designs that performed exceptionally and helped set the standard for others to follow.

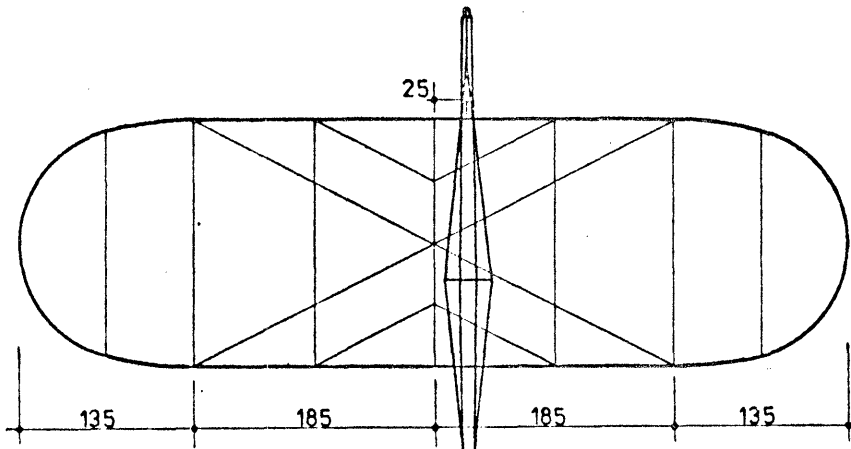
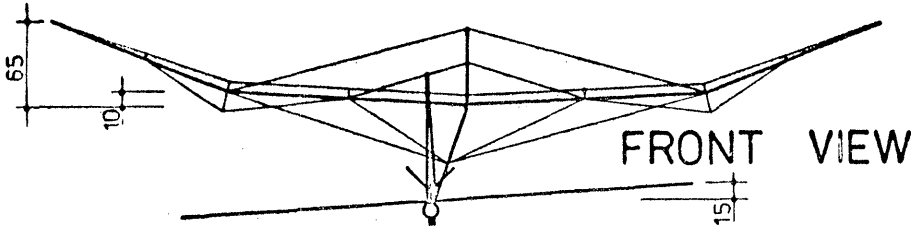
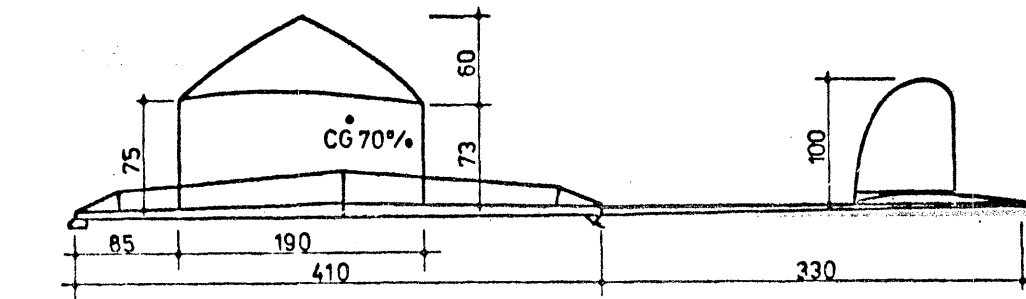
James Cahill
A world renown rubber model designer/builder. 1938 Wakefield winner with his famous Cloudhopper design.

Wallace Simmers
Provided handlaunch glider and rubber model designs that are still popular today. A manufacturer of model kits/supplies to all phases of modeling.

Awards banquet will be held by NFFS at the University of Dayton Student Union Dining Hall, August 12, 1980 at 7:30 P.M.

A. J. Italiano
A. J. Italiano, Chairman
NFFS Hall of Fame Award Committee

IN AFFILIATION WITH THE ACADEMY OF MODEL AERONAUTICS

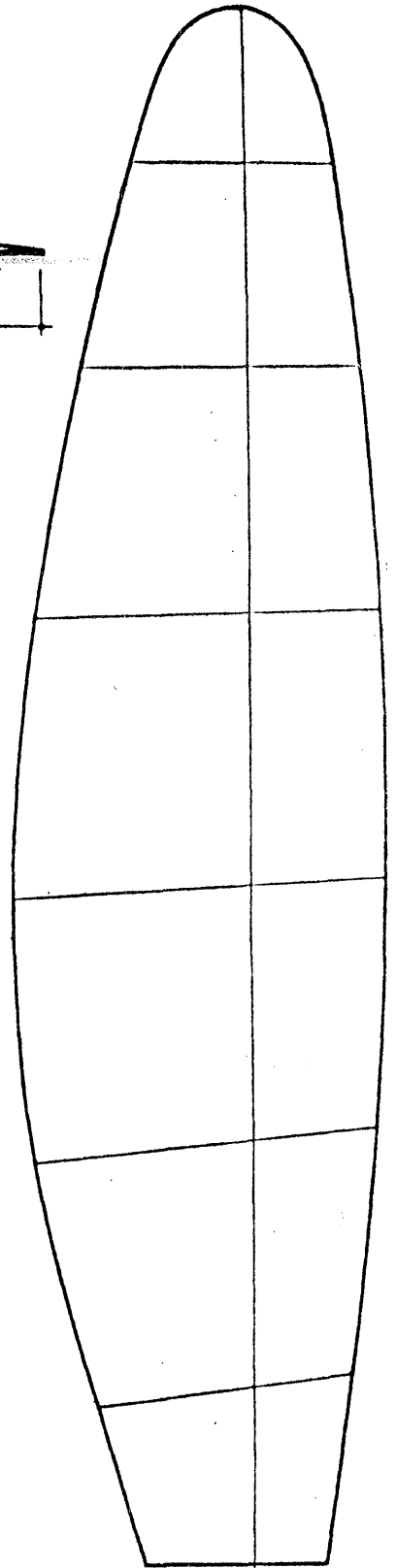
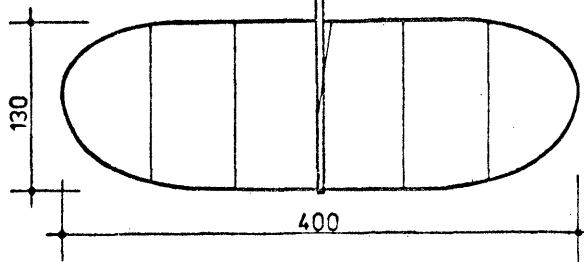


WEIGHTS

FUSELAGE	0,50
WING	0,28
PROP	0,18
BALAST	0,04
TOTAL	1,00

RUBBER

460 mm LOOP
1,45 g



D=540
H=900

FAI 1 GRAM
SYLWESTER KUJAWA
POLAND

the general competition experience. Much was made of the very high heat and humidity enjoyed (?) by the contestants. With the realization that no one can control the weather, we must make allowances for that part of the experience. However, there was also an almost bitter taste left by circumstances which left a number of strings, chains and other hang-up makers in the ceiling. These were finally removed on the second day, too late to avoid the unfortunate massacre of mike ships from the day before. It is impossible for me to get the whole story, since there are so many sources; there was a very clear pattern of poor advance planning associated with the event. The officials who came to run the event apparently did an almost superhuman job of trying to overcome this early lack, but there was too much to accomplish.

On a brighter note: if you are an AMA member and get MODEL AVIATION, Clarence Mather's excellent report in the Dec.'80 MA (page 56) is well done and leaves a much better taste. Also, see below comments about advance planning for the 1981 Indoor Nats.

<u>Indoor AMA Stick</u>		<u>Indoor Paper Stick</u>	
<u>Junior</u>		<u>Junior</u>	
Dave Lindley	16:09.2	Dave Lindley	14:08.0
Mike Clem	9:13.5	Mike Clem	8:08.5
Bradley Fulmer	7:25.7	Paul Loucka	6;54.6

<u>Senior</u>		<u>Senior</u>	
Susan Brown	4:52.8	Billy Carney	4:46.5
		Susan Brown	4:38.0

<u>Open</u>		<u>Open</u>	
Clarence Mather	28:29.8	Dick Obarski	17:47.8
Dick Hardcastle	25:06.1	Dan Domina	16:10.0
Dan Domina	23:34.2	Dan Belief	15:58.8
Bill Shailor	22:22.0	Ed Stoll	15:15.8
Ed Stoll	21:42.5	Charlie Sotich	14:23.4

<u>Indoor Cabin</u>		<u>Indoor FAI Stick</u>	
<u>Junior</u>		<u>Junior</u>	
Paul Loucka	10:00.0	Dave Lindley	22:04.0
Dave Lindley	7:21.0	Mike Clem	11:42.0
Bryan Fulmer	4:15.2	David Brown	7:14.7

<u>Senior</u>		<u>Senior</u>	
No flights.		Susan Brown	9:22.8

<u>Open</u>		<u>Open</u>	
Larry Loucka	19:04.5	Clarence Mather	51:00.0
Bill Shailor	18:54.8	Dick Hardcastle	47:36.0
Ron Ganser	17:29.4	Manny Radoff	45:17.0
		Dan Domina	44:04.0
		Bill Shailor	42:17.0

