

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

JANUARY 1962

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

Last month the NIMAS column carried the story of the formation, aims, and other details of our special organization. This month we have a more detailed account of the most important facet of NIMAS - the ballot by which official policy is determined.

Since a few questions have come up in regard to NIMAS membership and the use of the ballot, these comments should clear up some of the points in doubt.

INDOOR NEWS AND VIEWS is available without NIMAS membership, if desired, but NIMAS membership without the newsletter will not be feasible.

The newsletter must be a part of the membership so the exact wording of any proposal is clear at the time the ballot is used. All items of official NIMAS business will require the careful and individual attention of each member for the vote to have meaning.

Please note - non-members who subscribe may use the ballot to express their opinion, and these opinions will be made known. However, each time a ballot is issued the effect will be a roll call vote, and ballots not returned will be considered to be affirmative, if this is applicable. NIMAS policy on any given matter will then be determined by the outcome of the official balloting.

In order to keep the voting truly representative of all indoor flyers, members of a club should cast individual votes rather than a group vote. If this is not done, a group decision by several individuals can be nullified by the first opposing vote cast by some other member.

To summarize, ballots are to be filled out and returned to Box 545, Richardson, Texas as soon as you can possibly reach a decision. Ballots issued to NIMAS members and not returned will be counted as a vote of "yes", unless a stated choice of several alternatives is offered. Non-members can have their vote counted by joining NIMAS when they return the ballot, otherwise the ballot will be counted as an opinion only.

The latest word from Pete Sotich is that AMA HQ is fully in favor of our group and others like it, and that a special charter will be issued when one is made up. This may take time, however, so let us hear from NIMAS members. Drop us a postcard and tell us if you would prefer to wait for the special charter, or if we should apply for a regular club charter until the special charter is ready. Send the postcards to Bud Tenny, Box 545, Richardson, Texas.

There are still plenty of NIMAS memberships available, so step right up and get the biggest bargain open to bona fide indoor flyers - only \$3 per year. A subscription to INDOOR NEWS is included, and you can help guide the future of indoor modelling!

****FAI INDOOR REPORT****

About 48 hours too late to stop the presses, word came from Chairman Joe Bilgri that some changes had been made in the previously announced FAI Indoor Elims procedure, and details came from Dick Kowalski later in the month. Slight changes were made in the set-up of all three elims as follows:

Local elims - Three flights using AMA rules, best time wins, three models permitted.

Quarter finals - Instead of six qualifiers permitted at Chicago, eight will be qualified.

Semi-finals - Flights where models collide with another may be re-flown.

****LATE WORD ON SOLID STICKS****

Rudy Kluber, District III FF CB member, reports that the Solid Stick Proposal has been recalled and that the 1961 Paper Stick rules will apply again in 1962.

Really, we are kinda sorry to see that happen. Our mail was entertainingly enlivened by many well-written comments about that subject. If NIMAS members will put one-tenth the effort behind our program as was expended on the Paper Stick proposal, NIMAS will be a howling success.

****FUN MODELS****

For over a year, the WIMAC bunch have been flying "formula models", the Easy B class. Basically, these are "quickies", enabling novices to learn more and well pro's to keep their hand in. These models fit in well with Dunwoody's remarks about a beginner class. (INDOOR NEWS - October '61) They might well be a logical replacement for the Paper Stick proposal, and seem to fit in well with the Chicago Aeronauts' original intent.

Briefly, the "formula" is this: 18" span, 3" chord, all-balsa prop, solid stick and boom, and no bracing permitted. In order to simplify processing, a similar no-holds-barred event is being tried in the Ft. Worth-Dallas area, the results will be reported as soon as they are available.

****ANOTHER GLIDER PROPOSAL****

Recently, Tem Johnson sent us a carbon of another indoor hand launch glider proposal which has been sent to John Patton for distribution to the FF Contest Board for preliminary approval. This makes a total of four such proposals before the board, which should make an interesting situation for a while until they all get sorted out. Mr. Johnson's proposal contains four parts as follows:

1. Delete the second sentence in paragraph 13.1.
2. Delete paragraph 13.2 and substitute the following: Minimum Surface Loading. An indoor hand launched glider must weigh at least 0.002 ounces for each square inch of supporting surface area. Supporting surface area enclosed in a fuselage shall not be considered.
3. Delete paragraph 13.3.
4. Delete the words "released or" in the first sentence of paragraph 13.4.

Quite possibly the time will be right for NIMAS action by the time for the February issue. If so, all these proposals will be summarized and a ballot issued with the February issue. The results of this ballot will then be made known to the Contest Board for their consideration.

"NICE PEOPLE"

For years we have been aware that model builders were some of the nicest people we know, which isn't necessarily a biased viewpoint. If there had been any doubt of this, our Christmas weekend experiences would have removed all uncertainty.

On a trip to visit relatives, we stopped to visit on both legs of the journey. In Fayetteville, Arkansas Dick Ganslen and family rolled out the welcome mat and made us feel at home immediately.

Dick, who is an old-time rubber and glider man, and an avid indoor flyer besides, has an additional bit of welcome for visiting indoor flyers. He usually manages to get into the fieldhouse of the University of Arkansas for an indoor session. This time was no exception, and we got to limber up our models for over three hours. This was our first chance at Category II flying for over six months, and enabled us to check out this season's models more thoroughly.

On the return trip, Bill Netzeband put us up at his home in Tulsa, and again the welcome mat was out. Bill is past president of the Tulsa Glue Dobbers, and made it possible for us to meet Dave Carter of the FF section. Dave is interested in indoor and plans to cajole the Dobbers into flying a little indoor. Our bull session lasted into the wee hours, and left us hoarse from talking.

Of course, the hospitality is always wonderful at times like this, but the real treat is the opportunity for more bull sessions. Without these bull sessions, our hobby would soon be characterized by its lack of change and challenge. Bull sessions provide direct stimulation for all participants, and many new ideas are triggered in this way. Often, the result is a new model class or a new record for others to shoot at.

Consequently, we take this opportunity to thank our recent hosts again for the opportunity to "recharge our mental batteries"; truly, they are nice people.

DRAFTSMAN STILL WANTED

Last month we issued a plea for volunteer draftsmen to help prepare plans for publication. Just before this issue went to press, one man stepped forward and offered to help. He is welcome, but we will need more volunteers so no one will be overloaded. Volunteer work is one thing - let's not make a slave out of this man!

The amount of work involved varies from tracing a set of plans in ink, to re-arranging a set of plans or redrawing them to proper size.

****GETTING STARTED****

We have received mail which asks the question, "How do I get started in indoor?", or, "How can I get regular indoor sessions started in my area?". Far be it from us to assume we know enough to answer such questions completely, but we hope to point out a general direction and cheer you on.

We read with delight an account of how one group solved their problem a very good program. The group: The Union Model Airplane Club of Union, New Jersey; the problem: develop indoor activity to bridge over the winter months of cold weather and low activity.

This group was fortunate enough to be able to start with an impressive list of old-timers such as C. V. Russo, John Tricolo, Ernest Kopecky, Julius Rudy, Emanuel Radoff, Dave Call, Bill Bigge, and Pete Andrews. With that list of indoor buffs, one might be tempted to ask, "Who needs an indoor program?" However, these fellows realized that their total experience wouldn't help the average builder one iota unless a carefully developed program was set up to help him start right and develop to his maximum potential.

What kind of program did they come up with? To start, an auditorium was obtained for their meetings, and R.O.G. models built "stock" from kits were flown at the first meeting. The club furnished identical loops of rubber for each flyer, and then helped them to adjust and fly the models.

As a follow-up to this program, the next meeting went into how the kit models could be "souped up" to increase performance, followed by a contest to test the newly-acquired skills. The next meeting will combine a Category I record trials with discussion and demonstration of advanced building techniques. Final meetings will round out the program with special awards for neatness, originality, and time, plus a contest for all classes of indoor models.

Before someone complains that they don't have all that talent, bear in mind that similar programs will work even if everyone starts at similar skill levels, but it will take longer to reach the top. The basic principle is to start with simple models and gradually work up to lighter models until microfilm models are mastered. Then practice will make the difference, the more practice the better.

Unfortunately we know of very little printed material which deals with indoor techniques. However, there is a booklet entitled "Indoor Sketchbook" sold by Lew Gitlow, 2763 Roseview Ave., Los Angeles 65, California which puts more basic indoor information under one cover than we've seen any other place. After all, indoor models are simple until you get fussy over the weight, all the rest is practice. Send Lew \$1 and ask him for a sketchbook - every group should have one.

The basic necessities for starting an indoor group are: a place to meet and fly regularly and often, and a group of people interested in indoor flying. All the rest are luxuries, to be acquired as the group grows and has need of them. Further, the flying site need not be higher than 12'-15', but the ceiling should be reasonably smooth and the floor space should be at least 20' x 30' or more if possible.

Higher sites (over 30') unless they are perfectly smooth, can present more problems than advantages until the flyers learn to control the climb so hang-ups can be avoided. Nothing can discourage a novice so much as to hang a model and demolish it while retrieving! Besides, the larger sites are harder to get, especially until the group proves they have outgrown the smaller site.

Personally, we wouldn't recommend any microfilm projects for a while unless an experienced indoor man is around to give help. Simple paper covered models are much better to start with, and will polish all aspects of indoor building except for the techniques of microfilm models.

Keep the size of the models down to about 18" span so they will work in your smaller site, and concentrate on learning building and flying. Most important - fly regularly and often. This improves technique more than any other single thing - no matter what kind of models you fly.

One final point, and that is where to buy indoor supplies? If there is no indoor activity near, you will have to mail order supplies from one of two sources:

Jem Supplies	Micro-Dyne Precision Prod.
2979 Dudley	P. O. Box 65774
Lincoln, Nebraska	Los Angeles 65, California

****LATE FLASH****

PETE SOTICH HAS BEEN REELECTED AS PRESIDENT OF AMA! We wish Pete the best of everything as he again assumes one of the most important and thankless jobs we know of.

QUESTIONS AND ANSWERS

Last month, at the initiation of this column, we indicated that some questions would be thrown out for general comment, while others would be sent to some person generally accepted as expert for his comment. To aid in keeping the questions straight without repeating them, each question will be referred to by the number assigned here in the column.

Bill Bigge responded to the December column by answering questions #1 and #3 as follows:

1. "It is news to me that there are accepted stab and rudder areas. My rule-of-thumb is: Stab area x moment arm = wing area x average wing chord. Rudder diameter = 1/4 prop diameter. Sounds like a lot - it is a lot. - but the thing always climbs well under high power. The propeller diameter should be as much as the model will take and fly well up to 60% of the wingspan. Use a popular blade width or aspect ratio. Pitch/diameter ratio should be 1.7 or more unless it flares."

3. "There is no relation between fuselage length and wing span. (see preceding paragraph) The relation between the motor stick and boom is a matter of emphasis. A short stick cuts weight but tends to let the C.G. move too far back. Likewise, the wing aspect ratio is a compromise between weight, drag, and torque control. If you are a lot better at building wings than fuselages, use long wings and short fuselages. Note that similar models of the same wing loading should have the same duration and use motors of the same length."

Bill was one of three persons asked the following questions for comment here:

4. "Dave Call always stresses efficiency and Bill Bigge sent me a formula showing a gain (in efficiency) will result in twice the time gain as if weight were saved." (Quoting from the original source of question)

5. At this point your editor injected a question - How about a discussion of efficiency of indoor models?

6. What is the best prop shape? Records and phenomenal times have been done as of late with both teardrop and straight shape props.

7. Why do we fly with torque? Why not fly against torque?

8. What is the best way to control torque? Wash-in? Offset? Extra area? Prop offset?

Bill responded, answering the one on efficiency first:

Let v = the sinking speed of model gliding, with motor and prop replaced with ballast, in feet/second, and:

V = energy potential of rubber, foot pounds/pound

T = duration in seconds

W_r = weight of rubber

W_s = weight of structure

d = air density

A = area of lifting surface

C_d = coefficient of drag

C_l = coefficient of lift

θ = gliding angle

E = efficiency, so called

Then $T = V/v \times W_r / (W_r + W_s) \times E$

and $v = \sqrt{2(W_s + W_r) / dA} \times C_d / (C_l)^{3/2} \times (\cos \theta)^{3/2}$

Putting in some approximate values, let $T = 2000$ seconds, $V = 2400$ ft. lbs./lb., $W_r / (W_s + W_r) = 0.5$, and $v = 0.3$ feet/second. Then $E = 0.5$. That is, the product of what may be called energy storage efficiency, propeller efficiency, and flight pattern efficiency is $1/2$. Maybe the value chosen for V is too large - the other figures are reasonable, and E looks almost too good.

On question #4 Bill comments, with relation to the formulas already given:

A 1% increase in efficiency will increase duration by 1%. A decrease in W_s of 1% with no change in W_r , will decrease $(W_r + W_s)$ by $W_s / (W_r + W_s)\%$. Because of the square root, this decrease in weight will decrease v by $\frac{1}{2} W_s / (W_r + W_s)\%$, that is, by $3/4\%$ or less if W_s is equal to or less than W_r , as it should be. The model should fly $\frac{1}{2}\%$ higher and farther and $\frac{1}{4}\%$ slower. If W_s and W_r are each reduced 1%, usually a more realistic condition, (and convenient - Ed) the altitude reached is unchanged and the duration is increased $\frac{1}{2}\%$. Thus the remark that efficiency is twice as important as weight. The ratio of induced drag to total drag, ignored here, could also be called efficiency and is equally important.

On Questions #6, #7, and #8, Bill comments:

The best prop shape is the one that the individual can use for his purpose with best results. A well-balanced, properly flaring prop of any reasonable form is better than a poorly engineered prop of the best form. In other words, I plead ignorance.

The initial choice is between one spar and two spars. I have a suspicion that both the best props and the worst props are monospars. A greater variety of blade shapes is feasible with monospars. On theoretical grounds I lean toward having area concentrated near the mean radius but would not be surprised if the taper toward the tip should be concave instead of convex, at least part of the way. A possible advantage is that spar stiffness toward the tip could be reduced. In practice, structural considerations may be controlling.

I fly with torque because when my 1956 "C" flew against torque the circle opened on high power. If the rudder is adequate a model will turn more readily with torque. To fly against torque requires more extreme adjustments, which tend to reduce efficiency.

Torque is controlled by extra area and wash-in. I don't know what offset is unless it is extra area or swinging the left wingtip forward. Slew the entire wing, as mentioned, building the wing with dihedral ribs rotated clockwise as viewed from above, and left thrust (offset?) are all essentially methods of getting extra wash-in on the left tip relative to the right. Extra area may be the most efficient control means in steady flight. Wash-in gives the model a better chance to recover from improper flight attitudes at high power. It also tends to make the model dive straight ahead when falling off a girder, and gives it a better chance to clear the next time around.

NEWS FROM AROUND THE COUNTRY

CALIFORNIA-WILMINGTON

Dave Copple reports that the December session at Wilhall had a large turn-out for the contest-record trials. The Easy B class seems to be turning out lots of new people for their sessions.

On the following weekend, these boys flew at the Los Angeles Armory, Easy B's again. Over twenty entries in Expert category. Tom Finch topped the crowd in the 44' ceiling, turning 10:30.

CALIFORNIA-BAKERSFIELD

From Herman Stubblefield in Bakersfield we hear that several fellows in the Bakersfield club are flying miniature gliders in their meeting hall, and plan to give rubber ships a try if they can find a site.

INDIANA-KOKOMO

During the last month we heard from Chuck Borneman of the Kokomo Knights of The Round Table, who sent a letter and copies of the club newsletter. Anyone in that area interested in indoor flying should contact Chuck at 1401 West Taylor, Kokomo.

This club, once exclusively a control line club, has now branched out into free flight events and also indoor events. Their flying site at Bunker Hill AFB is at the low end of Category II with about 45' ceiling.

The HLG boys are working toward the 0:40 mark, the club record is 0:34.6 and there was an unofficial mark of 0:39.0. One of the club juniors jumped up with a mike ship which has turned a high of 7:54.

Two of the more active indoor flyers at each event are members of the BHAFB Model Club, and are responsible for the site availability. They are Captain J W. Hardin and CWO Herb Summers.

ILLINOIS-CHICAGO

Times in the weekly Madison Street Armory sessions (75' ceiling) have been climbing, as a result of lots practice flying, Pete Sotich reports. Tom Neumann, 18, has worked a modified Sweepette up to 1:08.6, while his brother Dan, 14, followed close with 1:02.6.

FAI times have been climbing past the times from the elims last year. Bob DeBatty recently topped out at 26:23.0, Charlie Sotich turned 22:00+, and Don Kintzele 20:00+.

MISSOURI-KANSAS CITY

Tom Johnson comments on his record-holding joint effort with Dick Stamm, "The why of the relatively heavy paper covered ship is that paper covering can take hang-ups without losing its skin. Around here there's not much percentage in trying to build exceptionally light planes for the same reason as paper covering and also because the air is usually quite turbulent. Heavy ships ride right through bumps that stall light ones. Of course, as we gain skill and fly closer to a plane's performance limit, lightness will count."

MISSOURI-ST. LOUIS

Ed Veselsky reports that indoor flying in St. Louis is starting up again after being dormant for 8 or 10 years. Members of the Kirkwood Thermaleers have been putting on flying demonstrations for Boy Scout troops and similar groups, and they feel there is a possibility of getting back into the site of Carl Goldberg's famous 23 minute flight of years ago.

WASHINGTON-SEATTLE

Phil Hainer suggests method for test flying Cat. I ships for maximum potential - fly them G-line on .001 wire. He sez both he and Hu Entrop have broken 13:00 with Class A ROG's in their living room!

THE HAND LAUNCH GLIDER

PART TWO

by RICHARD MILLER

HISTORY (cont.)

In the life of every model type, as in the life of most cultures, there is a Golden Age. This is the time near the beginning, the time of development, of trial and error when the essential form related to the specific function evolves. This period is to the later history of the model what the frontier is to the settled community. It is in general a more exciting time than what comes later. It is likely to be remembered with nostalgia by those who lived through it; they are likely to be a bit scornful of the lack of originality of the newcomers and the "set" designs they fly without realizing that each generation faces whatever challenges are open to it as best it can and leaves, in turn, its own Golden Age.

In most model types this period of development seems to take from 5 to 10 years. During it the lasting characteristics are evolved; beyond that there are inevitable changes and refinements but very little basic change. For the modern rubber model this period seems to have been the thirties. For U-Control and the single-channel RC model it was the time just following the war. For the hand launch glider, which coincides closely in this respect with the gas model, the early thirties was the time of getting ready while the real development took place in the late thirties and, after the interruption of the war, to a lesser extent in the late forties.

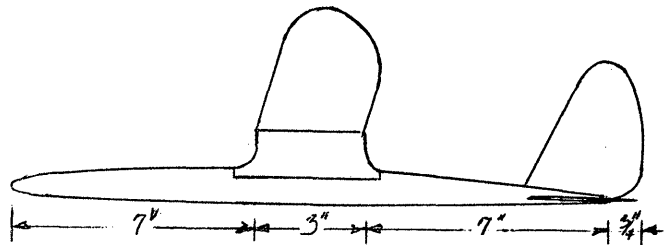
Nevertheless, by as early as 1933 HLG activity was widespread and important enough to warrant rules governing them. In April of that year - possibly in contemplation of the coming Nationals - the NAA established three classes: "A" (up to 30 sq. in.); "B" (30-65 sq. in.) and "C" (65-125 sq. in.) By September of the same year we find the first official record for HLG. Senior John Romanski did 28.4 seconds.

The first HLG plan I came across in researching back issues of M. A. N. appears in an article by Carl Goldberg entitled "Keeping Pace With Model Science". Date: October '33. The design is by John Young (no dimensions given) which features a pylon (popular in those days), sweptback wings, ordinary dihedral and a huge rudder. The model's best flight was 1 hour and 7 minutes o.o.s. from New York's Van Courtland Park.

The first bona fide HLG article, "How To Build a Simple Glider" by Marion Thomas of Topeka, Kansas comes along in April of 1934. Although the span of this one is a scant 11-1/4 inches one feature is outstanding; it has Nordic type polyhedral. Mr. Thomas informs us that the dead air time (on which there will be a few cynical comments later, like in May of '63) of this up-to-date machine is 17-18 seconds and that with all the forces of God and man in conjunction it hits as high as 21 seconds. Add about a minute to that and you have the struggle of the early sixties.

In the October '34 issue I came across the first two records which were specified as being "indoor". These were both by a senior, David Hecht of NYC. One was a class A record of 34.4 seconds, the other a Class B record of 31.6 seconds. The same list, incidentally, carries Goldberg's indoor tractor time of 22:59.4.

By February of 1935 the IHLG has come adequately of age to warrant its own honest-to-goodness plan and article in M. A. N. The design is by John Young and a lot like his earlier hour and 7-min. machine in the Goldberg article. The span is 19-1/2" and the chord 3" with 3-1/2" under each tip and a little sweepback. Things we might find a little odd looking today are the 1-1/2" pylon on which the wing sets and the fact that 7" of the 17-3/4" fuselage is ahead of the wing leading edge. Of possibly even greater interest (at any time) is the fact that the 1/8" sheet wing, as well as the tail surfaces, have a symmetrical section!

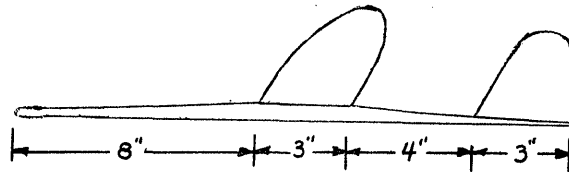


JOHN YOUNG

M. A. N. FEB. 1935

The total weight of the glider is .6 oz. The builder got his turn, as was common in those days, by a combination of wash-in in the right panel and left rudder. The model featured no finger grip (I guess you grasped the pylon) and I wonder who would like to state unequivocally that he could do 43 seconds indoors with such a machine today?

Or 52 seconds with the "World Record Indoor Hand Launch Glider" presented in the April 1937 M. A. N. by Tex Rickard of San Antonio, Texas? This Class B machine is a lot like Young's and with its 8" nose gap and 4" tail gap are just about opposite of what we have today. (Incidentally I was unable to find either of the times claimed for these gliders in the official records which I saw - but I didn't see them all.)



TEX RICKARD

M. A. N. AR 37

During the years just before the Second World War - after the ground work done in New York and Texas - IHLG design and development fell into the hands of Chicagoans in general and of the Chicago Aeronauts in particular. That club dominates IHLG records, and a good deal of indoor activity as well, during this time and the names which appear most frequently are those of Goldberg, Simmers, Obarski, Hugelot and Matulis.

If there was a Golden Age of IHLG this pre-war period in the old Madison Street Armory was surely it. The records recorded below (from Zaic's Model Aeronautic Encyclopedia vol. 2) were effective as of March 1st, 1938 and indicate the degree of refinement in building and flying which had been achieved by then:

Class "A"			
Jr;	Milton Hugelot	Chi, Ill.	44.5s
Sr;	Wallace Simmers	Chi, Ill.	49.3s
Sr;	Carl Goldberg	Chi, Ill.	47.5s
Class "B"			
Jr;	Robert Gelbard	Chi; Ill.	49.2s
Sr;	Wallace Simmers	Chi; Ill.	58.4s
Op;	Carl Goldberg	Chi; Ill.	47.5s

It could be that, having broken many a fuselage on many a Saturday morning in that armory myself that I'm a little prejudiced - but those sure seem like the good old days to me.

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

FEBRUARY 1962

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

****FAI INDOOR REPORT****

It was hoped that our first official NIMAS ballot could be distributed with this issue, but Rudy Klumber reminded us that there are four new CB members, and the new chairman had not been appointed. So there will be no rush for an official position until next month.

