

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;

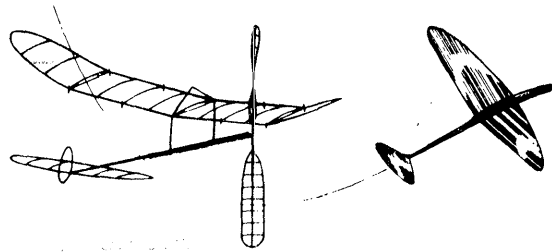
Through INAV you can tell friends of Milton (Butch) Hugelot and Joe (Pappy) Matulis of their passing. Butch died Dec. 22, 1975 and Pappy died Jan. 10, 1976.

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 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

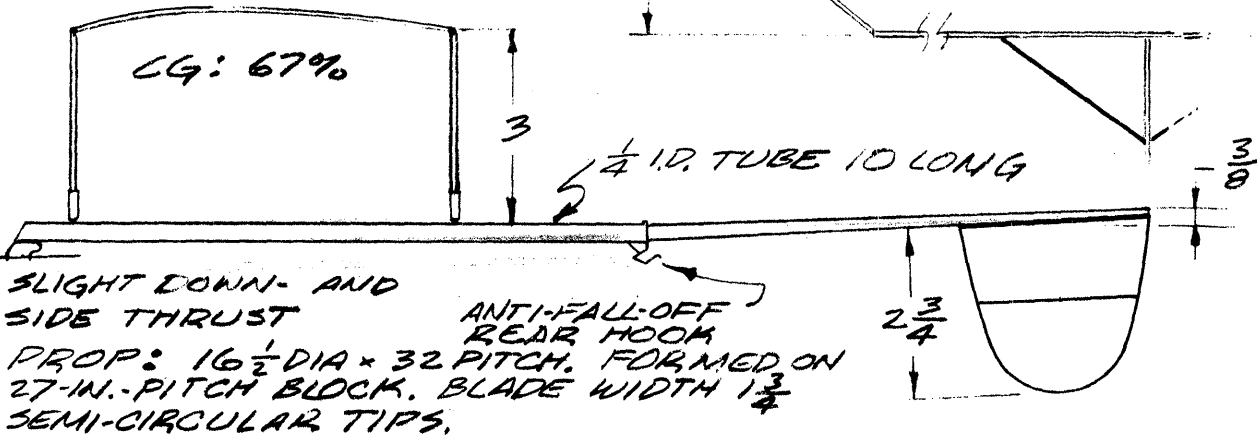
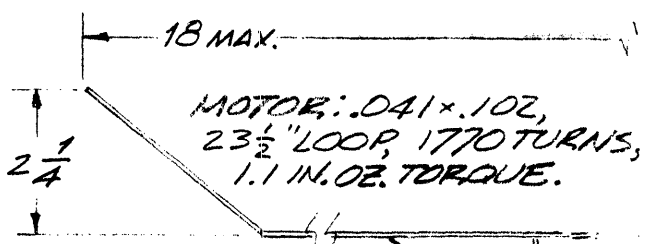
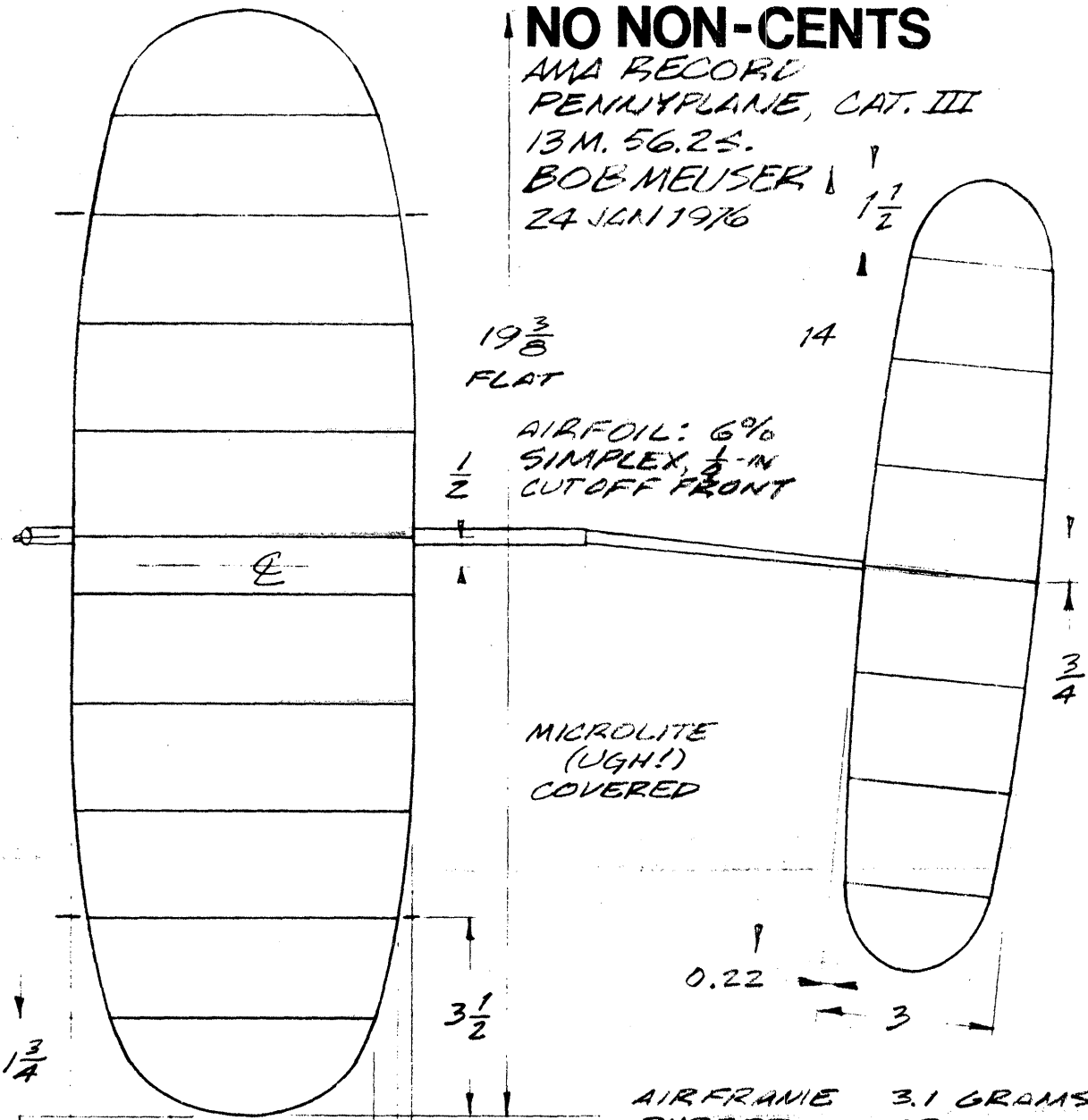
*Flight does not exceed time by Mike Clem (12/75 INAV)

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!

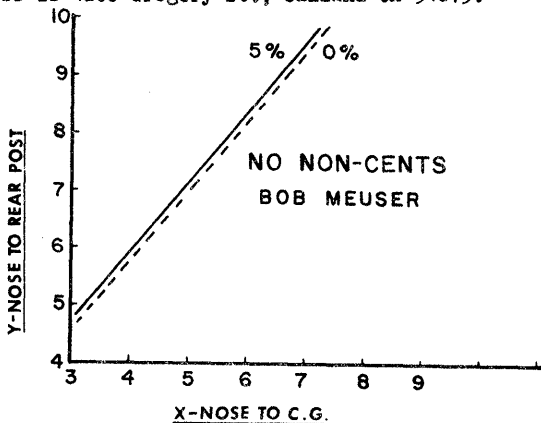
Well, no matter; I had pretty well convinced myself that duration potential is only slightly affected by chord and the optimum is probably not as great as 8". I might have an NFFS Sympo paper on the subject.

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.

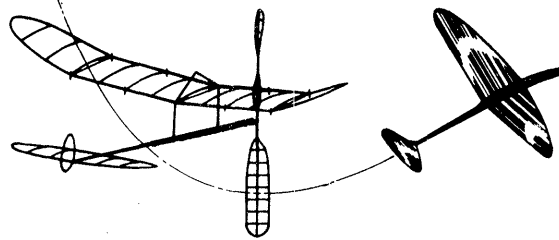
The indoor events will be flown at the 65' State Fairgrounds Coliseum at Columbus, Ohio. Those who have flown at the Detroit State meet will be familiar with the site layout, since it is a twin to the Detroit State Fair Coliseum. HLG will be held from 8 am to 2 pm, followed by Pennyplane and Easy B until 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

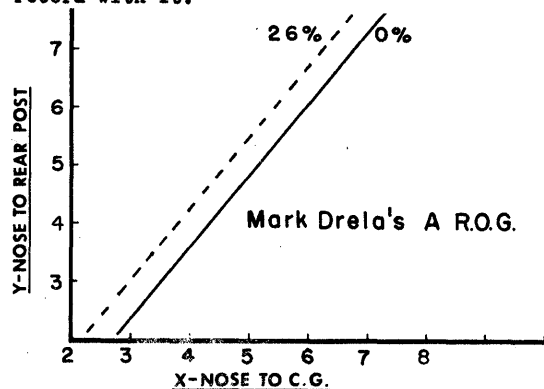
On page 2 there appears a model type long absent from INAV - an "A" R.O.G., as it used to be called - now called Rise Off Ground Stick Model. Mark Drela used the model shown to establish the Jr. Cat. III record at 9:17.3, flying at Lakehurst. Besides the wealth of detail on the plan, Mark adds the following:

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.

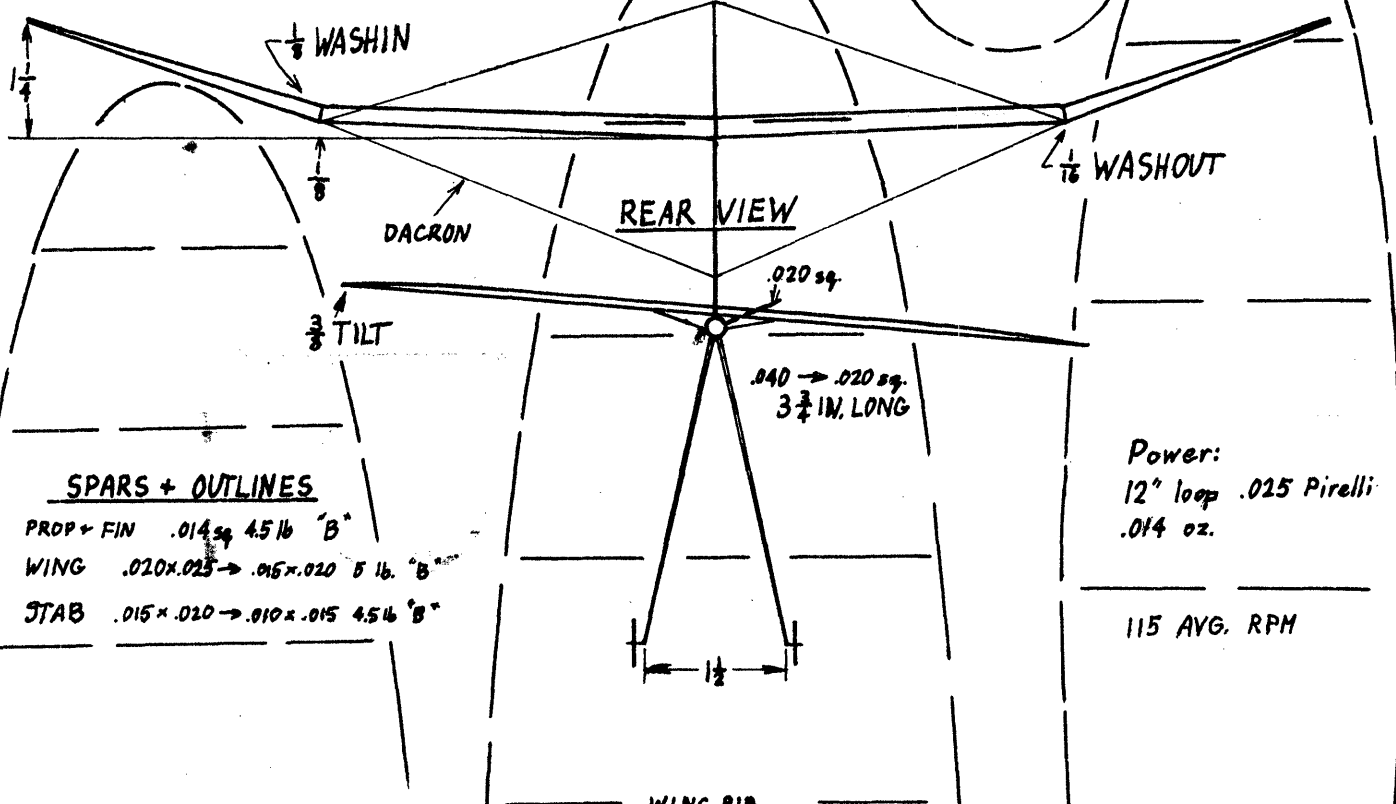
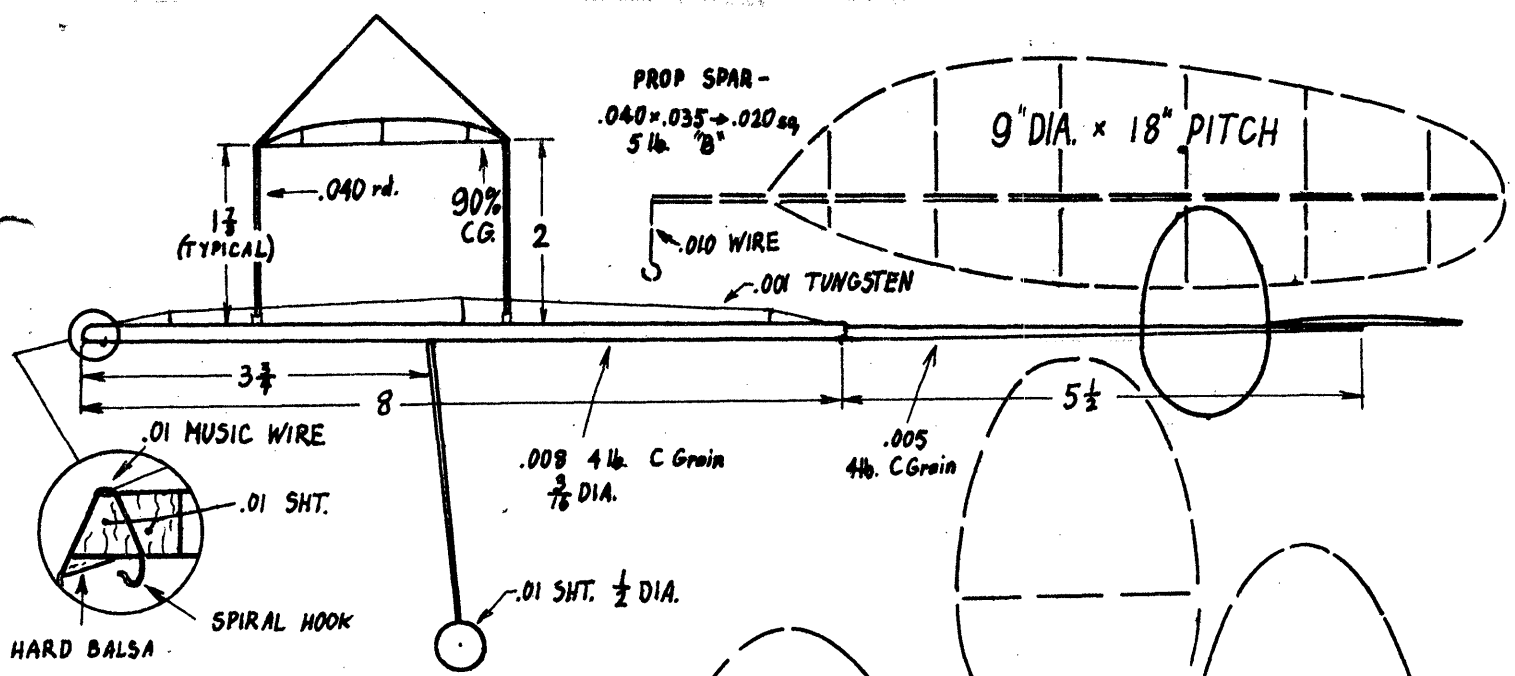
I had decided to take the plane along to the Lakehurst session to try it in the high ceiling. Conditions were excellent without the slightest drift at any height. After trying Cat. I motors, I switched to a longer and heavier loop. Wound it to almost the breaking point, hooked up and let go. The ship 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

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

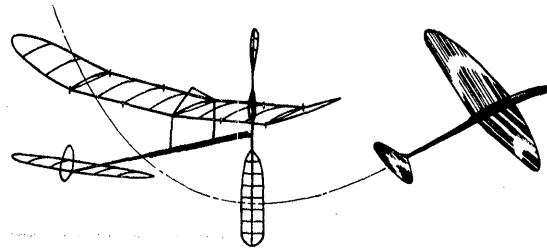
Andrews Is Team Manager

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

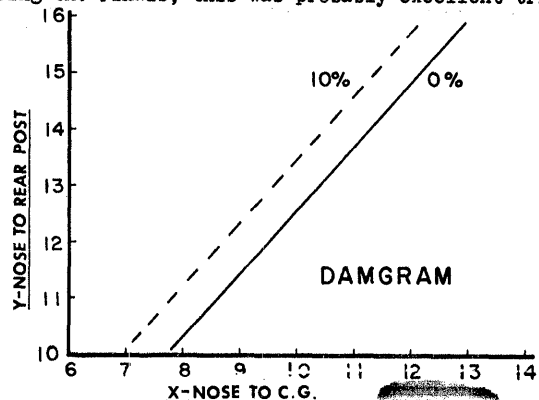
In times past, Jim Richmond's models have tended to become standards for comparison, and have been widely copied and flown by other fliers. His DamGram, the second design Jim made for one gram rules, has flown well in his hands. Time will tell about this model's staying power - it certainly seems to have the necessary potential. Jim has a few remarks about the one gram rule and the model:

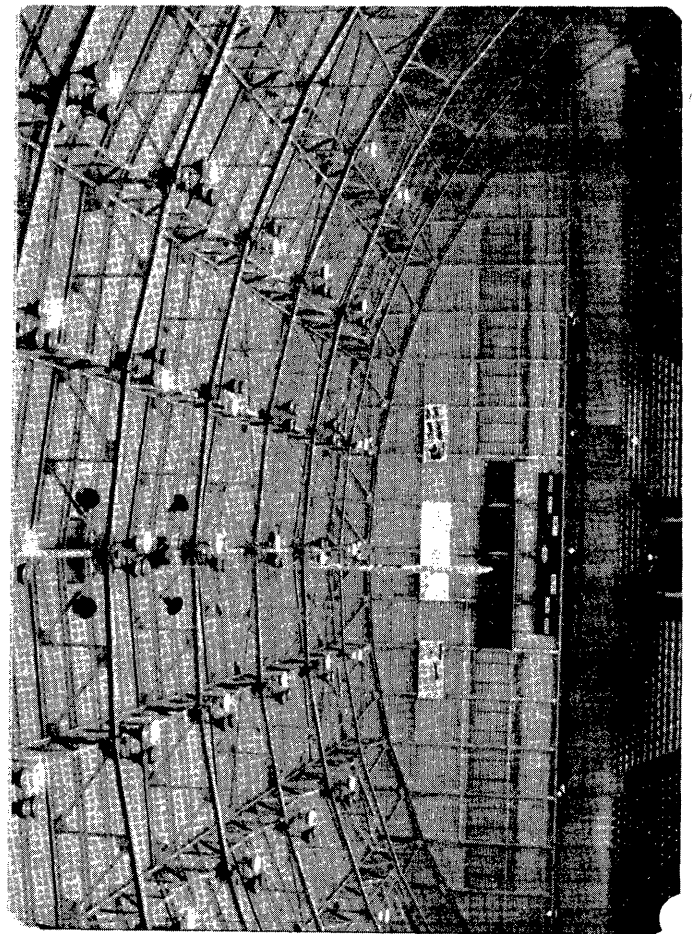
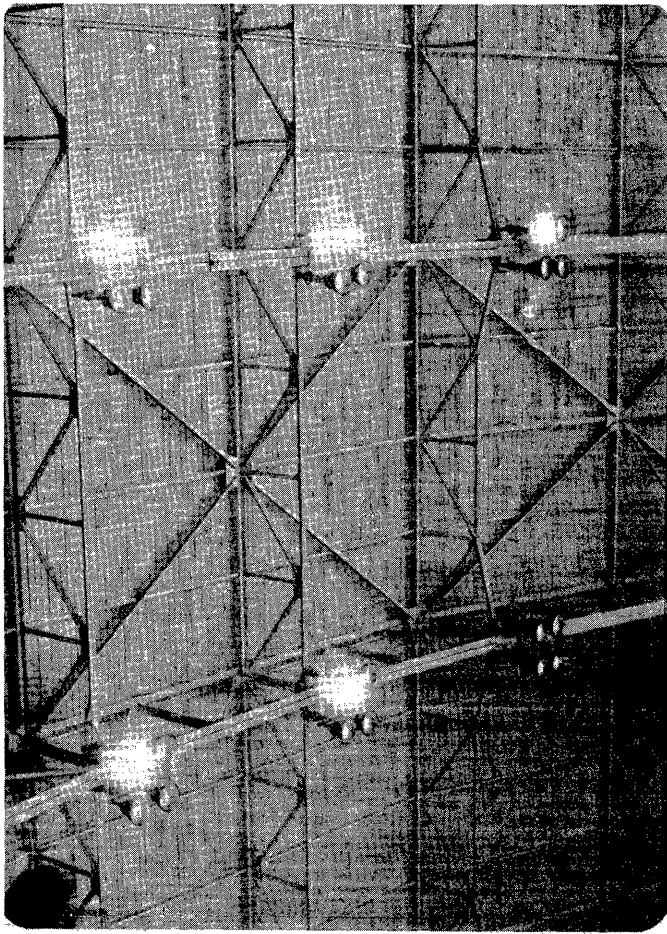
This is the plane which carried me through almost the entire program, doing equally well in low ceiling (Tulsa) and high ceiling (Akron) sites. The relatively small stab seemed to work OK and doesn't have as much drag as the 50% stabs used by others. The funny rudder serves very well as a support for 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.