<u>Indoor Pennyplane</u>		<u>Indoor Easy B</u>	
<u>Junior</u>		<u>Junior</u>	
Mike Clem	9:21.2	Mike Van Gorder	12:31.3
Aaron Markos	8:38.6	Mike Clem	9:21.2
Mike Van Gorder	8:30.6	Carl Linstrum	7:02.0
John O'Reilly	8:27.2	Bryan Fulmer	6:36.1
Paul Loucka	7:49.1	Bradley Fulmer	5:24.4

<u>Senior</u>		<u>Senior</u>	
Curtis Link	7:34.5	Susan Brown	5:07.6
Susan Brown	4:54.3	Billy Carney	4:57.5
Draycott Hooke	1:10.5	Draycott Hooke	0:55.2

<u>Open</u>		<u>Open</u>	
Dick Hardcastle	11:26.4	Walt Van Gorder	16:44.6
Jim O'Reilly	10:32.8	Dick Obarski	15:58.0
Gordy Wisniewski	10:24.6	Dick Hardcastle	15:52.9
Larry Loucka	10:19.7	Clarence Mather	13:52.9
Ron Ganser	10:06.5	Ron Ganser	13:17.5
Walt Van Gorder	9:48.5		

<u>Indoor Hand-Launch Glider</u>			
<u>Junior</u>		<u>Senior</u>	
Bryan Fulmer	0:84.7	Curtis Zink	0:61.0
Mike Clem	0:80.1	Draycott Hooke	0:42.6
Brad Fulmer	0:75.8	Jeffrey Carr	0:36.0

<u>Open</u>	
Stan Stoy	2:02.8
Bernie Boehm	1:48.0
Chuck Markos	1:45.1
Rudy Klueber	1:44.2
Paul Shailor	1:43.9

FLY BOSTONIAN!

It has been requested that more information on the Bostonian event be made available. So, I will welcome any info that anyone cares to share with us. Just below, I have reproduced from Ed Whitten's STAR SKIPPERS newsletter the latest rules. I can also say that, having to run Bostonian at VNART, I have made a few observations about the event. I found that those

RF0 FACE TIME!

One more case of operating-typewriter-before-engaging-brain: I recently referred to Lew Gitlow as "Mr. Micro-X", and Lew rightly complained. I haven't heard from Jerry Skrjanc; dunno if he didn't notice or just isn't speaking! This was dumb-dumb-dumb, and I apologize to both Lew and Jerry.

Just to set the record straight, and to confirm any rumors you may have heard, Lew is back in the indoor business, but not as Micro Dyne. He has returned to the indoor supplies business as Indoor Model Supply, P O Box C, Garberville CA 95440, ph. 707-923-3500. Send him 50¢ to get a catalog; he has lots of supplies, plus some very good-looking kits with well detailed plans and selected wood.

CONTEST CALENDAR

CONNECTICUT - Glastonbury
The winter flying session/contest schedule set up by the Glastonbury Modelers is as follows:

Flying sessions on Dec. 21, 1980 and Jan. 11, Feb. 8, and Apr. 12, 1981, 8 am to 12:30 pm. Contest on Mar. 8, 1981, 8 am to 5 pm. Contest events are WWI Peanut Scale, WWII Fighter Scale, Peanut Scale, Scale, OT Gas Scale, Easy B/Pennyplane, Tissue Endurance, HLG.

Contact George Armstead, Jr., 89 Harvest Lane, Glastonbury CT 06033 ph. 203-633-7836 for more details about event times and rules.

FLORIDA - Miami area

The MIAMA club scheduled winter fly-in sessions at the 28' Miami Dade South College, as previously announced. The ceiling at this site is 29' 7" to the girders. Contest events no longer include HLG and Paper Stick and have added Old Time Baby ROG using the 1930 ALMA rules:

Motor stick 8" max, rubber loop 10" max, two wheels 1/2" dia. min that turn, paper covered.

Call 858-6363 to confirm these dates on the day before the meet: Dec. 14, 1980 and Jan. 18, Feb. 15, Mar. 15, April 19 and May 17, 1981. In addition, the following sessions at the Goodyear hangar have been added, thanks to special arrangements by Mr. Glenn Key, of Goodyear: Dec. 7, 1980 and Jan. 4, Feb. 1, Mar. 1, April 5 and May 3, 1981. Confirm these dates same as the others mentioned above.

MISSOURI - St. Louis

Sessions sponsored by the Thermaleers and the McDonnell Douglas FF Club have been set for the Market St. Armory, 3600 Market St., St. Louis, on Dec. 14, 1980 and Jan. 18, Feb. 15, Mar. 15, and April 5, 1980. These events use both the normal AMA age categories and Stay Stoy's skill level classes for alternate meets. The meets with skill level classes use records ratio (similar to the NIMAS Index scoring), while the AMA-type meets use regular age classifications. Contact Bob Klipp at 867-6106 for more details.

NEW YORK - New York City

Indoor record trials have resumed at the Low Library of Columbia University, which is a circular building of just over 100' ceiling height. No HLG's allowed, due to large amounts of glass surrounding the flying area. Flying hours are 9 am to 5 pm, on Nov. 30 and Dec. 14, 1980. Contact Ron Williams, 214-722-5262 for more details

OKLAHOMA - Oklahoma City

The Sooner Free Flight Society has commenced another Winter Indoor Series of sessions, with meets set up on Nov. 23, Dec. 28, 1980 and Jan. 25, Feb. 22 and Mar. 22, 1981. The Feb. 22 date is a contest and all the others are fun fly events. Flying schedule is 9 am to 11 am - HLG; 11 am to 5pm - Pennyplane, Easy B, Peanut Scale (turn in models early for judging). For competition purposes, the Easy B activity uses the old rules rather than the 1980 rules. Contact Al Bissonnette, 6238 SE 15th, Midwest City OK 73110, ph. 405-737-1085 for more details.

THE NATS STORY

The results below have been taken from AMA's results listing in the Dec.'80 MODEL AVIATION. No one was able to furnish me a copy of the newsletters circulated at the Nats, so this is all there is. Sorry 'bout dat!

I received several letters regarding conditions at the Indoor Nats, and all were uniformly negative about

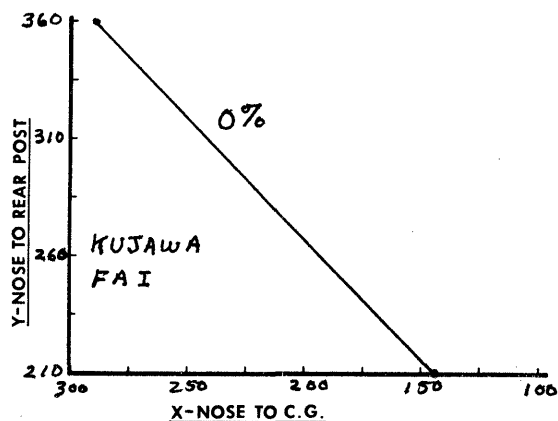
five entries at VNART were all good-looking designs, and most seemed to fly well. The concept of "charisma" judging is innovative, and could well make the difference in placing after the models are developed enough to approach the best theoretical times the class is capable of (whatever that is!). For my own personal activity, I probably will not build Bostonian, since I have far too little building time as it is. But I do welcome such experimental classes, and this one is fun to watch.

The "Current" Bostonian Rules

1. Maximum projected wingspan(s) 16".
2. Maximum wing chord(s) 3".
3. Maximum propeller diameter 6".
4. Power limited to one or more rubber motors.
5. Minimum weight without rubber motor(s) is 7 grams.
6. Maximum overall length is 14" measured from the front of the propeller bearing.
7. Fuselage must contain a theoretical "box" measuring 1 1/2" x 2 1/2" x 3" or larger, the longerons of which must both support the motor(s) and form, or exceed the box requirement. No motor stick allowed. Fuselage must have a forward windshield and a window on each side, each of which must equal or exceed 1" square area.
8. Landing gear must be fixed, with two or more minimum diameter 3/4" wheels, and rigid enough to support the model to a hand-glided landing.
9. ROG take-offs are required on all official flights.
10. Charisma Factor: The judge rates each model depending upon how the model appeals to him, based on construction neatness, scale-like details, uniqueness of design, etc. A 1.0 to 1.10 rating is used. Two or more models may be given the same rating. The models are not rated against each other, but against the 1.0 to 1.10 scale.
11. An unlimited number of official flights are allowed, with the total in full seconds of the best three flights multiplied by the Charisma Factor.

STATE OF THE ART

The model of the month, by Sylwester Kujawa, set a Polish national record earlier this year. Aside from the details shown on the plan, I can only comment on the unusual prop. The design concepts were checked out with observations using threads to show airflow directions as the prop turned under load. The resulting air flow patterns are reflected in the skewed rib angles near the prop hub. I was unable to find out the reason for the blade truncation near the hub, and it was also not clear if the test results revealed any significant increase in prop efficiency. The CMOS chart, computed at 0%, appears below. Flight trim was set at +14% margin.



NEWS FROM AROUND THE WORLD

MANHATTAN and BOSTONIAN Contest March 16, 1980, sponsored by CIMAS & LIAMAC, CD Ed Whitten, at Columbia U, NYC, 105' Low Library Rotunda.