In response to several requests, we agreed to print the names and addresses of NIMAS members so we all can get acquainted as the opportunity arises. As of January 31, 1962 this is the official membership list:

JIM ANDREWS, 2323 S. Lancaster, Dallas, Texas
DENNIS ARONSON, 1804 N. San Antonio Ave, Pomona, Calif.
JOE BILGRI, 256½ Locust Street, San Jose, California
RICHARD BLACK, 3214 Ash, Independence, Missouri
CHUCK BORNEMAN, 1401 W. Taylor Street, Kokomo, Indiana
HARDY BRODERMAN, 4729 Walnut Lake Rd., Birmingham, Mich.
STAN CHILTON, 446 Ida, Wichita, Kansas
DAVE COPPLE, 823 S. Mariposa, Apt.#1, Los Angeles 5, Calif.
RICHY EARLE, 522 Pittman, Richardson, Texas
HUBERT ENTROP, 6751 22nd St., N.W., Seattle 7, Washington
EDGAR FRANKLIN, 226 Harrington St., Bergenfield, N. J.
LEW GITLOW, 2673 Roseview Avenue, Los Angeles 5, Calif.
JIM GRANT, 70 Craigs Road, Windsor, Connecticut
PHILLIP HAINER, 10412 S. E. 228th St. Kent, Washington
EUGENE HANSEN, 26128 Hopkins, Inkster, Michigan
RAY HARLAN, 71 Brighton Avenue, Allston 34, Mass.
JAKE JAEGER, 2812 Purdue Road, Kettering 20, Ohio
CURTIS JANKE, 1612 South 7th St., Sheboygan, Wisconsin
HOWARD JOHNSON, 11543 S. Haas Avenue, Los Angeles 47, Calif
TEM JOHNSON, 444 W. 68th Terrace, Kansas City 13, Missouri
JIM KAGAWA, 1513 W. 124th St., Los Angeles 47, California
DENNIS KARGOL, 7502 West Berceau, Chicago 34, Illinois
DON KINTZLE, 2016 S. 68th. St., West Allis, Wisconsin
DICK KOWALSKI, 20203 Moenart, Detroit 34, Michigan
RUDY KLUMBER, 14325 Lakewood Hts. Blvd., Cleveland 7, Ohio
ALTER C. KUTAY, 110 Hatlen, Mt. Prospect, Illinois
LARENCE MATHER, 1224 Franklin Blvd., Ann Arbor, Michigan
CHUCK MEYERS, 4208 N. Leslie Ave. Indianapolis 26, Ind.
WALLY MILLER, 22142 Welby Way, Canoga Park, California
RICHARD MILLER, P. O. Box 27, New York 23, New York
WALTER MUMFER, 724 E. Michigan St., Ottawa, Illinois
TED PFEIFFER, 1740 Menahan St., Ridgewood 37, New York
LEE POLANSKY, St. Joseph's Church, L.B. 987, Bryan, Texas
GUY ROGERS, 1333 Norwood, Hurst, Texas
C. V. RUSSO, 143 Willow Way, Clark, New Jersey
GENE SCHAAP, 4539 S. Spaulding Avenue, Chicago 32, Ill.
WALTER SCHRODER, 551 Fifth Avenue, New York 17, New York
DICK SHERMAN, 408 River Road, Tewksbury, Mass.
CHARLIE SOTICH, 3851 W. 62nd Place, Chicago 29, Illinois
PETE SOTICH, 3851 W. 62nd. Place, Chicago 29, Illinois
CHUCK TRACY, c/o CLEVELAND PRESS, Cleveland 14, Ohio
ED VESELSKY, 2752 A Chippewa, St. Louis 18, Missouri
W. J. WILLIAMS, 1348 N. 2nd. Avenue, Upland, California

Although overseas modelers cannot vote for issues which affect only U. S. indoor flyers, their opinions are welcome and desired, the practice will be to make foreign subscribers honorary members of NIMAS. The first of our honorary members is: Boyd Felstead, 12 Kellatie Rd., Montagu Bay, Tasmania, Australia.

As a matter of reminder, the way to join NIMAS is to send \$3 to Bud Tenny, Box 545, Richardson, Texas. As a member you will receive a year's subscription to INDOOR NEWS AND VIEWS, decals for your equipment (eventually), and the chance to guide the present and future development of indoor flying.

Speaking of the decals, we should have a preliminary sketch available before too long. Please have patience on the matter of the decals, since the design, art work, etc. are a matter of spare time work.

Spare time? What's that? If you have received a post card in answer to a letter, please don't be offended. Your editor initiated about ninety letters and cards in answer to incoming mail during December, and the present total as the paper is being put to bed is 103 during January, with about 10 letters waiting.

The last paragraph was not a gripe, the response to INDOOR NEWS has been terrific and gratifying! Without all this mail, we would have to write the whole thing, and the results would be far from satisfactory. Thanks to all!

At this time of the year, the main FAI Indoor news is the where? and when? of the elimination contests. Our information is somewhat sketchy for some areas, so we can only plead for more info. For all FAI CD's, if you have a minute after notifying your Area Committee Chairman, drop INDOOR NEWS, Box 545, Richardson, Texas a line so we can spread the word. Free publicity never hurt any contest!

FAI INDOOR LOCAL ELIMS

Moffet Field - April 2, 1962, Moffet Hangar??
Joe Bilgri, 256½ Locust St., San Jose, California
Los Angeles - April 21, 1962, L. A. Armory
Dave Copple, 823 S. Mariposa, Apt.1, Los Angeles 5
Kansas City - Tentative
Tem Johnson, 444 W. 68th Terrace, Kansas City, Mo.
Wichita, Kansas?????

Detroit - Tentative
Dick Kowalski, 20203 Moenart, Detroit, Michigan
Chicago - March 31, 1962
Pete Sotich, 3851 W. 62nd Place, Chicago, Illinois
Cleveland - Tentative
Owen O'Malley, 3115 Stanfield Dr., Parma 34, Ohio
Dallas - April 7, 1962, S.M.U. Coliseum, Dallas
Bud Tenny, Box 545, Richardson, Texas
St. Louis?????

EAST COAST???

Richard Miller, P. O. Box 27, New York 23, New York

FAI INDOOR QUARTER FINALS

Moffet Field - May 7, 1962, Moffet Hangar??
Joe Bilgri, 256½ Locust St., San Jose, California
Los Angeles - May 19, 1962, L. A. Armory
Dave Copple, 823 S. Mariposa, Apt. 1, Los Angeles 5
Dallas - April 29, 1962 - Livestock Coliseum, Dallas
Bud Tenny, Box 545, Richardson, Texas

FAI SEMI FINALS

West Coast - June 4, 1962, Moffet Hangar??
Joe Bilgri, 256½ Locust St. San Jose, California

****CHECK THAT CEILING****

In our December issue, "News From Around The Country" column, a report was made of record applications made on flight made in a school gymnasium in Topeka, Kansas. Since no late AMA Rule Book which listed the definition of ceiling heights was available, Richard Black, CD, submitted the flight times for record processing. Upon receipt of a new Rule Book containing the proper information (Par. 10.21), Mr. Black requested that the record applications be withdrawn, and published a letter of apology in "Slipstream", the newsletter of the "Propbusters" model club.

Now that the late 1961 issue of the AMA Rule Book is available, it is not redundant to check the ceiling height definition, to make sure that you have the correct idea in mind. This is true whether you are a CD or contestant who might want to make a record application.

Briefly, the correct definition is that height which can be seen by standing under the highest part of the flying area and looking straight up. Several suggestions can be made about methods of measurement, but the two easiest are: first, check the building blueprints if they are available. The second method, and by far the most common, is to use a balloon to carry a tape measure up, or mark the string at ground level with the balloon touching the top. The string length plus the balloon diameter is the ceiling height, use the book to determine the ceiling Category.

The flights in question are: Open HLG, Open Paper Stick, Junior B Stick, Junior B Cabin, and Junior A ROG. The correct official times for all indoor records can be found on pages 22-23 of the December 1961 MODEL AVIATION, and this list will stand until a later list is published.

An unofficial listing of recent flights which have been submitted for consideration is found elsewhere in the paper, in the column entitled "Records? Maybe".

RECORDS? MAYBE!

Despite repeated efforts by your editor, he has been unable to get new records published month-by-month in MODEL AVIATION. Since this is the only source of official record listings, it has been decided to institute this column on a trial basis.

How long this column lasts will depend upon reader-and-CD response to the effort. Our listing will be unofficial, gleaned from info furnished by flyers and CD's after their contests.

The main service intended here will be to keep indoor flyers informed on the state of the art, and to eliminate some paperwork by advance information of pending records.

Great Lakes Indoor Air Meet - January 7, 1962 CATEGORY II
Open Paper Stick - 14:57, Mike Karlak
Junior: (B or C) Stick - 12:06, Ronald Roharik
Senior B Stick - 10:50.8, Daniel Tracy

Record Trials, Seattle, Washington, December 30, 1961
CATEGORY I
Open B Stick - 14:23.1, Phil Hainer
Note: Applications were made for flights in Jr. A ROG, Senior C Stick, and Senior Helicopter, we were unable to get the times.

Chicago Aeronauts Indoor Record Trials, January 27, 1962
CATEGORY I 75' Ceiling
Senior D Stick - 4:08, Chad Krogh
Open D Stick - 15:20, Charlie Sotich

CATEGORY II 22' Ceiling
Senior Paper Stick - 11:35.2, Dennis Kargol
Junior A ROG - 6:04.8, Jim Skarzynski
Senior A ROG - 5:04.8, Chad Krogh
To forestall comments about two categories at one contest, the report pointed out that the Category II records were set in the Madison Street Armory Drill Hall, and the Category I flights were made in a large lecture room, with a 22' ceiling, same building.

Walnut Hills Record Trials, Dallas, Texas, January 14, 1962
CATEGORY I 20' Ceiling
Senior Paper Stick - 5:09, Terry Hamer
Senior Helicopter - 0:37.0, Kit Bays

Record Trials, Wilmington, January 12, 1962
CATEGORY I 29' 11" Ceiling
Senior Helicopter - 1:20.8, Larry Renger
Senior A ROG - 3:59.1, Larry Renger

The format shows the information we would like to have, so here it is. If this is important information to enough people, the column will probably stay.

RECENT BOO-BOOS

Into each life some rain must fall, and your editor was recently splashed twice in the same month.

In our November summary on Hacklinger's superb pace setting FAI model, we made some slide rule errors, and also our source was in error. From now on, all our info will come through Dick Kowalski if it deals with foreign models. This will then leave only typographical errors to bug us!

The correct poop on Max's model is as follows: wing area - 153 sq. in.; stab. area - 51 sq. in.; and the prop was 19 x 30. The model weighed .030 oz. and Dick guesses that a loop of .055 pirelli about 15" long was used.

The second dousing came when Chuck Borneman gently reminded us that his club is named "Knights of the Round Circle," in spite of our efforts to change the name.

Our sincere apology to all for these errors, but the proof-reader must have been asleep!

****A MIGHTY BIG SHOW****

On January 7, 1962, the worlds biggest and best annual indoor air show became history, with 5013 official flights needed to pick the winners of 21 events. No one who has never attended a Great Lakes Indoor Air Meet can imagine the preparation necessary for such a contest, or even conceive how that many flights can occur in one day in one building. This Chuck Tracy must be the world's greatest magician!

A little simple arithmetic shows that over ten flights would have to start every minute, and that on occasion, hundreds of models would have to be in the air at once for all these flights to be completed.

All of this, one day, one contest, one building, and the attendance was lower than expected because icy roads prevented some out-of-town entrants from attending!

The times were all very good for the crowded air space, and some were even record breaking. The top HLG time was 1:04 by Don Eble (Open); Jim Skinner (Senior) put his pre-fab up for 2:17; Paper Stick topped out at 14:47 for a new national record (Mike Karlak, Open); and Larry Mzik made the longest Stick flight (Open) with 13:31.

****FUN MODELS****

Last month we reported briefly on "fun models" which have been growing in popularity all over the country and even are catching on in some foreign countries. We also mentioned that this model class could be substituted for the nearly defunct Paper Stick proposal.

After careful consideration, we feel that any attempt to build a new national event around such a model might create a lot of problems unless the rules are carefully written. On the local scene, we have no doubt that these "quickie" models are the greatest thing ever for indoor flying.

Some of the more experienced indoor flyers who haven't tried "fun models" have expressed doubts about their value, or are just ignoring them hoping they will go away. If these fellows are in a very active group of indoor flyers and have practically permanent sites, this might very well be a logical approach.

However, if the majority of flyers in your area shy away from indoor, and sites are hard to find, these models are just the ticket! First, and most important, this type of model is so simple that almost no one will admit that they can't build it. For years, indoor has had the unjust reputation of being an event for the "expert's expert", and the average reaction to an indoor model has been "My, isn't-it-pretty-but-it-looks-too-hard--I-can't-do-it."

The fun model, while it is simple to build, and looks the part, will turn in times nearly as good as the best of the "full house" models in the average low ceiling site. The apparent inconsistency here is easily explained, by considering the wing loading and the size of the bird. It has a higher loading, and thus is less affected by drift which easily shoves the "pro type models" around. Also, it very common for one of these to approach an obstacle which immediately hangs the big model, and it slips to one side and blasts off again.

Finally, the experts who fly these things will readily fly in sites they wouldn't think of putting their "good" models in. If one is completely wrecked, so what? About 4-6 hours and another one is ready to go!

The Wilmington Indoor Model Airplane Club (WIMAC), the first exclusively low ceiling indoor group, has flown their Easy B class for over a year. Wally Miller, who built the first one, tells the story:

"I feel we should start at the very beginning, which was back in September of 1960. At that time my eight year old son, Don, expressed a desire to build an indoor model. Realizing his limited capabilities, a great deal of thought went into a design that would be the ultimate in simplicity and still possess enough flying ability to satisfy his young ego. Solid components were decided upon for the above mentioned reasons and the "Easy B" was born.

The wing, stab, and rudder outlines on this first "Easy B" were constructed of 3/32" sq. Sig with 1/16 x 3/32 ribs, the motor stick and prop were indoor wood. He managed to complete 75% of this model on his own, but Dad had to build the prop and do the final assembly.

The following month at the Armory, (42' ceiling) Lew Gitlow was on the winder and approximately 900 turns were put into a short loop of 1/16 Pirelli. To the amazement of everyone this flight lasted 3½ minutes! Subsequent flights on a longer loop produced a consistent 5 minute + model, with a high time of 5:33.

At this time, Dave Copple, who is always wide awake, realized the terrific potential of this solid component model. The following month Dave and I had both built our first "Easy Bees", weights ran around .035 and times were from 7 to 8 minutes using .040 Pirelli. This was the clincher. Plans were published in WIMAC NEWS and regular monthly competition began. It has been, to be as modest as possible, a roaring success ever since. This I am sure, is due to the extreme simplicity of the solid component formula, coupled with high performance and regular monthly competition.

We hold two separate contests each meet using the unlimited attempt system over a given time limit, usually 3 hours each, top time wins. Boy, does this ever get action. Processing is by "Eyeball" (who ever heard of a dishonest indoor flyer?)

During the past year our Easy B competition has evolved into two classes, novice and expert. The beginner's models usually weigh out around .040 oz. and fly on .040 Pirelli. Performance of 5 to 6 minutes at Wilmington (30') and 6 to 8 minutes at the Armory (42') is normal. The expert, on the other hand, builds in the low 20's and flies on .025 Pirelli. Tom Finch and Lew Gitlow have built as low as .017.

Frank Cummings currently holds the Armory record with 11:18 and yours truly holds the Wilmington record at 10:04.

It is extremely satisfying to see the smiles on the faces of these top flyers in the heat of competition instead of the usual serious frown. This is truly the funniest indoor formula ever developed."

About nine months ago your editor, inspired by the success of the Parlor Mite (M.A.N. Feb.'62) and by reports of early flights on the Easy B models, decided that a class B model could be built to fly in the living room or any site immediately available.

The first Baby Bee model was built ruggedly, using a minimum of indoor wood, and weighed .047 oz. After over 200 flights by novices of all age groups the model is still going strong and weighs .049 oz. Very little damage has resulted, in spite of the fact that most of the flights were completely unsupervised and followed minimal instructions on holding, winding, and launching the model.

Top times on this model are: living room - 3:36 (after two hours of trying), Walnut Hill site (20') - 5:15 for each of two consecutive flights, and a 50' fieldhouse - 6:30. We feel that this model, although smaller than the Easy B formula (43 sq.in.) potentially has much higher performance than it has shown. About ten of these models have been built locally, and all have flown well. We have used the Baby Bee for an indoor primer, often as the first model or at least the first indoor model.

The first two contests in the Ft. Worth-Dallas area especially for fun models resulted in many flyers entering that had never flown indoor before, and the future looks even better.

The Wilmington Easy B rules are: "All outlines of flying surfaces must be straight lines, all components solid, no bracing of any kind, anywhere. Prop blades must be sheet balsa only. Covering is optional. Maximum span - 18", maximum chord - 3", maximum stab area - 27 sq. in. or 50% of the wing area."

The E-Z-Bee rules (Ft. Worth-Dallas) covering the model are: Maximum wing span - 18", maximum chord - 3", prop blades must be all balsa, covering optional. These contests used both Novice and Hotshot classes, and the first two Junior Novice winners were Bobby and Cheryl Crowley, both less than eleven years old!

QUESTIONS AND ANSWERS

For the questions covered this month we took a little different approach, and selected a panel with one flyer from each ceiling Category, that is, Hal Cover for Cat. I, Dick Kowalski for Cat. II, and Ernest Kopecky for Cat. III. To a certain extent, their approach will be shaded by the type of flying that they do the most, even though they all fly in other ceiling heights.

The questions asked this panel were as follows:
5. What about a definition of efficiency and ways to measure it, empirical or theoretical? (This question was also asked of the last panel - see January issue for more comments on this one)

9. What is the best wing location? Over the C.G. of the airplane or over the C.G. of the rubber motor? Other?
10. What is the best camber for props - high or low?
11. We have been using roughly a 50% prop diameter to wing span ratio. Hacklinger used a 64% ratio. Comments?
12. Why are tails on indoor models built to low aspect ratios instead of high aspect ratios?

Answers - #5

Hal Cover: "My simple definition of efficiency when discussing indoor model is as follows: The percentage of actual flight time vs. the calculated time. (winds in motor divided by RPM). This of course does not give any indication whether the loss of efficiency comes from the prop, airfoil, incidence settings, or weather conditions; but I don't think anyone can pin down any one of these to any extent anyway."

Dick Kowalski: Efficiency (with respect to model aircraft) is a measure of quality of performance as compared with theoretical expectations. I believe there are three types of efficiency an indoor modeler would be concerned with: aerodynamic efficiency, prop efficiency, and power train efficiency. These can be defined as follows:

Aerodynamic efficiency - that which dictates the flight path and velocity needed to maintain flight, such as flying surfaces, airfoil sections of each and their matching to each other, angle of attack, etc. A model which flies slower and has a lower sinking speed will give the most duration.

Prop efficiency - The prop which gives the greatest thrust with the least torque applied is the most efficient.

Let W = work consumed, and: Then:
 F = force applied
 $2\pi M$ = prop moment for one revolution
 T = number of turns

$$W = F(2\pi M)T$$

To lower any of these factors would give a lower rate of consumption of energy stored in the motor, and increase the propeller efficiency.

Power Train Efficiency - The power train includes the prop and the rubber working as a unit. The factors involved here are complex, but basically consist of energy potential (total work delivered by the rubber), the rate at which that energy is consumed, and how much work it is doing in terms of thrust. To a degree, power train efficiency is a matter of matching both the rubber and the prop to do a given job.

Ernest Kopecky: Although Ernest did not speak directly about efficiency, he did make some comments which we feel are valid, particularly with regard to Category III:

"It has been my contention for a long while that there was no mystery about long flights and record flights. Almost all ships today are fairly conventional in proportions. One kind of dihedral or another, elliptical wing or rectangular planform, etc., these are minor and do not make the difference. In my opinion, (and I have plenty of opposition to it) it is not the size of the model but the wing loading that is the magic key to forty minutes plus!

Ships that are correctly trimmed, props about equal in pitch to the wing span, and that most important wing loading of .00045 oz. per sq. in. or less, models like that are the potential record breakers - on a very good day, of course! Pete Andrews probably would have made forty minutes with his record "C" in 1949 if he had the Pirelli rubber we have today. Hacklinger's wing loading of about .00045 confirmed it."

Answers - #9

Hal Cover: "The best wing location would be over both the C.G. of the airplane and the C.G. of the motor. With a 50% C.G. location, the plane is easy to trim and by also having the motor C.G. at the same place the trim is not affected when motor sizes are changed."

Dick Kowalski: The wing must be located over the model's C.G. correctly, but every effort must be made to get the C.G. of the motor close to the model's C.G. to minimize the effect of uneven winding, which would change trim.

Ernest Kopecky: The best wing location depends entirely on areas and moments. The greater the stab area the further the C.G. should be from the wing leading edge. (50% stab - 100% C.G.; 30% stab - 60% C.G., etc.) I fly 50% C.G. and a 23% stab and about two and one-quarter times the wing chord for the tail moment. This set-up easily trims out, handles full power smoothly and produces a cruise just short of mushing.

Answers - #10

Hal Cover: "I believe the low camber is much better, going to a thick prop section increases drag without improving thrust enough to make up for the extra power needed."

It has been shown by many fliers that the Easy B class plane many time flies as well with a flat prop (no camber) as it does with a cambered prop. I have found that props with excessive camber are nothing but a headache - they definitely do not perform well when compared to a thin section (Bilgri prop)."

Dick Kowalski: "No comparative data available for prop camber. I use a 6% arc."

Ernest Kopecky: "I use 7%, but it can vary with flying conditions. Rather than add more power or shorter rubber which might change the C.G. or change to a lower pitch prop to get that extra 30' of altitude, change from a 7% camber to a 4% camber sacrificing 1 or 2 RPM, but gaining in overall time from the extra height."

Answers - #11

Hal Cover: "When a higher percentage prop diameter to wing span ratio is used, the planes generally are not too consistent, but when all goes well the plane will perform better. I prefer having a more consistent flying ship (50 - 55%) prop-wing ratio, especially in low ceiling flying where it is difficult to get any type of consistent performance."

Dick Kowalski: "The ratio of prop diameter to wing span means little except as a comparative term. It does not indicate that large props are going to yield more time necessarily."

Ernest Kopecky: It is a generally accepted fact that the closer the tip blade angle is to the plane of rotation the more efficient the prop is. For example, a 19 x 32 prop would be more efficient than a 16 x 32 because of the lower tip blade angle, with other factors being equal. However a problem arises with the lower P/D prop during the latter part of the flight or during the cruise. The lower blade angle of the prop acts as a brake actually causing the model to come down prematurely because its flying speed is being retarded by the prop.

Answers - #12 Although all three panel members agreed on the fact that low aspect ratio stabs have a higher strength to weight ratio, there were some interesting side comments made also.

Hal Cover: "If the stabs were 200-300 sq. in. in area, the actual shape and aspect ratio would be important, but since they are nowhere near this size, I believe that there is no advantage to high aspect ratio stabs."

Ernest Kopecky: "I don't see why with the trend toward bracing the stab we don't switch to high aspect ratios for more efficiency."

In December, this column was kicked off with three questions thrown out for general comment. Right after the January issue Dave Call sent, with profuse apologies for the press of business which prevented an earlier answer, the following comments:

Question #1 "In regard to relationship of prop area to wing area, I haven't worked out any parameters although I feel this should be done. My rule of thumb is, as the diameter of the prop and its area increases, I raise the wing above the thrust line. Also I increase both the aspect and area of the rudder. Sorry, I have no formula for this, although I'm sure one could be developed."

Question #2 "I seldom set a lifting tail at a positive angle of incidence, mainly due to poor climbing ability under full turns and greater forward speed. This again is based on high ceiling flying."

NEWS FROM AROUND THE COUNTRY WORLD

AUSTRALIA - TASMANIA

One of the "old-timers" in indoor flying "down under", Boyd Felstead, has been corresponding with us for some time. In his most recent letter he points out that the University of Illinois has a new assembly hall which should be ideal for indoor flying - he read about it in a U. S. magazine! How can we miss, with even our foreign members scouting sites for us?