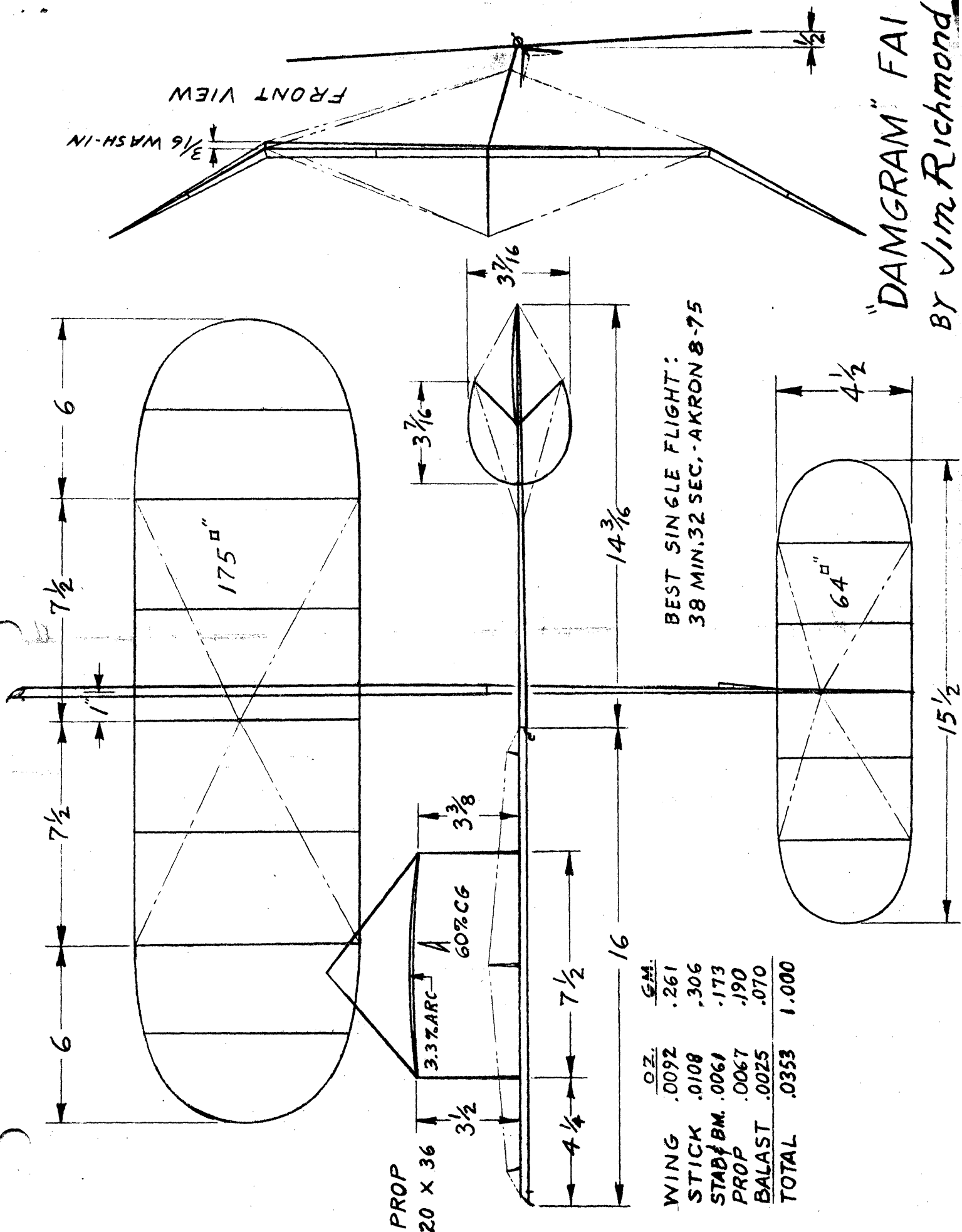
The name "DamGram" is mostly sour grapes, the plane being designed and built during the previous program when the "good old days" were still fresh in my mind. The weight rule certainly was successful in removing the emphasis on craftsmanship.

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.





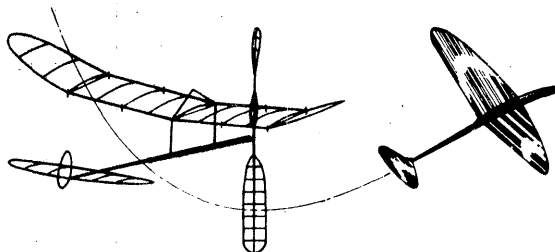


"DAMGRAM" FAI
By Jim Richmond

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
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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.

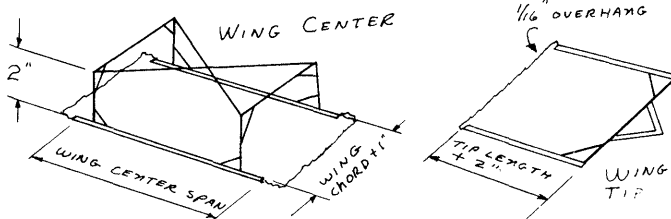
PENNYPLANE HINTS

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

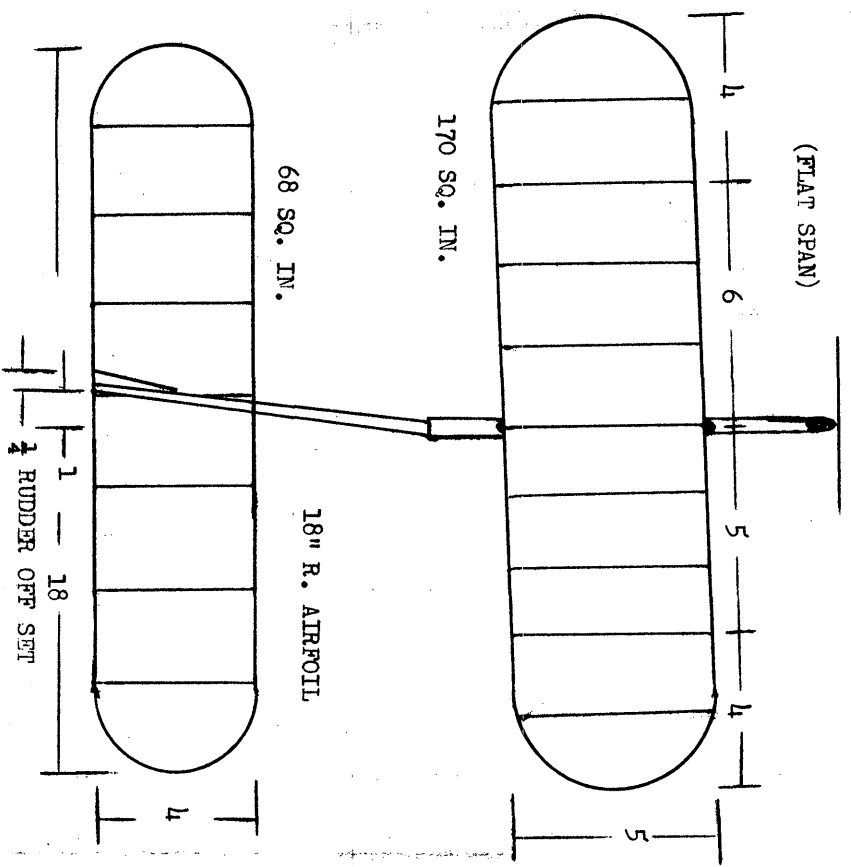
Jr./Sr. HLG	Time	Jr./Sr. Easy B	Time
1. Jason Tryon	:53.2	1. Rosie Tryon	5:22
2. Erik Schwan	:47	2. Doug DePaul	5:17.4
3. Bill Martin, Jr.	:41.6	3. Jason Tryon	3:54
4. Kurt Schwan	:34.6	4. Eddie White	3:19

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

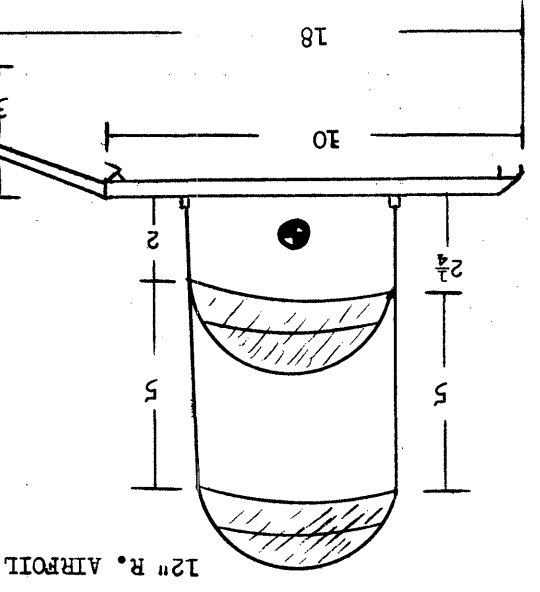
TIME : 11MIN. 12SEC.

POWER: 18 X .098 @ 1150 TURNS

DATE: FEB. 8 1976

BY

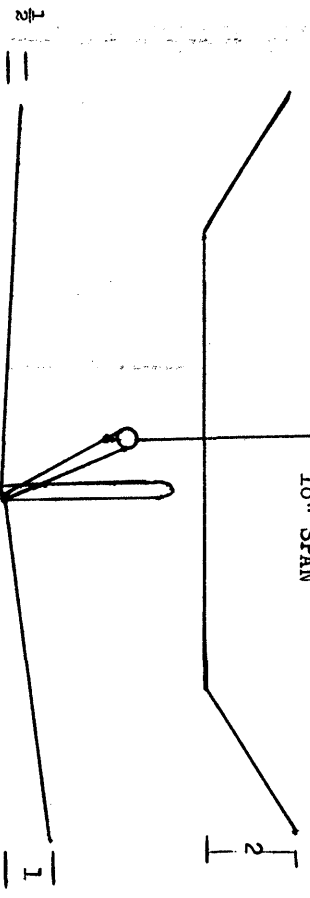
Samuel M. Kuebler



FRONT VIEW

1/4 WASH IN TOP-BOTTOM

18" SPAN



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:

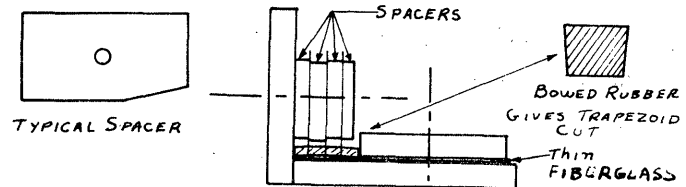
I use the Bilgri style stripper made of plexiglas, and generally take two strips from the center of 5 or 8 mm rubber, and discard the outer edges. This takes three razor blades and the blades give a smoother cut than the factory cut on the edges.

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 Pallet	1:12.8
4. Bruce Pallet	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 Pallet	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 Pallet	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 Pallet	172.1
5. Bruce Pallet	163.55

Open Peanut Scale

1. Jack Minissian	284.16
2. William Henn	239.98
3. Bob Bender	238.9
4. Jean Pallet	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

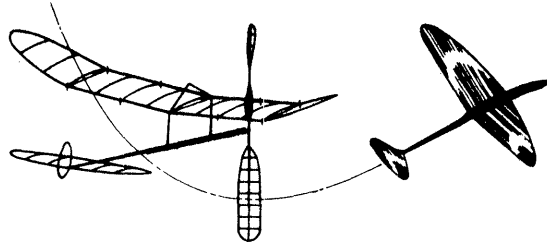
AMA Scale

1. Hal Schwan	Halberstaat	107 points
2. Lloyd Wood	Stinson SR10	87
3. Cecil Cook	Monocoque	82

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 Jaacks 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	Volkplane	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		

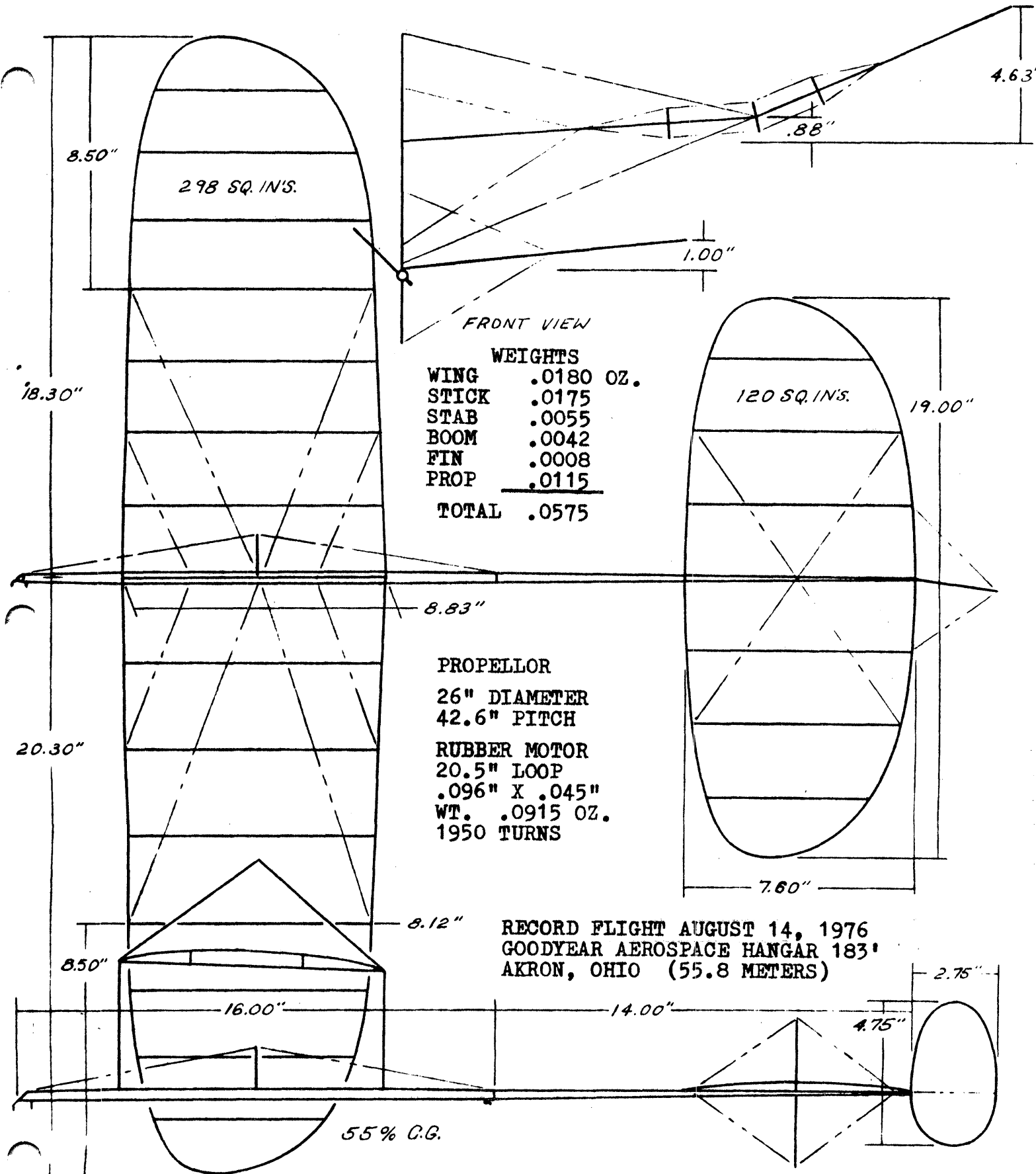
Paper Stick - Junior		FAI Stick - Jr/Sr/Op	
1. Jim Bowers	9:35.5	1. Jim Richmond	55:07
2. Mark Trubowitsch	8:54.0	2. Tom Vallee	43:32
3. Mike Clem	6:29.0	3. Ed Stoll	43:16
4. Glenn Anderson	5:15.0	4. Ron Ganser	39:40
5. Jim Geraghty	4:48.2	5. Dan Domina	37:23
		6. Charlie Sotich	37:07
		7. Bob Champine	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 Dally	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	Volkplane	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	Volkplane	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.

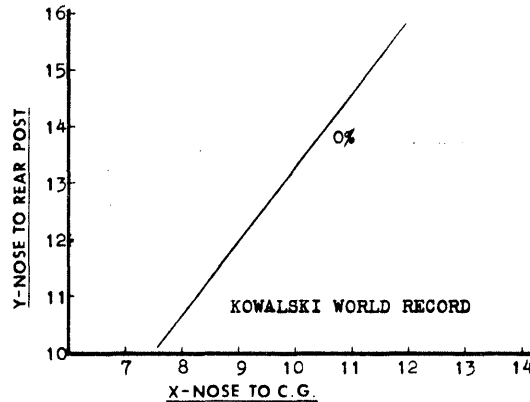
RECORDS? MAYBE!

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.

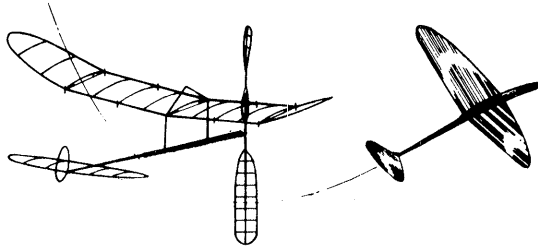
Center - Ken Johnson hooks up for an Easy B flight.

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.

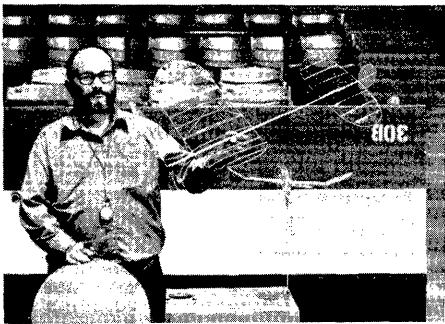
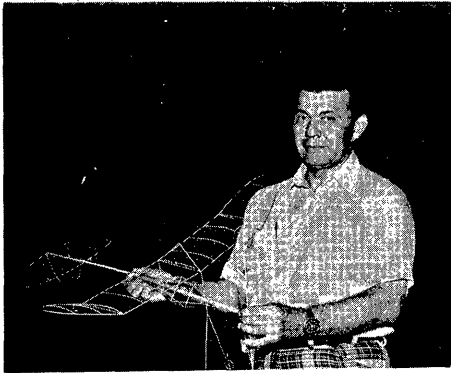
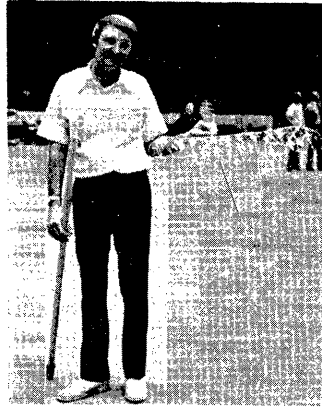
Propeller: Solid wood, direct drive, fixed pitch.

Landing Gear: Rigid with two wheels 1" diameter minimum.

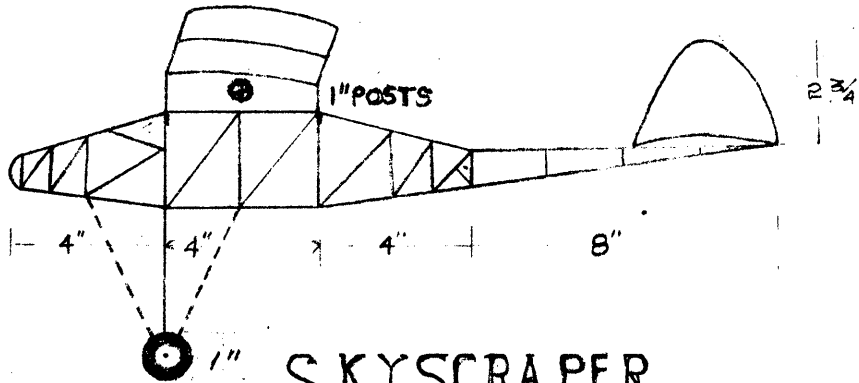
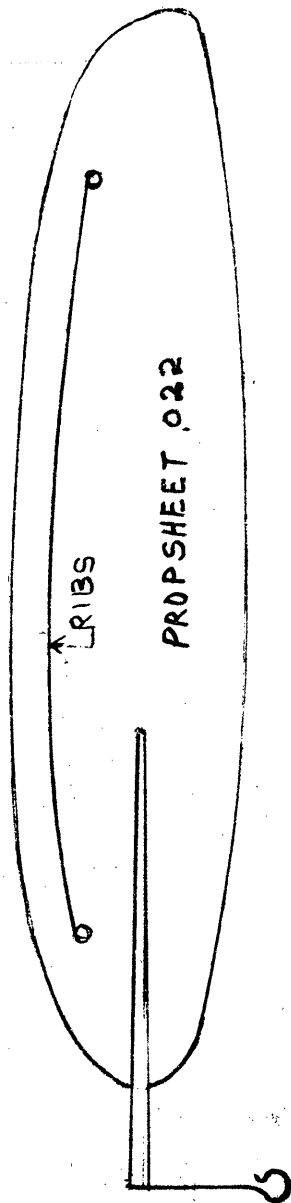
Covering: Must be paper, no poured or plastic films. Windows and windshield may be any transparent material.

Weight: 4 grams minimum without motor.

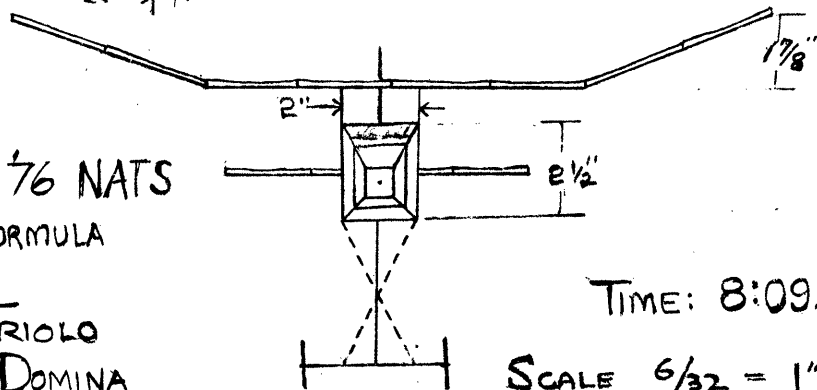
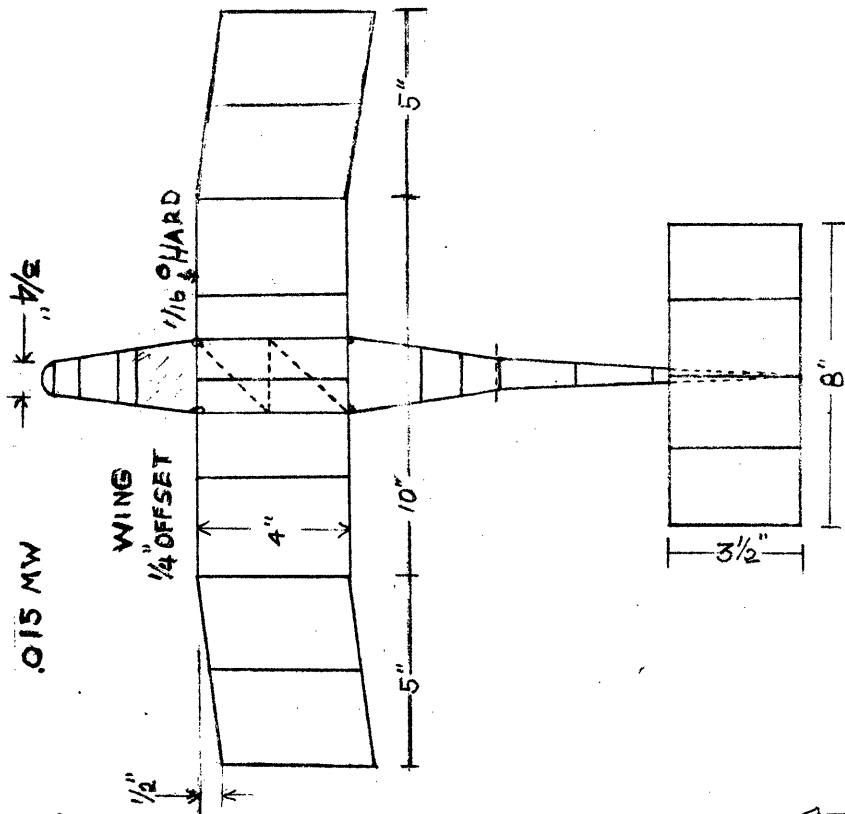
Flying: Rubber power only, all flights R.O.G. Unlimited attempts to record 5 flights; flights less than 20 seconds are attempts.