MANHATTAN - 4 g min wgt

1) Sal Cannizzo	"Skyscraper Too"	4.4 g	8:11.0	(7:43, 7:18, 7:04)
2) Don Garofalow	"Metro-gnome"	5.2 g	7:20.2	(7:00, 6:29, 6:07)
3) Bill Tyler	No. 2 model	5.4 g	6:50.0	(5:09, 4:16, x)
4) Frank Haynes	-	4.3 g	6:33.0	(6:29, 5:36, 4:46)
5) Joe Nuszer, Sr.	No. 2 model	4.8 g	6:10.5	(x x x)
6) Bill Tyler	No. 1 model	5.3 g	5:56.0	(5:56, 5:11, 3:53)
7) Pete Andrews	"Pete's Plane"	5.1 g	5:43.9	(5:15, x x)
8) Joe Nuszer, Sr.	No. 1 model	5.0 g	4:18	(4:11, x x)
9) David Aronstein	-	4.5 g	2:47.0	
10) Bob Bender	-			Hung up on string on test
	Bill Sinram	-		Model smashed by heavy Bostonian.

Notes: Sal's model, a Triolo design, is very possibly the best constructed Manhattan the CD has seen. 8:11.0 is a new Columbia high time. David Aronstein is a Junior age modeler.

BOSTONIAN - 7 g min wgt - 1.0 to 1.1 Charisma Factor x 3 Best ROG

1) Joe Nuszer, Sr.	-	7.0 g	CF 1.065	374 total - 398.3
2) Bill Tyler	-	7.1 g	CF 1.030	346 " - 356.4
3) David Aronstein	-	7.0 g	CF 1.020	245 " - 249.9
4) Randy Boston	"Suzy"	11.0 g	CF 1.050	197 " - 206.9
5) Bill Sinram	"Not Yet"	9.8 g	CF 1.080	165 " - 178.2
6) Bob Bender	"Rebel"	11.1 g	CF 1.070	76 " - 81.3

Notes: A weight close to 7 g, not the Charisma Factor, made the difference. Very possibly we should go back to the 10 g minimum and raise the Charisma Factor to move these models away from endurance and more towards scale.

NEWS FROM CHINA

Huang Yong-Liang of Shanghai is somewhat the John Worth of China. Ed Whitten met him way back in 1945 at the end of WWII, and flew models with him and his clubmates in Shanghai. (See the February 1980 issue of M.A.N. for additional news on aeromodelling in China.)

In a letter dated 12/7/79, Mr. Huang writes Ed that he has been assigned again to his 'Model Airplane Laboratory'... (the lab had been destroyed during the 'Cultural Revolution'). The letter continues.....

"Our FAI FF W/C team came back home in the middle of October. All of us deeply appreciated the efficient work in the W/C, especially the warm friendship of your people and the competitors of other countries. We are not satisfied with our contest results; we should fly a little better.

"The 1980 FLD W/C will be held in Indiana, USA. We can't participate in this contest due to some technical and financial reasons. But we are planning to participate in the 1980 Control Line W/C in Poland.

"In November I participated in the 1979 Shanghai Indoor Model Contest and Record Trials as head official delegate from the National Sports Committee. The contest results were better than before. Twelve contestants broke the existing National Record of 10:05 (ceiling height between 15 and 30 meters). The new National Record is now 17:23. The results of the first six contestants follows:

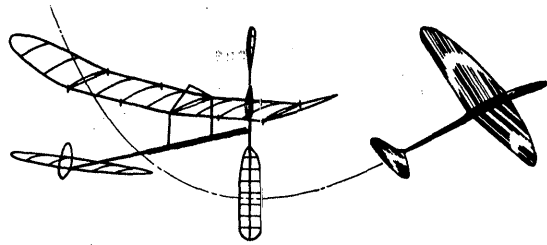
1) 卢秀森	LO Sao-Sum	11:45 - 17:23 -- 29:08
2) 张阳旺	CHEUNG Yang-Wong	13:31 - 13:08 -- 26:39
3) 刘鸣皋	LIEU Ming-Gao	13:14 - 12:44 -- 25:58
4) 周文斌	CHOW Mun-Ban	11:41 - 12:36 -- 24:17
5) 张伟豹	CHEUNG Wai-Pao	12:51 - 11:12 -- 24:03
6) 朱廷平	CHU Jen-Ping	10:31 - 11:26 -- 21:57

(Note: Ed used an old Yale system to translate the characters of the names; the new Chinese system of Romanization is different.)

INDOOR

NEWS and VIEWS

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

I'm sure that many of you are having the same problem that I have--cash flow. In order to maintain my household, an increasing amount of time must be devoted to developing more cash income. For that reason, it has been very difficult to find time or energy to work on this issue. As a result, there may be some material which is outdated, due to my having entered material on a catch-as-catch-can basis over the past couple of months. I have been optimistic in previous issues about when the next one is coming; I guess I can no longer develop optimism until some change allows a more relaxed approach to writing this newsletter.

Addendum

The paragraph above was written when I had really expected to be able publish an issue before Easter. After an office move, some of the material for this issue took an extra time to get off the ground. So, it has been longer than that, and now this issue has become a crash effort to get last-minute SNART news before it is totally too late. Also, I managed to bypass the cross-proposal deadline of May 1, so the rules coverage is simply a report. I will try to get some cross proposal info into the next issue, so you will at least know what others did along that line. If it fits, I will repeat the address list of AMA FFCB member addresses. Overseas issues will not have the entry blank info mentioned, as this is set up for the fifth page (cover sheet).

The Last Issue

The last issue contained remarks about weight of air mail issues to other countries. It finally proved necessary to print the last page of the that issue on very light paper in order to meet the 1/2 ounce weight limit! Not even a couple of months removal from the problem will allow me to view the trials of mailing that issue as anything except a nightmare. I had already searched and found envelopes which should have been appropriate, only to find that the envelope plus the newsletter was too heavy! I had to spend a couple of hours printing addresses on the envelopes to eliminate the weight of a label, then re-print the last page on very light paper to make the weight limit. The result of all this activity is that there can no longer be doubled-up issues, since this produces an overweight product. This becomes an added factor in ultimately getting the date on the newsletter to match the age of the news inside!

Hal Crane Passes Away

I am sad to have to report that Hal Crane passed away on January 21, 1980. The apparent cause of death was ventricular fibrillation, but Hal's activity at the time was not revealed. Hal was a diligent and frequent reporter of indoor activity, and a friendly, helpful flier on the field. In addition, he spark-plugged the indoor activity in the Hampton VA area, with particular emphasis on making site arrangements. At one time, he compiled an index of INAV articles, with some cross referencing. He also contributed model design articles to INAV. Indoor flying and modeling in general is poorer for this loss, and I feel a very deep sense of regret for the loss of a very good friend.

FAI INDOOR REPORT

Except for a memo from FAI Committee Chairman Jim Richmond (shown below) there has been almost no news input from the current Team Selection Program.* However, except for whatever events have been held in the past two months, the chart below summarizes the program results.

*Last-minute bulletin: It appears that the Santa Ana Hangar has been committed as available for the Team Selection Finals over Labor Day weekend this year.

1982 INDOOR TEAM SELECTION PROGRAM

3/10/81

NAME	CHICAGO DEFERIT		WEST BAHN		WILLIAMSBURG		KAYRON		SANTA ANA		SANTA ANA	
	TIME	POINTS	TIME	POINTS	TIME	POINTS	TIME	POINTS	TIME	POINTS	TIME	POINTS
ORRICK	10:34	10.00										
WILBERT	11:24	8.88										
LOUCKA	7:20	14.80										
STOLL			3:17	10.00								
BRODEASEN			18:45	5.99								
BANKS					66:58	10.00						
FRYAN					55:54	8.92						
GANSER					55:10	8.76						
CARTER					54:03	8.03						
BELIEFF					42:30	10.00						
CRANE					37:00	8.13						
CHONG					44:57	7.87						
RICHMOND					37:00	10.00						
HARLAN					37:00	10.00						
VAN GORBER					37:00	10.00						
RAMAK					37:00	10.00						
GIBBS					37:00	10.00						
HAREN					37:00	10.00						
GILLOW					37:00	10.00						
WILLIAMS, W.					37:00	10.00						
KANSNER					37:00	10.00						
FAYMAN					37:00	10.00						
CRILLAN					37:00	10.00						
CLAY					37:00	10.00						
HOFFMAN					37:00	10.00						
HAUPT					37:00	10.00						
CHILTON					37:00	10.00						
CLEM, J.					37:00	10.00						
CLEM, A.					37:00	10.00						
TRAVIS					37:00	10.00						
TRASKEN					37:00	10.00						
KULLER					37:00	10.00						

WEST BADEN IS AGAIN Cat. II!!!

Thanks to the good offices of Chris Matsuno, we now know that the "emergency proposal" has passed 6-3. This proposal solved the West Baden problem along with perhaps a few more somewhat similar problems in this manner: it adopts the FAI method of ceiling measurement while retaining the AMA ceiling height categories. This has the effect of preserving the big records shakeup which occurred as a result of the original FFCB finding which re-classified all previous West Baden records as Cat. III.