CALIFORNIA - BAKERSFIELD

Herman Bakersfield reports that his club is almost certain of getting a school gym there for a site. He also reports some interest in "fun models" for an ice-breaker.

COLORADO - DENVER

George Batuik reports that the Martin Model Masters have scheduled their first indoor contest of the season in February and promised a report of results when available.

ENGLAND - MALVERN, WORCS.

Reg Parham, another "old-timer" indoor flyer and a member of the 1961 British FAI Indoor Team, wrote a letter promising to give us news on occasion. He passed along the info that there will be at least four meets in Cardington Airdock this summer, in addition to the FAI Indoor Finals.

ILLINOIS - CHICAGO

Charlie Sotich reports that Tommy Neuman got two flights over 19 minutes with his FAI recently, with a top of 19:36.6. Tommy is one of the regulars at the Armory, and his flying is consistently improving.

Some of the fellows have also been flying Dinky Dips, a fun model developed by Charlie, and times have been going over 5 minutes.

MASSACHUSETTS - BOSTON

In Boston the indoor flyers do some flying in a 42' Armory, according to Ray Harlan. Ray works at M.I.T. and also attends classes there, but still finds some time to work on his FAI ships for the upcoming elims.

MISSOURI - KANSAS CITY

Both Dick Black and Tem Johnson reported on the activity in Kansas City. On schedule so far are about two contests in a small site in an attempt to build up total activity enough to warrant a larger site and a FAI local elims. Tem is also working to secure a site for the FAI Semi Finals in Kansas City. Dick Ganslen did the initial contact work, and Tem is acting as a local rep for the FAI Committee.

NEW YORK - NEW YORK CITY

Richard Miller, in his local newsletter NIMAS/EAST, reports on growing activity in the general area of New York. To qualify themselves for using the State Armory in Brooklyn, over 30 indoor flyers formed a club named Nimas/East and applied for liability insurance and an AMA Charter. Very soon they expect to start using the armory on Tuesday evenings from 7:30 to 10:30.

Dozens of indoor buffs showed up to fly and look-see at a small auditorium in New Jersey recently, there were so many planes in the air that it posed a real problem!

NEW YORK - NORTHPORT

The Greater New York Interclub Organization voted to add a fun model class to their list of events which form the basis for their high point system. This group flies an impressive list of 12 events during the contest season in an interclub competition which picks the outstanding flyer and the outstanding club each year. A real busy bunch!

NEW ZEALAND - UPPER HUTT

John Malkin, Upper Hutt Aeromodellers, indicates that there is a revival of indoor activity in New Zealand. Under the capable mail guidance of Dave Copple these boys are flying the Easy B class with good results in spite of the difficulty getting good supplies.

John and some others hope to have New Zealand flying by proxy in the FAI World Indoor Championships. Because of the high cost of shipping models, the models will just be sent one way.

OKLAHOMA - TULSA

The Tulsa Glue Dobbers are trying to find an indoor site to hold some contests. Dave Carter in the man to see for info. Willard Kehr, FF Group Reporter, said in the GLUE DOBBER'S NEWSLETTER, "At least this one won't be called off on account of weather."

TEXAS - BRYAN

Lee Polansky reports the availability of a coliseum near Bryan which should be a good indoor site. Lee has a group of students flying Baby Bee models in the gym on both Saturday and Sunday afternoons, how lucky can you get?

TEXAS - FT. WORTH-DALLAS

The indoor schedule is beginning to bunch up a little with another contest by the Cliff Model Club late in February, a Category I RT in Garland, and FAI Local Elims and Quarter Finals presently on schedule. Rumor has it that one or more Ft. Worth clubs are planning some indoor events if they can tie down a site.

THE HAND LAUNCH GLIDER

PART THREE

by RICHARD MILLER

HISTORY (cont.)

In the years immediately following WW II IHLG supremacy fell into the hands of the second of the three clubs (the Chicago Aeronauts having been the first) that was to make it a specialty and set significant records: The Oakland Cloud Dusters.

By as early as the '48 Nationals Pete Demos had established a new national record of 1:12. In an article in the March 1949 M.A.N. significantly entitled "The Polly Glider" Demos tells of the high interest in IHLG among the Cloud Dusters in those days; how in '47 he established the "B" Open record of 1:03.8 which Andrade subsequently broke with 1:07.8 and then lost to Rambo who broke the 1:10 barrier with 1:10.8 Somewhere along here Bilgri did 1:07, a fact which may surprise those who think he's only a first-rate Wakefield flier and World Indoor FAI Champ. The next significant mark in IHLG, 1:14, also went to a Cloud Duster, this one being Foster's flight at the '52 Nationals. This flight was a high water mark in the annals of glider flying but it was also the point at which the Dusters began to fade from the IHLG scene.

The factors which contributed to this very remarkable period of development are not too hard to detect. A design factor, polyhedral, which had been tried only occasionally before, was used extensively and fully exploited by a group of outstanding model builders in a club second to none. Add the use of the Moffet hangar to that and it is easy to see why IHLG records and the development of the glider have only inched above the accomplishments of the Cloud Dusters in their heyday, green and golden.

The Skyscrapers

If we divide IHLG progress into duration intervals of five seconds we can say that the Dusters, after a brief warm-up, exploited the one between 1:10 and 1:15 and that the next five second interval, the one between 1:15 and 1:20, fell to the Brooklyn Skyscrapers. The Skyscrapers are not, of course, the only ones to have passed the magic 1:15 mark. Tom Johnson, or at least one of his gliders, did it with 1:16.2 and so did Bob Dagand with 1:16.4. And Lee Hines, as a senior did 1:17.2 at the '57 Nationals.

About here the Skyscrapers took over. Bill Dunwoody came along with perhaps the best all-round indoor glider ever designed, his "Curly" (M.A.N. - May '59) and set a new Open record of 1:17.4. Following this, Pete Nishanian, a sometimes Skyscraper, broke Bill's record with 1:18.8 ('59) and about a year after that I squeaked in over Pete with 1:18.9. Although Bob Hatschek's highest time is just .02 seconds short of the 1:15 it deserves very special

mention for having been set with his 10:1 aspect ratio Hi-Hat, a design which, inspired by some experiments by Stu Savage, Bob pioneered.

The Future

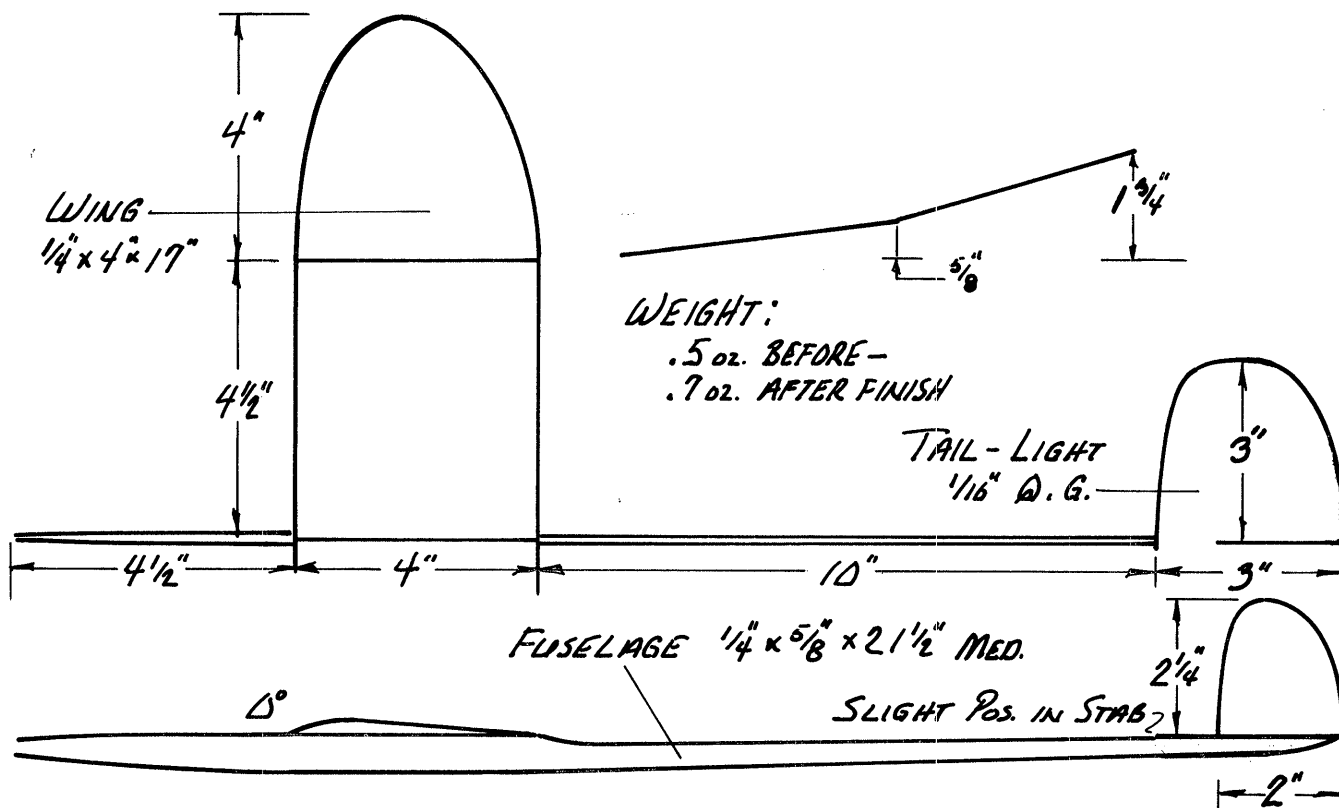
The next ten second, the 1:20 to 1:30 range, are not going to be easy to come by. To those who have thrown in the vicinity of 1:15 the problems are evident; to those who haven't spent a minute-and-a-half looking at your stop watch will convince you that a glider has to go mighty high and come down mighty slow to hit 1:30.

Perhaps Category I and II records leave more room for exploitation than the unlimited class does, although Otto Heithecker's 1:15 in Category II won't be easy to beat.

In any event IHLG has reached a level of development at the beginning of the '60s that is going to make it increasingly difficult to establish new records. Perhaps high aspect ratio will provide the solution. I wouldn't go so far as to say that the medium AR glider (5:1 to 7:1) has gone as far as it can go but I do feel that the HAR machine, once its aerodynamic peculiarities are mastered, is the most likely contender for the 1:30 mark and that its very special advantages should make it especially potent in low and medium ceiling flying.

What happens in the next few years is bound to be interesting and, record fever aside, a lot of fun.

-30-



R. M. M.

FOSTER'S 1:14 RECORD HLG

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

MARCH 1962

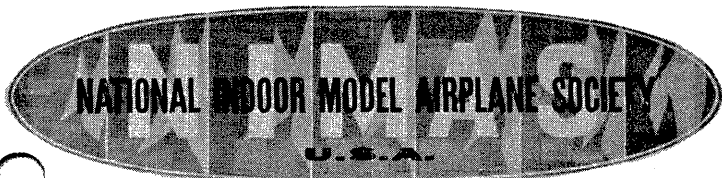
*****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

During the month of February NIMAS gained sixteen regular members and one honorary member, for a total of sixty-four members as of February 28, 1962. Here are the names and addresses of the regular members:

BILL BIGGE 5131 Mass. Avenue, N.W., Washington 16, D. C.
ANTHONY BUCZKO, JR., 5312 King Ave., Pennsauken, N. J.
JIM CLEM, 3505 Rosedale, Dallas, Texas
ROBERT COWLEY, 1481 Lincoln Avenue, Lakewood 7, Ohio
ALEX F. CRAIG, M.D., 415 Raintree Dr., New Castle, Ind.
WALTER ERBACH, 2979 Dudley, Lincoln, Nebraska
GEORGE FLEMMING, JR., 2819 E. 103 St., Chicago 17, Ill.
W. F. GAMBLE, 73 Harold St., San Francisco 12, Calif.
R. L. HATSCHKE, 316 Grosvenor St., Douglastown 63, N. Y.
LEE R. HINES, 20346 Hawthorne, Torrence, California
MIKE KARLAK, 16038 Egbert Rd., Bedford, Ohio
ALEX KONOPACKI, 101 Birchwood Rd., Paramus, N. J.
GUY NEGRI, 2105 Sigwalt, Rolling Meadows, Illinois
TOMMY NEUMAN, 1350 Davine Dr., Glendale Heights,
Glenellen P. O., Illinois
CHARLIE PRIMBS, 2924 Famosa, San Diego 7, California
JOHN G. TRIOLO, 195 Parsippany Rd., Whippany, New Jersey

Finally, REG PARHAM, 21 Davenham Close, Malvern, Worsc. England, is our latest honorary member.

As we had hoped, we now have one decal sketch ready to show, and there is another one in the works. Let us have your ideas, comments and suggestions on this one:



The background ellipse represents a microfilm wing, and the color is two-tone blue, representing light reflections from the film. Since there is little to suggest that NIMAS also has glider-flying members, let's have suggestions from the glider boys, also!

Liability insurance is something that all types of model flyers need to be concerned with, and Richard Miller's newly-formed NIMAS/East club has found an insurance plan that sounds pretty good.

When the New York area indoor flyers tried to obtain permission to use the Brooklyn Armory, they found that insurance was almost the only requirement that couldn't be easily met. After some looking, they turned up with insurance issued by Heber Smith Morris, of Alexandria, Va. which satisfied the necessary authorities and closed the deal, both for the insurance and for the Armory.

The cost of a \$20,000 liability policy is \$34.50 minimum premium deposit, and coverage for additional members at the rate of \$1.27 each. This covers the notification of officials, organizations, etc. that the policy is in effect if proof is required, gives similar coverage to our AMA insurance plus member-to-member coverage under one type of insurance. Since space is limited, interested parties can contact Heber Smith Morris, 113 North St. Asaph Street, Alexandria, Virginia for more information.

*****NIMAS BALLOT****

At long last we have a need for an official position on all the various indoor rules proposals that are now in the hands of the Contest Board. So now members of NIMAS can exercise their pencils and express their feelings on each of these indoor rules proposals.

In all cases such as this, a point sometimes overlooked is that a change may not be necessary just because a rules proposal has been made. If you feel that this is the case for any or all of these proposals, feel free to reject the unnecessary proposal, but at least express an opinion. If these pass, you will have to fly under them, so don't say anything later if you keep quiet now. Put up or shut up!

Lee Hines has asked us to announce that a movement involving several people, including Richard Miller, Dave Copple and Hal Cover, is getting under way to try to set up Indoor HLG as another FAI event.

The results of the poll (seven Charter Members) were: "for" Proposal A (solid component HLG), "against" any change in Paragraph 10.6 (solid stick proposal), and "against" any change in indoor wing area rules (unlimited D stick).

If there is any question about any of these proposals or why the poll results went as they did, you may contact the following for further information:

JOE BILGRI, 256½ Locust Street, San Jose, California
DAVE COPPLE, 823 S. Mariposa, Apt.#1, Los Angeles 5, Calif.
DICK KOWALSKI, 20203 Moenart, Detroit 34, Michigan
RICHARD MILLER, P. O. Box 27, New York 23, New York
PETE SOTICH, 3851 W. 62nd. Place, Chicago 29, Illinois
BUD TENNY, Box 545, Richardson, Texas
CHUCK TRACY, c/o CLEVELAND PRESS, Cleveland 14, Ohio

Late last year, the three HLG proposals (Questions I, IV, & V) were submitted to the Contest Board, but the vote results failed to reject any of the proposals, and also failed to approve any of the three for further study by the required vote. 1962 Chairman Bob Hatschek, realizing that if any action were to be completed in time for 1963 rules, submitted his alternate proposal to the CB, and to Pete Sotich, Dave Copple, Dick Kowalski, Richard Miller, and Bud Tenny for their comments.

Bob formulated his proposal after noting that, even though no HLG proposal received a large enough vote, the vote indicated clearly that "mike HLG" should be eliminated and that the method - minimum weight for HLG (set forth in Questions IV & V) received a majority of votes.

To use the ballot, simply mark "for" or "against" on each question, and mail the ballot to Bud Tenny, Box 545, Richardson, Texas. Please decide as soon as you can and do not delay sending in the ballot. If you subscribe to INDOOR NEWS, and wish to have your ballot count, send \$1 to join NIMAS. Non-members may express their opinions on the ballot, and the results of the poll will be published.

*****FAI INDOOR HLG??****

Lee Hines has asked us to announce that several people, including Lee, Richard Miller, Dave Copple, and Hal Cover are working to set up Indoor HLG as another FAI event. If you are interested, and desire more information, contact Lee Hines, 20346 Hawthorne, Torrence, California.

From a personal standpoint, we feel that the FAI program is a very beneficial program, and a logical one to be involved in when the AMA position in the international modelling picture is considered. At the same time, the Academy was established years ago to co-ordinate and aid model competition in the United States, and here lies the first responsibility of the Academy today.

It is becoming generally known that the AMA may be in some financial hot water, and many lay the blame at the feet of the FAI program. Certainly, there would be more money available to spend on domestic modelling if there were no commitments for participation in FAI. How much more we may never know, but we question the right and the advisability of spending any AMA money except postage and office overhead expenses necessary to co-ordinate the two programs.

Therefore, while we are glad to see more FAI interest and participation planned, we must caution both those who would add more events to the FAI program, and those who plan and participate in the present program, that FAI must be a completely self-supporting program. If this is not a primary goal of all FAI flyers, we stand a good chance of losing both the FAI program and the domestic program in the present forms.

If the AMA should fail to set its financial house in order, and cease to exist as an organization, the contact with the NAA, and therefore with FAI, will be lost. We will then be in the same state or worse as before AMA was formed, and there will be no FAI program at all.

How to finance the FAI program is something we have pondered and worried about for some time, with no real ideas coming forth. But this problem must be solved, or the future of organized modelling in the U. S. faces a dim future. Contrary to the belief of some people, a spot on a FAI team is only the right to go, and not the means to finance the trip. No one has the right to take or expect money to finance a trip to Europe on the basis of \$3, \$4, or \$6 dues paid per year - contrary to past performances of most of our teams.

****FAI INDOOR REPORT****

Local Elims

Chicago - March 31, 1962, Madison Street Armory
Pete Sotich, 3851 W. 62nd Pl., Chicago 29, Ill.
Kansas City - April 1, 1962, Kinnick Hall, Olathe N.A.S.
Benard Drummond, 9115 Charlotte, Kansas City, Mo.
Dallas - April 7, 1962, S. M. U. Coliseum, Dallas
Bud Tenny, Box 545, Richardson, Texas
Moffet Field - April 15, 1962, Moffet Hangar
Joe Bilgri, 256½ Locust St., San Jose, California
Los Angeles - April 21, 1962?? Wilmington Rec. Center
Dave Copple, 823 S. Mariposa, Apt.#1, Los Angeles 5
Detroit - Tentative
Dick Kowalski, 20203 Moenart, Detroit 34, Michigan
Cleveland - Tentative
Owen O'Malley, 3115 Stanfield Dr., Parma 34, Ohio
Lakehurst - Tentative - April 8, 1962
Richard Miller, P. O. Box 27, New York 23, New York

Quarter Final Elims

Chicago - April 28, 1962, Madison Street Armory
Pete Sotich, 3851 W. 62nd Pl., Chicago 29, Ill.
Dallas - April 29, 1962, Livestock Coliseum, Dallas
Bud Tenny, Box 545, Richardson, Texas
Moffet Field - May 6, 1962, Moffet Hangar
Joe Bilgri, 256½ Locust St., San Jose, California
Los Angeles - May 19, 1962?? Wilmington Rec. Center
Dave Copple, 823 S. Mariposa, Apt.#1, Los Angeles 5
Detroit - Tentative
Dick Kowalski, 20203 Moenart, Detroit 34, Michigan
Lakehurst - Tentative - May 6, 1962
Richard Miller, P. O. Box 27, New York

Semi-Final Elims

WEST COAST - June 3, 1962, Moffet Hangar
Joe Bilgri, 256½ Locust St., San Jose, California
EAST COAST - Tentative - June 3, 1962
Richard Miller, P. O. Box 27, New York 23, New York
CENTRAL AREA - Tentative

Dick Kowalski, 20203 Moenart, Detroit 34, Michigan
For those who plan to fly in the Elims at Moffet Field, Joe Bilgri advises that he will have to be notified ten days in advance so he can furnish a list of names to the Navy - you won't be able to get on the field, otherwise!

RECORDS? MAYBE!

The first order of business this month is to correct our goof of last month in giving ceiling heights for the Chicago Armory - the correct listings should be: Armory lecture room, CATEGORY I 22' ceiling, Armory drill hall, CATEGORY II 75' ceiling.

February activity seemed to about normal, but either the birds weren't flying so well or the CD's aren't sending us the info - here are all we have for February:

Wilmington Record Trials - January 12, 1962
CATEGORY I - 29' 11" ceiling.
Open HLG - 0:37.0, Lee Hines

Wilmington Record Trials - February 9, 1962
CATEGORY I - 29' 11" ceiling.
Junior B Stick - 6:20, Don Miller

Chicago Aeronuts 5th Annual Indoor Contest - Feb. 24, 1962
CATEGORY II - 75' ceiling.
Jr. B Paper Stick - 11:44.5, Jim Skarzynski

QUESTIONS AND ANSWERS

This past month there was no time to query another panel of experts in time for publication. However, the mail has brought in some more questions for general comment:

13. What determines the height of the wing struts? What effect does change in wing height have?
14. What factors control the climb in a low ceiling?
15. Since drift control seems to be quite important in Category I flying, your editor plans a summary of all info on the subject that he can get. So, what do you know about drift control?? Please send along anything you have found out about methods to control or combat drift - maybe we all will learn something!

NEWS FROM AROUND THE WORLD

AUSTRALIA - TASMANIA

Boyd Felstead sent along a picture of his B Cabin model which won the 1950 Aussie Nats with a flight of 12:36 - in a 50' ceiling! It sounds as if Boyd would be right at home in our Category II sites, and a top flyer also.

CALIFORNIA - WILMINGTON

Dave Copple reports that the Easy B has made it into the records column - Don Miller was flying an Easy B for that new Junior B Stick record.

COLORADO - DENVER

The Martin Model Masters held the first of two planned indoor contests this season on February 25. Times were low, due to unfamiliarity with the 33' site. George Batuik reported the times and opined that the next contest would show a big jump in times. High in HLG was 0:23.2, tops in Stick was 5:16.4, and Paper Stick went to 5:56.5.

ENGLAND - COVENTRY

Arthur Barr wrote last month, relating that repairs on Cardington Balloon Shed, recently completed, should further improve flying conditions there. Indoor interest is not as high in England as here, but his club does some low ceiling flying in a 20' x 30' room with a 20' ceiling. Their top times have gone over 8 minutes with a 60 sq. in. ship!

ENGLAND - MALVERN, WORSC.

Reg Parham also reported on the Cardington repairs, and was surprised last year that the U. S. team had rated conditions there better than at Lakehurst. C. S. (Rushy) - Rushbrooke has obtained permission for six indoor meets at Cardington this year, the first on April 14-15. The British team should really be ready this year!

ILLINOIS - CHICAGO

The 5th Annual Aeronuts Indoor Contest was a real ball that drew 37 contestants, according to a report from Pete Sotich. Top time in Paper Stick was 13:05, and high mike time was 18:36.0. Tommy Neumann overshadowed even the Open contestants in HLG, with almost a six second lead at 1:09.4. Charlie Sotich reports that it was breezy in the Armory, preventing real good times in rubber events.

KANSAS - WICHITA

Stan Chilton reported that the Cessna club held an indoor club in a small gym, with paper-covered ROG's and HLG events. Top ROG time was 3:46, top HLG was 0:24.2. Wichita activity is still limited by lack of a regular site of reasonable dimensions.

MISSOURI - KANSAS CITY

The Kansas City Model Association sponsored one indoor contest featuring HLG, Easy B, and AMA Stick events. No times were available, but the site was 60' x 30' with a 20' ceiling. A second contest on April 1 will also serve as FAI local elims, and will be held at Olathe N. A. S.