SKYSCRAPER



FIRST PLACE 76 NATS
MANHATTAN FORMULA

by
JOHN G. TRIOLO
PROXY - DAN DOMINA

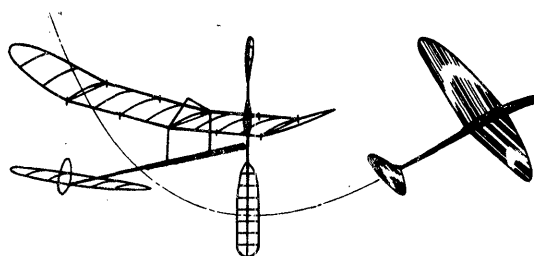
TIME: 8:09.7

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 Lindén	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!

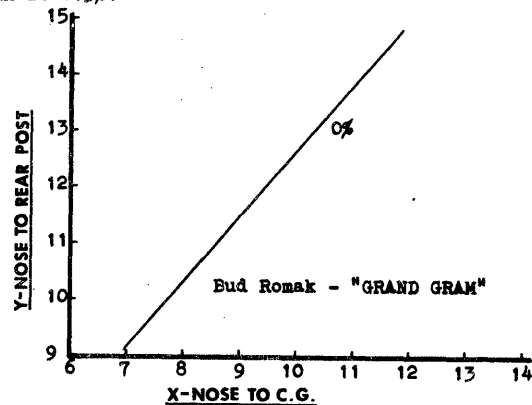
STATE OF THE ART

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%.



CONTEST CALENDAR

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Sundays, 8 am to 1:30 pm; Oct. 31, Dec. 12, 1976; Jan. 16, Mar. 13, May 1, 1977
Sundays, 8 am to 5 pm; Nov. 21, 1976; Feb. 13, Apr. 17.
Contact George Armatead, 89 Harvest Lane, Glastonbury CT 06033, ph. 203-633-7836.

FLORIDA - Miami

John Martin announces the activity schedule for the MIAMA club; please confirm individual dates shortly before each session by calling 305-858-6363. Fly-ins at JFK Gym of Miami Dade N. College; 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; Nov. 21, Dec. 19, 1976.

ILLINOIS - Chicago area

Indoor sessions/contests will be held in the Chicago area on approximately a monthly schedule. Contact Otto Curth, 2107 Center, Northbrook IL 60062, ph. 312-272-5114.

NEW YORK - New York City

Indoor record trials at the Cat. III Low Library Rotunda, Columbia University, 116th St. & Broadway. 9 am to 5 pm, Nov. 21 and Dec. 19, 1976. Site is 75' square, 80' high topped by 25' high dome. No HLG! Ron Williams, 1364 Lexington Ave., New York NY 10028.

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

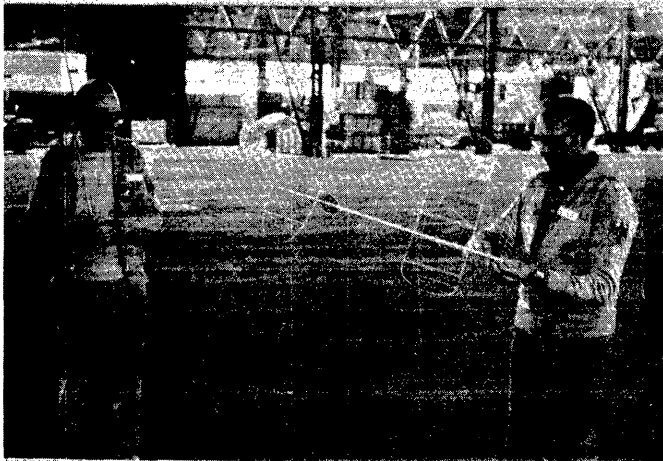
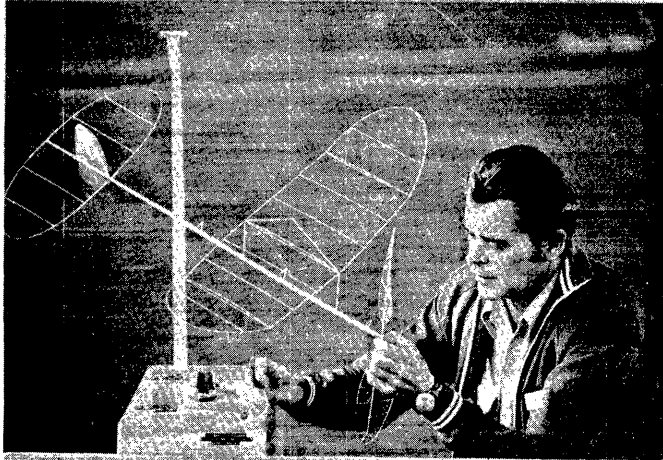
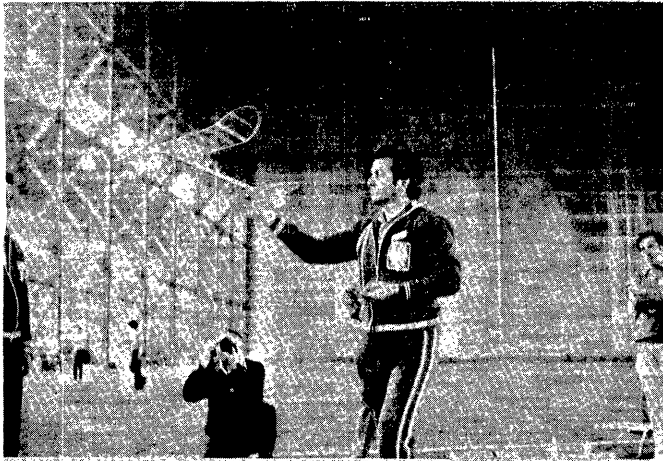
All photos by Larry Cailliau

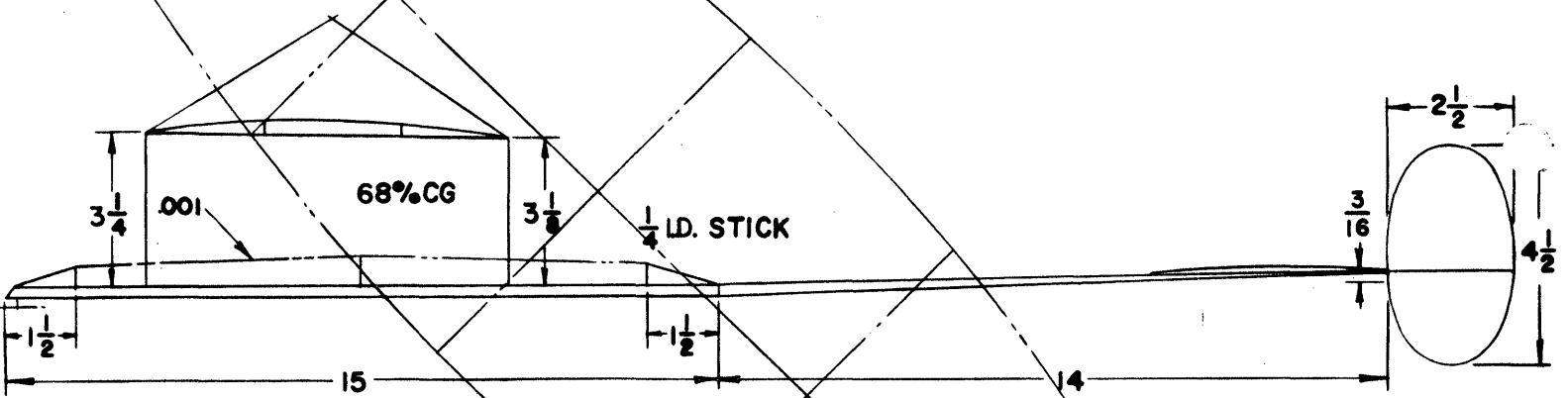
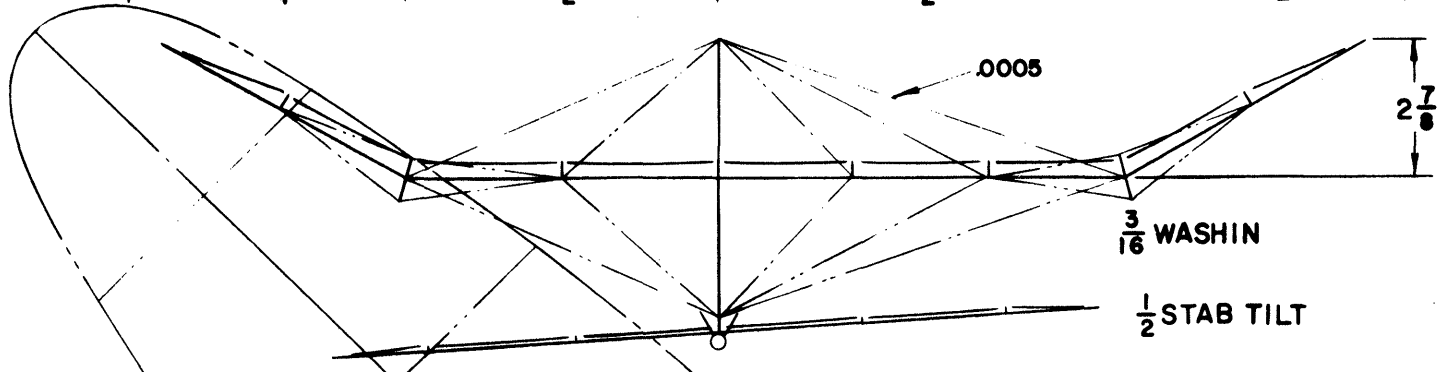
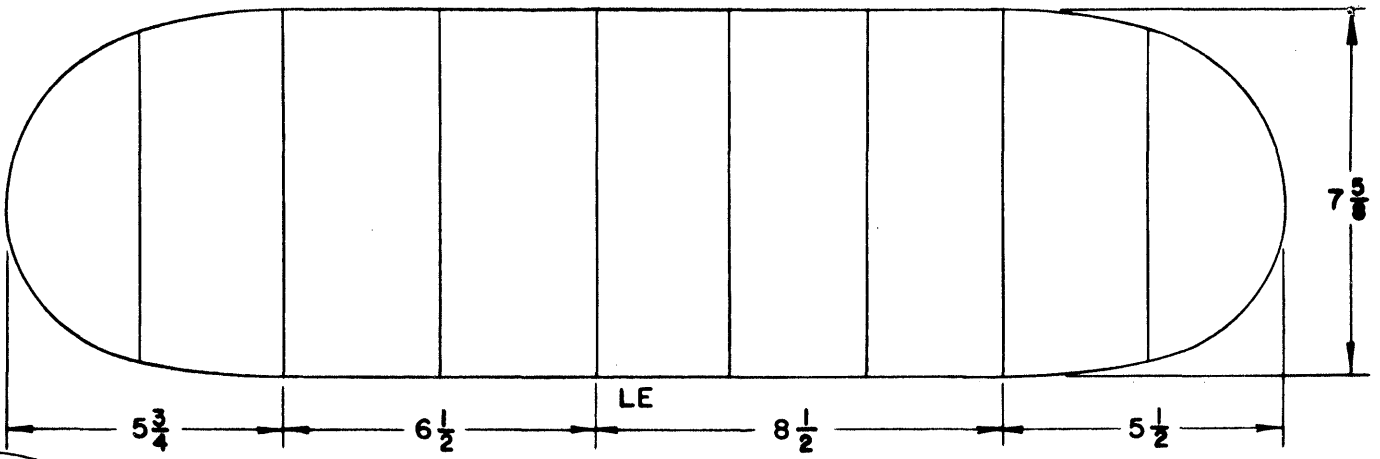
Row 1: Left - Edward Ciapala; Right - Bucky Servaites

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.

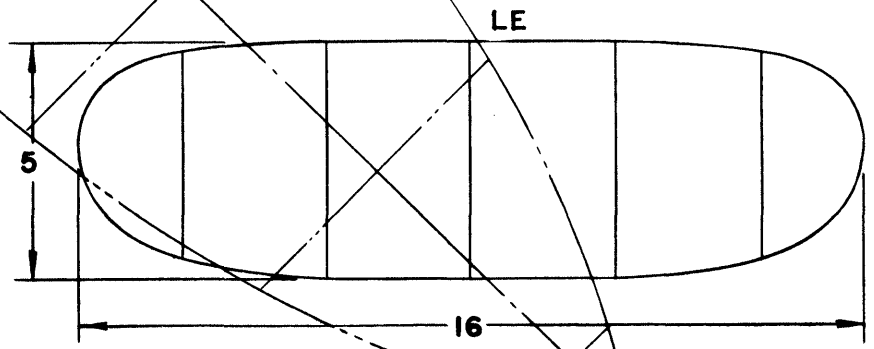




WING .010
 PROP .006
 REST .020
 .036

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

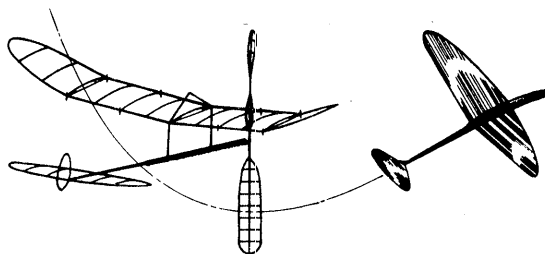
Top Ten Easy B

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:
 Strasberger, 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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 Indoor sessions/contests will be held in the Chicago area on approximately a monthly schedule. Contact Otto Curth, 2107 Center, Northbrook IL 60062, ph. 312-272-5114.

NEW YORK - Long Island
 Cat. I Record Trials at Friends Academy, Locust Valley, New York, Dec. 26, 1976, Noon to 5 pm; and also on Mar. 26, 1977, 11 am to 5 pm.
 Class AA Cat. II indoor contest at Cantiague Park, Hicksville, New York, April 24, 1977, 8 am to 5 pm.
 Class AA Cat. I indoor contest at Nassau County Arena, Long Beach, New York, June 12, 1977, 8 am to 5 pm.

NEW YORK - New York City
 Indoor record trials at the Cat. III Low Library Rotunda, Columbia University, 116th St. & Broadway. 9 am to 5 pm, ~~Nov. 21~~ and Dec. 19, 1976. Site is 75' square, 80' high topped by 25' high dome. No HLG! Ron Williams, 1364 Lexington Ave., New York NY 10028.

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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.

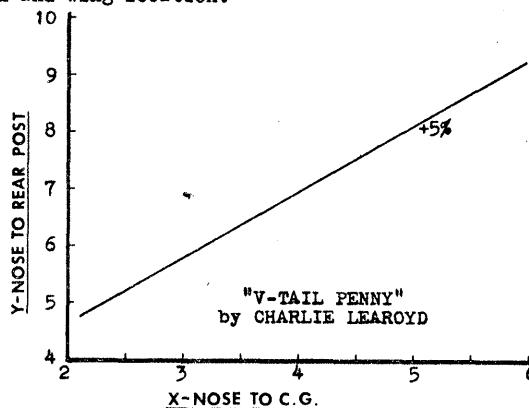
The design goal was a model which would be easy to handle, and in particular, be good at rafter-banging - i.e., fast recovery from diving, etc. I've seen many designs do a kamikazi job to the floor after hitting the ceiling. The wing tips tuck under and never recover. This led to "Y" struts on the wing, 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

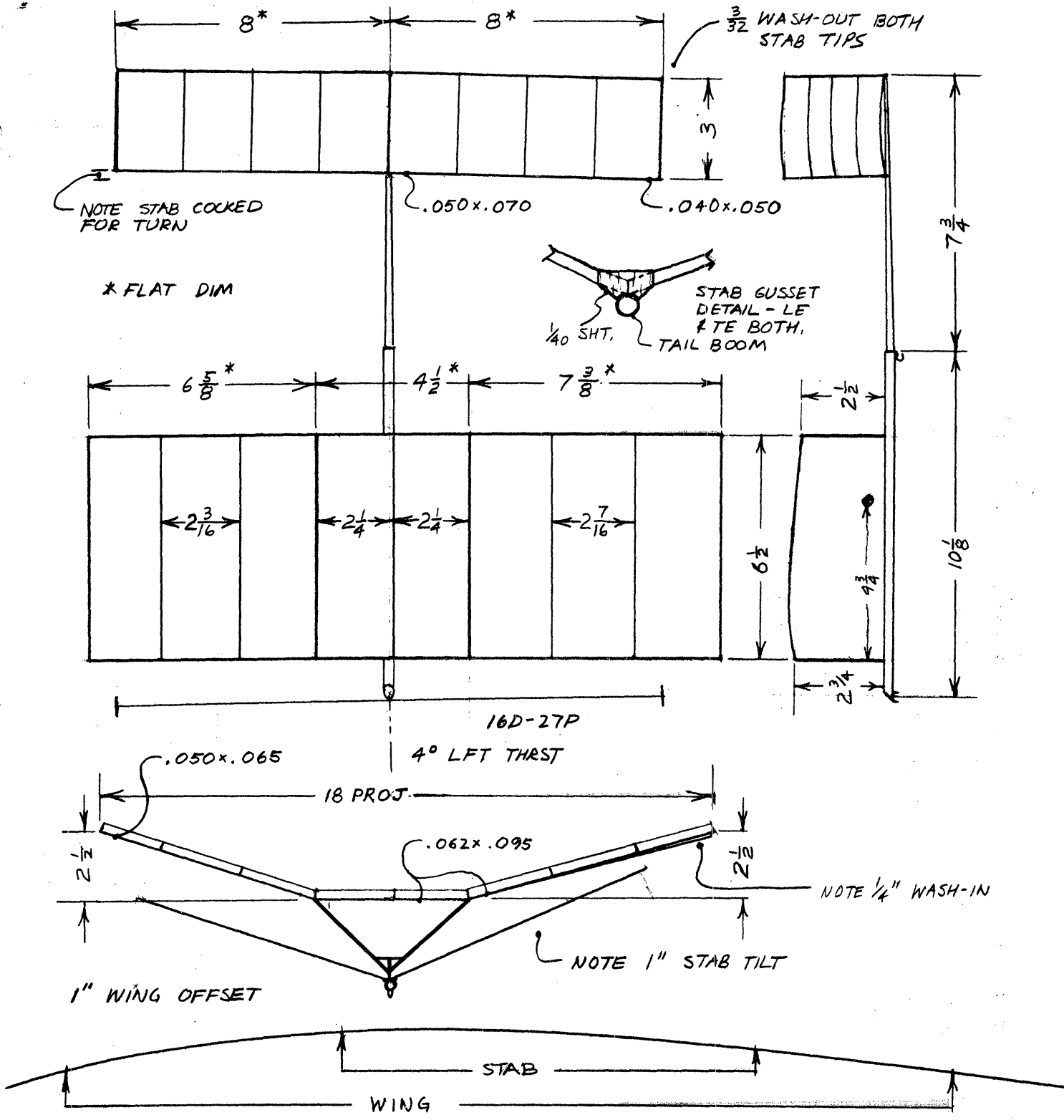
Editorial comments: the usual CMOS balance diagram is presented below, computed for +5% margin. In light of my personal experience, it is often difficult to apply CMOS directly to Pennyplane designs due to the wide chord and short motorstick. As a result, the desired wing position may be such that the 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

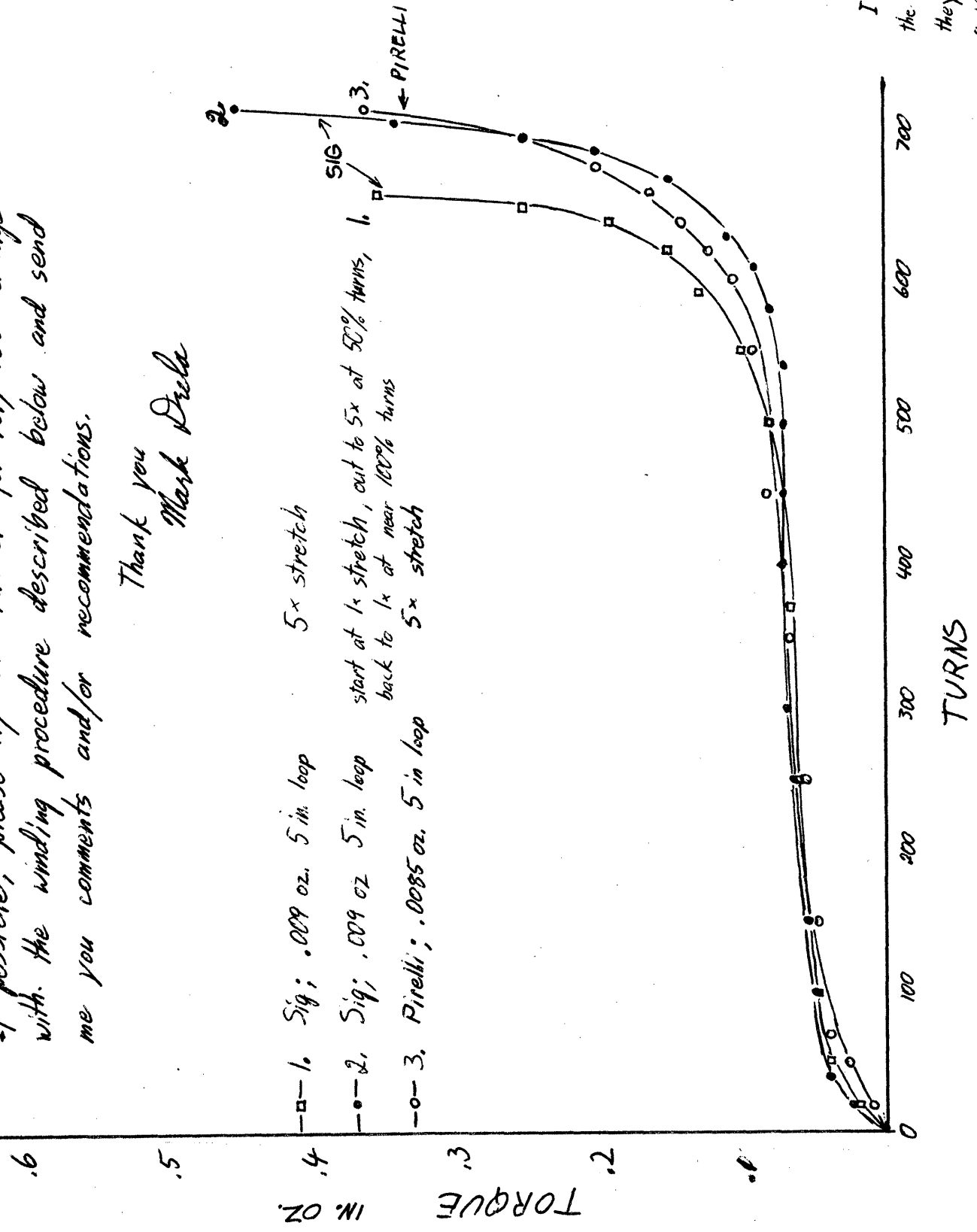
Dear Bud,

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

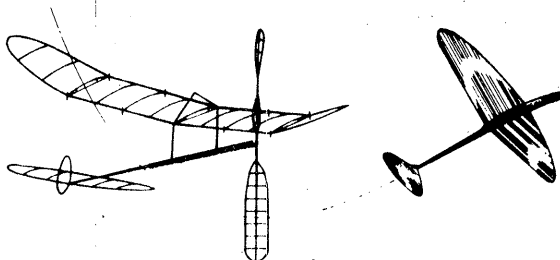
Only two items from the CIAM meeting are of interest to indoor fliers. First, the concept of three-year cycles for World Championships was voted down 21 to 3, against all expectations. Second, it seems likely that the 1978 Indoor WCh will be in Romania, since theirs was the only bid for the event.

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.

CONTEST CALENDAR

CONNECTICUT - Glastonbury
Indoor sessions at Glastonbury High Gym:



Evenings, 7 pm to 9 pm, Jan. 6, Feb. 9, Mar. 13 and Apr. 12, 1977.