Editorial Remarks

With regard to the original FFCB action mentioned above: In case any of you are still upset over the original action, shut up and go away! Although I disagreed with the FFCB reasoning in classifying West Baden as Cat. III (my reasons were published earlier in INAV), the only official voice is that of the FFCB acting in response to a request for a ruling.

The degree of acrimonious debate, innuendo and personal attacks on Chris Matsuno which came out after that ruling is a shameful. Chris Matsuno is an honorable gentleman in every sense, and he scrupulously followed all FFCB regulations exactly as he interpreted them. In one particular, he and I differed in this interpretation, and he was completely open to my viewpoint and incurred extra work and effort in dealing with me. Our rules can be in no better hands than Chris', regardless of the level of actual indoor experience he or other members of the FFCB may have.

There has been considerable commentary over the idea of creating a special Indoor Contest Board. Speaking as a former FFCB Chairman, I can assure you that there is so much extra work associated with CB activity that I would strongly counsel against it. At

least, let's give the existing system a fair trial--follow my previous exhortations for one full rules-making cycle and see how much better it turns out. Indoor fliers (as a class) gave the FFCB so little support and feedback during the last rules cycle that it is a wonder we fared as well as we did! I pledge to continue giving as much space as possible to rules activity, and to be as timely as possible with the coverage. In light of that pledge, note the additional rules coverage elsewhere in this issue.

THE CURRENT EASY B PROPOSAL

Tom Vallee is the author of the Easy B proposal which passed initial vote in the FFCB. The text of this proposal is as follows:

FF-82-12-Easy B Specifications. This proposes to redefine Indoor Easy B model characteristics as follows: a) Paper covered monoplane; b) Maximum projected wingspan of 18 in.; c) Maximum wing chord of four in.; d) Motor stick of solid wood, maximum length of 10 in., tail boom of solid wood; e) maximum length of model 18 in., excluding rudder; f) Minimum weight of model equal to 1/2 the weight of a U. S. copper penny (approx. .055 oz.); g) Stabilizer area not to exceed 50% of projected wing area; h) Simple wood strut braces at 45 degrees to the vertical wing supports are allowed; i) Propeller characteristics same as existing 19.8.2.e. Thomas Vallee of Laurel MD wants to restore Easy B to a beginner's event (p.13, para. 19.8).

Tom's logic for proposal: "Our Easy B proposal is simply an attempt to define the Easy B in such manner that a novice of reasonable talent can build an Easy B close to competitive weight and still have a flyable model.

Hopefully, having had the fun of building and flying a flyable light weight ship, our novice will be encouraged to continue. That's our goal! It's that simple! This doesn't mean that the experienced flier can't have a lot of fun with this type model--I hope they would."

SURVIVING RULES PROPOSALS

The material immediately below was reproduced and edited from a list in Bill Mathews' newsletter FFLIAR; the original list included all pending proposals, but only those which survived remain. On a space-available basis, the text of these proposals will be reproduced in INAV. I will endeavor to present the proposals in the order of highest priority, selecting those which impact model specifications first. The deadline for cross proposals to these proposals is May 1, 1981, so your input to the rules process should be sent off well in advance of that date.

FF 82-1 Drop AMA Indoor ceiling height categories and adopt the FAI categories. Logic: Will make more flying sites available and will provide more record categories.

FF 82-2a Change Indoor ceiling height measuring methods to the same methods used to measure FAI Indoor sites. Logic: FAI measuring is much simpler and more realistic.

FF 82-9 Eliminate size requirements for Indoor HLG.

FF 82-12 Redefine Easy B to make it easier to build and fly, as was the original intent of the rule. i.e., a paper covered monoplane with simple wood strut bracing. Logic: Present rule allows microfilm covering, and fine wire bracing for wing and motor stick - allowing too advanced models.

FF 82-15 Insert an additional paragraph in the Easy B rules stating that structural bracing is not permitted.

FF 82-21 Add a definition for ROG takeoff to the Indoor section of the rules so that changes in the Outdoor rules will not affect Indoor rules in the future.

FF 82-22 Eliminate current definitions for official and unofficial flights in Indoor Rubber events and replace with current FAI Indoor rules.

FF 82-23 Clarify scoring for record purposes for FAI Indoor. Current rule states record should be best 2 out of 6 flights. Proposer wants rule changed to "best single flight of a series".

FF 82-24 Replace current AMA rules for steering in Indoor Rubber events with FAI international steering rules.

FF 82-25 Eliminate maximum number of models requirement in Indoor Rubber events. Contestant could have 3 mid-air on his first 3 attempts and be eliminated because he has destroyed all 3 of his models.

FF 82-26 Clarify flying rules for FAI Indoor flown at AMA sanctioned contests. Change Section 19, par. 3 to "FAI Indoor model-specifications, flying rules, and scoring rules are the same..."

FF 82-27 Change definition of the end of a flight in Indoor Rubber so that it matches FAI international Indoor rules.

FF 82-28 Change timing accuracy for Indoor Rubber events from nearest 1/5 second to reducing the flight time to nearest whole second. Brings AMA events into line with FAI.

District		FFCB
I	Henry Struck, RFD 2, Hamburg, Old Lyme CT 06371	
II	Bradley Bane, 60 Lkae Ave. Lyndonville NY 14098	
III	Rudy Kluiber, 2021 Lakeland Ave., Lakewood OH 44107	
IV	Joe Boyle, 219 Shenandoah Rd., Hampton VA 23361	
V	Bonny Jenkins, 3112 E. Haines Rd., Memphis TN 38118	
VI	Chris Matsuno, 8576 Ginger, St. John, MO 63114	
VII	Phil Klintworth, 715 Rutgers, Rochester MI 48063	
VIII	Mark Valerius, 2302 Pomeran Dr., Houston TX 77055	
IX	Jerry Murphy, 2432 Astron, Colorado Springs CO 80906	
X	Joe Norcross, 413 Cameron, Hanford CA 93230	
XI	Ernie Linn, 16558-121st Ave., SE, Renton WA 98055	

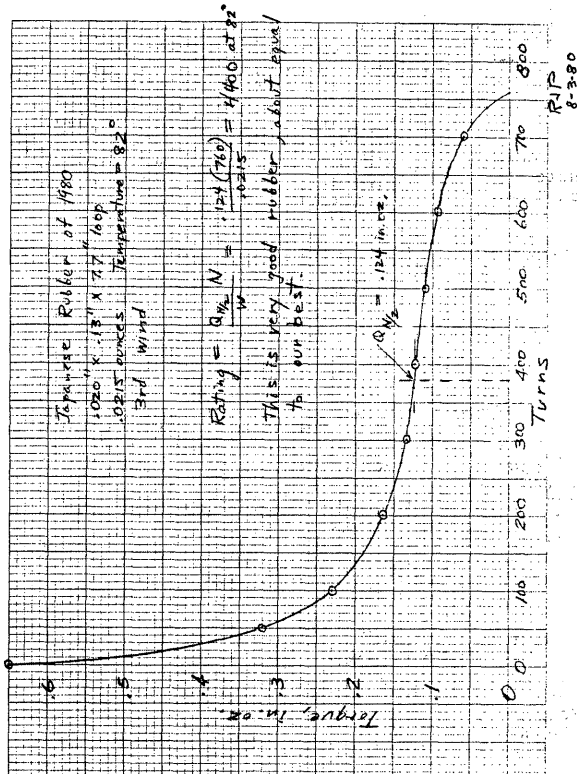
STATE OF THE ART

Mark Drela is an unusual young man, as those who know him can attest. He avidly seeks out new methods and materials, and the usual result is a new standard of performance for whichever type of model he is currently developing. One example of this is his record-holding UPSTART 4, shown on the plan page. This Cat. I HLG looks a lot like most other Cat. I HLGs we see, until you look closely.

This class of glider is difficult to build to the proper weight for the ceiling, due to limitations in the structural materials available. Mark's approach to this problem is to use carbon fibers for equal structural stiffness at equal or less weight. All the details are there, which should give you a good idea what kind of airplane it takes to do really good times in 35' ceilings.

THE LAB

Rubber testing remains one of our more important types of activity to "improve the breed", and Bob Platt is one of the more consistent practitioners of this particular art. After the 1980 Indoor WCh, Bob managed to obtain a sample of the rubber used by the Japanese team, and he ran some tests. One of his curves is shown below (assuming it isn't too light to show up). Bob's assessment of this sample is that it is about as good as the best available here.



WEST BADEN EXTRA VAGANZA:

WEST BADEN, INDIANA

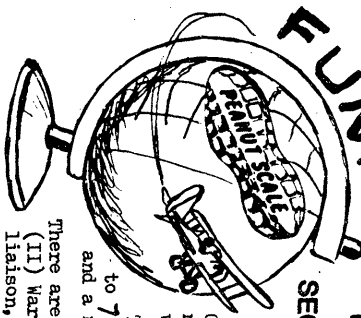
THIS YEAR - DECEMBER - FOUR (4) MEETS IN ONE WEEK!