NEW YORK - NEW YORK

The big news in the big city is that the State Armory, 357 Sumner Avenue in Brooklyn has opened up to indoor flying, thanks to the concerted efforts of many of the N. Y. area flyers. The first date is March 6, and we believe that they have several more Tuesday evenings from then thru June 26 lined up.

TEXAS - DALLAS

The second indoor contest this season by the Cliff model Club was a smashing success - 25 entries by 17 contestants. In spite of good conditions, the top stick times were below the building potential - 9:25.8 with a B Stick. Coming on March 11 is a Category I Record Trial in a site which might be the best site available - 105' x 112' floor space with 24' arched roof.

THE HAND LAUNCH GLIDER

PART FOUR

by RICHARD MILLER

DESIGN (General)

Design is a tool, a means to an end. Consequently the beginner, whether his goal is simply sport flying or maximum duration, will probably be best rewarded by putting his energies towards the ends of improving his building skills and practising his launch techniques. Design he can leave to those with more experience.

This would have been less true twenty-five years ago when just about everybody was a beginner in HLG. The high degree of development that HLG design has reached since then make it increasingly difficult to add anything of significance to what now exists. This is not to say either that those who made the contributions that we have access to today were infallible nor that there isn't a lot of room for the patient and imaginative designer-innovator to express himself. It is to say that it is shortsighted to ignore the hard-won conclusions of our forebearers and that we are better off building on their successes and avoiding at least their unsuccessful experiments. Then too, any current contributions to design are probably going to have to be more sophisticated than earlier ones which means that the amateur can delay his entry into design for a correspondingly longer time.

For those who are less experienced perhaps the best approach at the outset is to shop through the market-place of available designs - in the Year Books, magazines and newsletters - until you find one best suited to those personal characteristics such as temperament, morphology, body weight, hand-span and motor reflexes which constitute you, the hand launch glider flier. The final choice may be large or small, of high or low aspect ratio, have a little or a lot of dihedral - and it may take some building around to find it. But when you find one that rewards you with performance and consistency, when one out of the crowd speaks to you, stick with it, build it often, get to know it thoroughly, master it. When you begin to understand why it is suited to you, why it performs well, what its shortcomings are - and how you can improve it - you can profitably begin those experiments and modifications which we call design. And now to that.

The Wing

In powered aircraft the wing and power train assume greater or lesser importance in proportion to the power/weight ratio. As the ratio of power to weight increases the wing tends to assume less and less overall importance until at extremely high ratios, as in the case of a rocket, it is done away with entirely. Contrariwise, as the power to weight ratio diminishes the wing assumes ever greater importance until, as is the case with the non-powered glider, it becomes preeminent. The wing of the HLG then is unquestionably the most important single component and deserves the most careful attention.

From a general design standpoint we can state that the wing we want for the HLG will have an elliptical planform of the highest practical aspect ratio coupled with an airfoil section combining low drag (to permit maximum height on the launch) and high lift (to insure a low rate of sink in the glide). We'll take these factors one by one.

There seem to be very few home truths about wing design (or about any kind of design for that matter) but you will get few serious or responsible arguments against the aerodynamic and structural superiority of the wing with an elliptical planform. Structurally its superiority comes from the fact that its greatest cross-section, and therefore its greatest strength, is at the base chord where the greatest stresses are encountered; and nearer the tips where stresses are smaller, so is the cross-section. Then too, with construction factors equal, higher aspect ratio can be built into an elliptical planform. It also provides a bit of sweepback and tends to minimize tip losses, one of the most serious problems related to wing efficiency. Usually, by having the center of mass of the wing nearer center of the aircraft the center of gravity is kept lower and inertial forces are reduced.

The main case against the elliptical planform, of course, is the difficulty encountered in construction. As a rule all sorts of odd sizes of ribs must be tapered and curved along geometric lines and you finally run up against

covering cannily complex curves. In the case of the all-balsa HLG where we are not faced with these problems the zero-taper wing with rounded or elliptical tips remains very popular nonetheless.

There are a number of possible explanations for this. Laziness is one and another is the ignorance of how to carve such a wing. Still another is the reluctance of the builder to cut any further into a good piece of HLG wood than he has to. In light of the scarcity of really good wing stock and the distance it will sometimes go in the minor wheeling and dealing of the model builder's world this is not to be judged entirely as an act of cowardice. Nonetheless one excellent wing is worth several just good ones and the carving of the elliptical wing is not, as we will see, all that difficult.

Aspect Ratio

From a theoretical point of view the higher the A/R and finer the tips of any wing the higher its potential performance will be. In the second of his two articles on HLG in the January and February 1960 FLYING MODELS Stu Savage calculates a projected 42% increase in duration by increasing the A/R of a glider from 5 to 10:1; and theoretical L/D figures for some airfoils of infinite A/R go as high as 140/1 I'm told.

Against this projected superyield of high A/R, this tantalizing invitation to the glider builder in search of higher times, we must put a few substantial facts. The first problem that will come to most anybody's mind, particularly in the case of IHLG, is the structural one. The theoretician will give a thought or two to scale effect. Someone with practical experience in high A/R will wonder about the roll and recovery rates and the person whose experience includes building and flying high A/R IHLG may be eager to discuss a largely unspoken problem - already alluded to - in longitudinal instability.

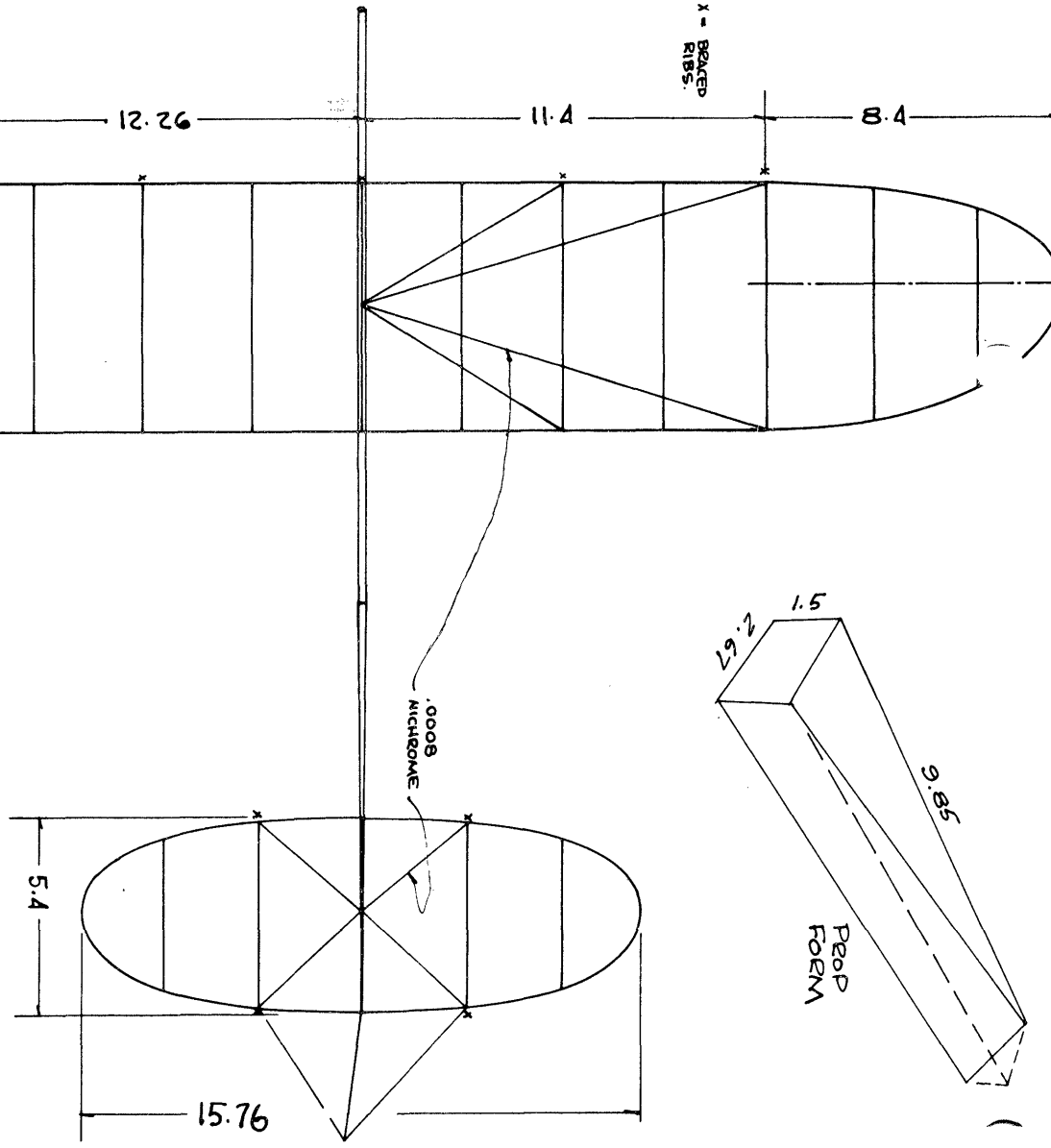
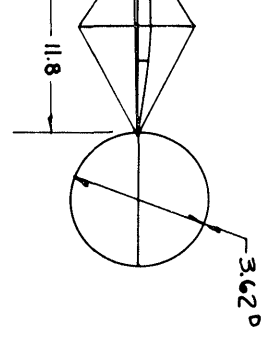
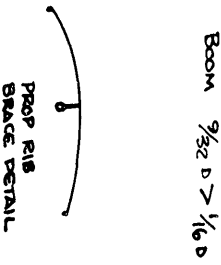
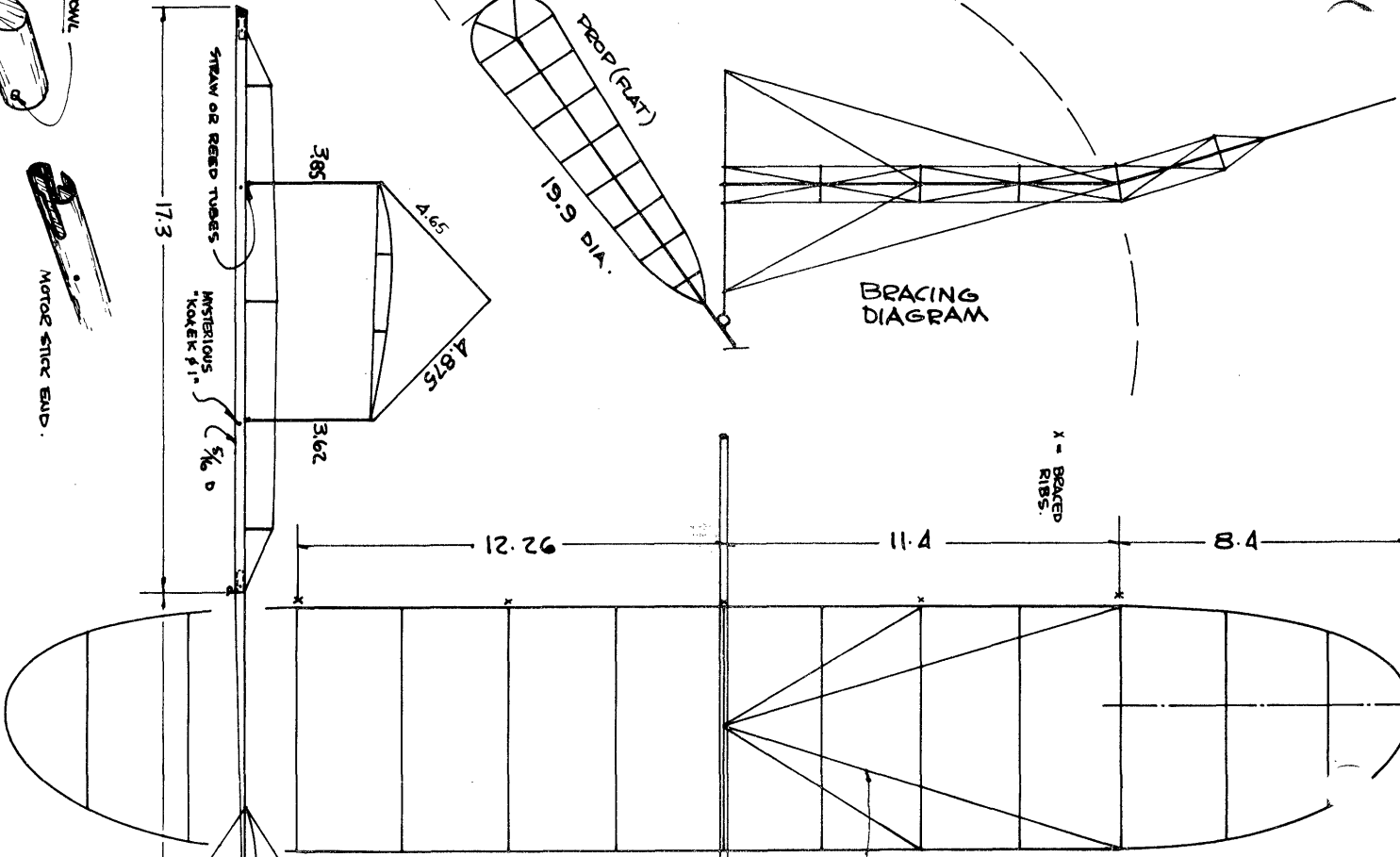
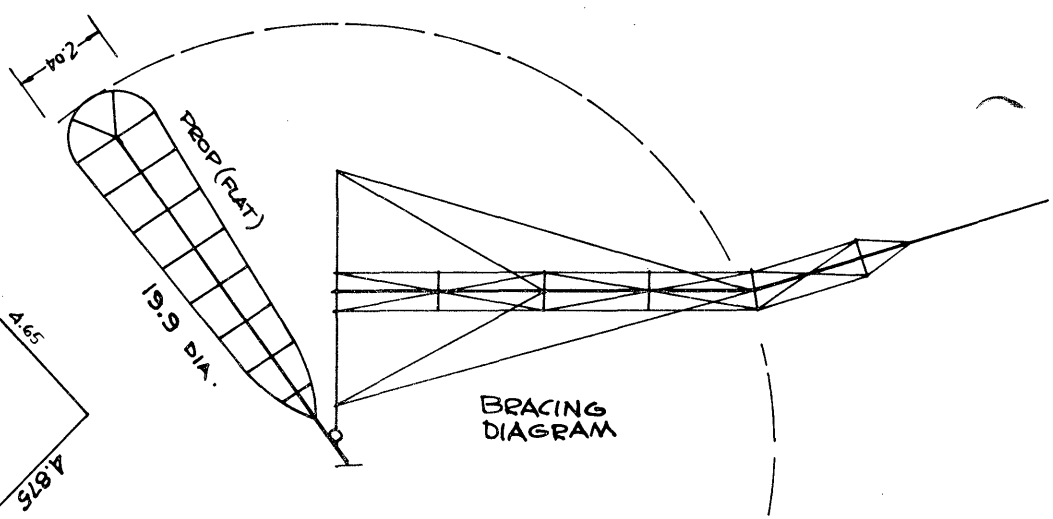
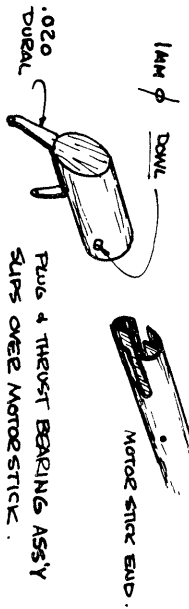
The High Hat

For a point of departure in discussing these problems let's take a look at Bob Hatschek's 10:1 A/R Hi Hat mentioned last month. We have a 1:2 ellipse with a base chord of 3" and a span of 24". The total area is 56.8 sq. in. and the airfoil thickness is 3/16". (See MAN for July '59 for more details and plan.)

Now if you're skeptical about the ability of a glider of these proportions to stay together when thrown by some of the best arms around I can't say that I blame you. The fact that the wings do stay on is a testimonial to the structural advantages of the elliptical planform, careful construction and tapered glue joints - and a practiced launch. It is also due in part to an easily overlooked plus factor, the fact that we can use increasingly heavier wood with increased A/R. This is because the ratio of wing volume/wing area decreases as A/R increases. This means that a 50 sq. in. wing with an aspect ratio of 5:1 will have more wood than a wing of the same area but an A/R of 10:1. If I were a mathematician I'd be happy to include a chart showing the relationship of A/R to wing wood weight. However the fact that the Hi Hat wing is frequently made from 7 to 8 lb. stock will provide both an indication of the scale and a point of departure in building.

The few extra lbs./cu. ft. are quite significant but they by no means solve the strength problems definitively. Wings must be fashioned carefully from first-grade balsa, joints must be true and it is wise to taper the glue skins at the joints in order to assist in absorbing excessive loads. But we do know that a 10:1 A/R glider such as the Hi Hat will, even under unlimited ceiling conditions, stay together and that this is perhaps the least of the problems encountered in high A/R HLG. We also know that, despite a mean chord of slightly more than 2" and a very low gliding speed, the Hi Hat will (on occasion) fly so extraordinarily that we needn't break our heads over the scale effect business. It may, of course, complicate other problems we have, but by itself it doesn't seem to be a hazard.

(To be continued next month.)



WING .0318
 STRAW & RUDDER .007
 PROP .0141
 STICK & BOOM .0353
 RUBBER .1060
 .1942 (5,506)
 .105 x 19 5/8 LOOP PIRELLI
 MAX TURNS - 1700
 BEST TIME 23 MIN 37 SEC.

MIKROMODEL SB-60M
 STEFAN BOMBOL · POLAND

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

APRIL 1962

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

The month of March blew in (very hard in Texas) and left NIMAS with twelve new members for a total of seventy-six members as of April 1, 1962. We welcome these new members:

BOB CHAMPINE, 25 Beechwood Dr., Yorktown, Va.
ROBERT HARRISON, 1721 Tehoma, Oxnard, California
BILL HAUGHT, 1811 Hanford Rd., Baltimore 6, Md.
WILLIAM G. HULBERT, 174 Castle Blvd., Akron 13, Ohio
PAT McDONALD, 3539 "B" Street, Oxnard, California
JIM MCGEE, Clinton, Ohio
DREW MORRIS, 25 Nassau Ave., Plainview, New York
MARVIN MOSS, 25 Union Ave., Maplewood, New Jersey
HAROLD REDNER, 19 Stephen St., Hazlett, New Jersey
FRED WEITZEL, 131½ Warburton Ave., Yonkers 2, New York
LAWRENCE WELLMAN, 8 Park Street, Groveland, Mass.
CHARLES YUSTER, 60 Woodland Ave., Great Kills, S.I.8, N.Y.

The return of NIMAS ballots has been a little slow, with less than half the ballots presently in hand and counted. Perhaps it is in order to point out that there is still a good chance that NIMAS will eventually have a more important role in rules revision than we now enjoy, but that a lack of response from our members can only hurt our chances to assume a more responsible role if and when the opportunity arises.

The reasonably unique make-up of NIMAS certainly is our most important qualification to assume the position of advising the Contest Board on indoor rules changes, and our strongest argument that we should be permitted an even more important role in the future. In theory our group represents the sport of indoor modelling to a very large degree, and NIMAS members hold at least 25% of the existing indoor records. If our present rate of growth holds, we will in fact be truly representative of our hobby - so we should follow through, demonstrating our interest and potential strength by making a 100% return of the ballots.

An interesting sidelight of the balloting was the large number of comments and suggestions also set forth by the voters. A summary of these comments will be in the May issue, some of these will probably stimulate a lot of discussion of our present rules system.

The general trend of the balloting has been to approve of three-flight scoring for IHLG and the addition of FAI as a new category; and disapproval of the Cliff Model Club IHLG proposal, the Skyscraper's IHLG proposal, the "solid stick" proposal and unlimited Class D area. Still "on the fence" so to speak, is the vote between the Wilmington IHLG proposal and Hatschek's alternate proposal. Some voters complicated the issue here by voting for both these proposals, very likely there would have a clear-cut count for one or the other if this had not happened.

Only a few comments have been received so far on the decal design as presented last month, but no adverse comments came up. This would tend to indicate a general approval of the design, but maybe some are waiting on the other design before making any comments.

Just before press time, Joe Bilgri has advised us of his new address: 1255 Blackfield Dr., Santa Clara, Calif.

****FAI INDOOR REPORT****

Local Elims

Moffet Field - April 15, 1962, Moffet Hangar
Joe Bilgri, 1255 Blackfield Dr., Santa Clara, Calif.
Los Angeles - April 21, 1962, Wilmington Rec. Center
Andrew Faykum, 9410 Dayton Way, Beverly Hills, Calif.
Cleveland - April 29, 1962, Central Armory, Cleveland
Chuck Tracy, c/o CLEVELAND PRESS, Cleveland 14, Ohio
Lakehurst - April 8, 1962 Lakehurst NAS, Hangar #6
Richard Miller, P. O. Box 27, New York 23, New York

Quarter Final Elims

Chicago - April 28, 1962, Madison Street Armory
Pete Sotich, 3851 W. 62nd Place, Chicago 29, Ill.
Dallas - April 29, 1962, Livestock Coliseum, Dallas
Bud Tenny, Box 545, Richardson, Texas
Moffet Field - May 6, 1962, Moffet Hangar
Joe Bilgri, 1255 Blackfield Dr., Santa Clara, Calif.
Detroit - May 6, 1962, State Fair Coliseum, Detroit
Dick Kowalski, 20203 Moenart, Detroit 34, Michigan
Los Angeles - May 19, 1962, Wilmington Rec. Center
Andrew Faykum, 9410 Dayton Way, Beverly Hills, Calif.
Lakehurst - May 6, 1962, Lakehurst NAS, Hangar #6
Richard Miller, P. O. Box 27, New York 23, New York

Semi-Final Elims

WEST COAST - June 3, 1962, Moffet Hangar
Joe Bilgri, 1255 Blackfield Dr., Santa Clara, Calif.
CENTRAL AREA - Tentative - June 2-3, 1962
Dick Kowalski, 20203 Moenart, Detroit 34, Michigan
EAST COAST - Tentative - June 3, 1962
Richard Miller, P. O. Box 27, New York 23, New York

For those who plan to fly in the Elims at Moffet Field, Joe Bilgri advises that he will have to be notified ten days in advance so he can furnish a list to the Navy, you won't be able to get on the field, otherwise!

FAI Indoor Results

This issue was delayed long enough to publish results from local elimination contests in Chicago, Kansas City, and Dallas; the May issue will contain the rest of the local elimination results and the results of the Chicago and Dallas Quarter-Final elims.

CHICAGO - March 31, 1962, 14 entries and 7 qualifiers.
Don Kintzele - 22:59.0 Bob DeBatty - 21:07.2
Tommy Neumann - 22:45.7 Vic Hotz - 20:03.2
Walter Mumper - 22:09.0 Charles Sotich - 20:03.0
Art Christensen - 21:21.6

KANSAS CITY - April 1, 1962, 1 entry, 1 qualifier.
Walter Erbach - 8:23.4

DALLAS - April 7, 1962, 8 entries, 4 qualifiers
Bud Tenny - 13:41.7 Terry Hamer - 10:22.8
Jim Clem - 10:46.2 Jerry Murphy - 8:13.2

DETROIT - April 8, 1962, 10 entries, 5 qualifiers; times were not available on short notice, but will be printed next issue.
Phil Klintworth Ed Stoll
Paul Crowley Jim Baggi
Dick Kowalski

ANOTHER EDITORIAL

The response to our editorial of last month which took a strong stand for a completely self-financed FAI program was low, but the letters we received were very well thought out, regardless of which side of the fence they came from.

Unfortunately there is not enough space to quote any of these comments verbatim, and we would hesitate to use any part of such a letter, for fear of unfairly presenting a statement out of context.

AMA headquarters furnished the best argument we've seen for such a stand, in the form of the 1962 Rule Book. We refer to pages 50 thru 53, "BY-LAWS: ACADEMY OF MODEL AERONAUTICS. This section, a welcome-but-long-overdue addition to the Rule Book, outlines just what the AMA can and cannot do; and then outlines how these things shall be done.