Sundays, 8 am to 1:30 pm, Jan. 16, Mar. 13, 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

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.

ILLINOIS - Chicago Area

Indoor sessions/contests will be held in Chicago area on approximately a monthly schedule. Contact Otto Curth, 2107 Center, Northbrook IL 60062, ph. 312-272-5114.

NEW YORK - Long Island

Cat. I Record Trials at Friends Academy, Locust Valley, New York, Dec. 26, 1976, noon to 5 pm; also on Mar. 26, 1977, 11 am to 5 pm.

Class AA Cat. II indoor contest at Cantiague Park, Hicksville, New York, Apr. 24, 1977, 8 am to 5 pm.

Class AA Cat. I contest at Nassau County Arena, Long Beach, New York, June 12, 1977, 8 am to 5 pm.

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.

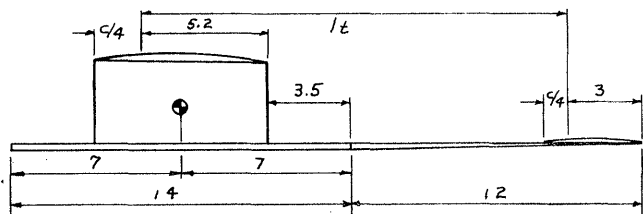


Fig. 1

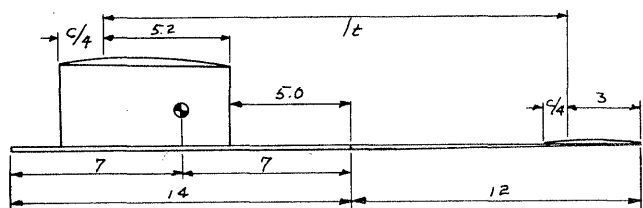


Fig. 2

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.

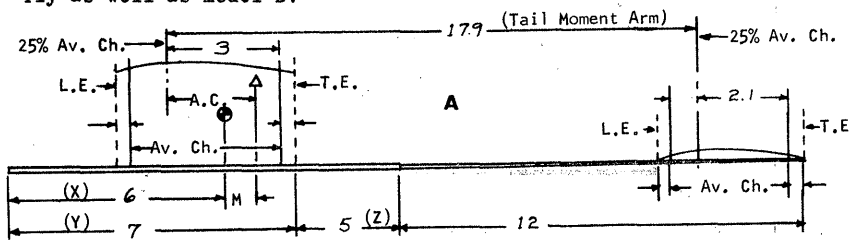
The computations discussed above were also made with the stipulation of 0% margin - the aerodynamic center and center of gravity are coincident. This simplifies the computation considerably. Note that Fig. 1 has three balance lines - +5%, 0% and -5%. Only the 0% line was calculated in Fig. 2, and the 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".

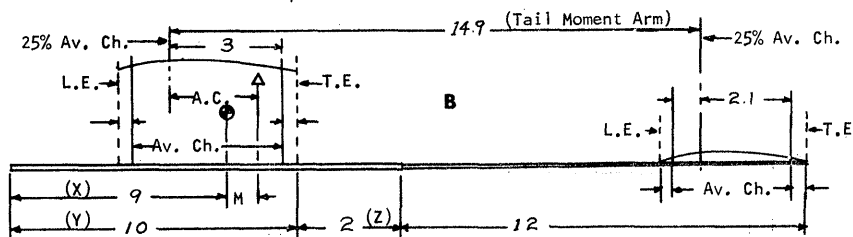
To figure stability margin on an existing model, compute the A.C. as before, then measure where the CG is with respect to the CG. Compute the margin according to the formula shown in Fig. 2. Fig. 5 illustrates this process on two models built to the design illustrated in Fig. 2, except that both models 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!



$$A.C. = \frac{32.8}{100} \times 17.9 \times .46 = 2.7 \quad 3 - 2.7 = .3; \Delta \leftarrow T.E.$$

$$1 - .3 = .7; CG \leftarrow A.C.$$

$$\text{Stability Margin} = \frac{.7}{4} \times 100 = 17.5\%$$

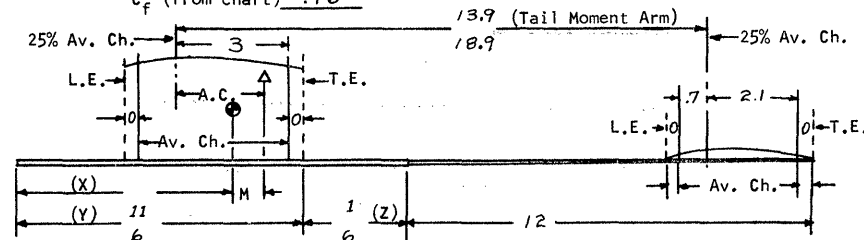


$$A.C. = \frac{32.8}{100} \times 14.9 \times .46 = 2.25 \quad 3 - 2.25 = .75; \Delta \leftarrow T.E.$$

$$1 - .75 = .25; CG \leftarrow A.C.$$

$$\text{Stability Margin} = \frac{.25}{4} \times 100 = 6.25\%$$

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



$$\text{Tail Moment Arm} = 12 - 2.1 + Z + 3$$

$$A.C. = \frac{\text{Stab Area}}{\text{Wing Area}} \times \text{Tail Moment Arm} \times C_f \quad \text{Stability Margin} = \frac{M}{\text{Av. Chord}} \times 100\%$$

$$= \frac{32.8}{100} \times 13.9 \times .46 = 2.1 \quad (Z = 1) \quad 3 - 2.1 = .9; A.C. \leftarrow T.E.$$

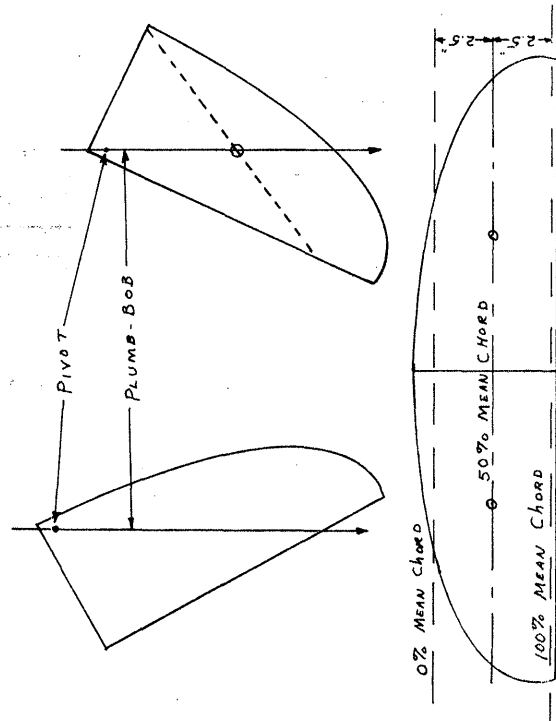
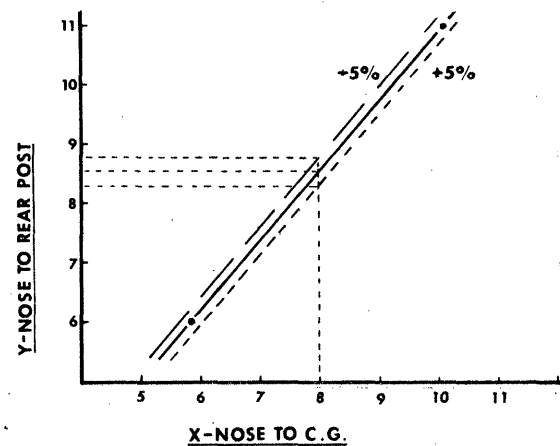
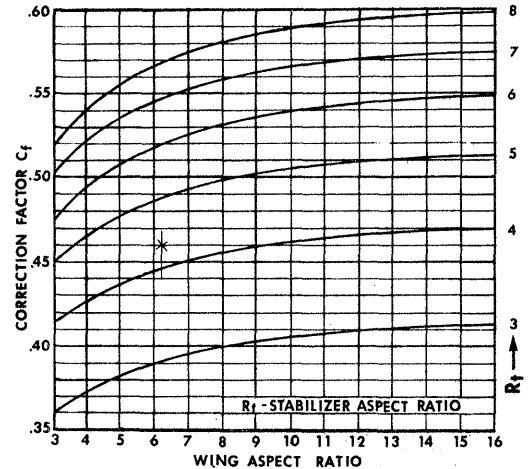
$$11 - .9 = X = 10.1$$

$$= \frac{32.8}{100} \times 18.9 \times .46 = 2.85 \quad (Z = 6) \quad 3 - 2.85 = .15; A.C. \leftarrow T.E.$$

$$6 - .15 = X = 5.85$$

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.

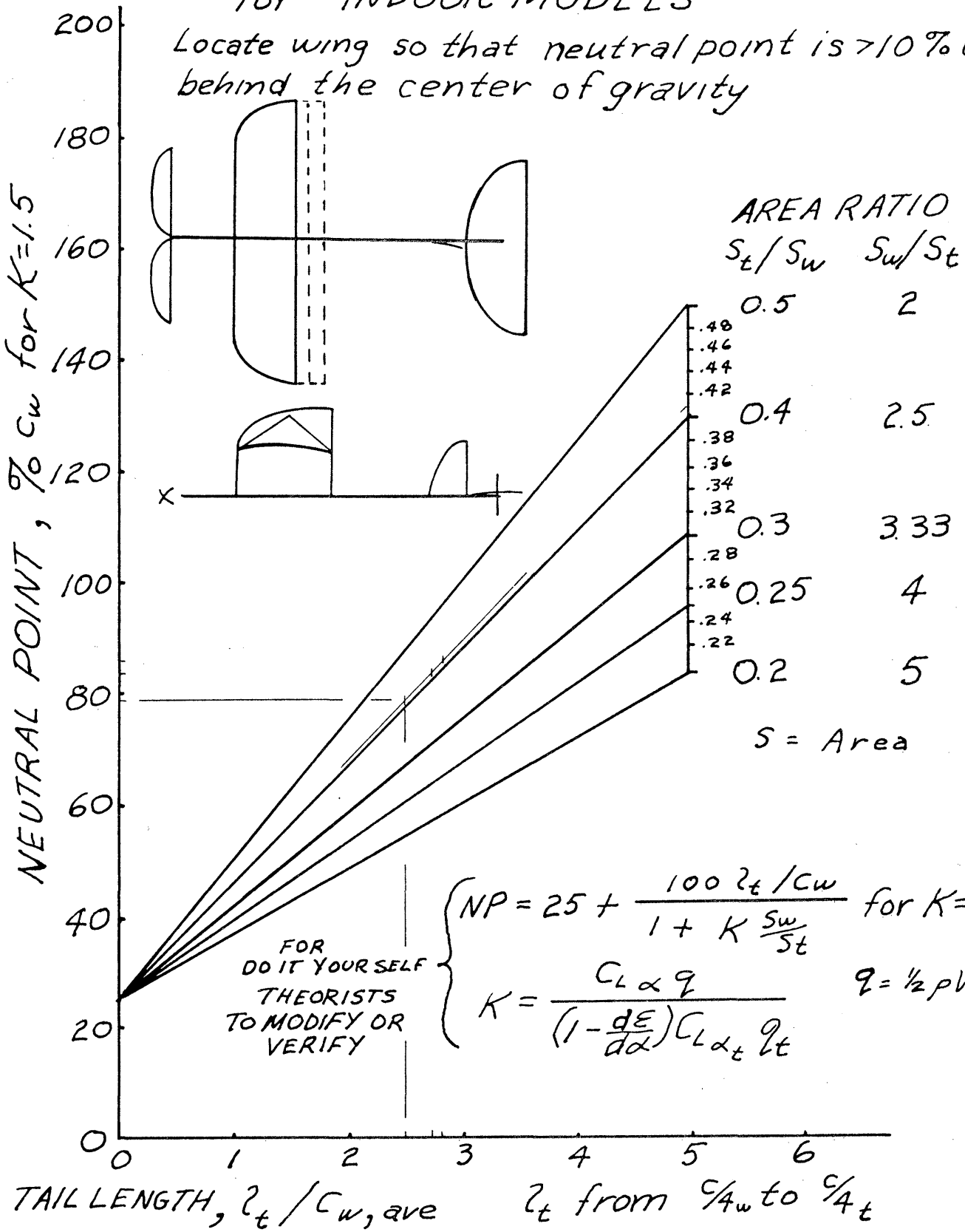
Three final points regarding CMOS: First, C_f remains unchanged so long as wing and stab dimensions and tail boom length remain unchanged. Changes in motor stick length can be handled by making a corresponding change in both X and Y dimensions. It is easiest to use projected wing area and build the wing 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.

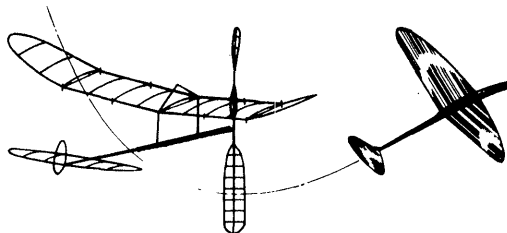


John G. Trielo

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.

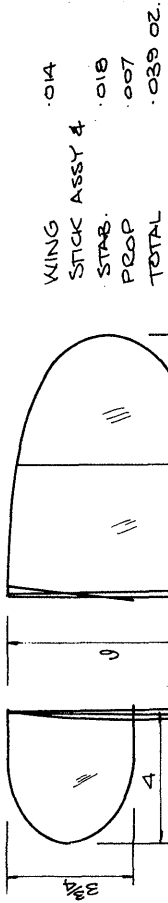
TEXAS - Ft. Worth/Dallas

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.

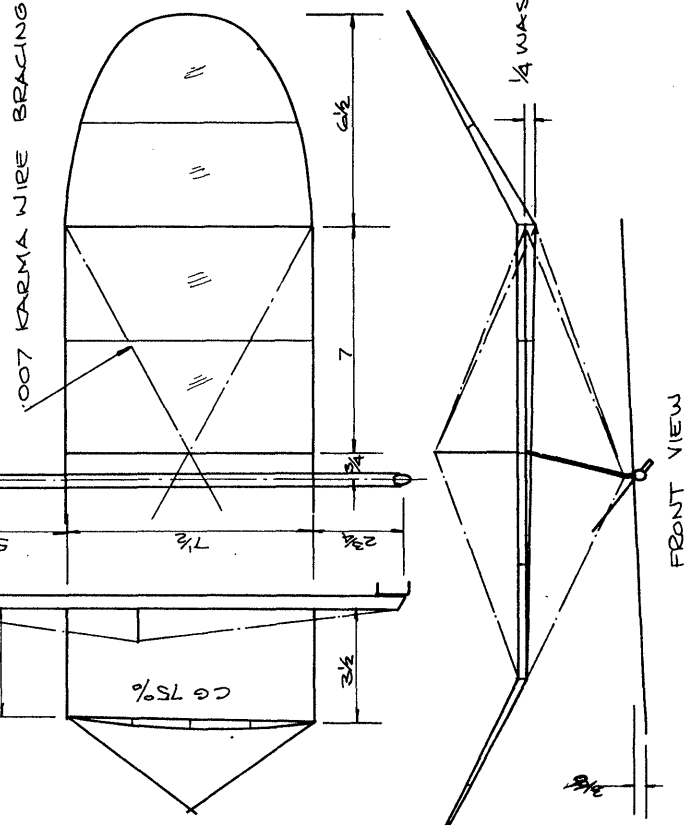
STATE OF THE ART

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.

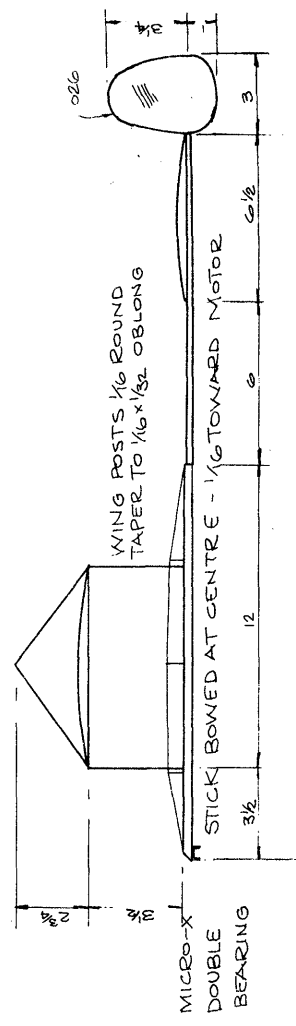
ALL DIMS IN INCHES



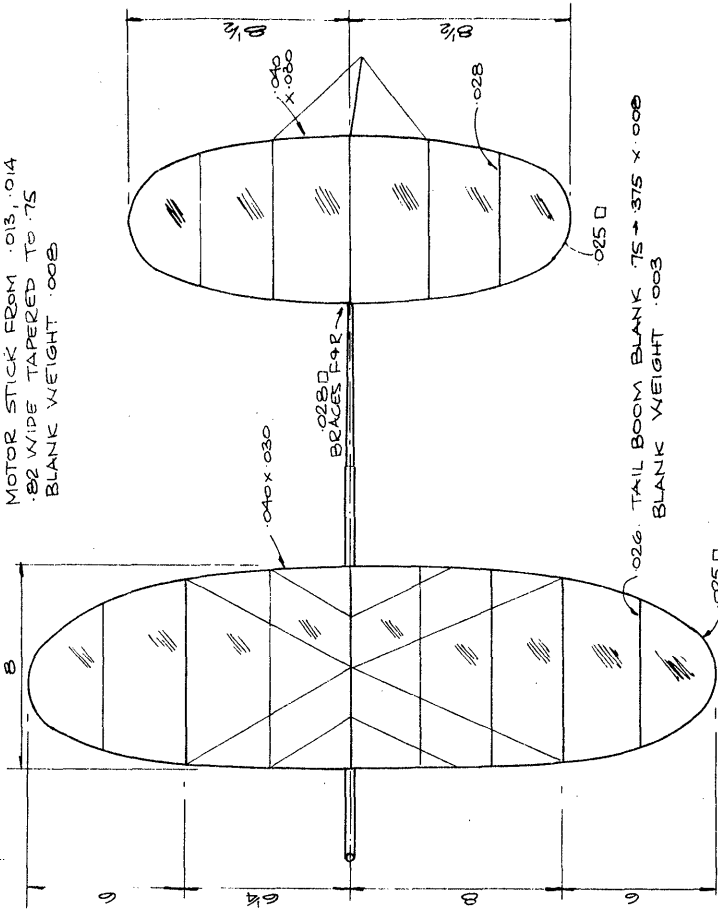
RUBBER: 17 LOOP, .060
 PROP: 20 1/2 X 32 SYMMETRICAL



ALL DIMS IN INCHES



MOTOR STICK FROM .013, .014
 .02 WIDE TAPERED TO .75
 BLANK WEIGHT .008



BRACING POSTS .030 D
 7/8 CENTRE 5/8 AT ENDS
 CROSS MEMBER AT CENTRE ONLY

F1D by J. Blount

'LUCKY JIM' F1.D. by Mike Thomas. Canada

.013 WIRE

1/16 ROUND - HARD

NOTE!
5% reduction by copier.

.024 □

.028 □

.030 □

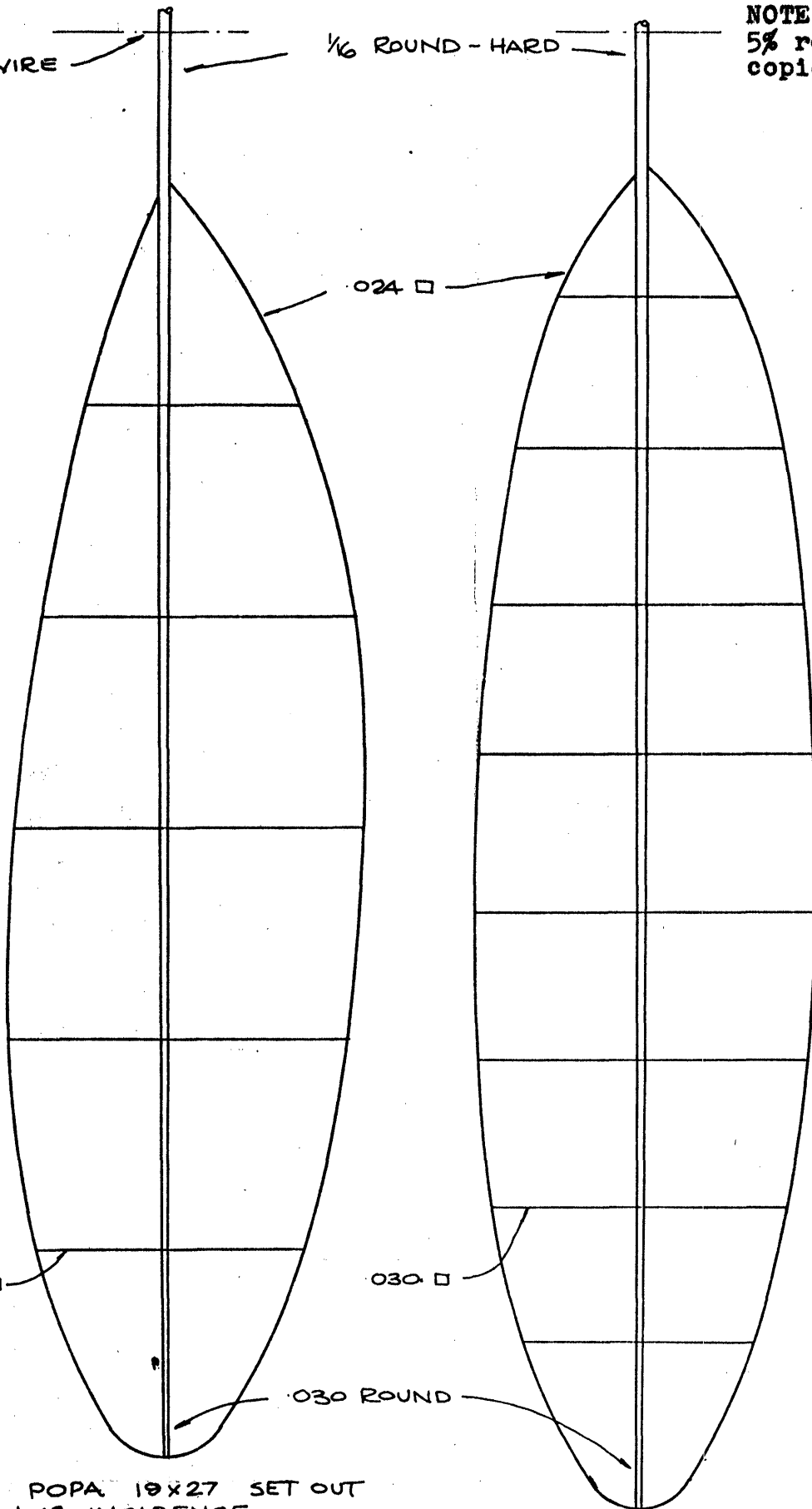
.030 ROUND

POPA 19x27 SET OUT
+4° INCIDENCE.
OR 19x33

ANDREWS SYMMETRICAL
20x33 OR 20x27
POSITIVE FLARE ALSO USED.

MOST TYPICAL SECTION .35 DEEP AT 40% AT ROOT
VARIETY OF SECTIONS USED.

full
size
details



All ribs $.028" \times .032"$ - deepest section vertical.