This is the sixth year that the National Indoor Model Airplane Society returns to West Baden for their favorite annual attempt to set records, to see old friends and to make new ones, and to just have fun. Most indoor modelers all over the world are now aware of the food, flying and camaraderie to be had at Northwood Institute, due, particularly, to the 1980 World Champs Meet held there last June, followed by the IMART Record Trials, and the First World Grand Prix.

This year there is another unique FIRST. The first time the AMA Indoor MMS has been held at a separate time and place from the "main" MMS. Indoor modelers, for a long time, have felt this would be a good idea. Not that we are snobs, but that ideal indoor sites are rare, and recent MMS indoor sites were far from ideal. Details of the AMA part of this full week of indoor flying are obtainable from AMA Headquarters. Please send them an SASE BEFORE MAY 31. This is their cut-off date.

MIAMA JUNE 26 1981

SECOND ANNUAL WORLD P-NUT GRAN PRIX



24 HOURS OF FLYING!

Open to all modelers around the world...All nations, ages, and sexes, either in person, or with your model flown by proxy.

THE CONTEST will be from 7:00 PM Fri. June 26 to 7:00 PM June 27 followed by an awards banquet and a midnight awards ceremony.

- There are 5 classes of peannts, (I) PIONEER (Up to WW I), (II) Warplanes (Combined WW I & WW II aircraft excluding liaison, sky cycles & personnel planes that were civil aircraft of the period...You KNOW the ones we mean), (III) Golden age (Between WW I & II) (IV) Modern (After WW II) (V) Weirdo, This new class includes multi-engined planes, flying boats (not Cubs on floats), amphibians, autogyros, helicopters, triplanes, or quadraplanes. NO canards, pushers, or flying wings unless they are also one of the above weird types. (Planes entered in weirdo class can also be entered in its other classes. Pioneer, Modern, etc.)
- AMMUS: There will be engraved glass bottom mugs for 1st, 2nd, & 3rd, a Grand Peant, Best static score, Best flight score, and some flying Aces Type mass launch event awards. ALL ENTRIES will receive a souvenir and complete results down to umpteenth place, so you can improve for next year.

TO ENTER: All entries, whether you will be at West Baden's NORTHWOOD INSTITUTE, Indiana, or whether you are sending a proxy entry, or whether you will be present to do some proxy flying of other entries, please send in the entry with your entry fee to Mike Atack, 10900 SW 61 Ct. Miami, Fla. 33156, USA. PLEASE SEND IN ENTRY BY MAY 31, 1981. Don't put this off because it seems so far away...You have lots to do before then! Make out check to MIAMA; Dr. John Martin

WHEN WE RECEIVE YOUR ENTRY AND FEE YOU WILL GET AN INSTRUCTION SHEET CONTAINING: (1) Methods of safely packing your proxy, (2) Flight check list to aid your proxy flyer get the best from your model, (3) A SELF-SCORING judging sheet... (Yep, you rate yourself), and return aircraft post-contest instructions. Build your model to AMA Title 59, (page 82, rule book). This permits either a 13" span, or a 9" overall length peant. A copy of these rules will be included when your entry is received.

FLY!
FUN!

THE SMART:

Most everyone will be glad to see the ceiling height controversy has been adopted officially by the AMA. West Baden..height 98', Cat II. In the record trials (June 24-26) every type of indoor model is flown and recognized. This is all 12 AMA classes, and 7 other unofficial types. You will be scored according to your "Index of Performance" in the 12 official classes, which is a comparison of how well your best flight compares with the national record. Individual trophies to Manhattan, Postonlin, Scale (AMA and GO 2, and Peant -rule 59) Easy B old rule, (New rule is under "Index"), Peant speed, and possibly some "Flying Aces" type mass launch events. All classes NOT named are in the "Index" event, and are eligible for the famous glass bottom peant mugs. There are no limits to the number of flights you make, and no limit on the number of classes you enter. AMA rules apply to all classes except the rules printed in this brochure.

NORTHWOOD INSTITUTE, West Baden Indiana, 1-812-936-9971 is an old college, and not plush, or air conditioned. Bring many of the creature comforts you will be wanting with you. There is plenty of activity for your entire family at nearby French Lick.

AIR CONDITIONED MOTEL: Lana's Motel, Box 244, French Lick 47432
1-812-936-9919
West Baden Springs Motor Inn Box 38 West Baden 47469 1-812-936-9995
Plush Accommodations: Sheraton Hotel, French Lick, Indiana

SMART CREATOR OF EVENTS 12 HOURS OF FLYING PER DAY

TUE - JUNE 23	CONCLUSION OF AMA MMS	AMA LUNCH	8:00 PM - MMS BANQUET
WED JUNE 24	ALL 'HEAVY' MODELS - MAIN TRIALS (BOSTONIAN, PENNY, AVANCE PER. 'OLD' EZB. 9:00 AM -	1:00 TO 2:00	5-6 DINNER
THURS JUNE 25	BY 10:00 AM TRIUMPH ALL SCALE MODELS - FOR FRI + SAT EVENTS ALL "LIGHT" MODELS - 7:00 AM -	7:00 PM	8:00 MMS SMART BANQ.
FRI JUNE 26	GLIDER + SCALE DAY 9:00 AM -	9:00 PM	5-6 DINNER
FRI NIGHT 7:00 - START PAUNT S.P.	SAT ALL DAY - JUNE 27 WARD PAUNT G.P. #2	LUNCH	7:00 END 24 HRS. W.P.G.P.

SMART ENTRANTS - BRING STOP WATCHES!
+ BE PREPARED TO HELP - VOLUNTEERS NEEDED!

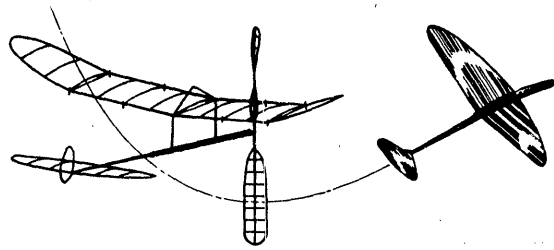
NOTES:

The AMA portion of WEST BADEN WEEK.. June 19 to June 23, includes the AMA MMS, and the FAI Regional Team Trials. Send to HQ for details. AMA activity terminates after lunch on Tue., June 23. Dinner that evening is an AMA awards banquet sponsored by NIMAS for those who wish to have their NIMS trophies presented at an old fashioned type awards dinner. The NIMAS awards banquet will be on Thurs. night when the INDEX OF PERFORMANCE mugs will be awarded.

Friday June 26 will be glider and scale day with these events alternating all day long. Awards for these flyers on Friday night, and after dinner the 2nd World Peant Grand Prix gets going...for 24 hours!! We hope to have the Club MIAMA cash Bar open, and fill the evenings with symposia, movies, and bull sessions.

INDOOR**NEWS and VIEWS**

Editor: Bud Tenny · Box 545 · Richardson, Texas · 75080



NATIONAL INDOOR MODEL AIRPLANE SOCIETY

This Issue

When two people made camera-ready reports available before I had all the Nats and SNART results typed, it became very advantageous to go ahead with this issue and get some of the results out sooner instead of making you wait until all results were ready. So, thanks to Charlie Sotich and John Martin for the coverage from the Peanut Speed Event and the 2nd World Peanut Grand Prix which appear below. That leaves the Nats report and the rest of the SNART report (including pictures from all three events) for next issue.

Need a Pen Pal?

Francesco Falanga, P O Box 58, 70100 Bari Italy, has just subscribed to INAV and wishes to correspond with any architect who are also aeromodelers. Can you oblige him?

A Great Idea!

A number of people have been nagging at me to update the masthead date to more nearly correspond with the real-life date represented by the issue. I guess that if you see the 1981 Nats results published in an issue dated Dec. 1979, it does seem more like a science fiction prediction than news reporting! Anyway, whenever I would hear from one of these "industrial-strength" Nags, I would pose the question: "Suppose I do bring the masthead date into line with reality, and I get behind again, how do I handle that?" Ed Whitten (ranked as #2 in nagging frequency) recently replied: "Stop dating the issues and start numbering them. Do the bookkeeping in terms of issue numbers instead of by month and year. Make a sub good for 12 issues instead of a year."

Right on! The three problems I had were: (1) Each "slippage" would result in needing to re-translate the records into a new "last issue" month for each subscriber and change all the records, both on the master records and on the address masters; (2) Justifying the financial records so that money comes out even with the number of issues obligated (without this, it would be impossible to know when the expenses had begun to outstrip income); (3) Whenever I make a mistake in dates, or double-mail an issue, or do anything to upset the dating scheme, it is almost impossible for someone to be sure they have a complete set of issues when they look back. Thus, I get requests for issues that may never have existed.

The new scheme solves all of those problems, and will actually make the record keeping and financial analysis slightly easier than before. So, the next issue, which would have been the Jan. '80 issue, will be numbered (either #1, or #xx, depending on how many have been published in the past 20 years). Let's assume that it is #1, and your subscription was due to expire with the Mar. '80 issue. The label on this issue looks like the first example below, while the label on the next issue will be like the second example. More important, the masthead date will be the current month and year, instead of Jan. '80. Whether or not you manage to decipher the label to tell when your subscription expires, I will continue to send a warning note with the issue which represents the end of your subscription. Rejoice, ye mighty Nags! Thanks for chipping away at a problem which bothered me as much as it did you!!