Other pages that should be of extreme interest to all who would be an active member of AMA, and an effective member of AMA, are pages 42 and 49. In a manner of speaking, these pages should be of more importance to all members than the section on the rules.

A careful study of this information would have saved hundreds of hours of mis-directed energy that could have accomplished wonders in the proper channels, if the material had been available and heeded. Heretofore, groups of disgruntled AMA members have charged off in all sorts of campaigns to accomplish some desired end, only to come head-on with proper procedure requirements. Quite often, the desired end is achieved through proper channels, or is demonstrated to be an undesirable event and the "why" explained, but only after the delay caused by wrong procedures has occurred.

In short, the democratic machine which is our AMA may seem slow to act sometimes - but this is a valuable safeguard to our interests in the long run.

RECORDS? MAYBE!

Garland Aeromodelers Record Trials - March 11, 1962

CATEGORY I - 26' 4" ceiling. (Garland, Texas)
Senior B Paper Stick - 6:43, Richy Earle
Junior Autogyro - 0:13.2, Kent Britain

Chicago Aeronuts 5th Annual Indoor Contest - Feb. 24, 1962

CATEGORY II 75' Ceiling
Junior B Paper Stick - 11:44.5, Jim Skarzynski

Chicago Area FAI Indoor Eliminations - March 31, 1962

CATEGORY I - 22' Ceiling
Junior B Cabin - 5:08.4, Jim Skarzynski
Senior C Stick - 9:26.2, Dennis Kargol
Senior D Stick - 14:36.1, Tommy Neumann

CATEGORY II - 75' Ceiling

Junior B Stick - 8:39.8, Jim Skarzynski
Junior B Cabin - 7:15.0, Jim Skarzynski
Junior Autogyro - 0:17.8, Jim Skarzynski
Junior Helicopter - 3:44.0, Jim Skarzynski
Senior C Stick - 14:38.2, Dennis Kargol
Senior D Stick - 22:45.7, Tommy Neumann
Senior Helicopter, - 1:50.4, Chad Krogh

Dallas Area FAI Indoor Eliminations - April 7, 1962

CATEGORY II - 55' 9" Ceiling (S. M. U. Coliseum)
Open Ornithopter - 1:58.4, Jerry Murphy

Recently, we received information from AMA Hq. on a newly-confirmed record:

CATEGORY I
Senior Helicopter - 2:06.7, Robert Michelson.

We have no info on where Robert hails from, but the record was set on December 30, 1961, which makes it likely that the flight was made in Seattle, Washington at the same site used by Phil Hainer for his 14:23.1 B Stick record (see plans page, and THE STATE OF THE ART).

As far as we've heard, Tommy Neumann's winning HLG flight at the 5th Annual Chicago Aeronuts Indoor Contest would be a new record, "if" it weren't for the fact that a mike HLG holds that record at 1:28.0. This flight was 1:09.4, a very impressive flight for that site.

In future letters, we would appreciate an indication from our readers whether they would like to see this column continued - usually the readers indicate a like or dislike for various features, but this one has drawn a blank. If there is interest, we will have to have more info from those who set the records - don't expect your CD to do it - he has lots to do already!

QUESTIONS AND ANSWERS

Although the following remarks by Lew Gitlow weren't specifically in answer to question 14, many of these comments fit in very well with that theme. Lew writes:

"Regarding low ceiling flying, I think the question very simply is this, "How can I get the highest times under a low ceiling?"

The main thing to keep in mind is that the weight of rubber used should be quite high relative to model weight. By using nothing under a 1:1 ratio of model to rubber weight, we can use the flat portion of the torque curve for a long cruise. However, it becomes a problem to harness this energy for CRUISE, rather than CLIMB. Here are a number of approaches to the problem:

1. Build rigid models. Light weight models under low ceilings gain little in the long run and will be demolished. Well thought out bracing costs little in weight,

and adds rigidity. When a surface gives out under power, a wing tip especially, drag goes way up.

2. Make sure all surfaces are flat, and will stay that way.

3. Build props that flare out during the power burst. Keep the pitch to diameter ratio over 1.6:1 and as mentioned, allow props to flare out. Low pitch means a rocket climb.

4. Keep the flight circle tight - even to the point of torqueing in. This will keep climb down in the burst.

5. Build in extra area on the torque side of the wing as this will reduce torque effect without increasing the drag as much as extreme wash-in on the torque side of the wing.

6. Use wash-in on the torque side of the wing, starting with 3/32".

7. Try using a motor stick that will bow slightly under full power.

8. Try a C.G. location at 50% of wing chord. Model will hit the ceiling, stall down, and go up again.

9. Try coasting on the ceiling if it is not obstructed. A C.G. location at 40-45% of the wing chord will give instant recovery.

10. Try a stab with a flexible leading edge, and stiff trailing edge. Model will climb slowly under full power, and instantly pull out of a stall when the flex is just right, regardless of C.G. location.

11. Build one model - - - and lots of props.

12. Start winding the motor while walking out. Add about 40% of the total turns this way for higher ratio of cruise turns to descent turns. (Higher average torque)

All of these tips have their difficulties. One could go on and on with each technique. Some of these techniques, used in combinations with others, would result in models very tricky to fly. But, we are faced with a problem that requires much practice, and time devoted to experimentation."

THE STATE OF THE ART

In this column, like "RECORDS? MAYBE!", we will have to lean very heavily upon those who have set records and are willing to share the information with us. So, this column will last only so long as the information comes in - or it may appear on an irregular schedule as material is available.

There have been many people who have indicated strong interest in what should be flown in low ceiling sites - so we have almost two extremes in the two schools of thought represented below. We neither champion one way of flying over the other, nor express approval of either, we are merely reporting on these two schools of thought.

Each flyer has taken his own site, building time, and other factors into consideration; and each has advanced the state of the art by establishing a new record for the class he was flying.

Jim Kagawa is a senior aeronautical engineer for North American in Los Angeles, and a member of Wilmington Model Airplane Club. Jim holds two Category I records, according to the info we have; B Paper Stick - 11:35, and C Stick - 14:09. Both records were set at the Wilmington Recreation Hall, which is made available by the Los Angeles Recreation Department and has a 29' 11" ceiling. Speaking of his Paper Stick (plans on page five), Jim says:

"You asked for details on my paper stick model, but the design is so simple that I would hesitate to have it circulated. I nearly got laughed off the floor when I first appeared with it in November of 1960. The wing and stab looked like an enlarged version of Sotich's "Dinky Dip" and the prop was a single spar type with square tips. Still, it was doing better than 10 minutes with surprising regularity and was once clocked at 11:20. I later added some circular tips to the wing and stab and tried a two-spar prop. It was with this configuration (94 sq. in. wing and 30% stab.) that I was able to squeeze an extra minute out of it."

"I built this model to see what a simple design would do in Category I paper stick, and for low ceiling flying I am convinced that elliptical and other "nice to look at" wing planforms are not necessary. Also, a rigid, fairly heavy model with adequate power will turn in consistently better times than a very light model that is tossed around the turbulent air of a Category I building. I am a firm believer in plenty of power in low ceiling flying, you just have to provide lots of thrust to enable the model to recover from collisions with ceiling and wall obstructions. A small turning radius is desirable. My paper stick has a turning radius of about 6 to 7½ feet - have you ever flown in a telephone booth?"

"What I have written may appear contrary to commonly accepted ideas about building and flying indoor models, but I think that this is the easiest approach when it comes to getting the most out of a Category I model, and for the present it is good enough for me. Later perhaps, when necessary, I will try some other approach."

Phil Hainer, designer of the "Bumper", the other one of our feature models this month, works for Boeing in the model shop of the Seattle plant. His approach to low-ceiling indoor flying represents almost an opposite to Jim Kagawa's technique - the ultra-light model. If we examine the plans of "Bumper", we note a weight of .0257 oz., with rubber weight of .024 oz. The record flight, in a 24' 9" ceiling, lasted 14:23.1 on 1300 turns spinning a 14 x 28 prop.

As a further definition of his low-ceiling philosophy, Phil says: "I'll give you what I think are good basic proportions for low ceiling ships:

Wing aspect ratio - 10/1
Stab Span - 40% of wing span
Motor stick - 43% of wing span
Tail moment - from 3 to 3½ times wing chord
(measured from max. wing thickness to max. stab. thickness)

Prop diameter - from 50 to 55% of wing span with a P/D ratio of 2:1

Rudder area - 8%

The motor weight should about equal the airframe ght. These are things that come to mind and may not see with anyone else's thinking, but they work for me."

Jim and Phil expressed, almost word-for-word, a basic philosophy for low ceiling flyers - "In Category I, you just have to keep trying!"

REPORT ON CHICAGO

In February your editor and Jim Clem were privileged to attend an indoor session at the Madison Street Armory - stomping grounds of the Chicago Aeronuts. Thanks to their excellent hospitality, we had a real ball. The Aeronuts even furnished us with models to fly - Charlie Sotich loaned us an unbraced paper stick model to fly, and Guy Negri gave us a glider to fly as long as the arm lasted.

It turned out that the glider was a test - sort of. All the real "arms" had flown this particular glider, including Richard Miller who had passed through the week before. Your editor had long realized that IHLG was a real art, but he found a new appreciation for that art after lacking about ten seconds in trying to equal times turned by that glider when flown by Miller and Tommy Neumann.

During the day we witnessed Tommy's fabulous arm-and-Sweepette combo - including two flights of 1:04 and one of 1:06. As we were loading up the cars to leave, Tommy topped himself and got 1:08. Tommy will be one of the guys to watch at the Nats this year.

Our own specialty is rubber - so we spent most of the time with the rubber flyers. The Aeronuts, like all live-wire clubs, usually have a bit of good-natured banter going. The high-light of the day was the by-play between George Flemming and Charlie Sotich. It seems that George didn't have another motor and borrowed one from Charlie - then topped him with it! Charlie, usually high man for a day, could get only 14:20, and then George put up a flight over 16 minutes. Somehow, the word got around that the borrowed motor was one that Charlie had discarded and he was kidded unmercifully. All in fun, and really funny to hear as a spectator!

Tommy Neumann is also a rubber flyer - one of the few Aeronuts who fly all day long at the Armory sessions.

His FAI ship is somewhat heavier than the average, and he has sometimes had trouble matching his motor to the varying weather conditions in the Armory. After some better-than-usual flights someone asked Tommy what his power was - he replied "One loop of .080 and two strands of golf ball!"

In a more serious vein - this visit inspired a search for data on the Aeronuts and other similar clubs. Unless we have overlooked something, the Aeronuts presently hold as many indoor records, both Category I & II, as any other single club. The Madison Street Armory, with a lecture room in Category I and the drill hall in Category II, is a real boon for this club, and they make full use of it.

We inspected the lecture room, site of Charlie's 15:20 Class D flight, and feel that this is a significant milestone in indoor flying. Only 22 feet of ceiling, and part of that is taken up by concrete beams which extend into the flight area. We hope to give a report on this model and flight soon, as space permits.

NEWS FROM AROUND THE WORLD

CANADA - TORONTO

From John Easton's AIRFOIL, we note that a little indoor activity happens occasionally, and we understand that an attempt will be made to participate in the FAI Indoor World Championships this year.

COLORADO - DENVER

The Martin Model Masters held their last scheduled indoor contest in March. Times increased about 15% over the first contest, which is the usual trend as groups begin to get used to a site and "in the groove".

George Batuik hopes to keep some flying sessions going for a while. If this happens, this group should set some records soon - they have a 33' ceiling!

ILLINOIS - CHICAGO

Charlie Sotich reports that the last few Saturday Armory sessions have been getting so crowded that they plan to appeal to FAA for some type of traffic control!

At one time we heard that the Aeronuts may get another armory in Chicago for a summer season, after they lose the Madison Street Armory after the April 28 session. If they get another site, the Aeronuts will definitely be the club to beat at the Nats this summer!

INDIANA - KOKOMO

Chuck Borneman continues in his efforts to get indoor firmly under way in Indiana, and is holding the only regular organized indoor activity in that area. This results in attendance from all over the state for their meets at Bunker Hill Air Force Base.

For anyone within striking distance of that activity, you can contact Chuck at 1401 West Taylor, Kokomo, Ind. Drop him a line - he has a real live-wire group!

MISSOURI - KANSAS CITY

Now that Dick Black has moved from the Kansas City area, SLIPSTREAM has been taken over by the Kansas City Modelers Association and is edited by Bill Wright. Bill's efforts are aided by a staff of associate editors from clubs in the area.

Indoor activity in the Kansas City area seems to keep growing steadily under the combined efforts of Jim Dunkin, Tom Johnson, and Bernie Drummond.

NEW YORK - NEW YORK

Richard Millers last report on the armory was that the sessions have been a little shy of rubber flyers, but the glider flyers were hard at it. The ceiling was measured at 75' 6", placing the altitude in the same range as the Madison Street Armory in Chicago - maybe we'll have mail contests between these two clubs sometime?? Contact Richard at P. O. Box 27, New York 23 for dates of flying sessions in the armory.

Note to Junior flyers in the New York area - Walter Schroder, Editor of M.A.N., has put up a trophy toward an Easy B event for the Armory. Step right up and get your feet wet - boys, this is a lot of fun!

OHIO - CLINTON

Two letters in rapid succession from Jim McGee tell of a club sponsored by Goodyear that includes indoor activity in the planning, and of a flying session in the Goodyear Auditorium. This site has floor area equal to

about six basketball courts and a measured girder height of 33' 6", but he didn't say how much further it is to the roof. So it is either high Category I or low Category II - but they can use more flyers each session in either case. Contact Jim at Clinton, Ohio for more details and get into the swim.

VIRGINIA - YORKTOWN

The Newport News Armory has been the site of several indoor sessions, and Bob Champine reports that interest in indoor flying is growing slowly but steadily. As with most groups just starting low ceiling flying, the times were a little low, but are expected to pick up with more "stick time". Anyone in the Yorktown area can contact Bob at 25 Beechwood Drive, Yorktown, Va. for dates and times of more flying sessions.

****CREDITS****

In the last-minute rush to finish the March issue and cram the most pertinent information into the two pages remaining after the plans, glider article, and ballot, we cut out mention of the fact that Hardy Broderson handled the decal art work. Also, Hardy was too modest to sign the plans - so, we are indeed indebted to Hardy for all his efforts in the last issue!

THE HAND LAUNCH GLIDER

PART FIVE

by RICHARD MILLER

DESIGN (cont.)

High Aspect Ratio Problems

In continuing our considerations of the problems encountered with high A/R gliders we'll go kind of lightly over the height and roll out problems with the observations that, all other factors equal, the high A/R glider cannot be thrown to the altitude possible with a low A/R glider of similar area and that more careful adjustment will usually be necessary to assure a decent transition. However the greater duration yield of the higher A/R machine should more than make up for any small losses in the transition.

And thus we get down to the problem that separates the men from the boys, the tip stall. Now, as has been implied, when one of the good Hi-Hats settles down to glide it is inspiring. The tail sits low, speed slackens off, the wings rock with the slightest bit of air movement and the rate of sink drops to a point usually associated with ultra-light, highly undercambered low-ceiling IHLG. Unfortunately this is the sort of once-in-a-while phenomenon that has made the Hi-Hat essentially a one-man machine.

When the Hi-Hat doesn't make the grade (aghr!!) it will dive ever so slightly in the glide; the increased velocity is immediately apparent to the practised eye. This curious shallow dive may last for as long as 15 or 20 seconds before, quite suddenly, there is an abrupt stall followed by a quick drop of the inside wing tip. This will be followed by another extended period of dive and another abrupt stall. The addition of a shade of weight will result in an unrelieved dive - and a very short flight - while the removal of any clay, no matter how little, will simply cause the stall to appear sooner.

Experiments - and a Solution

When I built my first Hi-Hats, naively expecting the exquisite performance I'd seen from Hatschek's machines, I got what I've described above - and miserable duration. I tried everything I could think of to remedy the quirk. I used larger and smaller stabs, lifting and symmetrical sections, larger rudders, more dihedral, turbulators, and toe-out at the polyhedral breaks - plus frantic letters to Goldberg, Blanchard, and Ritz.

Finally, after more months of experimentation, conversation and correspondence than I'd care to admit, the probable cause became blindingly obvious to me. The Hi-Hat has three features which induce tip stall: high A/R, taper, and generous polyhedral. Combined, they reinforce one another. Add to that the low Reynold's number and the scale effect of a $1\frac{1}{2}$ " tip chord and is it any wonder that there was an instability problem?

When I had gotten, toward the end of my experiments, to the point of toeing-out the polyhedral joints (to get

wash-out in the outer panels) I was getting close to home. But the matter was even simpler than that: all that was necessary was to carve the desired amount of washout into the wing blank before shaping the airfoil! At this point the solution seemed so plastically simple that I could have kicked myself twice around hangar #6, Lakehurst NAS, in chagrined retrospect for struggling so long with something so obvious.

As far as washed-out tips go then (even to the extremes of 3-5°) I would like to follow some tentative observations with some very optimistic, but not necessarily accurate assumptions:

1. From the standpoint of glide performance alone, washed-out tips seem definitely desirable on medium to high A/R gliders and are probably beneficial, in lesser amounts, on low A/R machines;
2. At higher speeds excessive washout will unquestionably cause drag and prove a structural liability. (Certain sailplanes incorporating washed-out tips seem to have a definite performance advantage in thermal flight but are slowed down on cross-country hops between thermals due to the downward deflection of the wing tips - caused by the wash-out.);
3. When a HLG with a 0° wash wing is thrown at launch speeds there is a tendency, due to the lifting action of the section, for the wings to fold up and back. A wing with excessive wash-out would tend to fold down and back;
4. There is a point (and this is where the optimism begins) between these two tendencies, say 2-3° of wash-out, where the down and back shear will somewhat neutralize the up and back break load, yet create no special problems of its own;
5. (Most optimistic of all) At some happy point the wash-out will tend to reduce stress loads and drag losses in the wing during the launch and be, in addition, highly advantageous to the glide-flight of the machine.

It seems likely that wash-out is going to have a definite relationship to A/R; they will increase numerically together. On the other hand wash-out, due to the down and back break load would seem to have a definite limit, perhaps 5°, perhaps more. Finally then, incorporating wash-out in proportion to A/R would force an upper limit on A/R, say on the order of 7 or 8:1.

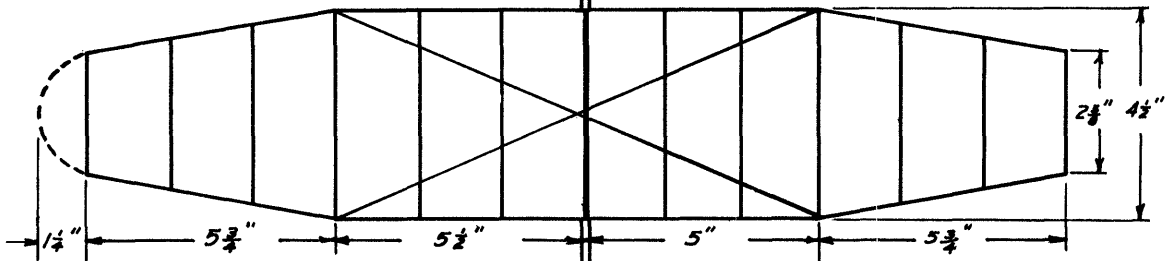
So much for theory. Does it work? My first experience with a 7:1 A/R glider which was hopeless (tip stall) last year indicate that 2° degrees of wash-out carved into the tips has done the trick - although one glider doesn't make a season. It is also worth noting that just about the most successful design around these days, the Sweepette, employs varying amounts of tip wash-out in different versions. It has also been my observation that, perhaps due to the unique planform, the Sweepette tends to acquire wash-out even when it isn't carved or sanded in. This could account in some measure for its remarkable successes.

And this brings us, as neatly as anything could, to wing planforms other than the elliptical and to sweepback. The big pitch we made earlier should definitely be tempered by mention of the parabola (a sort of fat ellipse), the reversed ellipse ("Hey mister, your wing's on backwards!") and sweepback. They all have been used many times of course.

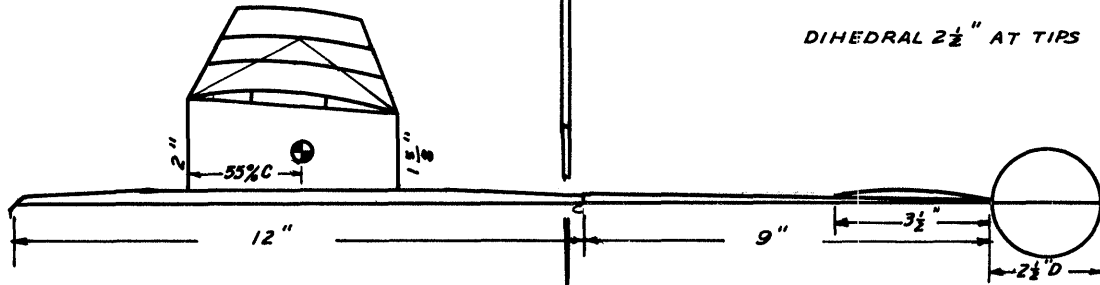
The stabilizing effects of sweepback, and the fact that it can permit a reduction in dihedral, have long been noted. Whether, or in what part, this contributes to the success of the Sweepette it would be nice to know. That the glider is successful is beyond argument. Most people who have tried it, according to Lee Hines, the designer, have seen their indoor times go up about 10%. A quick look around seems to substantiate this. Ron Wittman won the Nats (1:14.5) with one; Otto Heithecker, using a modification, established the current Category II Open record (1:15.0) and Jim Baggi used Otto's version to take Jr. IHLG at the Nats (1:07.2). Tommy Neumann of Chicago has done an incredible 1:09.4 under the 75' ceiling in the Madison Street Armory. Lee himself has done 0:37.0 with a low-ceiling version under a 29' 11" ceiling, 0:51.8 under 45' and 1:16.2 at Moffet recently. Times like these can leave little doubt as to the quality of the design.