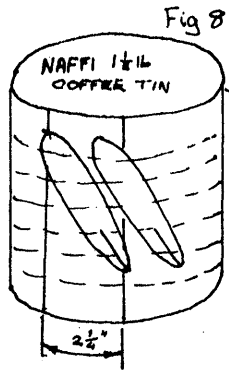
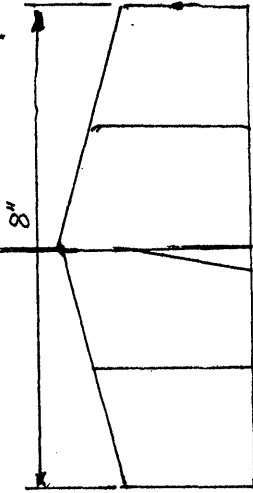
All spars $.065" \times .032"$ tapering to $.032"$ sq at tips

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.

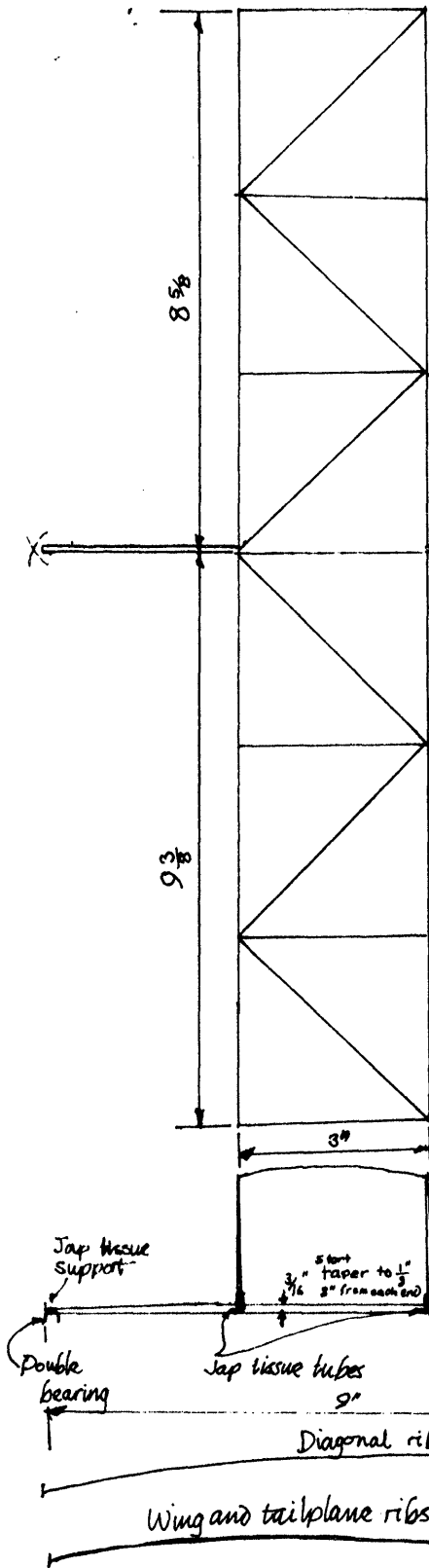
Tail boom $\frac{1}{8}" \times \frac{3}{32}"$ tapering to $\frac{1}{32}" \times \frac{1}{32}"$

Power 10"-18" loop
 $.045"$ to $.055"$ wide - according to weight. Start with 15" of $.055"$ rubber.

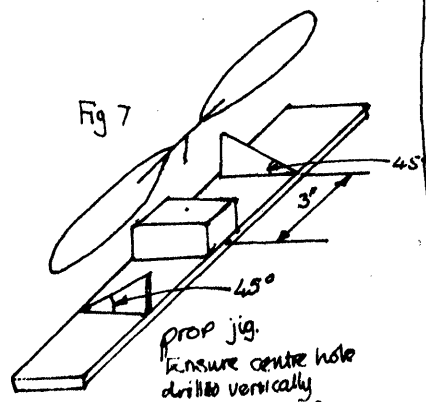
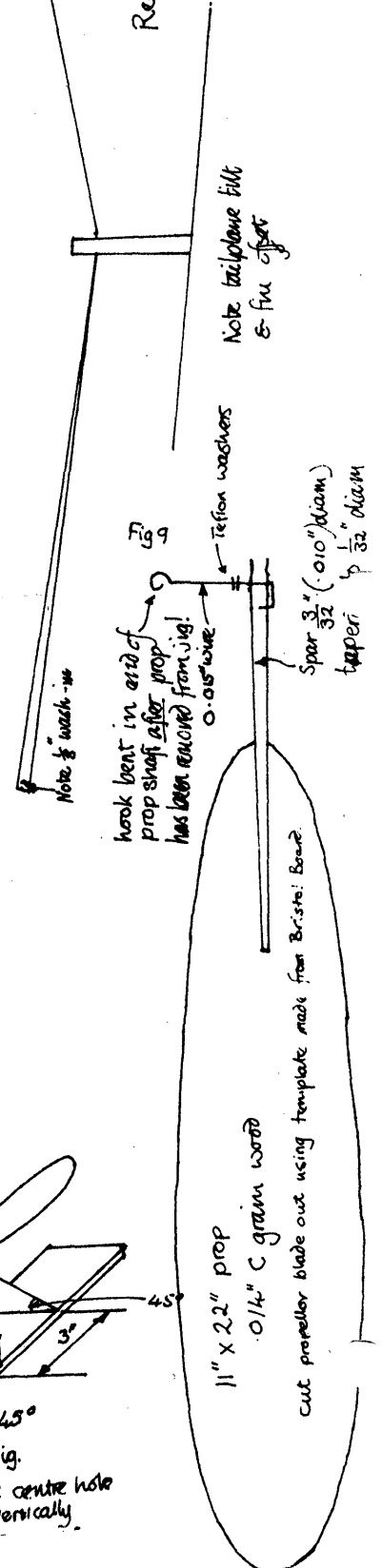


Wet blades. Bind to tin. Bake in oven 10-15 mins at 350°F.

Note. Model flies to left only



Rear view





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 or 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.

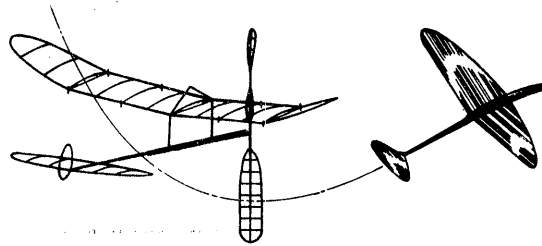
In the Dec. '76 MODEL AVIATION: "Fike Peanut" by Bob Dunham; "Indoor World Championships" by Larry Cailliau, and in the AMA Section, WCh reports by Pete Andrews, Bud Romak Bucky Servaites and Manny Radoff.

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.

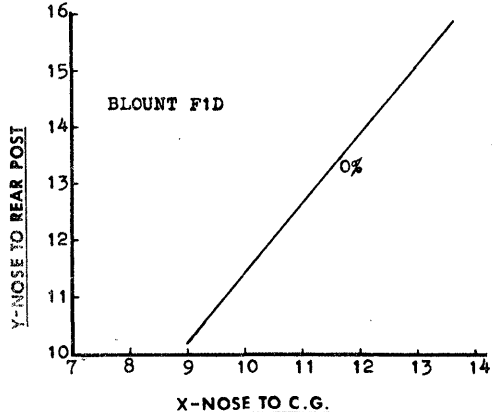
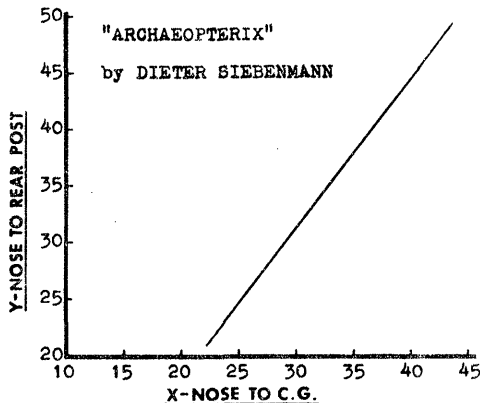
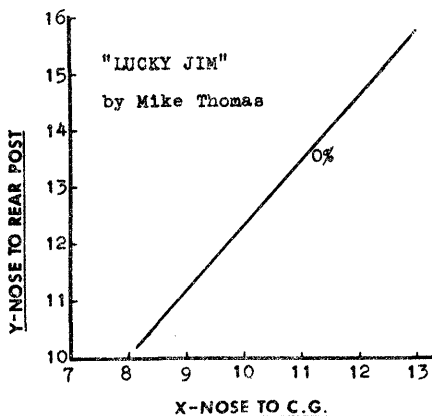
Other notable features of this model are the adjustable stab incidence, symmetrical wing planform with canted wing posts to allow wing offset, and a two-piece fuselage which allows more efficient packing. The 22" x 31.5" prop is powered by a relatively short loop (1.9" longer than the hook distance) of .049" rubber. This gives a very low rubber/airframe ration of 1.2:1.

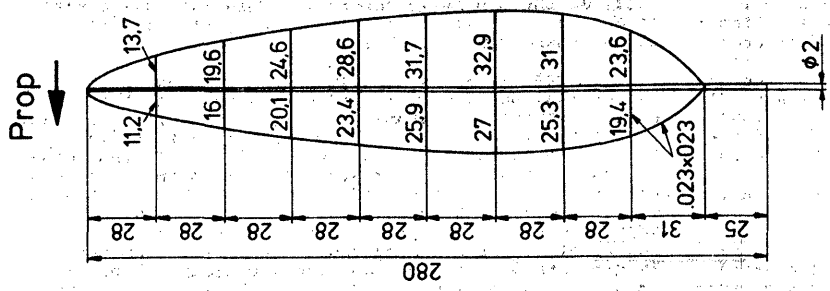
It would be nice to be able to say that all the hard work won Dieter a much higher WCh score, but the model's high potential has only been approached in practice. It should be noted that the Swiss team's relative performance improved by 16% over the '74 WCh - more than any other team achieved. Also, 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

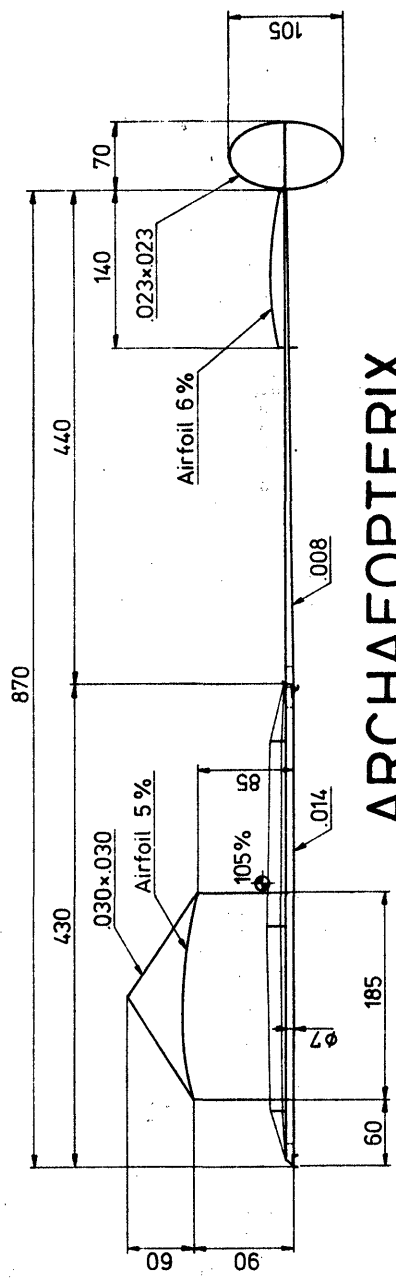
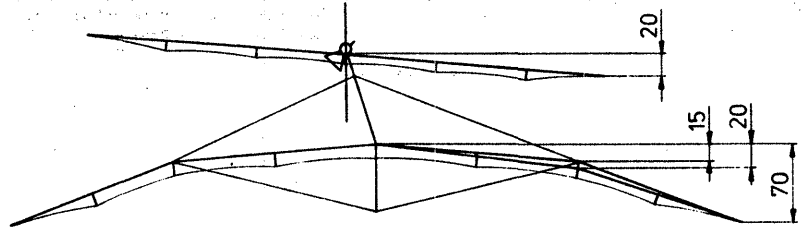
CMOS balance charts for the two models appearing in the Nov. '76 INAV, FAI's by John Blount and Mike Thomas, appear below with the balance chart for Archaeopterix. Both plans and CMOS chart for Archaeopterix are dimensioned in metric units, while the other two charts are in inches.





Diameter 560
Pitch 800
Rubber 105x14x470
2150 turns

View from rear

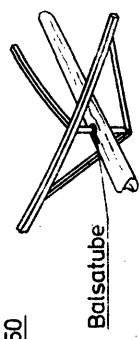
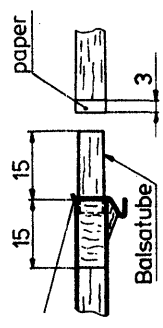
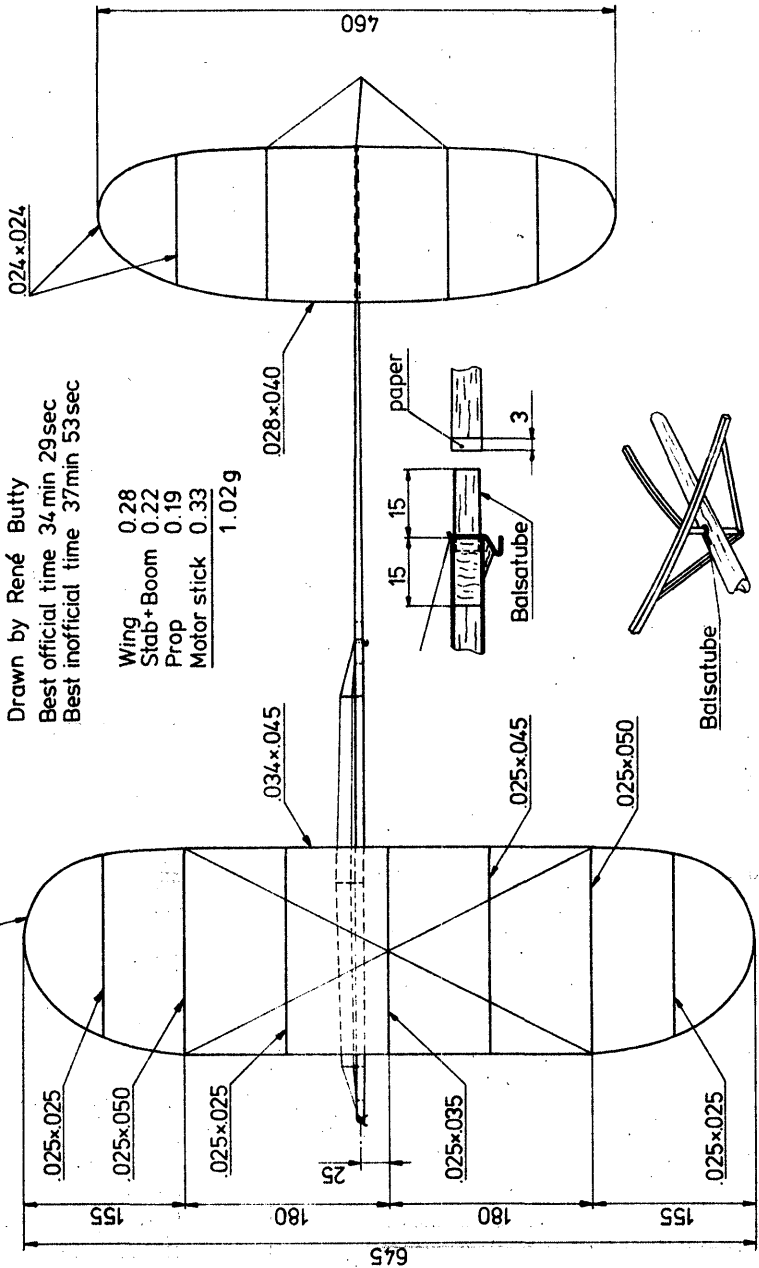


ARCHAEOPTERIX

by Dieter Siebenmann

Drawn by René Butty
Best official time 34 min 29 sec
Best unofficial time 37 min 53 sec

- Wing 0.28
- Stab+Boom 0.22
- Prop 0.19
- Motor stick 0.33
- 1.02 g



Tailplane Trim Detail

$$EFF. = \tan \phi \left[\frac{1 - D/L \tan \phi}{D/L + \tan \phi} \right]$$

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

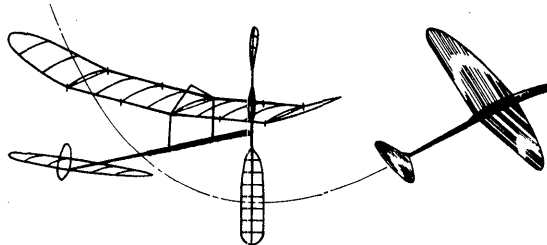
Now comes some thoughts and observations. First, note that each curve shows a peak efficiency. On the top five curves the most efficient P/D ratio moves from 1.1:1 to 1.3:1 as the L/D ratio improves. Does this say anything to anyone which would lead to better practice? If so, please share your thoughts!

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	0.838088
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 point 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 Shailor	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 Shailor	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 Shailor	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

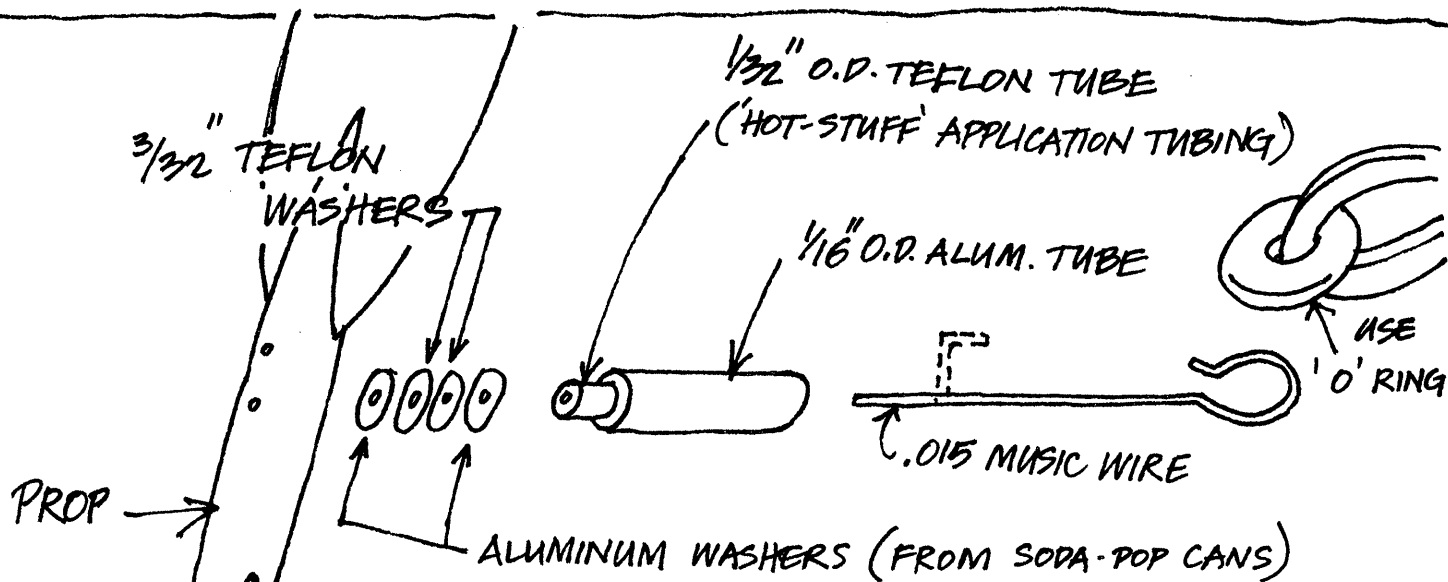
<u>Jr.-Sr. HLG</u>		<u>Open HLG</u>	
Joseph Nuszer, Jr.	1:02.6	Jack Minissian	1:06.3
Barry Pallet	0:57.2	Dan Domina	1:01.2
Richard Whitten	0:54.1	Joe Nuszer	0:59.7

<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.

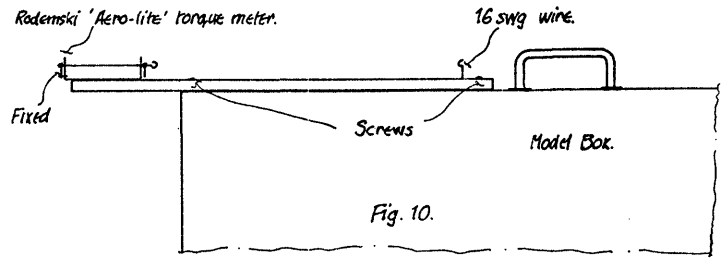


Fig. 11, showing method of making '0' rings (enlarged!).

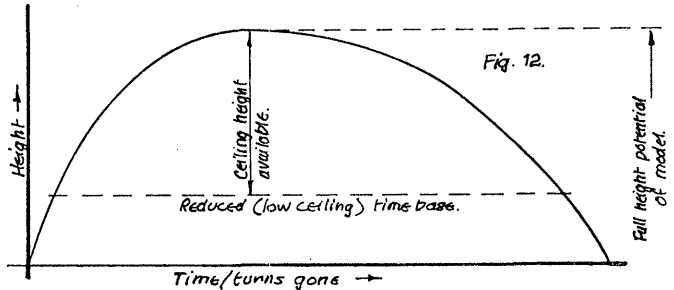
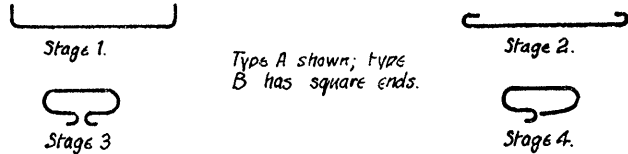


Fig. 12. were, of the flight profile of a correctly matched model and motor - see Fig. 13.

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 Nuys 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

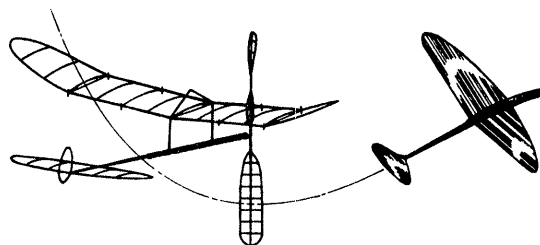
Since this Feb. issue will go out early in May, it doesn't seem premature to remind everyone that entries in the 1977 NIMAS Postal must be postmarked by May 9, 1977. Quite a number of entries have already arrived, so perhaps this meet will be larger than usual.

Second NIMAS International Record Trials

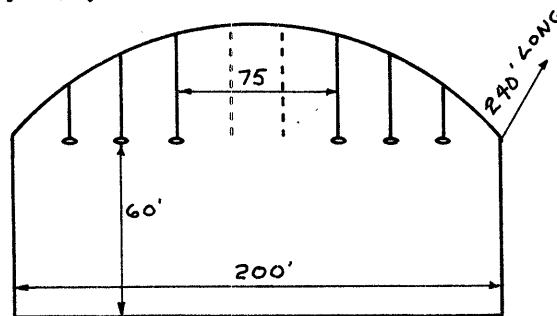
We're either going to have to get a smaller name for our annual bash or get a wider newsletter! Anyway, just in case the Postal Service strikes again and your issue doesn't have the special announcement page, the SNIRT will take place June 2-5, 1977. The longer schedule allows for North Central and South 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 REPORTTeam 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

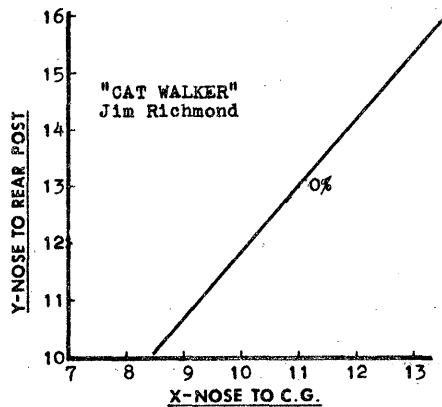
Jim Richmond's qualifying performances in the 1975 program led to a reasonable expectation of high times at the WCh. Jim's remarks below detail some of the many pitfalls available in indoor flying.