Joe Blow 0-3
2837 Breeze Ave.
Gust XA 55555

Jim Sneak #3
3333 Quiet Lane
Stealthy ZZ 73739

Results From NIMAS Index Competition

For those who haven't heard, the NIMAS Index Competition is a system where any and all AMA model classes are flown in the same competition with each other. This is possible because each model is flown against the national record for the model class and age group of the flier. Each flight is divided by the national record time, yielding a number (hopefully) greater than 1.0. Each flier's score is then compared, with the highest score winning. One of the originally unforeseen things about this scheme is that a Junior or Senior quite often wins first place, since these records are usually somewhat lower than the open records, in comparison. Another side effect of this type of competition is that a great many records are broken and re-broken each year.

You might expect that, given the freedom to fly your "best" class, rather than a class picked out in advance by the CD, can be at least a psychological benefit. To a certain extent, this is true. However, it often is the case that your strongest event may not be the best one for you to fly. If the record is quite high for your strongest event, but you have a model fitting a class with a low record, it may be easier to get a high Index score in the second event. Note in the chart below that Mike Van Gorder did just that, and won two handsome pewter mugs!

This year, in spite of having considerable previous activity in the site, there were fifteen fliers who exceeded either the existing national record, or else broke a mark set at the meet. Note in the list below that Juniors and Seniors won the top five places, with an Open flier first appearing in sixth place. Here are the top fifteen winners, with engraved pewter mugs being presented through tenth place):

Name	Model Class	Age	Flight Time	Index
Mike Van Gorder	Easy B	Sr.	14:54.0	1.6284
Chad Curth	Ornithopter	Jr.	00:25.7	1.6042
Mike Van Gorder	Novice Penny	Sr.	10:26.8	1.3990
Paul Loucka	Indoor Cabin	Jr.	15:07.8	1.2935
Robert Skrjanc	ROG Stick	Jr.	10:48.8	1.2627
Walt Van Gorder	Easy B	Op.	21:36.8	1.1974
Dick Hardcastle	Easy B	Op.	21:28.0	1.1893
Mike Clem	Pennyplane	Sr.	11:48.8	1.1739
Dennis Jaacks	Pennyplane	Op.	15:01.4	1.0793
Cezar Banks	Pennyplane	Op.	14:55.5	1.0722
Dave Lindley	Pennyplane	Sr.	10:20.3	1.0274
Dick Hardcastle	Pennyplane	Op.	14:08.6	1.0160
Jim Richmond	ROG Stick	Op.	17:42.4	1.0078
Lew Gitlow	Ornithopter	Op.	3:09.1	1.0061
Cezar Banks	Novice Penny	Op.	12:51.9	1.0027

****FAI INDOOR REPORT****

Program Winding Up

A recent memo from Committee Chairman Jim Richmond contained the chart reproduced below, listing the results at that time, except for the Lakehurst Regional. By the time you receive this, the Denton TX Regional will also be completed, with only a short time until the Akron Regional.

Jim noted that, even now, it was not too late to enter the program, provided you can enter at Akron. This is possible because the Akron meet will be both a local and a regional meet, so that you could enter and compete in one of each before the Labor Day Finals, now fairly firm for Santa Ana. If you need to enter at Akron, be sure to call Bill Hulbert at 216-864-8030 to get your name on the roster for entry to the site.

In other comments, Jim noted that Romania is considering a bid for the 1982 WCh, but that if this does not happen, we have unofficial word that England will host the meet at Cardington.

Finally, after the Finals, there will be a confirmation vote for the members of the FAI Indoor Committee and an election for the next Chairman of the Committee. A list of the present Committee members is shown below.

Your indoor committee is as follows:

- District I Ray Harlan* 15 Happy Hollow Rd., Wayland, MA. 01778
- District II C.V. Russo 143 Willow Way, Clark, NJ 07066
- District III Bucky Servaites* 7660 Duffield Circle, Centerville, Ohio, 45459
- District IV Bob Champagne* 205 Tipton Rd., Newport News, Va. 23606
- District V Jim Richmond* 5371 Lanford Springs Ct., Lilburn, Georgia, 30247
- District VI Al Rohrbaugh 1415 Jewel Ct., Ft. Wayne, Ind. 46825
- District VII Dick Kowalsky* 32823 Gloede Dr., Warren, MI. 48093
- District VIII Bud Tenny Box 545, Richardson, Tx. 75080
- District IX Stan Chilton 300 S. Main St., Wichita, KS. 67202
- District X Erwin Rodensky* 2433 Hastings Dr., Belmont, Ca. 94002
- District XI Dave Hagen 19957 S. Redland Rd., Oregon City, Or. 97045

*Past or present chairman.

1982 INDOOR TEAM SELECTION STATUS

Contestant	Aktion		West Baden		Santa Ana		Leishburn		Denton Tex		Aktion		Points	
	Regional	time/points	Regional	time/points	Regional	time/points	Regional	time/points	Regional	time/points	Regional	time/points	Local	to date
Ballef	9/2/80		11/15-16/80		6/21-22/81		7/4-5/81		7/26/81		8/1-2/81		10.00	10.00
Broderick	4/21/80	461/46.67	6/18/80	681/28/100.0	6/21-22/81	681/28/100.0	7/4-5/81	681/28/100.0	7/26/81	681/28/100.0	8/1-2/81	681/28/100.0	9.29	109.22
Cailliau			57/13/95.29	681/28/100.0	49/25/61.95								9.68	70.04
Chilton			63/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Clem, J.			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Doane			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Faykun			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Gamm			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Gibson			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Hagen			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Haupt			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Hoffman			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Hubert			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Luick			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Lozka			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Mather			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Maraki			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Palfr			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Randolph			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Richardson			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Romak			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Shear			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Sheppard			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Stoll			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Stylla			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Stylla			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Tenny			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Van Gorder			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00
Williams, W			61/12/94.21	39/52/28.23	65/14/95.28								10.00	10.00



NATIONAL FREE FLIGHT SOCIETY
DEDICATED TO THE INTEREST OF FREE FLIGHT AEROMODELING

Nominations for the 1982 10 Model of Year Award are being accepted until January 1 1982.

Please send your nomination along with good cogent reasons why it could be considered. Send to:

Gill Graunke
15260 Heather Hill Dr.
Brookfield, WI 53005

Nominations for the 1982 Free Flight Hall of Fame Award are requested. Please submit by January 1, 1982 along with a detailed description of their contribution to the Free Flight community on the whole. Send to:

A. J. Italiano
1655 Revere Dr.
Brookfield, WI 53005

Thanks for your assistance.

Sincerely,
Tony
A. J. Italiano

MORE ON CYANACROLATE

Some time back, there was some commentary about use of cyanacrolate (Hot Stuff and Super Glue) type of adhesives for indoor modeling. Don Lindley's "how to" article followed (Jun/Jul '79 INAV); the following

comes from David Rollin, describing how he used cyanacrolate glue for almost everything on his Easy B. Between these two articles, about all that is missing is a close study of the weight added by our regular glues compared to cyanacrolates!

"HOT STUFF" Your Easy B!

by David Rollin

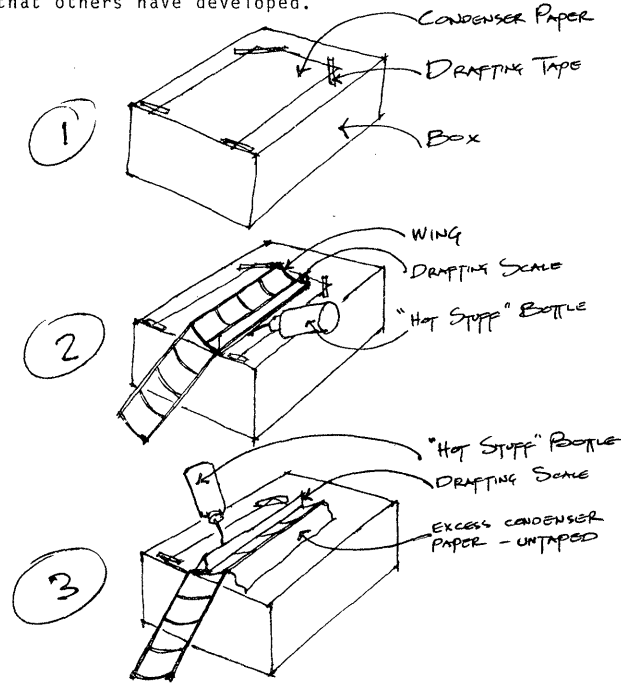
This letter is in response to your request for experiences in using cyanacrolates in indoor modeling. I am just beginning, and have built only a couple of Peck Peanut kits and one Micro-X E Z Bee. My other modeling experience is with towline gliders and R/C sailplanes. "Hot Stuff" is used by our club (Western Lake Superior Flying and Hiking Society) for reinforcing balsa noseblocks in peanut scale models, both around the bearing hole to keep it from loosening, and to toughen the edges which mate with the fuselage. I have also used it to attach windshields--holding the clear plastic in position and applying several small drops of glue to the joint. The glue spreads by capillary action, and I have had no problems with loosening.