PROP DIAMETER 13 1/2"
 2 SPAR PROP P/D = 1.8
 16 IN. LOOP .085 PIRELLI

PAPER STICK CATEGORY I MODEL
 DESIGNED BY JIM KAGAWA
 BEST TIME 11 MIN 35 SEC 25 FT. 11 IN. CEILING
 WT. .06 OZ LESS RUBBER

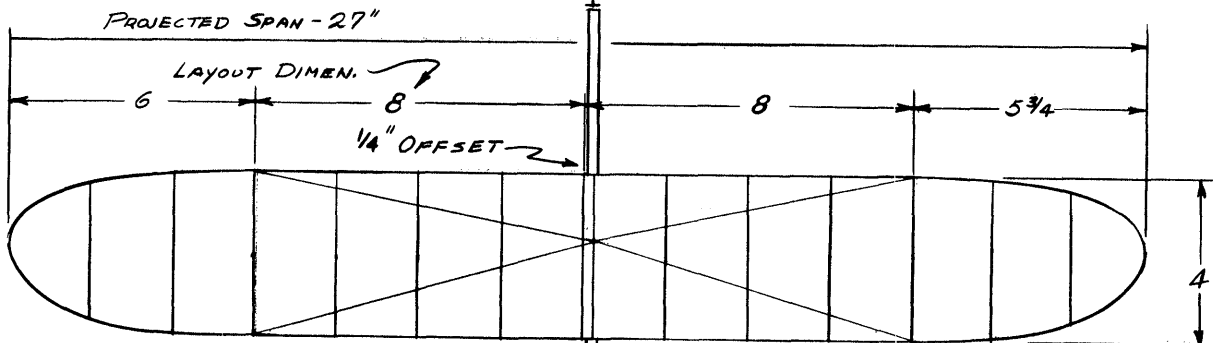
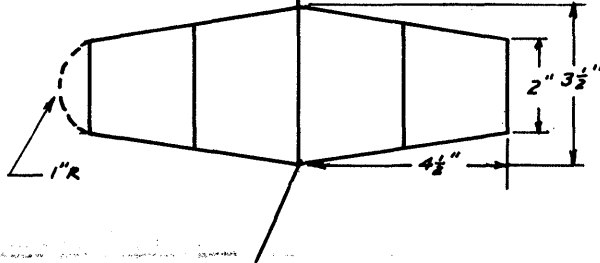


DIHEDRAL 2 1/2" AT TIPS



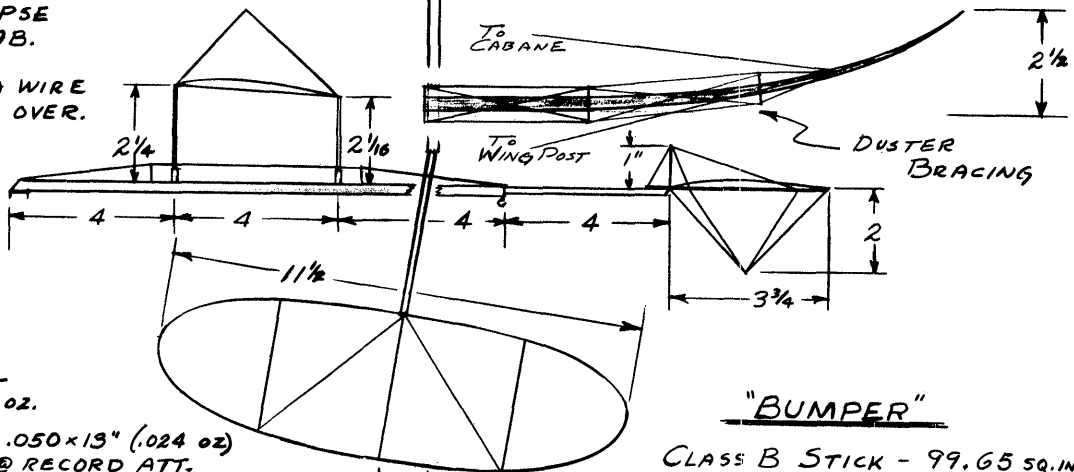
ORIGINAL TIPS SQUARE
 ROUND TIPS ADDED LATER

LEE POLANSKY



40-60 ELLIPSE
 WING & STAB.

.0007" KARMA WIRE
 BRACING ALL OVER.



WEIGHTS:
 FUSE - .0100
 WING - .0060
 TAIL - .0030
 PROP. - .0050
 BRACING
 & STRETS .0017
 .0257 OZ.

MOTOR - .043 x .050 x 13" (.024 OZ)
 1300 TURNS @ RECORD ATT.

PROP. - 14" D. x 28" PITCH - MONO SPAR

DESIGNED & FLOWN by PHIL HAINER - KENT, WASH.

"BUMPER"

CLASS B STICK - 99.65 SQ. IN.

CATEGORY I - 14 min. 23.1 sec.

12-30-61

CEILING - 24' 9" Geo. Batiuk

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

MAY 1962

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

NIMAS membership increased by seven during the month of April, for a total of eighty-three. The names and addresses of the six regular members and one honorary member who joined last month are:

DAVE BALES, 1511 Hollywood Way, Apt. C, Burbank, Calif.
AL CARLSON, 10129 Brookbank Dr., Dallas 29, Texas
JACK DANIELS, Box 451, Oak Lawn, Illinois
FRED PEARCE, Dynamics Branch, NASA, MSC, Rich Bldg.,
Telephone Rd., Houston, Texas
JIM SKARZYNSKI, 3800 N. Odell Avenue, Chicago 34, Ill.
RON WITTMAN, 200 West First St., San Angelo, Texas
DEVON SUTCLIFFE, 21 Burwood Rd., Matamata, Waikato,
New Zealand

A final tally of the NIMAS Ballots that have been returned showed a total of thirty-four ballots cast from about eighty possible. This is just over 40% returns, and just a little disappointing. Only time will tell just how important the results to follow really are, but NIMAS could only gain from having had a larger return.

- I. Wilmington-Detroit-Chicago PROPOSAL A (IHLG design)
18 for, 15 against, 1 no vote
- II. Wilmington-Detroit-Chicago PROPOSAL B (IHLG scoring)
21 for, 12 against, 1 no vote
- III. Wilmington-Detroit-Chicago PROPOSAL C (FAI Indoor)
28 for, 6 against
- IV. Cliff Model Club IHLG Proposal
5 for, 28 against, 1 no vote
Skyscraper's IHLG Proposal
4 for, 29 against, 1 no vote
Hatschek's Alternate IHLG Proposal
11 for, 14 against, 9 no vote
- VII. Solid Stick Proposal
8 for, 25 against, 1 no vote
- VIII. Unlimited D Stick
6 for, 23 against, 5 no vote

About the time the ballot was issued, developments on the various IHLG proposals were moving far too fast for even the short deadline of INDOOR NEWS to keep up with, with the result that only the very earliest ballot returns had any chance to affect the outcome. At last word, Bob Hatschek indicated that the Contest Board had given sufficient support to his proposal for it to enter study, at the same time he requested comment on another alternate proposal that defined the flight of IHLG, specifically, that the glider would gain the major portion of its flight altitude from the launch. This would probably be effective in ruling out long thermal flights of "mike" gliders, by negating flights which gained significant altitude from soaring. Since the above mentioned bulletin, there has been no further word on the status of any rules proposals.

To comment briefly on the ballot questions other than those on IHLG, we can note the following:

II. This vote shows a majority of NIMAS members favor a three-flight total for scoring IHLG, which should be a strong factor for the Contest Board to consider.

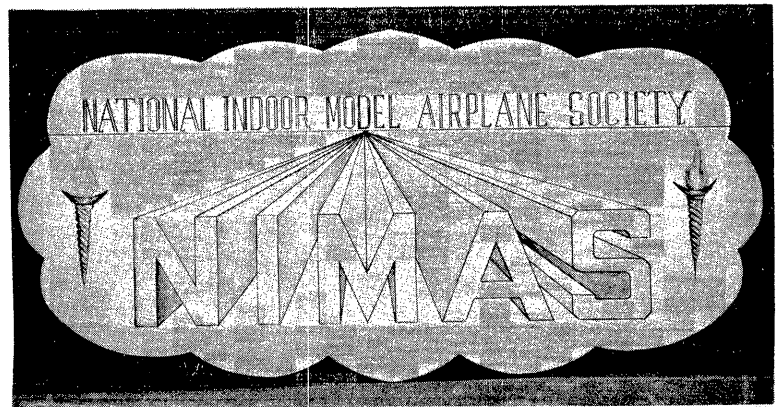
III. An overwhelming majority for adding the FAI Indoor model to existing categories of indoor models. We believe that both II and III are in the study period; they should pass in time for the 1963 Rule Book.

VII. This vote should result in final rejection of the Solid Stick proposal, which would be most desirable from our own viewpoint.

II. Since VIII was sort of an opinion poll to determine if NIMAS should originate such a proposal, unlimited wing area for Class D obviously is considered undesirable.

Final Decal Sketches

In addition to the decal sketch published in the March issue, we have these two other suggestions:



The first decal suggestion was made by Fred Weitzel, with the art work by Hardy Broderson. The background is light blue, the IHLG and mike ship (we hope they show up) are white, the border and lettering are black.

The last suggestion comes from Ron Wittman, who also did the art work. The coloring is mostly pastel shades, with light blue front on the letters and pale red shadow. Ron also submitted about a dozen variations on this theme to show adaptation to patches, FAI Indoor team emblems, and other uses.

In order to make it possible to have the decals by Nats time, each NIMAS member should drop a card to INAV indicating his choice not later than May 25. Even sooner would be better, as time is growing short. You have no gripes coming if you keep silent!

Rules Suggestions

Along with the ballots the members sent rules comments and suggestions. Most of them dealt with items on the ballot, but some were new concepts of rules sent in for comment.

To consider the rule book as a whole, we have a large number of events governed by complex rules. In our humble opinion, when all of our rule book attains the beautiful simplicity exhibited by the rules for FAI Indoor Rubber, we will have "arrived". Every time an attempt is made to legislate the structural constitution of a model, such as the Solid Stick proposal, or the precise design considerations, as in Team Racing, the result is a complicated rule. Such a rule will have enough loopholes so as to prevent efficient administration except by the group that conceived the rules, or it will require a legal education to interpret the meaning.

In other words, that which has been conceived by the mind of man can be circumvented by the mind of man - all it takes is a little time and effort. It is unfortunate that our society contains those few who make a game or a life philosophy of circumventing the rules.

All of which was a windy introduction to the following two suggestion that would simplify our rules - maybe there are other ideas to do the same??? Hardy Broderson suggests: Explore the approach that in each category of ceiling heights the modeler be allowed complete design freedom for the best time under that ceiling in "mike" and paper - both cabin and stick." And Bob Champine says, "I would greatly prefer to see all rules changed to drop the wing area rules and substitute wing span requirements which are much easier to process."

If either of the above rules suggestions tickles your fancy or arouses your ire, let your feelings be known. Or if you have a rules suggestion, send it in. Now is the time to start on rules for 1964 - if we make good changes. At the same time, let's avoid rules changes for the sake of changing something - the ballot poll also brought many comments that indicated both a satisfaction with the time honored events we now have, and the rules for them.

****FAI INDOOR REPORT****

Quarter Final Elims

Moffet Field - May 6, 1962, Moffet Hangar
 Joe Bilgri, 1255 Blackfield Dr., Santa Clara, Calif.
 Detroit - May 6, 1962, State Fair Coliseum, Detroit
 Dick Kowalski, 20203 Moenart, Detroit 34, Michigan
 Los Angeles - May 19, 1962, Wilmington Rec. Center
 Andrew Faykum, 9410 Dayton Way, Beverly Hills, Calif.
 Lakehurst - May 6, 1962, Lakehurst NAS
 Richard Miller, P.O. Box 27, New York 23, New York

Semi-Final Elims

WEST COAST - June 3, 1962, Moffet Hangar
 Joe Bilgri, 1255 Blackfield Dr., Santa Clara, Calif.
 CENTRAL AREA June 2-3, 1962, State Fair Coliseum, Detroit
 Dick Kowalski, 20203 Moenart, Detroit 34, Michigan
 EAST COAST - June 3, 1962 - Tentative
 Richard Miller, P.O. Box 27, New York 23, New York

FAI Indoor Results

Local Elims

DETROIT - April 8, 1962, 10 entries, 5 qualifiers
 Paul Crowley - 23:08 Ed Stoll - 21:09
 Dick Kowalski - 22:05 Jim Baggi - 19:30
 Phil Klintworth - 21:55

LOS ANGELES - April 13, 1962, 5 qualifiers, times not available.
 B. Paton Tom Finch
 Frank Cummings Lew Gitlow
 Carl Redlin

MOFFET FIELD - April 15, 1962, 13 entries, 7 qualifiers
 M. Andrade - 32:19 Hal Cover - 26:59
 Joe Bilgri - 30:40 Phil Hainer - 25:13
 Hu Entrop - 30:03 W. Williams - 23:01
 B. Atwood - 27:07

LAKEHURST - April 8, 1962, 9 entries, 5 qualifiers
 Ray Harlan - 26:39.6 Bill Bigge - 14:37.2
 Jim Grant - 25:16.2 Ernest Kopecky - 14:32.0
 John Triolo - 24:00.0

NEW YORK CITY - April 17, 1962 7 entries, 4 qualifiers
 C. V. Russo - 15:25.0 Drew Morris - 10:54.6
 Julius Rudy - 12:55.0 E. Franklin - 10:06.0

Quarter Final Elims

DALLAS - April 29, 1962, 5 entries, 4 qualifiers
 Jim Clem - 15:26.5, 16:57.1; 32:23.6
 Stan Chilton - 12:53.4, 15:33.9; 28:27.3
 Terry Hamer - 10:50.4, 11:41.6; 22:32.0
 Bud Tenny - 8:22.2, 11:43.6; 19:33.4

CHICAGO - Postponed until May 12, 1962 by circumstances beyond control of CD. Contact Pete Sotich, 3851 West 62nd Place, Chicago 29, Illinois, RE 5-1353

****"THE EASY I"****

Recently we had the good fortune and pleasure to meet Ron Wittman for the first time. Naturally, there was a long bull session about people, places and models. Then, Ron asked "Is there a need for a "fun model" type of HLG?"

This sounded like such a good idea that we said, "Have you got one?". He didn't have one then, but a week later there was one - the "Easy I". Here's the story:

"The Easy I"
 by Ron Wittman

The "Easy I" was designed primarily to create more interest in Low Ceiling glider flying. The idea was to have a glider that was easily built and still have high performance. The "Easy I" takes but a couple of hours to build but trims out easily.

Monthly contests for the "Easy I" along with the "Easy B" rubber powered model should make for fun-filled indoor sessions.

Construction

First, the selection of wood is of great importance. Choose the wood carefully, keeping in mind that you want a glider that is light and will reach the ceiling without breaking under the force of the launch. Also it should not be able to go over that height very much, even with an all-out effort in the launch. This will give you the right glider for that ceiling.

Fuselage

The fuselage can be made from strong, light 1/16" or 3/32" sheet. Draw the outline shown on the plans including the undercamber curve right on the wood. Cut it out and sand it smooth.

Tail Surfaces

The stab and rudder are made from light quarter grained 1/32" sheet. Cut the stab out and draw the center line on the top. Sand the leading and trailing edges as thin as possible without causing warpage or danger of breakage, leaving the center portion at 1/32" thickness. Make a cut along the center line of the stab approximately 3/4 of the thickness deep all the way across the stab. Cement in the anhedral shown and let dry. Cut the rudder to the shape shown and sand it thin like the stab. Cement the rudder to the fuselage first, then the stab.

Wing

The wing should be made from 1/16" sheet balsa, quarter grained and as light as possible. Mark off 16" on a 4" wide piece of wood, then mark off the center line of the wing. Cut the sheet to the wing outline shown and sand an airfoil section with the high point at 30%. After the airfoil has been sanded in, cut the wing in half. Cement it to the fuselage, adding the dihedral as shown.

Finish

After sanding all the components to shape the next step is to get them as smooth as possible. This can be done by using #600 wet or dry sandpaper and then #1000 polishing paper. Sand lightly with the #600 until the wood feels smooth, using fairly worn out paper. Then polish the wood with the #1000 until it shines. If you can't get #1000, use the back of the #600. After this has been completed, the parts are ready to be cemented together.

Flying

Balance the model at approximately 60% of the chord from the leading edge. Hand glide the model, if it dives with no sign of pulling the nose up (indicating negative incidence), warp the trailing edge of the stab up until a smooth glide is obtained. If the model stalls, warp the trailing edge of the stab down. Get as close as possible to zero incidence, with a barely noticeable positive angle.

Now adjust for turn, either left or right. For left turn warp the trailing edge down, thus creating wash-in. In the glide this will create drag and force a left turn. The turn can also be increased by tilting the stab and by warping the left stab trailing edge up and the right edge down. Above all, don't give up until you get the results you want. The more you try, the better your adjusting techniques will become.

THE HAND LAUNCH GLIDER

PART SIX

by RICHARD MILLER

DESIGN (cont.)

The Airfoil

Any history of the development of the IHLG will have to record Mr. Reynolds as a man who invented a naughty number which, when it was high was worth spending a big part of the R & D budget on (because everybody, at least everybody who's civilized, wants to get there yesterday) and when it was low managed only to become the subject of an occasional report which had very little to do with how

QUESTIONS AND ANSWERS

During the past month Ray Harlan and Ted Gonzoph were asked to air their views on Question 13 (presented in the March issue and repeated here) and Question 16. We have several comments on drift control (Question 15) but there wasn't enough time left over at the end of FAI Indoor to work it up. There is still room for any basic comments on how to control drift - anyone???

13. What determines the height of the wing struts? What effect does change of wing height have?
16. What determines how much dihedral should be used? In your opinion what is the most practical type of dihedral (ease of construction vs. efficiency)?

Ted Gonzoph says:

"I cannot give you a single, definite formula for determining wing height, since different models have different characteristics. Checking some old notes on previous models, I found the following percentages worked well:

- A ROG - 25% of prop diameter
- B Paper - 20% of prop diameter
- C & D film - from 15 to 18% of prop diameter

Some modelers may present wing height figures based on wing span, but I feel that the problem is more directly related to the prop diameter than to wing span.

Now, lowering the wing position tends to make the model spirally unstable in a tight turn-full power condition. Opening the turn or more dihedral will generally help. Raising the wing induces a looping tendency under full power, necessitating down thrust. A secondary, less noticed effect is for the model to want to fly straight ahead under full power. More rudder area will aid in keeping the model in its turn.

Incidentally, the high wing position should be given some consideration with the upcoming solid stick paper models. It could be used to control or minimize the diving tendencies those solid, bending sticks will have."

"Dihedral is another variable, dependent on model type and flying speed. To generalize:

- A ROG - $1\frac{1}{2}$ " per foot of span
- B Paper - $1\frac{1}{4}$ " per foot of span
- C & D Film - 1" per foot of span

V Dihedral - very easy to build and brace, but spiral dives easily.

Polyhedral - my personal preference. The flat center section is easy to brace and the "Nordic" tip (I generally use a tip of about 20% span) gives good control in tight turns and under high power.

Polydihedral - just a little more work to get the same results as polyhedral.

Elliptical - after Hacklinger, what can I say? However, unless used generously, it tends to drift and the slightest air disturbance will make it roll out of the turn pattern."

Ray Harlan commented on #16:

"After thumbing through Perkins and Hage's "Aircraft Performance, Stability and Control", I've come to the conclusion that this question is not worth considering analytically to any great extent. However, the dihedral effects can be summed up from two extremes to essentially justify "using what everybody has used for years". First, dihedral creates a force unbalance resulting in a rolling moment when the model is sideslipping in such a way as to negate spiralling tendencies. On the other side of the fence, too much dihedral reduced the damping of lateral oscillations (through shortening the period of oscillation) so that the model would exhibit prolonged responses to small disturbances and probably would be very subject to being disturbed by propeller unbalances (weight and/or pitch).

With these extremes in mind, the best answer is to use that which seems to work. I prefer plain tip dihedral (with my tips taking about 44% of the span) of about 20 to 25 degrees. It is certainly the simplest to build and is just as effective as any more elaborate schemes - to achieve adequate lateral damping.

One additional dihedral effect is the creation of vortices at the dihedral joint due to airflow disturbances. This is a form of induced drag, whose magnitude is difficult to measure. I would question the worth of avoiding dihedral joints on the grounds of trying to reduce this drag."

RECORDS? MAYBE!

One of the things we have watched since the inception of this column has been the accuracy of the information as presented - judged by the number of listings that are finally confirmed. Confirmation information comes from three sources - official AMA publications, and letters from either the CD or the record holder. So far, we have been confirmed on over 70% of the times, and some listings in the April issue are just too new to be confirmed yet.

Another important consideration will be just how many we miss - and that depends upon our readers to furnish the information. As it now stands, this column will stay in print so long as there are reports coming in in time to serve a useful purpose.

The large listing last month sort of took the wind out of our sails this month, and there have been no reports of high times since those listings.

NEWS FROM AROUND THE WORLD

CALIFORNIA - SANTA CLARA

Reports from Joe Bilgri and Lew Gitlow on the Moffet FAI local elims made interesting reading. Besides the high qualifying times (page two), Carl Redlin posted 36:50 for high time of the day, followed by Lew Gitlow's flight of 34:42 with a brand new "C". Tom Finch turned 30:22 with a "C" - in fact, all those who qualified at Wilmington were out in force for a day of test flying, making use of the first opportunity this Spring to fly in Moffet.

ENGLAND - COVENTRY

Arthur Barr reports that two situations marred the first indoor session in Cardington - some misunderstanding about dates made it difficult to get on station the first Saturday, and the repairs to the shed weren't complete as had been reported. With a real gale outside the shed conditions were very rough inside - Ron Draper lost a ship to drafts while handling it!

Arthur and Ron Draper have been testing some different batches of Pirelli, and found it to be like wine - better some years than others. The best vintage was 1960, with 1962 and 1958 very poor, and 1959 was pretty good.

NEW YORK - NEW YORK

Activity in the new Armory has been slowly increasing, especially since C. V. Russo proved that 15 minutes was possible during the FAI local elims there. In fact, he proved it three times and got the model back each time!

NEW ZEALAND - UPPER HUTT

John Malkin is making an all out effort to boost the indoor activity in New Zealand, along with all his other interests. The latest issue of the Upper Hutt Aeromodellers Bulletin has an article by John with good tips on getting started, locating sites, getting supplies, and general cheering on of the timid. With such enthusiasm things should be jumping there soon.

OHIO - CLINTON

Although the attendance is still poor at the indoor sessions in Goodyear Auditorium, Jim McGee reports the rubber times to be climbing up to around 8 minutes with many hang-ups. Jim is presently top dog in glider with flights ranging around 0:37 (43' ceiling but 33' 6" to the bottom of a maze of rafters and wire) and a top of 0:37.4. With Jim's guidance, the other flyers are rapidly catching up with flights up to 0:31.5.

TEXAS - DALLAS

The FAI local elims and the quarter finals marked the end of the formal indoor contests in this area, but on May 4 the Walnut Hill site opened up for regular sessions until basketball starts up again next Fall.

The attendance was small the first evening, but rubber times were over 7 minutes for both Senior and Open fliers. The real news was that IHLG was permitted on a scheduled basis for the first time. Although the plans for the Easy I (see story and plans this issue) had been out less than 36 hours, this glider dominated the HLG session. Flown by Terry Hamer, the Easy I now holds the building record of 0:16.0 (20' ceiling). The next sessions should really be crowded, considering the enthusiasm generated this time.

TEXAS - HOUSTON

Letters from Warren Gillespie and Fred Pearce tell of several members of the Brainbusters, including Frank Parmenter, have moved from Virginia to the NASA facility in Houston. Indoor activity in Texas will take a big jump if these boys can get started in Houston.

"EASY I"

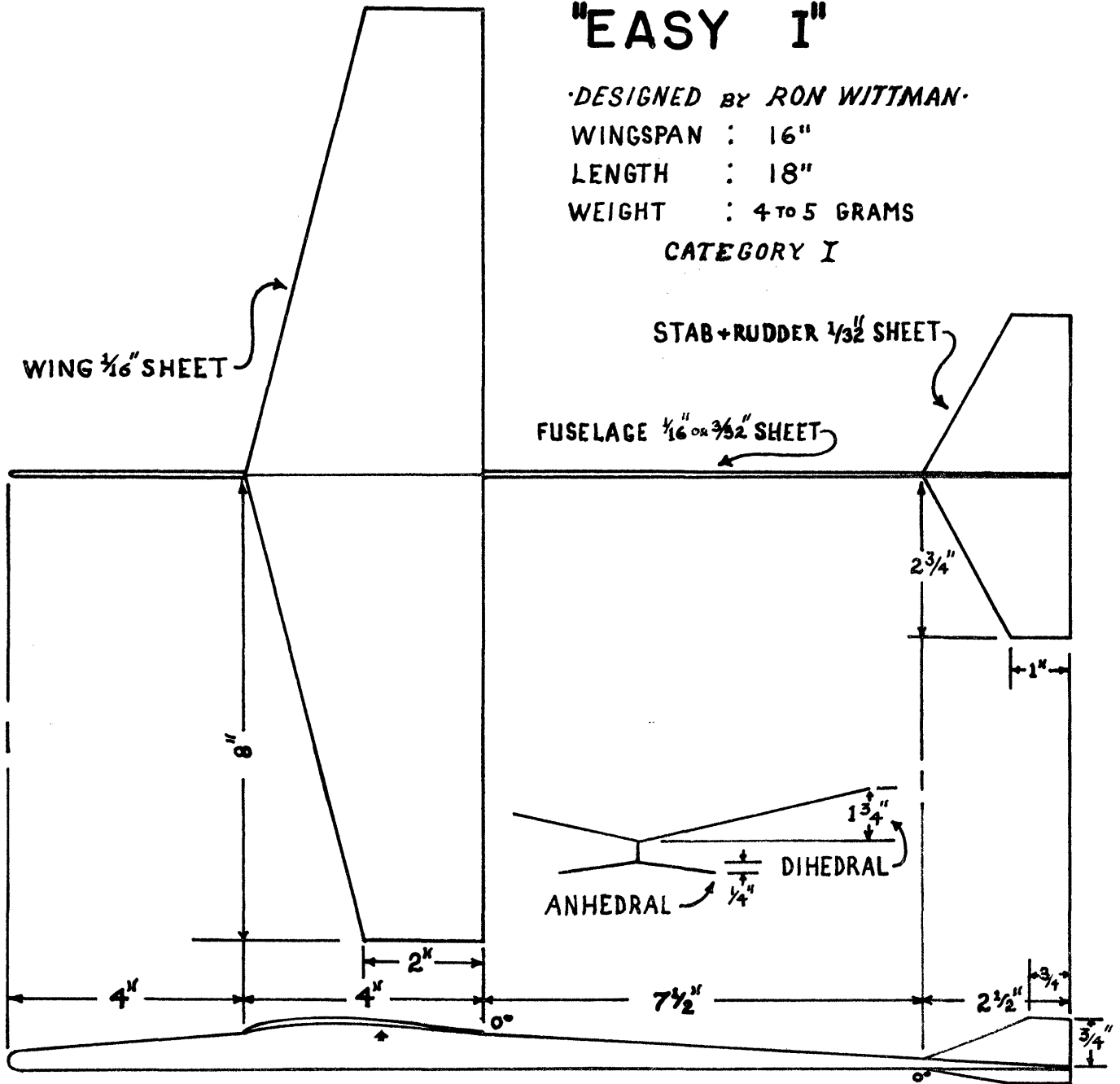
DESIGNED BY RON WITTMAN

WINGSPAN : 16"

LENGTH : 18"

WEIGHT : 4 TO 5 GRAMS

CATEGORY I



ADDITIONAL NOTES:

1. Maximum wing undercamber $\frac{3}{32}$ " at 30% of chord.
2. Fuselage depth at wing $\frac{3}{4}$ ".
3. Extra light gliders may use up to $\frac{1}{32}$ " less undercamber.

effortlessly a HLG goes up nor how reluctantly it comes down.