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!

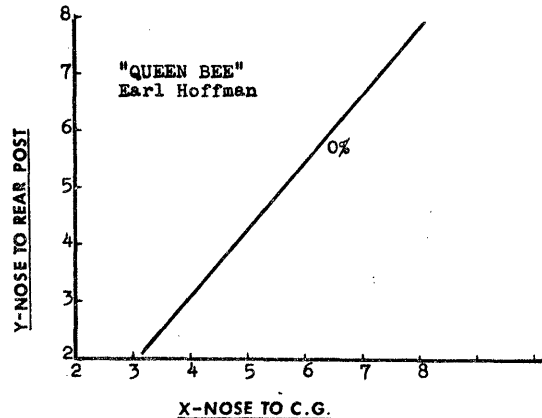
Earl supplied the following data about the model:
NOTES ON CONSTRUCTION:

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

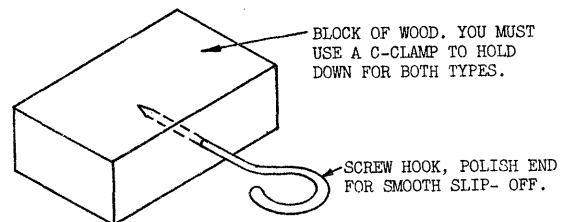
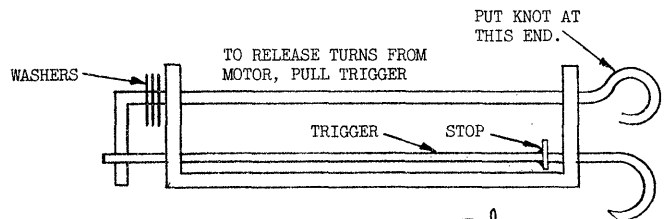
#330 or 400; under .008" thickness use only #600. Be sure to sand only away from you and use very light pressure. Patience does it - don't expect to sand a sheet this thin in a few minutes.

Trim info: not available; CMOS chart below.



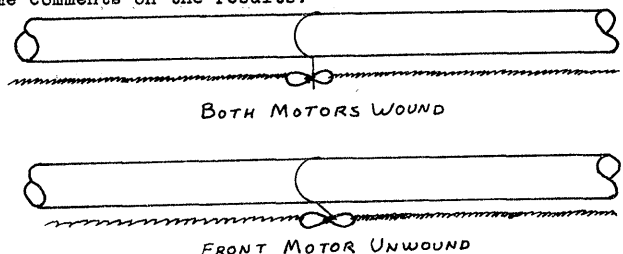
HINTS AND KINKS

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.

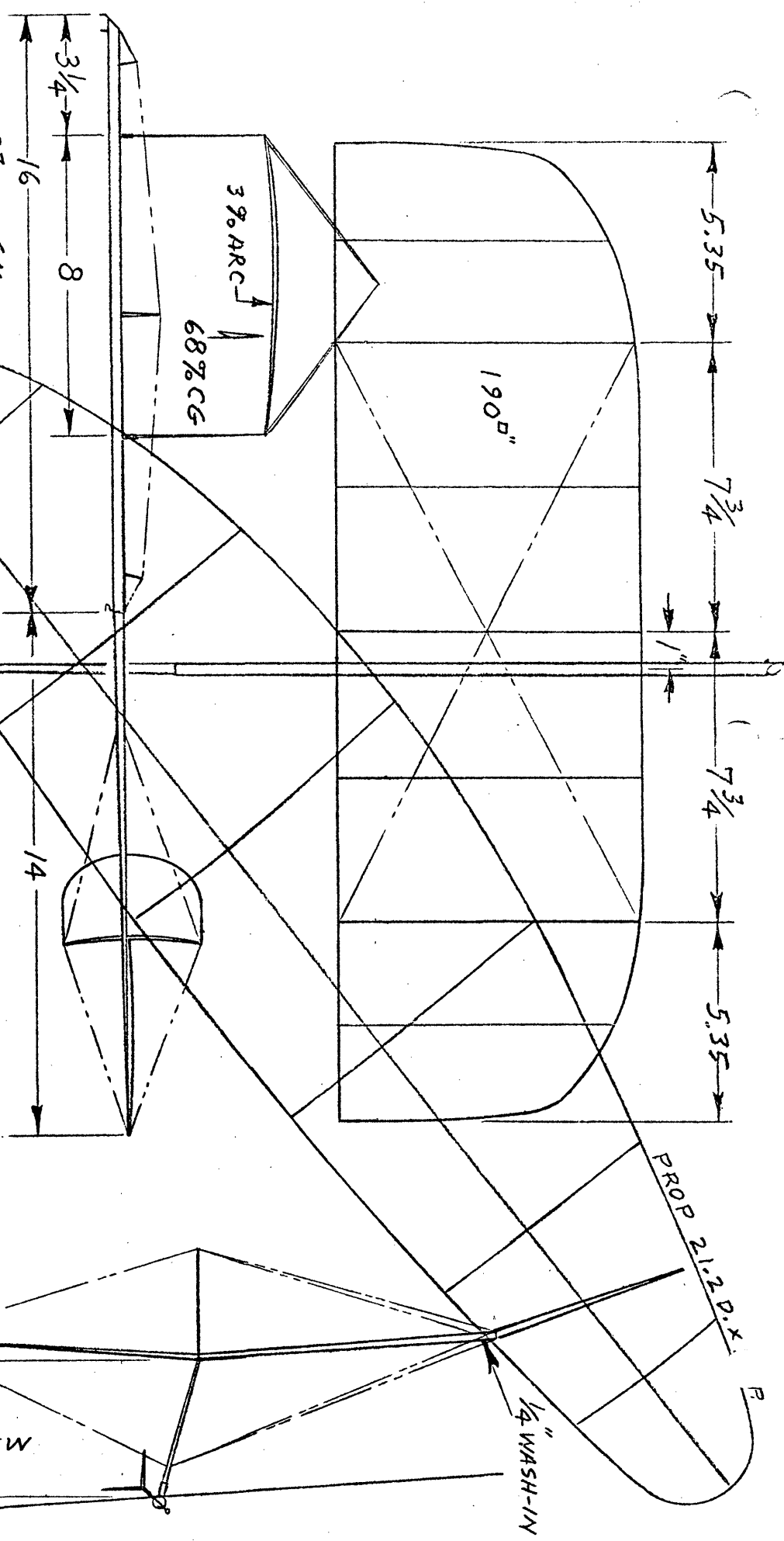


A LOOK AT YESTERYEAR

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?



	OZ.	GM
WING	.0106	.30
STICK	.0106	.30
STAB+BM	.0071	.20
PROP	.0049	.14
BALAST	.0021	.06
TOTAL	.0353	1.000



BEST SINGLE FLIGHT:
41 MIN. 32 SEC. - AKRON 7-5-76

FRONT VIEW

"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:

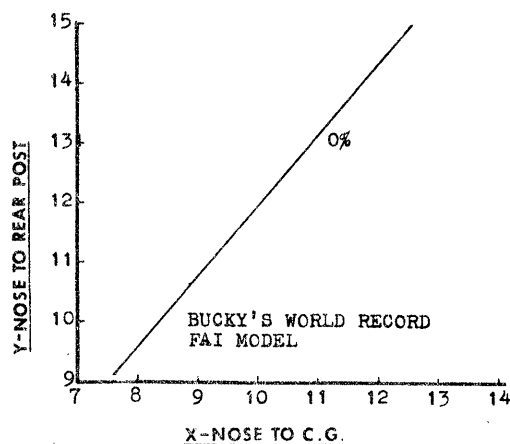
Outdoor atmospheric conditions on the day of the record attempt were rather cool; 65-70°F with partly cloudy skies and 5-10 MPH winds. The coolness was the result of a passing front which brought only brief showers the day before, but which produced a clearing of the air. Two years prior at this same 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

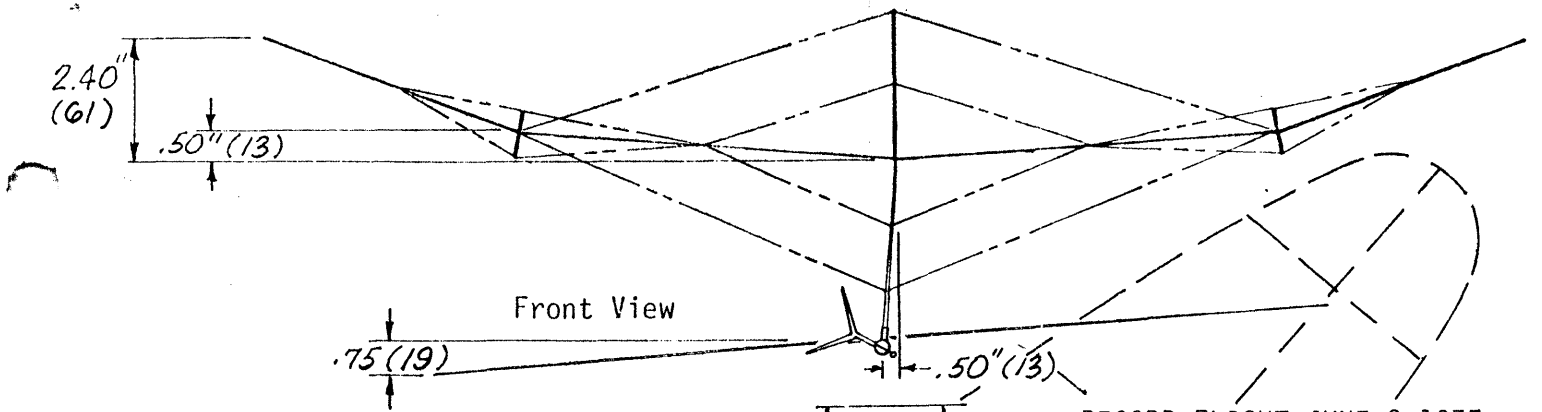
It was the SNIRT .. the Second NIMAS International Record Trials in Northwood Institute's magnificent Atrium. So there we all were in West Baden - NIMAS, the MIAMA indoor club, and some of the world's best hot-shot indoor modelers in the process of setting six AMA records and one world record. Then along 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.

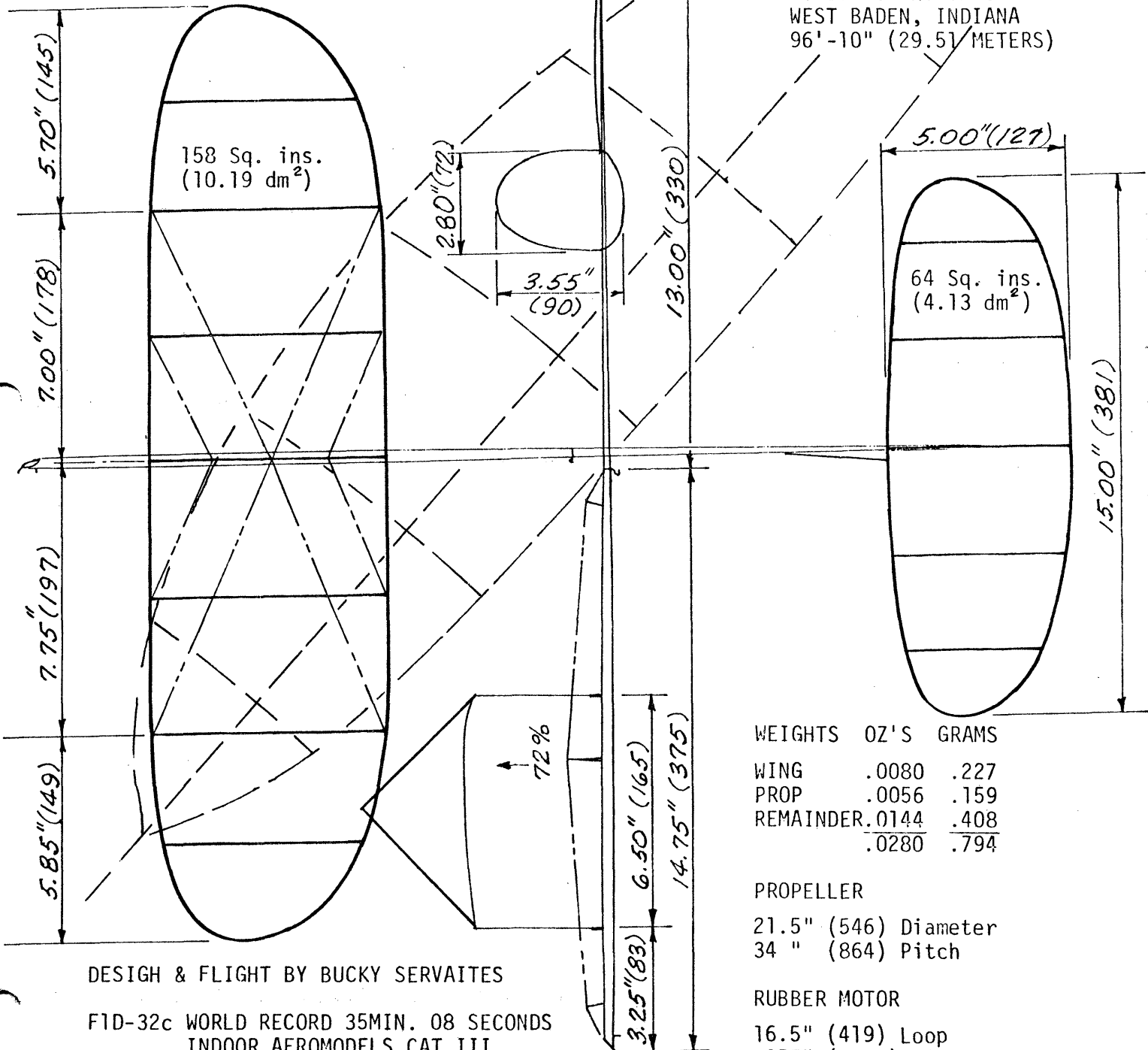
The most exciting moment of the Trials came when Ron Ganser broke Col. Bob Randolph's long-standing ROG Cabin record. (If it can be said that indoor is exciting at all - some claim it is as exciting as watching an off-shore yacht race. Some yachting buffs claim this is exciting too.) Let's face it, Indoor 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

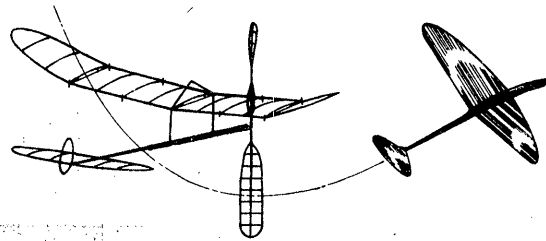
TULSA SOUTH CENTRAL QUALIFICATION TRIALS, July 10, 1977

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

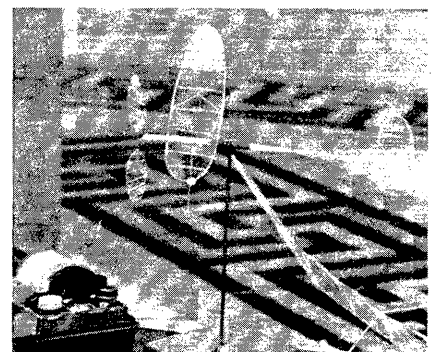
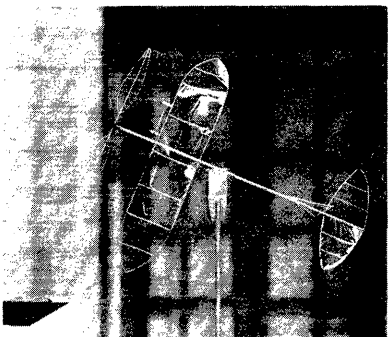
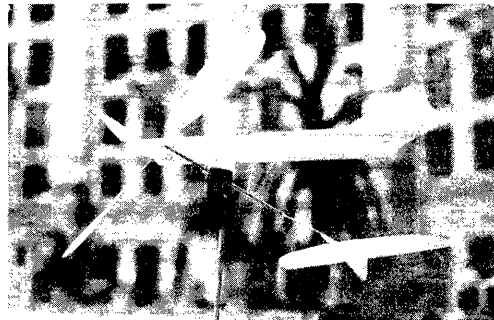
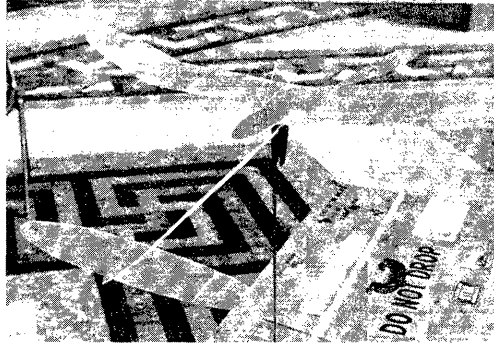
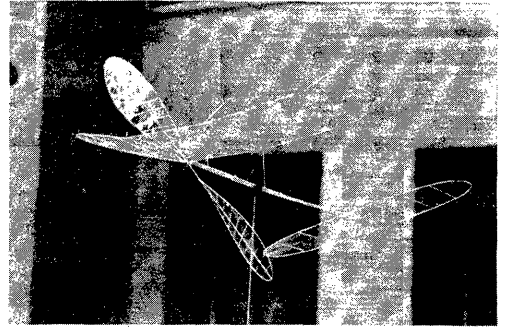
1. 60034	C. Clemens	6:19.0	
2. 54284	G. Stevens	5:34.8	
3. 92595	D. Segle	5:06.4	
4. 52673	B. Grove	4:44.5	

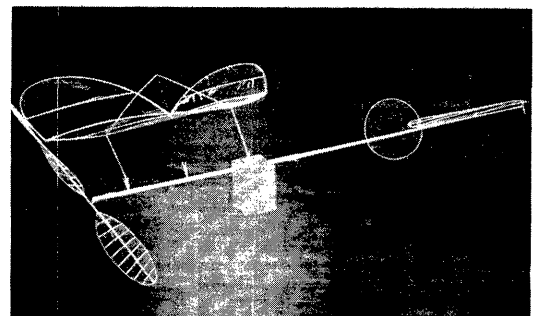
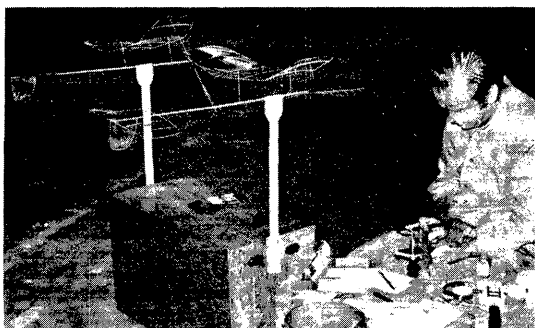
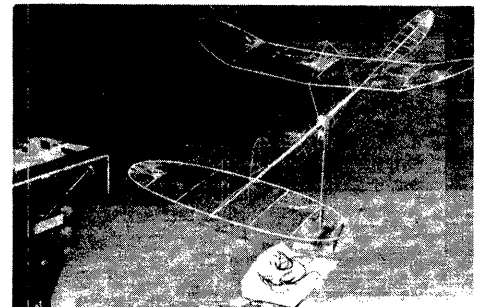
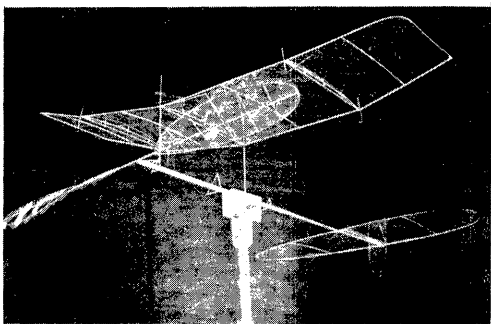
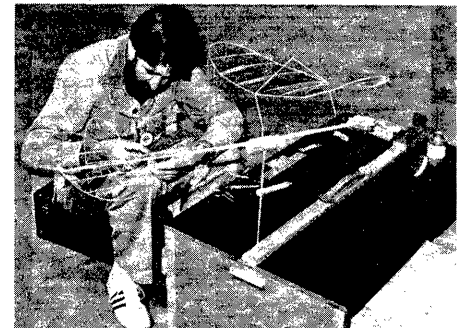
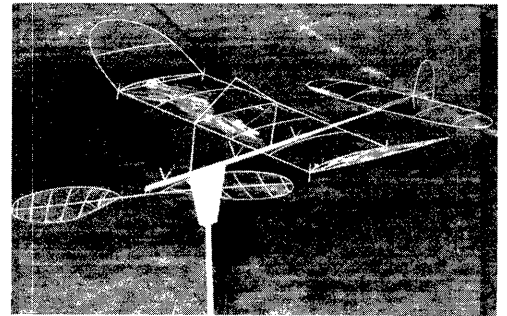
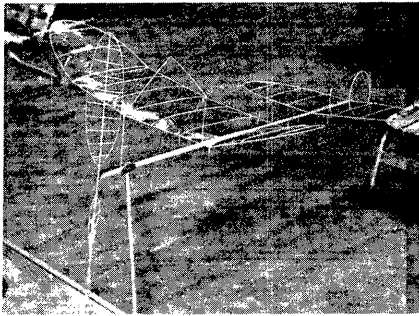
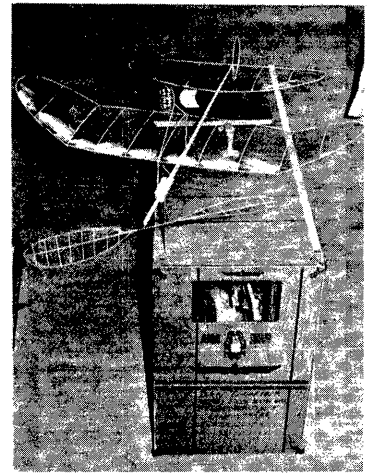
OPEN

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

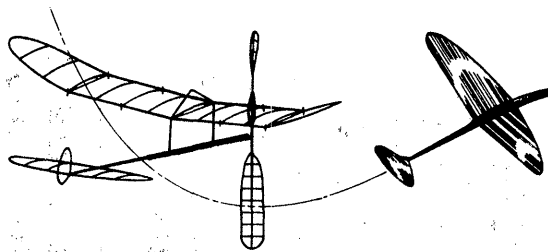
Indoor sessions (no HLG) at Low Library Rotunda, Columbia University, New York City, 9 am - 5 pm, Oct. 23, Nov. 13, 1977. Contact Ron Williams, 1364 Lexington Ave., New York NY 10028.

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.