My E Z Bee was built entirely with "Hot Stuff", except for the bearing hanger which was attached with a small dab of 5 minute epoxy. The condenser paper was also attached with "Hot Stuff" by the following method (illustrated below).

1. Tape a somewhat oversize piece of covering to a flat box with drafting tape at the corners, making sure there are no wrinkles.
2. Position the wing upside down on the covering with the trailing edge held in continuous contact (weight it down with a drafting scale or similar item). Touch glue at several points along the trailing edge; glue will flow into the joint by capillary action.
3. Allow the glue to set up, untape the two corners of the covering at the trailing edge, and remove the weight. Roll the wing forward on the airfoil, lifting the trailing edge until the leading edge is in contact with the covering. Check for wrinkles. Weight the leading edge down and apply glue as before, this time gluing the ribs also. Allow the glue to set up, untape the remaining corners, and trim off the excess covering. Repeat for the other wing and the tail surfaces. This E Z Bee has proved to be very durable.

I have also used "Hot Stuff" to reinforce the leading edges and tips of the prop blades, and the leading edge of HLG wings.

I hope to hear from other builders about their experiences with new materials, and as a beginner, I would appreciate seeing any other ideas and techniques that others have developed.



THE SECOND WORLD

Boy, did we have FUN !! Everybody flew like Woody's Goose ! The Second World Peanut Grand Prix at West Baden was the second time that a model meet was held for 24 hours. (The first time was last year.) Commencing at 7:00 PM on June 26, and finishing on June 27 1981 at 7:00 PM we feel that, for the first time, everyone had time to get in all their flights, or did they? This event has supplanted the MODEL BUILDER Peanut Proxy Contest as the premier Peanut event of the year as this contest drew 79 models from 5 countries.....next year we are going to apply for International Sanction!!

M.I.A.M.A. was the host club (Doc Martin, Pres.), and we would like to thank MIKE ARAK, who was the Proxy Flying Chairman, and to BUTCH HADLAND who was CD for the second year in a row, and who also did very well in the meet. Once again, the atmosphere at the Peanut meet was relaxed and enjoyable, and the feeling of good FUN was in evidence.

Observations on the meet: There were far fewer proxy entries than entereca. Mike Arak is worried that there is a back room at Northwood Inst. that is full of boxes of peanut planes. We can't understand what happened to all the planes who put up \$5.00 to enter, and then didn't. I guess we need a longer advance time to inform folks about the meet.....so here is your notice: Start building NOW 'cause the THIRD PEANUT GRAND PRIZ will be held at West Baden on the 25th of June 1982!! As before it will be 24 Hrs. and will finish on June 26 at 7:00 PM. BUTCH HADLAND promises to return as C.D., and, as mentioned, we plan to have a WORLD SANCTION out of Paris, France!!

A lot of thought was given to the Proxy Flying portion of the meet, and Mike provided packing and shipping instructions to the entrants, as well as an outline of flying instructions to the Proxy fliers. All those who heeded his advice had no breakage on shipping, but a few did NOT heed his advice...Their planes arrived squashed. Fortunately the Proxy fliers were compassionate...DAVE LINDELEY, and MARTIN VARNEY, to name just two, spent many hours rebuilding their Proxy plane.

The rules controversy...To ROG or not to ROG did not materialize as the rules require all planes to ROG except the Weirdo class, which can be hand launched. All planes easily ROG'd. Outdoors, with a brisk breeze blowing, this would NOT be the case.

As to the special awards...JIM MILLER scored HIGH TIME, which is the best two flight total of nine flights. He had 218.3 with his Piper Vagabond. The best static score was DAVE KIEFER with 315.8 points for his PITTS SPECIAL biplane. Hadland had had 351 on his impeccable Monocoupe, but failed to put up a qualifying flight. The Best Proxy Flier was MARTIN VARNEY...The Best Junior was Stephaeny Sanford, with Melanie Sanford recording the best Jr/Sr time, and LIZ getting high static points. All with Lacey M-10's.

TONY SUTTER, with a beautiful little Heinkel HE 100, not only won "WARDPLANES" but won "GRAND PEANUT" as the Heinkel had best static score, AND best flight time in its category for a perfect score of two points!

Weirdo had only 3 entries, and Pioneer 4. Warplanes had 11 planes, and there were 26 in Golden age, and 35 in Modern. I don't understand that distribution. The following results list only the planes that posted flights:

REFLECTIONS: The Club MIAWA cash bar was going strong again...this time run by Gloria Seymala...serving hot and cold snacks along with the Erlanger. The entire West Baden Security and Maintenance staff as regular customers.

The Clothes-line Art Exhibit by Heather and Susan Arak featuring original Art about indoor models. The price was right...20 cents for a signed original. Some of the titles: "Oh, Darn, My Manhattan is caught in the rafters", "I fly indoor and I love it", "rats, my rubber broke" Also available at this booth was the new taste sensation drink...The Heather Wall Banquet. Try one next year.

Considerable discontent about the AMA portion of the week... This time the sitewas NOT the problem, but the utilization of it. Poor allotment of time was the major complaint, and inadequate staffing ran second. There may, or may not be a separate indoor Matsnext year depending on the results of the Questio naire all contestants were to answer. Bobby Strjanc set up a "Peanut Repair Center", and was busy restoring the beat up remains of crashed peanuts. He repaired a limp wing on my Junkers Stratoplane, and had it flying better than ever.

There were many MIKE ARAK contrived mass-launched events for merchandise all during the 24 hours of Peanut. The sight of at least 20 Peanuts in the air at once can't be forgotten. The levity, banter, and laughter. The sight of Willard Jell's Plastic Solar Challenger, and Butch's over-2 minute CO2 flight. All the Kit Lacey's. Doc's hourly shouts about the time remaining... "23 HOURS"! Wells and Doc were the only two fliers who made it all through the night until 8:30 next morning...Then breakfast, a nap, and back to peanuts.

CHARLIE SOTICH'S great new innovation that makes a "Peanut Speed" competitor out of any peanut model, not just the raceplanes. Two laps around 2 balloons 20 feet apart from an ROG take off (YES; WE SAID ROG) completes the course. 12,13,14 seconds was good, and single

PEANUT GRAND PRIX

didget times are possible. NOT as easy as it sounds, but GOOD FUN! This was the first time this event was held but it has GREAT POTENTIAL as a club event in any city or town in USA. We will fly this as a MIAWA club event this season. Write to Charlie Sotich for the rules, and the formulation of the balance between scale points, and speed. At any rate, if you can build a peanut plane, and can't build it light enough to be competitive in the Peanut Scale event....try Peanut speed, Cause it's weight may make it FASTER.

In Summary...We had FUN; FUN; FUN like the #21 who's Daddy took her T-Bird away.

- GOLDEN AGE:**
- 1. Phil Cox (Proxy Varney) Miles M-18 (206.2) 6 Static, 2 flite (72.5) (51) 8 Pts USA
 - 2. Jim Miller, Piper J-3 (189) 12 Static, 1 Flight (70.0) (80.5) 13 Pts USA
 - 3. John Martin, Cessna A-1 (201) 7 Static, 8 Flite, (45.0) (49.0) 15 Pts USA
 - 4. Alfred Gether, Fokker F-7A (210) Swiss, 4 Looks, 12 Flite (30.6) (35.8) 16 Pts SWISS
 - Proxy, Adams & Niederhauser
 - 5. Bob Clemens, Merc "Cosling" (200) 8 Looks, 8 Flights (44) (44) 16 Pts USA
 - 6. Bob Clemens, Avro 560 (199.7) 9 Looks, 7 flight (46.0) (49.0) 16 Pts USA
 - 7. Phil Cox, Proxy Varney, Fokker F-II (208.5) Looks, 13 Flite (25.6) (34) 18 Pts USA
 - 8. Mike Arak, Gaudron Lightplane (292) 1 Looks, 18 Flight (10) (12) 19 Pts USA
 - 9. Mike Arak, Piper YO-59 (280.5) 2 Looks, 17 Flight (16.2) (17.8) 19 Pts. USA
 - 10. J. Martin, Dayton Wright (188.5) 13 Looks, 6 Flite (53) (43.1) 19 Pts. USA
 - 11. Walt Everson, Waco SRE (178.7) 16 Looks, 4 Flight (60) (60) 20 Pts. USA
 - 12. Dave Kiefer, Waco SRE (184.25) 14 Static, 9 Flight (39.4) (45.6) 23 Pts USA
 - 13. Walt Everson, Taylorcraft (112.5) 19 Static, 5 Flight. (42.7) (1:07.7) 24 Pts USA
 - 14. B.H. Kemmenell (Proxy Lindley) Imm (198.2) 10 Looks, 15 Flight (27.2) (23) 25 Pts. AUST.
 - 15. Carl Hedley, CNA, PM-1 (183.7) 15 Looks, 11 Flight (35.0) (40.0) 26 Pts USA
 - 16. John Martin, Junkers JU-49, 177, 17 Looks, 9 Flight (47) (38) 27 Pts USA
 - 18. Willard Wells, Pietermol (95.7) 20 Static, 14 Flight (24) (28) 37 Pts. USA
- DID NOT FLY:** Martin Varney, Fokker F-7A, 192; Paul McClrath, Bonzo (150) Millard Wells, Monocoupe (219) Bob Clemens Pacific Racer (192) Paul McClrath Bonzo (150)
- Don Lockwood, Bonzo, and Dayton Wright, Carl Hedley Luton Minor (183.5)