Nonetheless, despite this serious oversight on the part of Theoretical Science, we are far from ignorant about the effects of low, or even ultra-low, R/N airflow. There is a far from meager fund of experience related to thin and thick sections; sharp and blunt leading edges; forward, middle, and rearward high points; laminar and turbulent airflow and their combinations. In a sense every glider ever built and flown has been a small contribution to a vast, pragmatic research project aimed, to paraphrase a loquacious linguist, in determining the statistical regularity with which the permitted combinations of the constituent elements - within the pattern of the particular configuration - recur and can be classified in terms of formulae which are concerned with the classical probability of increased performance; i.e., duration. In Short, some airfoils work better than others. And some don't work as well, although a flat plate will maintain a HLG in a fashion. Thus, in our concern with the individual model builder's realization of the specific form that aerodynamicists have given to Bernoulli's application of Venturi's principle (that an increase in the velocity of a mass of air causes a reduction in its pressure) we would do well to take a look at what has been tried and how well it has worked.

Section Thickness

The choice of the thick, highly undercambered airfoil sections which pretty well dominated general model building fifteen or twenty years ago seem to have been dictated by the feeling that if a little camber produced a little lift a lot of camber would produce more. This assumption, which made sections such as the RAF 32 and Eiffel 400 so popular in those days was probably pretty close to correct. What was equally correct, but overlooked, was that an increase in camber and an increase in lift was also accompanied by an increase in drag.

Perhaps it was due to the fact that this drag penalty was so immediately evident in the HLG that caused glider throwers to stick to relatively thin sections. Nonetheless the existence of the 1/4" X 4" plank (and the mistaken idea that one had to use the lightest wood available for glider wings) tended to do to the HLG wing what the 36" strip did to the span of the 1/2 A gas model for years. The 1/4" X 4" plank gives a section thickness of just over 6%. Just what the ideal thickness is is dependent, of course, on a number of related factors and cannot be stated categorically. My own experience and observations indicated that somewhat thinner sections, ranging from about 4 to 5% of the chord, give better results, at least for unlimited ceiling flying. (And remember that wood weight can increase in proportion as the wing is thinned down; and that heavier wood is both more resilient and takes a higher finish.)

With all other factors equal the highly cambered, high lift-high drag sections do improve glide speed rate-of-sink. It is under increased thrust that they become wasteful and the reason for avoiding them, of course, is in order to get maximum height under unlimited ceilings. Under lower ceilings, where we have a surplus of power in our arm to ceiling height ratio, we can increase the airfoil thickness somewhat and the undercamber radically, or until it takes all the strength we have to get a .3 oz. glider up 30'. And this exercise provides an excellent lesson in how much energy a little camber in an airfoil can absorb.

High Point

In the general uncertainty that surrounds the selection of which airfoil to use the specific case of just where to put the high point of the upper camber can well represent the quandry of the designer. The extreme limits seem to be about 20% to 40% with something close to 30% being most popular. Wally Simmers seems to feel that a 40% high point is worth experimenting with principally as a means of decreasing drag - and it is interesting to note that Hacklinger used a 40% high point on his 44:20 mike job. At least according to 7 out of 10 reports he did.

Leading Edge Radius & Entry Point

Things are somewhat more definite in regards to the leading edge radius. There is fairly wide feeling in favor of sharp leading edges and about .05% (or a diameter of about 1%) would seem to be a good place to start. This is one factor which can be controlled carefully by the use of various sizes of wire or monofilament. (Another version of the sharp L.E. is the 1/8" X 1/32" L.E. wedge strip which Stu Savage used to cure one of his high aspect ratio designs.)

In the interests of reducing drag (once again) there seems to be some justice in having a shade of upsweep of the lower camber at the leading edge, or a slightly raised entry point. Lee Hines recommends using 1/16" on his Glidette and I use about 1/32" on wings having the same thickness as the Glidette, namely 7/32".

Undercamber

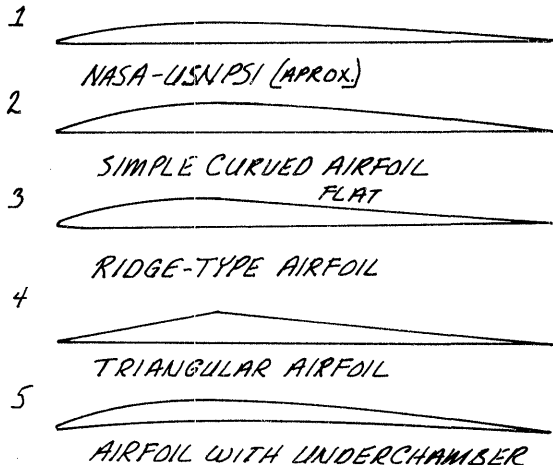
Undercamber is, as inferred earlier, a must for low ceiling gliders and a little may be in order even for the unlimited ceiling glider. The old RAF 32 type of undercamber of past years seems to have given way to the full chord style and the amount is simply all you can carve in and still get the glider to within a couple of inches of the bottom girder.

If you've read this far and have the feeling that you're very little wiser than before I can't say I blame you. What makes airfoil characteristics so difficult to pin down is the great variety that have been used successfully.

Nonetheless I think it is safe to outline a sort of composite airfoil for unlimited ceiling gliders taken from those design factors which have shown up with greatest regularity on the most successful gliders. Supposing a 4" chord such a section would be about 7/32" thick, be flat bottomed, have a slight upsweep to a rather sharp leading edge and a high point at about 30% of the chord. This conforms remarkably to a section with the rather curious designation of NASA-USNPSI shown on p. 58 of the 1951-52 Zaic Year Book - and recommended for HLG. Here are the vital statistics:

%	UP'R	LW'R	%	UP'R	LW'R
0	0.40	0.40	50	3.80	0.00
5	2.36	0.00	60	3.48	0.00
10	3.16	0.00	70	2.96	0.00
20	3.80	0.00	80	2.24	0.00
30	3.99	0.00	90	1.42	0.00
40	3.96	0.00	100	0.32	0.00

This NACA section is shown, approximately, an #1 in the airfoil drawings. #2 is a reliable section, easy to carve and quite popular. The third (ridge-type airfoil) has been used with a great deal of success by Curt Stevens and can be found detailed on page 168 of the 1957-58 Zaic Year Book. The triangular section (#4) actually does work. As a matter of fact Pete Nishanian has even used a variation in which the top camber was scooped out to a convex curve - and did very well with it. #5 is typical of the current undercambered sections, the one here being quite close to what Tommy Neumann is using on his 1:09 version of the Sweepette. Take your choice.



THE STATE OF THE ART

This month our featured model is not a record holder, but only because of circumstances beyond the control of the builder. Tommy Neumann, with this version of the now famous Sweepette, has made flights in excess of 1:09 under a 75' ceiling - 1:09.2 to be exact. Since Tommy is only 18, he is a Senior; that is the highest time we've heard of, by a Senior.

Admittedly, your editor hasn't had enough experience to check on specific points of construction for this glider, so if the plans don't give enough info, check with Tommy at 1350 Davine Dr., Glendale Hts., Glenellen P.O., Illinois.

MODIFIED

SWEEPETTE 18

DESIGNED BY

LEE R. HINES

MODIFIED BY

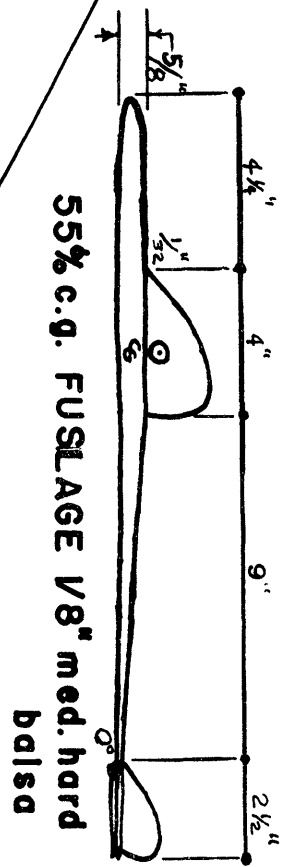
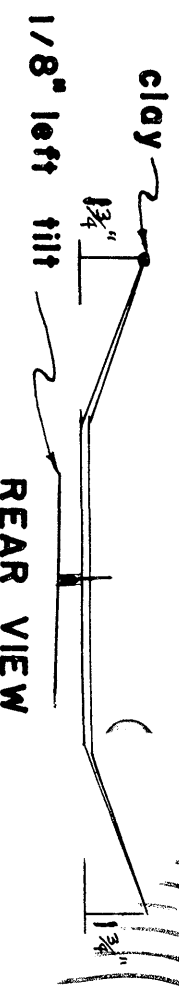
TOM NEUMANN

DRAWN BY

JIM ANDREWS

WEIGHT: WING .25-.28oz.
FUSLAGE .10oz.
TOTAL .46-.49

FINISH WITH THINNED
PLASTICIZED NITRATE
DOPE APPLIED WITH A
RAG & SAND LIGHTLY
WITH $\frac{3}{4}$ 00 EMERY

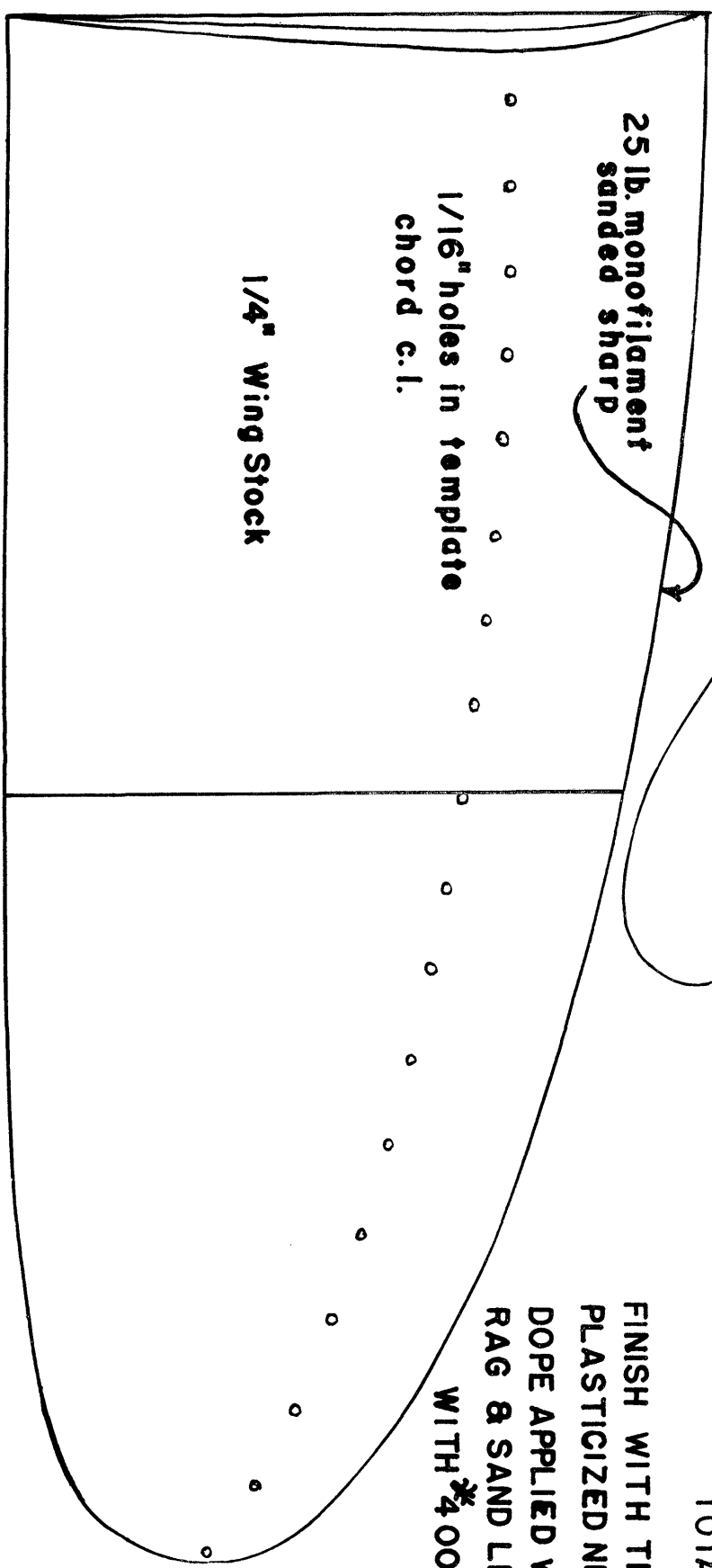


non-lifting stab

25 lb. monofilament
sanded sharp

1/16" holes in template
chord c.l.

1/4" Wing Stock



INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

JUNE 1962

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
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****NATIONAL INDOOR MODEL AIRPLANE SOCIETY****

Only two more NIMAS members joined during the month of May, bringing the total to eighty-five at press time.

MERRICK S. ANDREWS, 320 DeMott Avenue, Teaneck, New Jersey

RON DRAPER, 74 Morris Ave. Wyken, Coventry, England
(Honorary Member)

More on Ballots

In the ballot report in the May issue we stated that we believed that Questions II & III were under study by the Free Flight Contest Board. Ron St. Jean called us on this and a check showed that last year's Chairman of the Contest Board failed to submit these issues to the Board. This oversight has been called to the attention of Bob Hatschek, but time has run out and 1964 is the earliest possible time for these proposals to become effective, in spite of overwhelming favor for these proposals on the part of the NIMAS membership.

Along this same line, we have been aware for some time that Par. 4.7 of the AMA rules has been universally ignored at local contests and at the Nats, at least with regard to indoor models. Would you like to have this rule enforced?

Missing Something?

A few times in past months, we have received letters complaining that the writer had missed one or more issues of INDOOR NEWS; in each case the complainer had moved and failed to notify us of his new address. All copies of this issue have been mailed first class, normally we use second class mail after it is felt that the address is right.

There normally are a few extra copies of any given issue left after all mailing is done, and extra copies are available to subscribers as long as they last. In view to future requests for copies of back issues, there are some copies of the December 1961 issue, and then the supply skips to April and May, with some of each on hand.

Try to avoid missing any issues by promptly notifying us of your new address, if you wait you may not be able to find a spare copy.

Shame on You!

In the January issue an editorial request for guidance on the matter of a special charter for NIMAS; except for the charter members and one other member there was zero, count them, zero comments on the subject.

The NIMAS ballot issue resulted in a smashing 40% return from those who could have voted.

The final presentation on the NIMAS decal was made in the last issue with a plea for a choice to be made not later than May 25, 1962. As it now stands, it seems likely that less than 20% of the membership will have a hand in choosing our symbol we will use for identification. Only a pressing desire on the part of your editor and the other charter members for the decal is keeping the issue moving. In other words, if the membership doesn't care, why bother?

A bouquet to Chuck Borneman - he is the one member who cares enough to have answered in each of these cases!

****FAI INDOOR REPORT****

FAI Indoor Results

Local Elims

CLEVELAND - April 29, 1962, 18 entries, 9 qualifiers
Mike Karlak - 19:10.2
Frank Pavliga - 15:24.0
William Hulbert - 14:47
Jim Skinner - 14:35.0
Stan Smith - 14:34.0
Lou Willis - 14:32.0
Jerry Skrijanc - 14:09.0
Harry Harps - 12:49.0
Ron Roharik - 12:22

LOS ANGELES - (Wilmington) 5 Qualifiers

Tom Finch - 13:46.2
Frank Cummings - 12:15.6
Bruce Paton - 11:00
Carl Redlin - 10:54
Lew Gitlow - 10:32

Quarter Final Elims

CHICAGO - May 12, 1962, 6 Qualifiers
Charles Sotich - 21:38, 25:33.1 47:11.1
Bob DeBatty - 19:12.0, 25:02.0 44:14.0
Don Kintzele - 20:44.7, 22:54.4 43:39.1
Tom Neumann - 18:11.8, 21:31.8 39:43.6
Vic Hotz - 16:30.0, 20:28.8 36:58.8
Clarence Mills - 15:15.8, 14:38.4 29:54.2

DETROIT - May 6, 1962, 12 Qualifiers
Dick Kowalski - 24:09.2, 27:13.0 51:22.2
Bill Hulbert - 24:11.0, 23:17.0 47:28.0
Stan Smith - 23:58.7, 22:49.2 47:28.0
Jim Skinner - 21:40.6, 22:59.2 44:39.8
Harry Harps - 19:42.4, 23:31.4 43:13.8
Phil Klintworth - 21:30, 21:00 42:30.0
Jim Baggi - 20:07.0, 21:42.5 41:49.5
Ron Roharik - 21:37.7, 19:11.1 40:48.8
Lou Willis - 20:13.7, 19:52.3 40:06.0
Paul Crowley - 17:17.9, 22:38.3 39:56.2
Ed Stoll - 18:13.4, 18:37.2 36:50.6
Frank Pavliga - 20:37.7, 15:08.6 35:46.3

MOFFET - May 6, 1962, 11 Qualifiers
Carl Rambo - 34:29.0, 36:51.0 71:20.0
Frank Cummings - 34:10.0, 36:09.0 70:19.0
Lew Gitlow - 34:43.0, 35:11.0 69:54.0
Bill Atwood - 32:29.0, 37:15.0 69:44.0
Carl Redlin 65:40.0
Bruce Paton 62:51.0
Joe Bilgri 62:05.0
Manny Andrade 61:27.0
Bud Romak 54:42.0
John Lenderman 48:59.0
Warren Williams 48:09.0

LAKEHURST - May 6, 1962, 7 Qualifiers
Ray Harlan - 33:01.2, 29:11.6 62:12.8
Bill Bigge - 27:24.8, 25:45.0 53:09.8
Jim Grant - 25:05.9, 24:48.2 49:54.1
John Triolo - 23:02.0, 21:29.0 44:31.0
Julius Rudy - 23:02.4, 20:31.5 43:33.9
C. V. Russo - 23:40.8, 19:18.2 42:54.8
Edgar Franklin - 24:10.6, 18:44.2 42:54.8

SEMI-FINAL ELIMS

For several reasons, only the first place times are shown below, and complete results will be presented next month. The Central Area elims was postponed until June 16-17, and will be reported on next month also.

WEST COAST - Moffet Field, June 3, 1962
Carl Redlin - 35:15, 35:28 70:43

EAST COAST - Lakehurst, June 3, 1962
Julius Rudy - 30:57, 34:09* 65:06
Bill Bigge - 30:48.2, 34:05 64:53.2

*This flight allowed on a restart pending a ruling by Bilgri. On the aborted flight, Rudy's model struck a balloon string and damaged the wing. At the time the balloon was being used to retrieve a model which had hung up. If the restart is allowed, Rudy is the East Coast team member, if not, Bigge will repeat as the team member, which makes two out of three left from last year.

****NIMAS MEETING AT NATS?****

A majority opinion of the charter members indicates that we should try to hold a first meeting of the general NIMAS membership at the Nats, provided we can line up a meeting place and a time that doesn't conflict with other important meetings which must be attended by some of our members due to their holding important AMA posts. Watch for an announcement of meeting time on the main bulletin board at the Nats.

HINTS AND KINKS

By nature, model builders are a little lazy - not too lazy, but just enough to "invent" their way out of some work. Therefore, we feel the need for this new column which will appear as often as there are enough contributions for a column.

The idea will be to simplify our hobby by passing on work saving ideas on any phase of building indoor models. Please submit your favorite tricks and short-cuts with a sketch if necessary. The description will be re-typed, but the sketches must be clear and complete, with good contrast, since our printing uses a photographic process. Keep the sketch dimensions to a maximum of 6" wide, using as much vertical space as is needed.

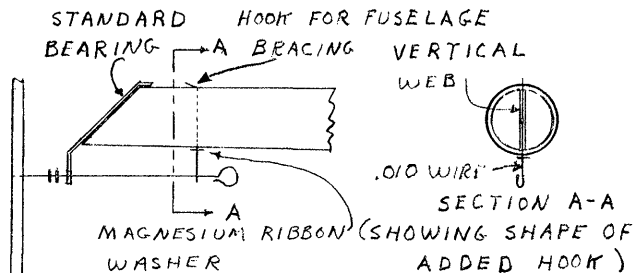
Trimming Microfilm

Of the two methods of cutting or trimming film that we've heard about; the hot wire and thinner-on-a-stick, each poses a problem. The easiest to do is the thinner method, but it is likely that some thinner will run out on the surface and leave a hole. The hot wire is a lot of bother, no matter how the wire is heated, and some of our more exotic films are very inflammable.

The trick is this: use a very soft balsa stick and a slower evaporating thinner such as butyrate thinner. Let the end of the stick soak in the thinner for a while at first. When you're ready to trim, drag the stick on the edge of the bottle to remove any excess thinner and cut the film with the "fumes" from the thinner that soaked into the wood. It is now possible to trim right next to the outline of the surface without tearing into the film on the surface. Of course, it goes without saying that the film must be stuck to the surface all around for any trimming method to produce a clean edge. Also, the stick should be dipped again every 6" or 8" of trim so the cutting will proceed smoothly.

Double Thrust Bearing

The double thrust bearing has been used for years to control the angle of the thrust line and to minimize prop wobble due to rubber creeping up on the hook. Here is an improvement on standard aluminum double bearings, dreamed up by John Triolo and reported by Manny Radoff:



DOUBLE THRUST BEARING

Says Manny, "We have given up double bearings of one piece. The rear slot in dural always wears out and the shaft slips out when least wanted or expected. Correction is to use old fashioned single bearing and a .010" music wire rear support."

Note from the sketch that the added piece of wire is supported inside the fuselage by the doubler web, and is re-inforced on the bottom by a tiny magnesium washer for additional support. Although there was no .010" wire handy, samples of .009" and .012" were bent up and weighed, with the .009" seeming to be a bit light. Weights: .009" - .0002 oz.; .012" - .000395 oz. Even the added weight of the washer should not be a weight penalty, total installation weight ought to be less than .00075 oz.