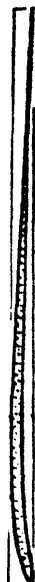
OREGON - Albany

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	3/8	1/2	5/8	3/4	7/8	2
.052	.049	.046	.043	.040	.037	.034	.031
2/8	2/4	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

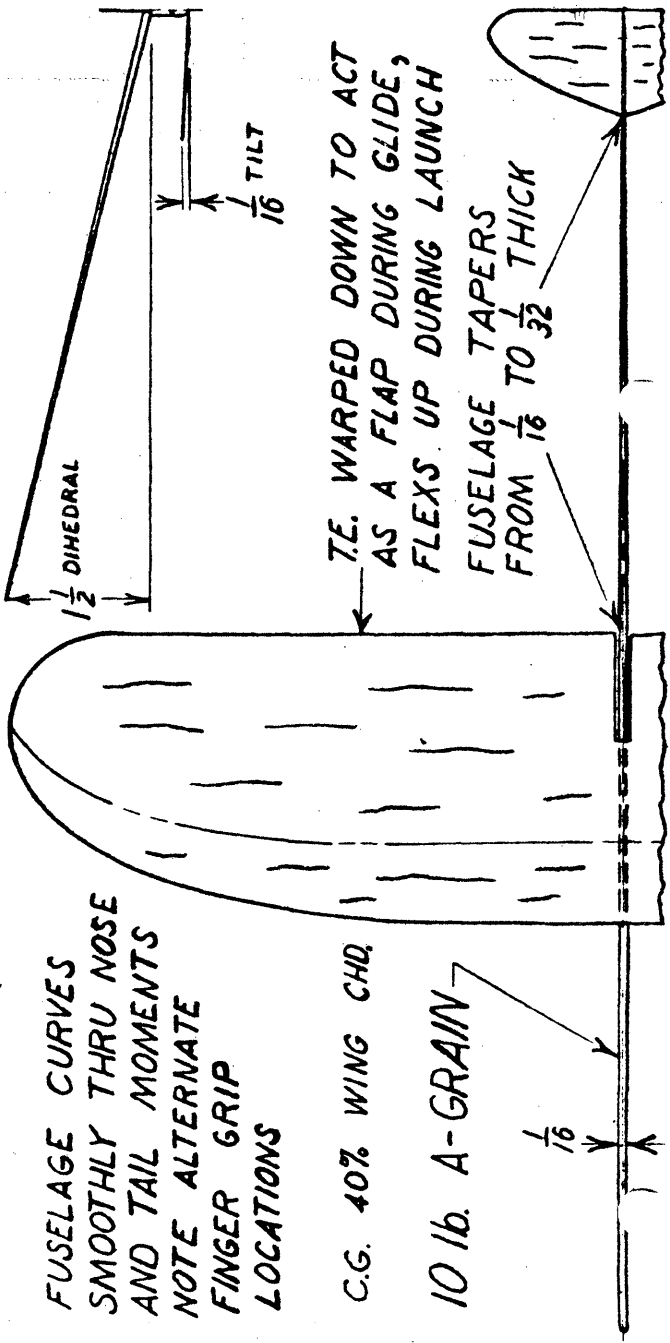
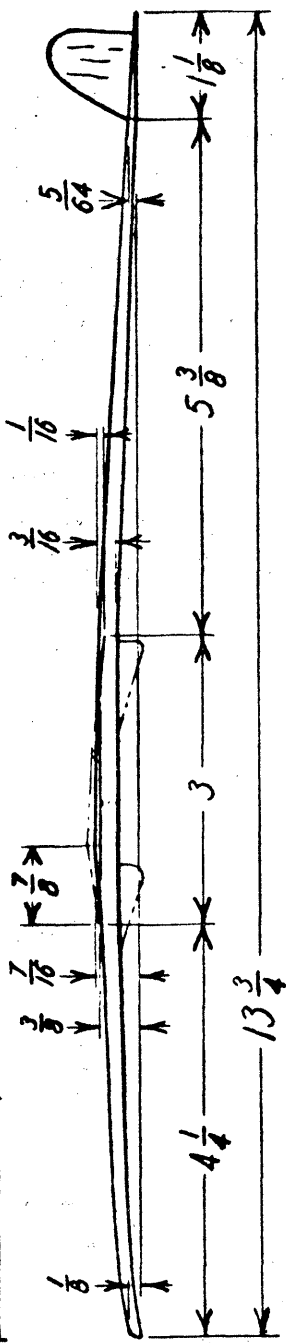
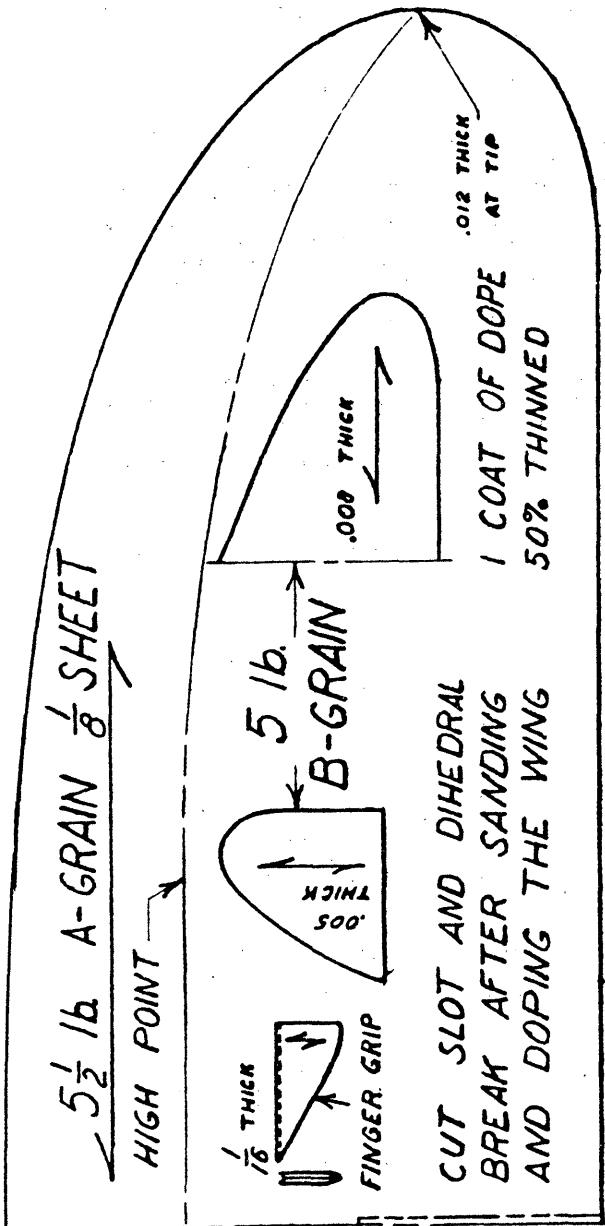
VERTICAL LAUNCH, 17 FT. DIA GLIDE CIRCLE

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



FUSELAGE CURVES SMOOTHLY THRU NOSE AND TAIL MOMENTS
 NOTE ALTERNATE FINGER GRIP LOCATIONS

C.G. 40% WING CHD.

10 lb. A-GRAIN

TE. WARPED DOWN TO ACT AS A FLAP DURING GLIDE, FLEWS UP DURING LAUNCH

FUSELAGE TAPERS FROM 1/16 TO 1/32 THICK

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
Tenny

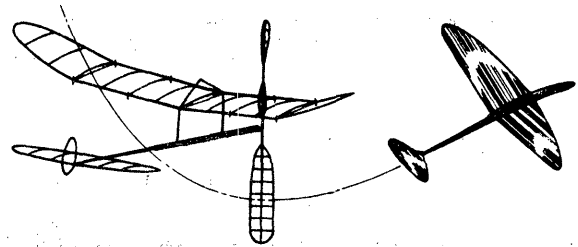
hit more up air than down air. After watching about 50 flights, I was convinced that the glider possessed aerodynamic characteristics not shared by other gliders which were flown (tried, anyway) in the same conditions. I also participated in attempts to fly a record-holding Pennyplane model. Even with 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:

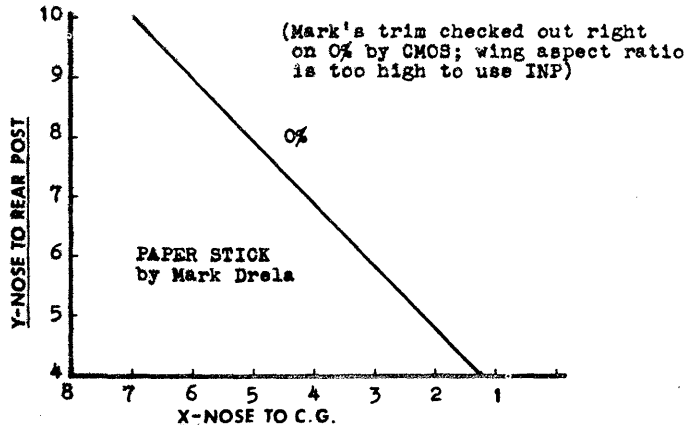
Enclosed is a 3-view of my paper stick which set a Sr. Cat. I record. Although the time is not exactly far-out, the model definitely has more potential. The record attempt was the model's first flight ever (not even a test hop was made). Pressured for time, I quickly assembled it, grabbed the nearest 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.

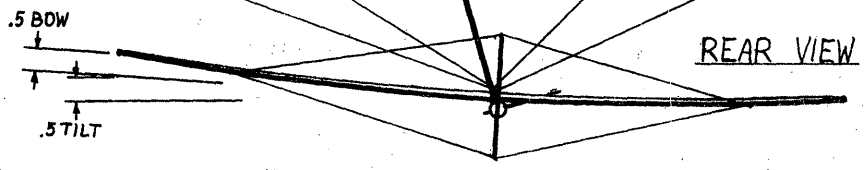
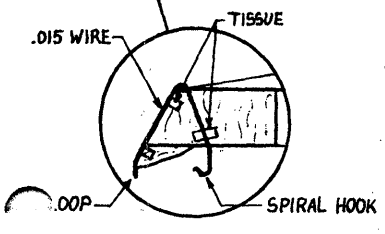
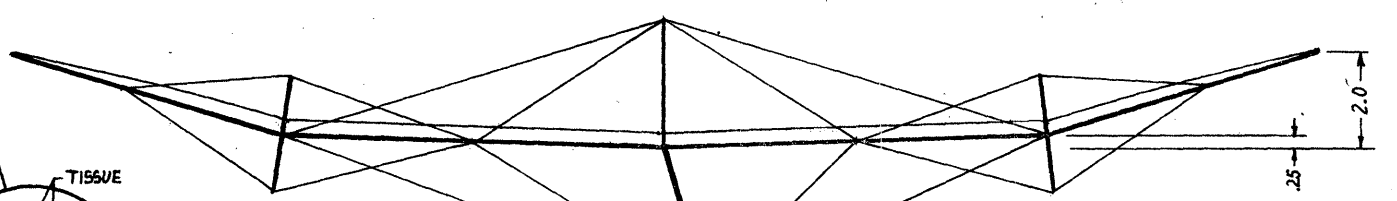
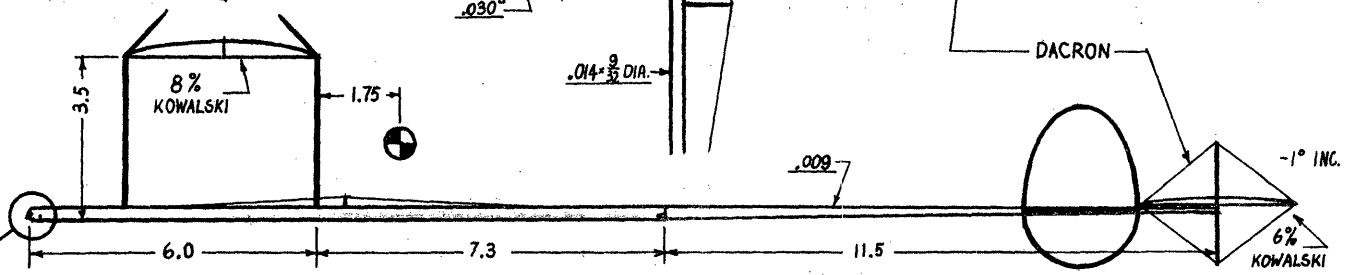
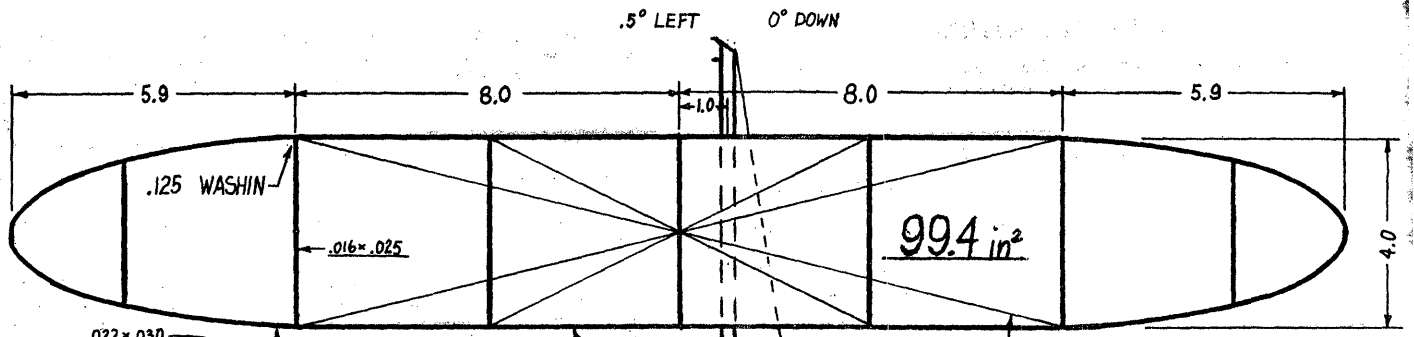
The heart of the model is the Jeff Annis torque-variable prop. It clearly gives an advantage in low ceilings. A model equipped with one can be launched safely with a torque that would cause it to ram the top of a high Cat. II site, if it used a conventional prop. As indicated on the 3-view, the pitch 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).

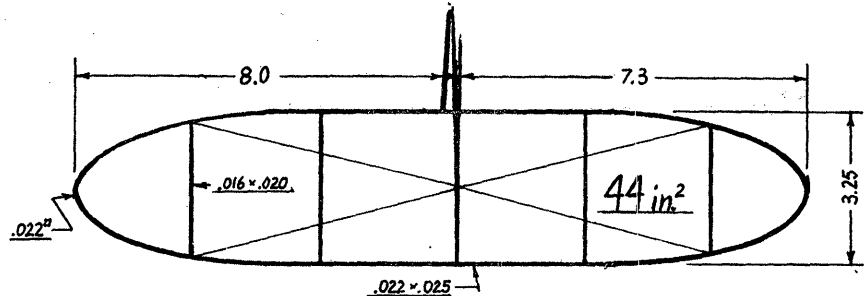
Anyway, the prop adjusts itself to maintain an almost constant RPM. This gives a fantastic cruise in addition to the slow climb. A similar design could do close to 10 minutes with about 12 feet of altitude (no ceiling contact). I plan to stay with the huge 18" prop, which gives an RPM somewhere between 50 and 60, while going to thicker rubber of greater weight.





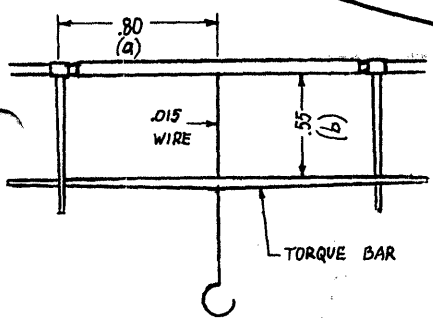
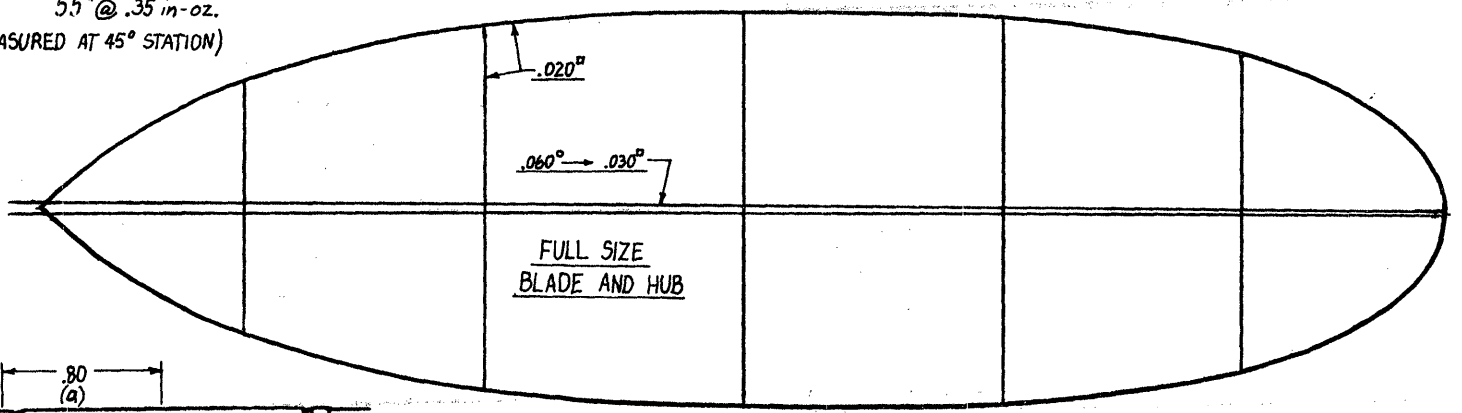
WEIGHTS, OZ.

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 flyers 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

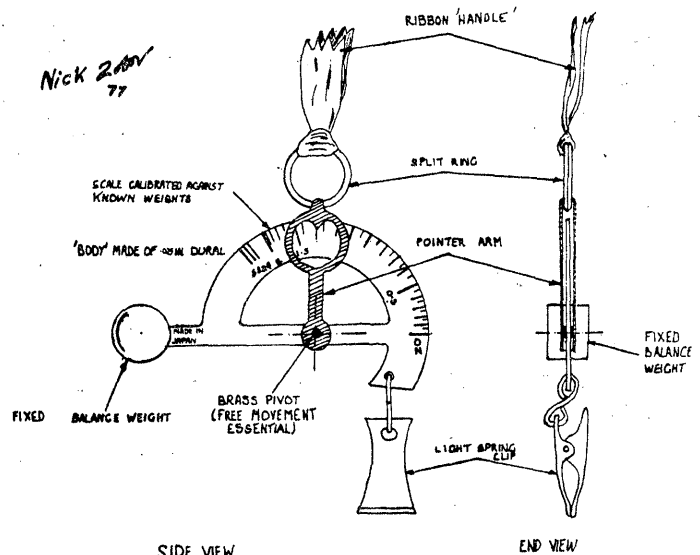
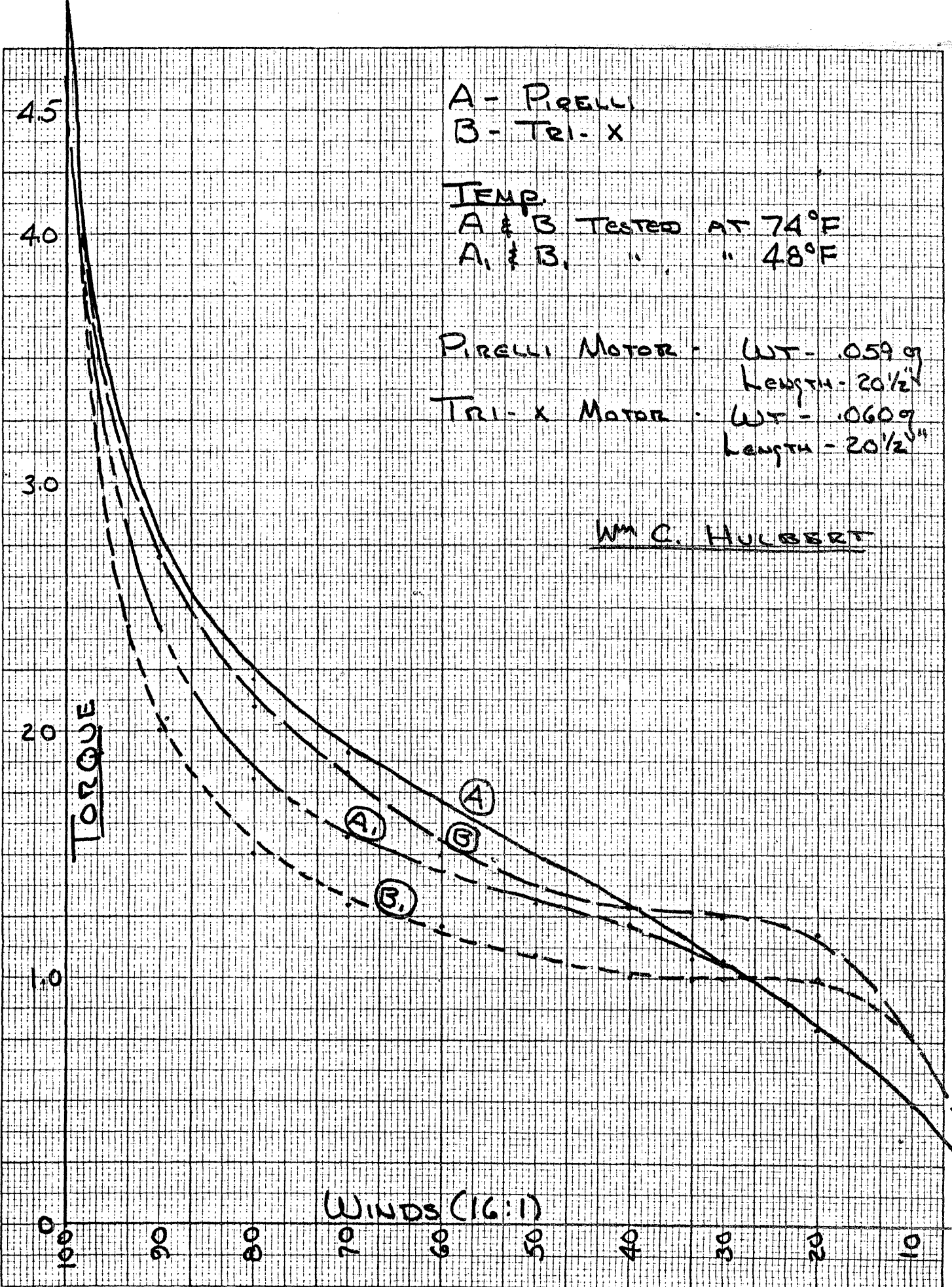


Fig 1. LIGHTWEIGHT POCKET BALANCE (FULL SIZE)

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



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 C 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

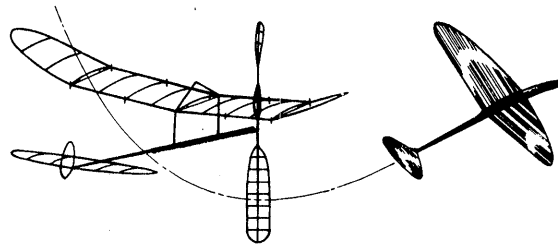
Due to the lateness of this issue, the deadline for entry in the 1978 NIMAS Postal will be extended to June 5, 1978 (postmark).

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

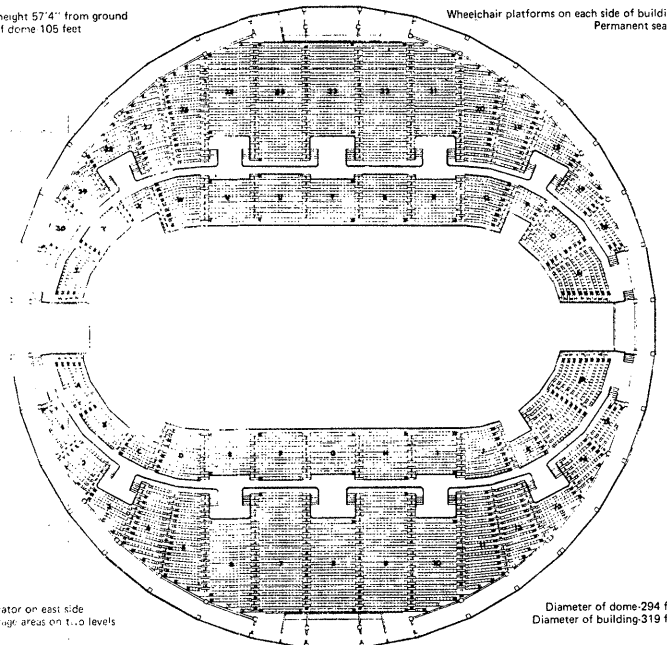
It has been noted that the A ROG photo on p. 2 of the April '77 INAV was identified as depicting Paul Shailor's model, but it was Richard Doig's model. Also, in the May '77 INAV, a number of NIMAS Awards were listed. The 6th one, Gold Cat. II, 25:25.4, was attributed to Richard Doig and should have been 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 Hultbert 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'ed 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 -

Don Lindley - Contest Director

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 -

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	3 Flt total
Mike Van Gorder 9:47.8	Jim Miller (Pike) 1	1	3:41.6
Team Servaites 8:50.4	Jim Miller (J-3 Cub) 2	3	:08
Walt Van Gorder 8:46.6	Jim Pulley (M-10) 3	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.