26 ENTRIES
8 DO NOT FLY

MODERN CLASS: (35 Entries)

- 1. Mike Arak, Lacey M-10 (300) 2 Static, 10 Flight (69.0) (73.0) 12 Points USA
 - 2. Butch Hadland, Lacey M-10 (300) 2 Static, 11 Flight (69.8) (72.0) 13 Pts UK
 - 3. Dave Kiefer, Lacey M-10 (238) 5 Static, 9 Flight (72.1) (72.6) 14 Pts USA
 - 4. Jim Miller, Piper Vagabond (182) 17 Static, 1 Flight (114.3) (104) 18 Pts USA
 - 5. John O'Donnell, Fike E (191.75) 14 Static, 5 Flight (90) (101) 19 Pts UK
 - 6. Bob Willey Fike E (236) 6 Static, 14 Flight (59.6) (62.2) 20 Pts USA
 - 7. Dave Kiefer Pitts Special (315.8) 11 Static, 22 Flight (35.3) (35.4) 23 Pts USA
 - 8. Pat Ciambrello, Davis DA-2A (198.2) 11 Static, 12 Flight (66) (67.8) 23 Pts USA
 - 9. Liz Sanford (JR) Lacey M-10 (140.2) 20 Static, 3 Flight (99) (100.4) 23 Pts USA
 - 10. Carl Hedley, Lacey (232.5) 7 Static, 17 Flight (54) (63.1) 24 Pts USA
 - 11. Stef Stanford (SR) Lacey M-10 (140.2) 20 Static, 4 Flight (99.2) (98.5) 24 Pts USA
 - 12. Melanie Stanford (JR) Lacey (131.2) 22 Static, 2 Flight (101.2) (105.2) 24 Pts USA
 - 13. Bob Clemens (Bede IV) 192 (192) 13 Static, 13 Flight (61) (62) 26 Pts USA
 - 14. Dave Kiefer, Ganagobie (210) 9 Static, 19 Flight (44.4) (41.6) 28 Pts USA
 - 15. Tony Sutter, Lockpeiser (246.1) 4 Static, 6 Flight (94.6) (96.1) 29 Pts USA
 - 16. Curt Sanford, Lacey (130) 23 Static, 21 Flight (39.0) (39.0) 31 Pts USA
 - 17. Walt Moorey, Found (206) 10 Static, 21 Flight (75) (73) 32 Pts USA
 - 18. Walt Everson, Found (96.2) 25 Static, 8 Flight (71) (74) 32 Pts USA
 - 19. Mike Gilbert, Lacey (117.5) 24 Static, 8 Flight (95.6) (95.6) Only one.
 - 20. Willard Wells, Monocoupe (219.4) 8 Static, 24 Flight (24) (7) 32 Pts USA
 - 21. Willard Wells, Andreason (195) 12 Static, 26 Flight (20) (19) 38 Pts USA
 - 22. Willard Wells, Solar Challenger (189) 15 Static, 24 Flight (29) (32) 39 Pts USA
 - 23. Willard Wells, Nesmith Cougar (186) 16 Static, 23 Flight (32) (33) 41 Pts USA
 - 24. Earl Hoffman, Andreason (123.0) 23 Static, 18 Flight (95.6) (95.6) Only one.
 - 25. Brian Varney (JR) Cougar (75) 27 Static, 15 Flight (61) (60) 46 Pts USA
 - 26. Ted Gonzoph (Proxy Fiom Posthumus) Lacey (90.5) 26 Static, 20 Flight (11) (21) 47 Pts USA
 - 27. Willard Wells, Andreason BA-7 (147) 20 Static, 27 Flight (11) (21) 47 Pts USA
 - 28. Willard Wells, Ganagobie (179) 18 Static, 29 Flight (14) 47 Pts USA
- DID NOT FLY:** F J Bates, Old Ironsides (144), Martin Varney, Ipanema (168.6) Lloyd Wood, Moraine (196), Don Lockwood (Fike 115), Mike Gilbert, Lacey (117.5) Joe Koch, Penna. (Gurrie) Not 125.. would not R.O.C.) wrecked and rebuilt by Bob Wells.
- Don Kilgore, Fike E (212),

WEIRDO CLASS:

- 1. Bill Hanman... Helicopter, G I Penillon (342) 1 Static, 2 Flight (15.3) (16.5) 3 Pts USA
- 2. John Martin, Mieuport Triplane (250.5) 3 Static, 1 Flight 4 Pts USA
- 3. Lloyd Wood, Twin Mustang (267.75) 2 Static, 3 Flight 5 Pts USA

PIONEER CLASSES: 1. Butch Kalland, Norma Salmer (340) 1 Static, 2 Flite (46.8)(47.6) 3 Pts. UK
 Proxy Varney 2. Koch, Blackburn Mono (191.25) 4 Static, 1 Flight (1:28.2) 5 Pts. Germ.
 3. Bob Clemens, Newport IV (243) 2 Static, 4 Flight (29) (30) 6 Pts. USA
 4. John Martin, 14 Bis (231.4) 3 Static, 3 Flight (44.0)(45.0) 8 Pts. USA

MARPLANS: 1. Tony Sutter, Heinkel 100(280) 1 Static, 1 Flight (39.0)(32.7) 2 Pts USA
 2. John Martin, Niessport 170(253.5) 3 Static, 2 Flight (46.2)(47.3) 5 Pts USA
 3. Mike Arak, Fokker E III (268) 2 Static, 5 Flight 7 Pts USA
 4. John Martin, Niessport Triplane, (250.5) 4 Static, 4 Flight (23)(20) 8 Pts USA
 5. John Martin, Ansaldo SVA-3 (156.2) 5 Static, 3 Flight (42)(43) 8 Pts USA

Did not fly: Jim Miller, Bristol Scout (203),
 6. Lloyd Wood, P 82 Twin Mustang (267.75) 3 Static, 6 Flight (16.8)(15.2) 9 Pts USA
 Dan Kildgore, Loening Kitten (210.5)
 Walt Everson, P-51 Mustang (112.5)
 C.E. Roth, Taube (182)

THE 1981 SNART PEANUT SPEED EVENT

The 1980 VNART peanut speed event required the models to ROG from a table top and fly across a finish line 88 feet away. This required the models to be readjusted for this event if they were trimmed to fly in a circle for the regular peanut duration event. Some of the 1980 entries had a lot of trouble getting across the finish line even though it was 200 feet wide. Hardy Broderson suggested that the models fly a circular course around a single pylon. The model would be timed for two laps. The idea of a circular course was interesting to many peanut flyers but they thought the course should have a minimum diameter. A twenty foot diameter was decided on for the big SNART Contest at West Baden and it proved to be a good compromise.

Two X's made of masking tape were placed twenty feet apart on the floor of the Atrium. Helium filled balloons rose up about 40 feet from the center of each X to mark the end points of the course. When the models crossed the line determined by the two X's the stop watches started. After two full laps around the course the watches stopped. This is a very easy event that can be handled by one person in any suitable flying site. Kurt Sanford's Lacey M-10 was the first one to try the course. It took a couple of tries for him to find the proper launching spot and direction to make a successful flight without cutting either pylon. Although the models were all adjusted to turn, they all were set up to climb and this

obviously is not the way to get the top speed. Some of the models were trimmed to fly with more down thrust or a more forward CG position to hold the nose down. Last year's straight course winner, Martin Varney, was able to hold the climb down for most of his flights and was able to make some very fast laps, 6.82 seconds to go the 125 feet, 8 inch course. On several of his attempts, his Folkert Toots' wheels touched down beyond the starting line to void his flights. Both Varney and Sanford made use of the evening hours prior to the contest to do some test flying so they were both prepared to fly on the day of the contest.

While the calculated flying speeds may appear very slow, it should be noted that they were calculated on the basis of the model traveling 2 laps in a twenty foot diameter circle. The models must really fly in larger circles to miss the lines going up to the balloons. The torque of the motor drops off considerably after the take-off so the model just slows down after about a half lap. After 1 1/2 laps many slowed down very rapidly when they started to climb.

You might keep this Peanut Speed event in mind for the winter months when you want a change from the routine that will stir up some interest among those modelers who can't make a 4 or 5 gram model.

RESULTS OF SNART PEANUT SPEED EVENT - JUNE 26, 1981

Pilot	Plane	Best 2 Lap Time	Avg. Speed	Scale Points
1. Martin Varney	Folkert Toots	6.82 sec.	12.56 mph	26.66
2. Willard Wells	Little Butch	14.33	5.98	20.73
3. John Martin	Dayton Wright Racer	13.20	6.49	20.39
4. Kurt Sanford	Lacey M-10	12.41	6.90	19.90
5. Paul McIlrath	Wittman Bonzo	21.87	3.92	14.42
6. Don Lockwood	Fike Model "F"	25.03	3.42	12.17