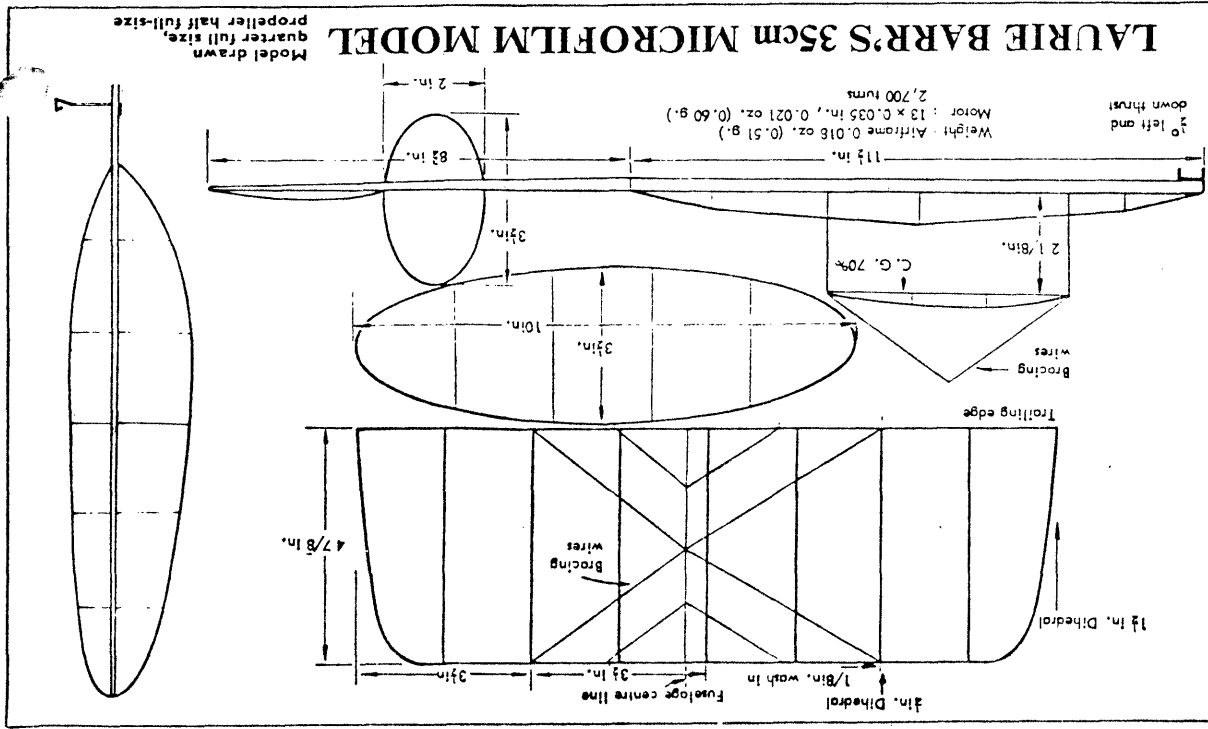
Dieter Siebenmann and Rene Butti were over from Switzerland getting some high ceiling practice, and flying the long moment arm models discussed by Dieter in the October '76 FFR. The next World Championships for Indoor are likely to be held in the salt mines at Slanic, Romania, and it is possible that 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	32.01	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



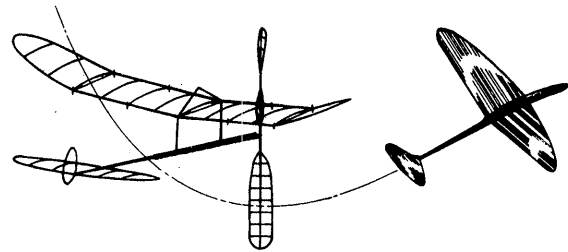
Laurie Barr's 35cm Microfilm Model
This model always impressed those fortunate enough to see it before its sad demise at the Nationals. Distinctive features included the large wing chord which largely overcame the severe rolling problems on high power, and the very long fuselage (over 20in. for a 14in. 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 <u>35:25</u> 37:57 100.00
2) Bill Tyler	28:11 26:02 34:55 5:00 <u>34:37</u> 27:34 96.08
3) Bob Platt, Jr.	31:18 25:37 1:09 <u>24:56</u> 28:00 36:34 93.78
4) Dan Domina	32:32 32:47 14:40 <u>31:09</u> <u>15:21</u> <u>34:23</u> 92.81
5) Manny Radoff	6:00 8:50 7:10 26:13 29:08 <u>33:52</u> 87.05
6) Richard Whitten	28:09 22:58 28:40 8:39 19:02 <u>31:52</u> 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 <u>21:47</u> <u>22:34</u> 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 CALENDAR

NEW 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.

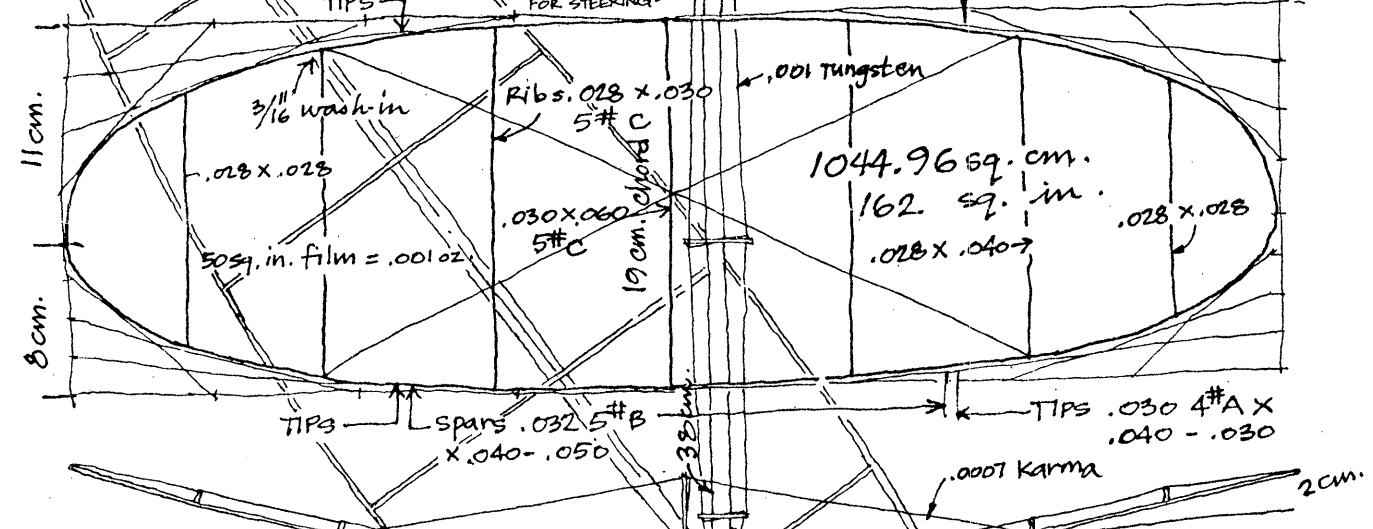
The planes are trimmed for maximum duration with 200 turns, i.e., for glide. They climb without a hitch when so trimmed. I tried some of Manny Radoff's great old Pirelli, but unfortunately went through the roof at 4 minutes or so.

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
 #5: .0070

BRACED	FRAME ONLY
.010	#1: .0063 oz.
.0107	#2: .0070
.012	#3: .0068
.010	#4: .0063
BROKEN	#5: .0070

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 # .012 "
#5: .0112 oz.	5 # .011 "

WT. WOOD

TAIL CONES

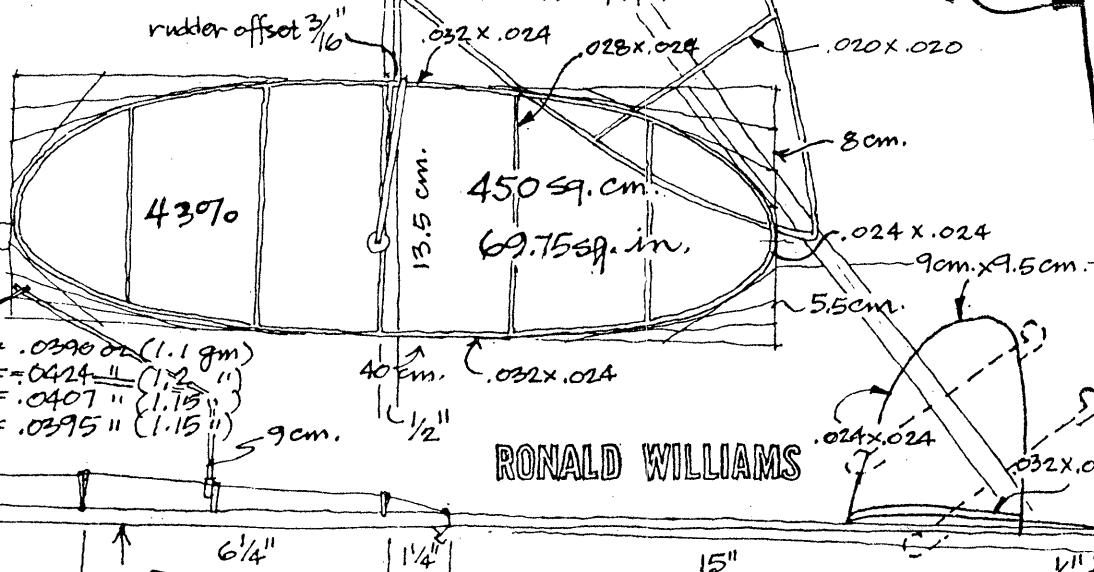
#1: .002	4 # .010 "
#2: .0043	4 1/2 # .011 "
#3: .0047	5 1/4 # .010 "
#4: .004	4 1/2 # .010 "
#5: .0048	4 1/2 # .010 "
#6: .0047	4 3/4 # .010 "

FRAME ONLY

STABS: #1-.003 ✓
 2-.0025 ✓
 3-.0024 ✓
 4-.0022 ✓
 5-.0032 ✓
 6-.003 ✓

FLYING ASSEMBLIES

- #3-.021 oz. + W#1 = .0296 oz (1.1 gm)
- #5-.0224 oz. + W#3 = .0424 "
- #2-.022 oz. + W#2 = .0407 "
- #1-.0204 oz. + W#4 = .0395 " (1.15 gm)



RONALD WILLIAMS

MAYFAI 77

EPHEMERA GUTTULATA
 IRON FRAUDATOR
 EPHEMERELLA ROTUNDA

EPHEMERELLA
 "

DOROTHEA
 INVARIA
 ATTENUATA (ARG)

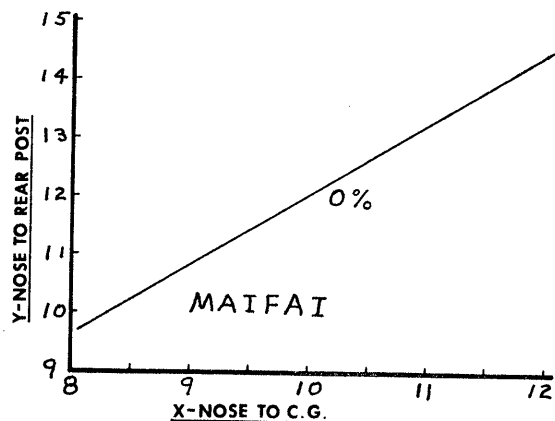
THIS IS AN INK TRACING OVER PENCILED BUILDING NOTES JUNE 1977

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.

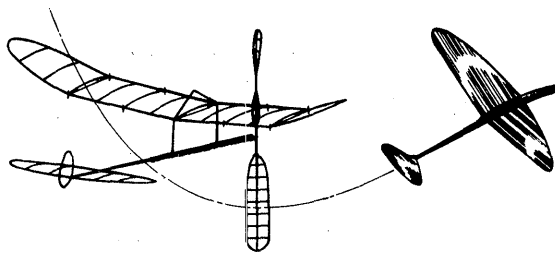
When the dye dries we hopefully will have a wrinkle free, uniformly colored piece of condenser paper on the frame which at a glance resembles yellow Japanese Tissue. The material can now be cut from the frame and applied to the model with your favorite condenser paper adhesive. I use a 50% or weaker 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
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(3 entries)

ORNITHOPTER

1. Al Rohrbaugh	3:08.3
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(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
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HELICOPTER

1. Dick Obarski	*8:47.6
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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.

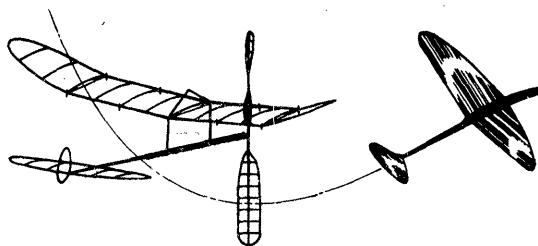
I do not favor making Easy B an official event for this reason: any such action has always resulted in making

(CONT. P.4)

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 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 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	Rank	Name	Time	Rank	Name	Time		
#1 Indoor Launch	JUNIOR																
	1.	Dave Turgeon	1:47.4	1.	Dave Lindley	11:50.6	1.	Mike Clem	7:03.6	1.	Nick Decarlis	128.5	1.	Tom Comparet	95		
	2.	Mike Clem	1:24.5	2.	Mike Clem	8:07.0	2.	Dave Lindley	5:14.9	2.	Guy Larsen	96	2.	Dan Isaacks	85		
	3.	William Langley	1:23.5	3.	Bradley Fulmer	5:51.0	3.	John Benepe	4:21.1	3.	Glenn Anderson	109	3.	Nick Decarlis	103		
	4.	Dave Lindley	1:17.6	SENIOR			4.	Susan Brown	3:51.8	4.	Frederick Stark	134.5	4.	Linda Brown	53		
	5.	Bryan Fulmer	1:17.4	1.	Joseph Kubina	8:40.2	5.	Bryan Fulmer	2:17.0	5.	Ronald Roberti	134	5.	Mark Valerius	134		
	6.	Bradley Fulmer	1:14.3	2.	Earl Hoffman	25:08.4	6.	Carl Linstrum	2:10.0	6.	John Martin	155	6.	Lloyd Wood	125		
	7.	Steve Spence	1:09.6	3.	Daniel Belieff	24:35.1	7.	Bob Boyer	8:10.2	7.	Clarence Mather	156	7.	Fred Anderson	121		
	8.	Kris Lane	1:02.3	4.	Stan Chilton	23:03.0	8.	Joseph Kubina	5:08.4	8.	Robert Dunham	115.9	8.	Robert Dunham	115.9		
	9.	Draycott Hooke	0:51.2	5.	William Shailor	22:02.0	9.	Peter Brown	4:02.0	9.	Alan McAdam	97	9.	Alan McAdam	97		
	10.	David Hooke	0:47.6	6.	Charlie Sotich	14:01.2	10.	Linda Brown	3:36.2	10.	R.J. Dunham	67	10.	R.J. Dunham	67		
	11.	Eric Vaughn	0:38.2	7.	Richard Doig	11:46.8	11.	Cezar Banks	10:10.2	11.	R.J. Dunham	66	11.	R.J. Dunham	66		
	12.	John Benepe	0:23.6	8.	Anthony Schott	9:47.0	12.	Louis Sutter	9:50.4	12.	Peanut Scale Indoor	78.5	12.	Peanut Scale Indoor	78.5		
	13.	Joe Henderson	0:22.3	SENIOR			1.	Richard Doig	8:49.7	1.	Tom Comparet	95	1.	Tom Comparet	95		
14.	Frank Henderson	0:11.3	2.	Paper Stick	8:38.8	2.	Earl Hoffman	8:30.2	2.	Dan Isaacks	85	2.	Dan Isaacks	85			
SENIOR																	
1.	Bob Boyer	1:50.1	1.	Dave Lindley	7:22.0	3.	Charlie Sotich	9:25.1	3.	Glenn Anderson	109	3.	Guy Larsen	61.7	3.	Guy Larsen	61.7
2.	Guy Larsen	1:35.8	2.	Mike Clem	5:33.0	4.	Rolf Gregory	9:02.2	4.	Nick Decarlis	103	4.	Linda Brown	53	4.	Linda Brown	53
3.	Brian Petty	1:22.5	3.	David Turgeon	5:33.0	5.	Richard Doig	8:49.7	5.	Clarence Mather	217.6	5.	Mark Valerius	134	5.	Mark Valerius	134
4.	Joseph Kubina	1:11.0	4.	Bob Boyer	9:16.8	6.	Earl Hoffman	8:30.2	6.	Charlie Sotich	200.2	6.	Lloyd Wood	125	6.	Lloyd Wood	125
5.	Robert Kubina	1:04.2	5.	Joseph Kubina	6:55.8	7.	Rolland Anderson	7:32.6	7.	Robert Dunham	160	7.	Fred Anderson	121	7.	Fred Anderson	121
6.	Peter Brown	0:57.7	6.	Stan Chilton	17:47.2	8.	Richard MacCleevy	5:57.0	8.	Robert Dunham	142	8.	Robert Dunham	115.9	8.	Robert Dunham	115.9
OPEN																	
1.	Paul Shailor	2:16.2	1.	Stan Chilton	17:23.5	1.	Mike Clem	8:22.0	1.	Clarence Mather	217.6	1.	Clarence Mather	217.6	1.	Clarence Mather	217.6
2.	Dale Segie	2:11.8	2.	Dan Domina	14:56.8	2.	Bradley Fulmer	7:43.0	2.	Charlie Sotich	200.2	2.	Charlie Sotich	200.2	2.	Charlie Sotich	200.2
3.	Stan Stoy	2:02.3	3.	Louis Sutter	14:40.2	3.	David Turgeon	5:44.0	3.	Ronald Roberti	160	3.	Ronald Roberti	160	3.	Ronald Roberti	160
4.	Robert Dunham	2:00.8	4.	Richard Doig	14:37.6	4.	Kevin Loeffler	4:42.5	4.	Frederick Stark	142	4.	Frederick Stark	142	4.	Frederick Stark	142
5.	Dan Domina	2:00.2	5.	Charlie Sotich	14:36.6	5.	Susan Brown	4:30.0	5.	Mark Valerius	134	5.	Mark Valerius	134	5.	Mark Valerius	134
6.	Frank Sharpton	1:59.9	6.	Robert Dunham	12:18.0	6.	John Benepe	2:55.0	6.	Lloyd Wood	125	6.	Lloyd Wood	125	6.	Lloyd Wood	125
7.	Rudy Klumber	1:57.6	7.	Ronald Roberti	12:03.2	7.	John Benepe	2:55.0	7.	Fred Anderson	121	7.	Fred Anderson	121	7.	Fred Anderson	121
8.	Dick Mathis	1:53.9	8.	Cabin	3:23.1	8.	Bob Boyer	9:54.4	8.	Robert Dunham	115.9	8.	Robert Dunham	115.9	8.	Robert Dunham	115.9
9.	Terry Rimert	1:49.0	9.	Mike Clem	2:49.6	9.	Peter Brown	6:32.1	9.	Alan McAdam	97	9.	Alan McAdam	97	9.	Alan McAdam	97
10.	John Sites	1:43.9	10.	Bryan Fulmer	1:37.2	10.	Linda Brown	4:16.5	10.	John Martin	91.9	10.	John Martin	91.9	10.	John Martin	91.9
11.	Ronald Roberti	1:41.2	11.	Carl Linstrum	2:12.0	11.	Stan Chilton	14:31.4	11.	R.J. Dunham	67	11.	R.J. Dunham	67	11.	R.J. Dunham	67
12.	Larry McFarland	1:40.7	12.	Joseph Kubina	2:12.0	12.	Stan Chilton	14:31.4	12.	John Pagan Jr	64	12.	John Pagan Jr	64	12.	John Pagan Jr	64
13.	Glenn Lee	1:38.0	13.	Dan Domina	16:35.0	13.	Stan Chilton	14:31.4	13.	John Pagan Jr	64	13.	John Pagan Jr	64	13.	John Pagan Jr	64
14.	Gerald Guiles	1:35.7	14.	R J Dunham	16:09.0	14.	Cezar Banks	13:44.5	14.	John Pagan Jr	64	14.	John Pagan Jr	64	14.	John Pagan Jr	64
15.	Phil Sullivan	1:32.6	15.	Greg Simon	14:02.0	15.	Clarence Mather	12:37.2	15.	John Pagan Jr	64	15.	John Pagan Jr	64	15.	John Pagan Jr	64
16.	Daniel Belieff	1:31.1	16.	Robert Dunham	12:07.0	16.	Clarence Mather	12:37.2	16.	John Pagan Jr	64	16.	John Pagan Jr	64	16.	John Pagan Jr	64
17.	Greg Simon	1:29.2	17.	Louis Sutter	9:13.0	17.	Earl Hoffman	11:51.7	17.	John Pagan Jr	64	17.	John Pagan Jr	64	17.	John Pagan Jr	64
18.	William Schlarb	1:20.4	18.	Richard Doig	6:16.0	18.	Ronald Roberti	10:22.5	18.	John Pagan Jr	64	18.	John Pagan Jr	64	18.	John Pagan Jr	64
19.	Steve Geraghty	1:19.3	19.	Richard Doig	6:16.0	19.	Louis Sutter	9:26.0	19.	John Pagan Jr	64	19.	John Pagan Jr	64	19.	John Pagan Jr	64
20.	Jim Thomerson	1:15.2	20.	Richard Doig	6:16.0	20.	Jim Clem	8:38.7	20.	John Pagan Jr	64	20.	John Pagan Jr	64	20.	John Pagan Jr	64
21.	Bill Langley	1:13.6	21.	Richard Doig	6:16.0	21.	Jim Clem	8:38.7	21.	John Pagan Jr	64	21.	John Pagan Jr	64	21.	John Pagan Jr	64
22.	Jim Stewart	1:08.4	22.	Richard Doig	6:16.0	22.	Jim Stewart	7:35.5	22.	John Pagan Jr	64	22.	John Pagan Jr	64	22.	John Pagan Jr	64
23.	Charles Markos	1:05.4	23.	Richard Doig	6:16.0	23.	Indoor AMA Scale	7:35.5	23.	John Pagan Jr	64	23.	John Pagan Jr	64	23.	John Pagan Jr	64
24.	Ronald Talley	1:04.2	24.	Richard Doig	6:16.0	24.	Indoor AMA Scale	7:35.5	24.	John Pagan Jr	64	24.	John Pagan Jr	64	24.	John Pagan Jr	64
25.	Charles Adams	0:44.9	25.	Richard Doig	6:16.0	25.	Indoor AMA Scale	7:35.5	25.	John Pagan Jr	64	25.	John Pagan Jr	64	25.	John Pagan Jr	64