QUESTIONS AND ANSWERS

In the March issue we posed the question, "What do you know about drift control?" In addition, several low and medium-ceiling groups were contacted for more info on controlling and/or "living with" drift as it occurs in our indoor sites.

As in most other problems facing us, drift control is a very complex problem, and is affected by dozens of variables. The basic problem, of course, is that drift will almost always terminate that "good" flight by pushing the model into the wall or some obstruction, and usually the model is damaged.

The causes of drift can be divided into three classes: 1. "external", or weather influence, 2. "internal" drift caused by localized heat sources, and 3. "ricochet" drift caused by the model contacting obstructions that change the flight pattern without hanging the model.

Of the three, ricochet drift is hardest to combat, and some corollary of Finagle's Law can be used to show that ricochet drift is almost always detrimental to the best interests of the model. Sometimes persistent offending obstructions can be removed or modified, but usually there is neither a pattern to the effect of the offender nor a way of effectively removing it. For example: Small irregularities in a smooth ceiling near the edge of the flying area - if the model (circling left) passes to the outside of the "snag" and contacts it with the left tip, the next circle will probably be much closer to the wall. If the model passes inside of the snag and brushes it with the right wing tip, the pattern usually shifts toward the center of the flight area. To remove or not to remove?

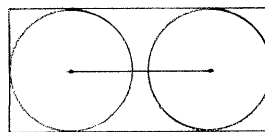
External or weather drift is caused by (usually) uneven heating of one wall of the building by the sun, or by a combination of high winds and leaks in the outer walls of the building. Sometimes, sunlight on a patch of floor will set localized drift patterns which cause lots of trouble. For the leaks and hot floor the correction is obvious; for the unevenly heated wall little can be done except hold the contests at night, which is OK only for the smaller local contests with no out-of-town entry.

Internal drift sources cause the most grief in Cat. I sites, but they are usually easiest to combat in the low ceilings also. Causes: lights making hot spots on the floor, and groups of spectators or contestants. From personal observation, normal movement of people does not set up drift patterns, regardless of how much turbulence is generated. But three or four people sitting quietly for a period of time can generate a miniature "jet stream" across the ceiling away from their location.

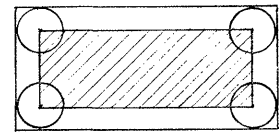
The building and ceiling configuration has much to do with the magnitude of disturbance caused by localized heat sources - an "ideal" site with a smooth unobstructed ceiling will permit the models to spend most of the power burst and about 50% of the cruise within 12" of the top, where the drift will have the greatest effect. Girders, lights, and hanging heaters cause many a tense moment due to ricochet drift, but usually force the model to hold a mean altitude somewhat lower than the drift pattern from localized heating - so you can't win!

Hu Entrop, a member of the group of indoor flyers in Seattle, Washington and present holder of the Category I A ROG record (12:10.0) and Class D stick record (15:24.0) pointed out early this year the advantage of dispersing contestants and spectators around the room to avoid building up a pattern of interior drift. In his last letter he relates, "As I told you in one of my other letters we try to disperse all spectators evenly around the room, but as the contest gets under way there definitely seems to be a drift pattern that eventually dominates, driving all models against one wall. When this happens, we employ the opposite technique and bunch up to 10 or 15 spectators (providing you have that many) up against the wall in the direct path of the model. This will prevent the model, about 80% of the time, from striking the wall, in fact it may even start the model off toward another wall. By employing the same technique again it is possible about 80% of the time to prevent the model from striking any wall."

Charlie Sotich, member of the Chicago Aeronuts, had a few comments on "living with" drift, applicable to all indoor flying:



MODEL'S PATTERN
RESTRICTED TO A LINE



MODEL'S PATTERN
RESTRICTED TO A
RECTANGLE

"In the diagrams above the circles represent the paths that models could have in a flying site. Using the largest circle possible, the center of the model's path must stay on a line, otherwise it will contact the wall. If a smaller circle is used, the center of the model can occupy a much larger area. This means the model with a small circle can drift more without getting into trouble.

NEWS FROM AROUND THE WORLD

CALIFORNIA - PACIFICA

Warren Gamble reports that the San Francisco Vultures are holding Easy B contests after the third meeting each month. The site is an auditorium with 20' ceiling, if attendance builds up they will try for a larger site. Good luck on this project - Keep 'em flying!

ILLINOIS - CHICAGO

Although the Chicago Aeronuts have lost the use of the Madison Street Armory until the winter indoor season, the club will remain sharp in indoor. They have secured the use of the Armory at 52nd Street and Cottage Grove in Chicago. If memory serves us right, this armory has a 90' ceiling, a gain of 15' over the other armory.

The monthly achievement award from the Aeronuts for May was presented to Jim Skarzynski, who set five National records in Category II, Junior division. Incidentally, Jim is 13 years old!

INDIANA - KOKOMO

The Kokomo Knight of the Round Circle finished their 1961-'62 indoor season with a bang. The last contest had 5 events, including a flying scale event with a total entry of seven.

Some "special awards" for the Junior events were donated by Bob Larsh and his wife - they were cakes baked by Mrs. Larsh! Sounds like a delicious trend?

OHIO - BEDFORD

Along with the report on the Cleveland Area FAI Local Elims, Mike Karlak noted with regret that the Armory in Cleveland where the elims were held will be torn down this summer. Mike notes that over 25 years of indoor flying by many big names has been done in this building, indoor loses a real historical site when the Armory goes.

TEXAS - DALLAS

The second Walnut Hill session had a much larger turnout than the first. Nothing spectacular was done in HLG, but the rubber times approached 8½ minutes, about the level they were at the end of the last summer session as the Center turned to basketball last fall.

The prettiest model on the floor? Dick Jordan's scale Corbin Super Ace! Dick is still working toward an optimum motor for it, but early test flights showed promise.

THE HAND LAUNCH GLIDER

PART SEVEN

by RICHARD MILLER

DESIGN (cont.)

Polyhedral

Just about everyone knowledgeable enough to know his longitudinal axis from his tail volume coefficient would hasten to answer the question "Why do we need dihedral?" with a statement very close to "For stability." And essentially, of course, he would be correct, although in the case of the IHLG not all that correct. An outdoor glider which must be kept from spinning in all sorts of conditions including thermal flight needs just about as much dihedral as is common today, but not an IHLG - at least not in the glide. Perhaps the extra dihedral is there to get us through the launch then? Partly, but we really don't need it there either - if our control is good! By elimination then we have left only the transition and it is precisely here that enough dihedral to give us a satisfactory roll rate is most critical.

We can begin therefore by stating that we want enough dihedral in our design to give us a roll rate which will forgive our worst launching sins. What we want to know is (a) how much is enough? and (b) what is the best configuration? We'll look at the second part first.

Now certain types of dihedral, principally polyhedral, are more efficient than others. In practical terms increased efficiency means that we get the stability and roll rate we desire with less actual tip elevation. This in turn means the greatest possible true wing span and decreased wing losses due to highly angled breaks and sharply canted tips.

As in the case of the wing planform (part 4) the ellipse seems to be the most efficient form of dihedral - at least theoretically. Someday, perhaps, someone will carve an elliptically shaped wing from a big block of balsa, or (more likely) laminate several layers of 1/16" sheet to form an elliptical wing blank. In the meantime we'll have to struggle along getting as close as we can to this elliptical ideal with the Zona saw, the sanding block and good guess work.

In general the drift varies with altitude. Near the ceiling it may be from North to South while at the floor it may be the reverse. By observing how a model behaves on its way up and down it is sometimes possible to see how the air is circulating. A little thought will often show you how you can get a few more minutes by observing the drift. Last Saturday (1/27/62) the Aeronuts had a club contest for paper stick models. Dennis Kargol could not get his model to climb to near the ceiling. It went straight up and down without much drift, and he got over 11½ minutes. I was flying my model with a small prop that gave it a good climb. On my first flight it climbed well, but drifted fast near the ceiling and caught on a light in about 5 minutes. The next flight I rewound and backed off a few more turns. After 5 minutes it was still above where I had launched it. It climbed a bit higher and started drifting. It traveled the length of the Armory and hung up on the far wall after 12 minutes. A bigger prop or less rubber was what I should have tried."

So there you have it - some remedies to the drift problem, but nothing sure-fire and guaranteed. Commenting on Entrop's "steering" or "counter drift" technique, we have tried this in the Walnut Hill site (20' ceiling) with some success. One flight on a paper stick model was deflected time and again from hitting two baskets opposite the main body of spectators. A group of five youngsters provided "solid" control, affecting the pattern within two circles.

To those who may scream "Foul" at such ideas, we can only say that the model showed no tendency to "soar" over the group after it started down; conversely, the extra turbulence over the group seemed to cause the model to lose altitude faster. Far better control was maintained by keeping the group at least 5 or 10 feet ahead of the model's path. In our own personal opinion, the use of steering reduces the potential duration somewhat over that possible with an unlimited floor area with no obstructions. The only gain involved seems to be trading a very long flight (potential) that would have been terminated early in the cruise by a hang-up, for a shorter flight that lands in the flight area in a normal fashion.

STATE OF THE ART

This month's model established one of the higher Cat. I times that have been coming up recently - Open Class D stick (15:20). In spite of the fact that the record stood only a little over a month until a new one of 15:24 was set in a 28' ceiling, this record is still a rather important one since it set in a 22' ceiling. The designer, Charlie Sotich, tells the story thus:

"I used the same set up that I had been using for the higher ceiling; (75" - Ed.) 18" diameter, 30" pitch prop, powered by an 18" loop of .080 Pirelli rubber. My first three flights were 12:49, 13:06, and 11:50.8. There were too many turns left after the third flight so I shortened the motor by 1½". The fourth flight was made by putting in 1300 turns and backing off 80 turns before launching. About 160 turns were left in the motor after the 15:20 flight, which figures out to be 69 RPM. The prop was a single spar type with a 2¼" maximum blade width."

RECORDS? MAYBE!

Official confirmation has been received on two records previously listed:

CATEGORY II, SMU Coliseum, Dallas, 56' ceiling
Open Ornithopter - 1:58.3, Jerald B. Murphy
CATEGORY II, Livestock Coliseum, Dallas, 70' ceiling
Senior HLG - 1:55.1, Nickey Jones (Mike)

CLEVELAND AREA FAI LOCAL ELIMS, April 29, 1962,
CATEGORY II, Central Armory, Cleveland, 45' ceiling
Junior B Stick - 12:22, Ronald Roharik

DETROIT FAI QUARTER FINALS, May 6, 1962
CATEGORY II, Michigan State Fair Coliseum
Junior D Stick - 21:37.7, Ronald Roharik
Senior D Stick - 22:59.2, Jim Skinner

CHICAGO FAI QUARTER FINALS, May 12, 1962
CATEGORY I, Lecture Room, Washington Armory, 20'
Junior Autogyro - 0:54.2, Jim Skarzynski
CATEGORY II, Drill Hall, Washington Armory, 90'
Junior Autogyro - 1:59.0, Jim Skarzynski
Junior C Stick - 11:24.5, Jim Skarzynski
Senior B Stick - 12:10.2, Dennis Kargol

WEST COAST FAI SEMI-FINALS, June 3, 1962
CATEGORY III, Moffet Hangar
Open B Stick - 34:15.6, Tom Finch

It is immediately obvious that we are likely to come a lot closer to the elliptical form by using something beyond dihedral; and the heading for this section - Polyhedral - states the case for dividing the HLG wing into more than the two traditional panels. Dihedral, of course, is quite serviceable and we're not likely to see the end of it for a long time. But the obvious advantages of polyhedral, in terms of improved roll rate and increased duration, and the relative ease of cutting and glueing the extra panels, make dihedral a poor compromise and a lazy man's out.

Just how advantageous and common polyhedral is can readily be seen by a glance at Bill Dunwoody's excellent chart (Outstanding Gliders of the Last Ten Years) in M.A.N. for July, 1959 - p. 25. It is noteworthy that only one glider on the chart, Dagand's, has dihedral. The fact that Dagand's time is listed as 1:16.4 might seem to some an excellent argument for saving a few minutes extra work. Nonetheless (if the stories are true) Dagand's is reputedly a good consistent 1:08 glider, one that got an 8-second boost one day. Based on this the best dihedral gliders would seem to be about 10 seconds behind the best polyhedral gliders; and sawing those extra panels worth the little additional trouble.

It is obvious that the more panels we use the closer we can come to the ideal of elliptical polyhedral; and just as obvious that each additional cut into the wing is liable to be a cut into its total efficiency. The 4-panel wing is the compromise most people have settled for and in general is highly satisfactory. Both the 3- and 5-panel wings have the advantage of a flat center section which can be plunked directly onto the fuselage without the bother of notching and trimming. The main disadvantage I've found to this arrangement, however, is that without a center joint in the wing to give it firmness, the soft wing wood rips out easily. Nonetheless it is worth noting that Tommy Neumann's version of the Sweepette (INAV, May 1962) uses a 3-panel wing.

The 6-panel wing (#2), despite the possible losses from the extra breaks, might be a slight improvement on the 4-panel arrangement. It has probably not been tried more often due to the extra work involved, although this seems nominal to me.

But however many panels you choose, 3- or 4- or 5- or more, their arrangement seems to me to be of somewhat greater importance. The advantage of the 6-panel design, of course, is that we can get very close to the elliptical ideal with it. The nearest to this ideal we can come with a 4-panel wing would appear to be the "Curly" type (#3) with relatively flat inner panels and highly upswept outer

ones. Whether this configuration is superior to the ordinary 4-panel type (#4) is an open question. Suffice it to say that the "Curly" has a fantastic roll rate which usually rescues it from the sloppiest of launches, yet doesn't seem to suffer at all when it comes to performance.

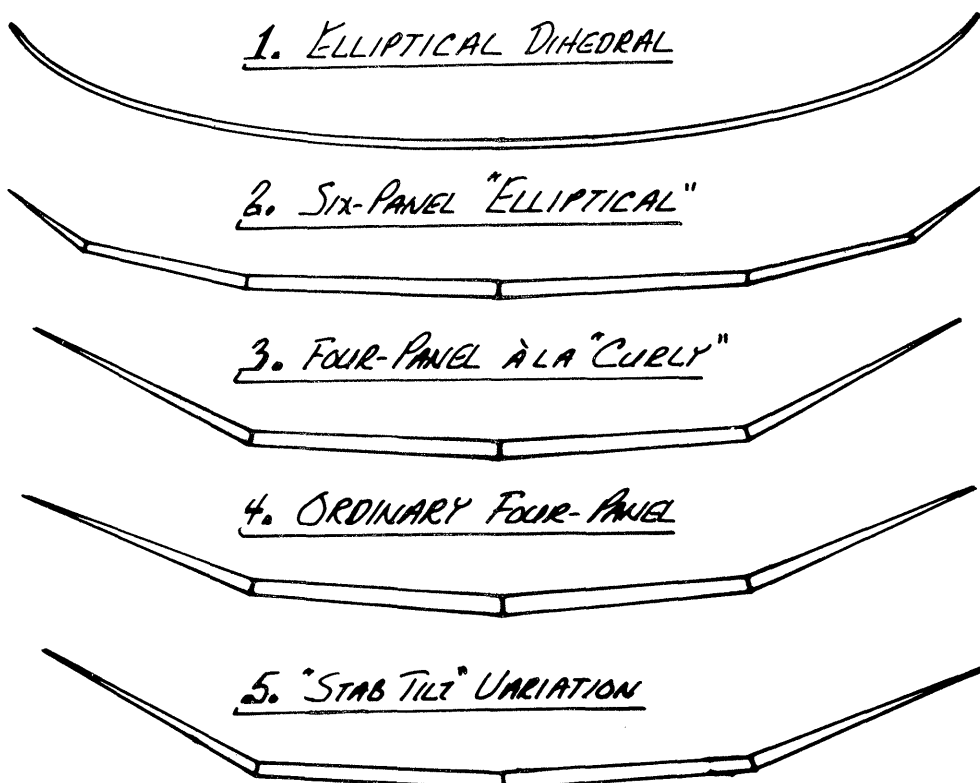
Part of the explanation of the "Curly's" excellent roll rate seems to be that the mean line of its panels form the arc of a somewhat smaller circle than do those of the ordinary 4-panel wing. Thus the radius of roll is reduced, and the rate of roll is speeded up.

(There is, incidentally, a little roll rate test you can easily perform on any of your gliders if you wish. Hold the glider by the fuselage near the tail - upside down - letting the nose drop just a shade. Now swing the nose back and forth rather smartly and note the tendency of the glider to roll in the hand.)

When it comes right down, in inches and fractions, to how much polyhedral to use you can do yourself a favor by being generous. But, no matter how poor your launch, you should not have to go beyond the 2 1/4" total of the "Curly" - if you use it in the proper manner. As you gain control - and are sure of it - you can begin to lower the panels bit by bit. Working in this direction you will find that the gain in the launch proficiency will have to be considerable for each little gain in duration. This is just another way of saying that for the inexperienced at least a little extra polyhedral is an excellent investment.

There is one further way to increase the efficiency of polyhedral, a method which is contingent upon the fact that the model need only roll in one direction and one which carries the additional provision that it be used with a lifting stabilizer. This is achieved by angling the outer left panel of the wing (assuming a normal left turn in the glide) somewhat less than the outer right panel as in illustration #5. Thus, as long as there is a lifting and slightly tilted stabilizer, the vector of lift in each wing panel, from right to left, is put in a progressively different relationship to the vector of stabilizer lift. (See "The Effects of Stab Tilt" in Oct. '61 M.A.N. for more on stab tilt.) I call this set-up "elliptical stab tilt". What it does is to drag the tail of the model around in just the way we want it as the model decelerates into the transition, a phenomenon that will be discussed in more detail later on.

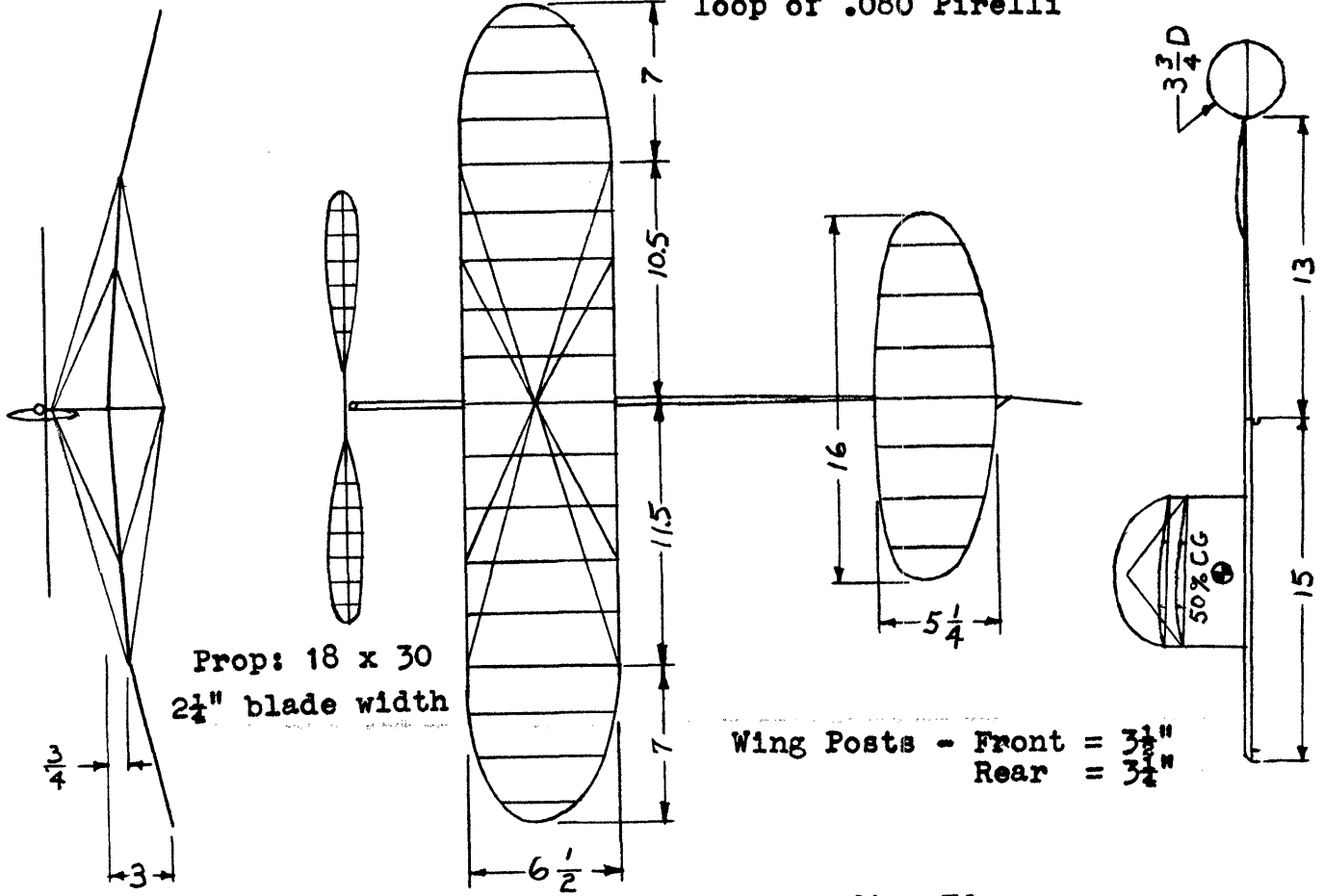
Elliptical Stab Tilt is not a half-baked idea but a device that I have used repeatedly with very positive results and one well worth incorporating in any HLG.



R.A.M.

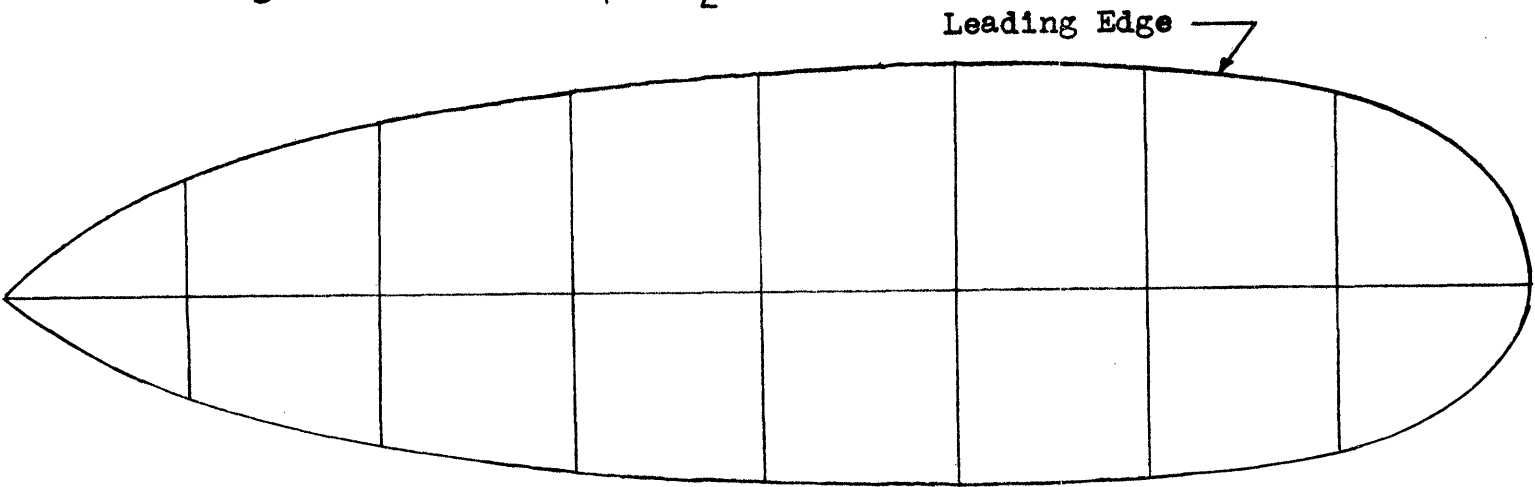
Wing and Stab airfoil
 5% thick @ 36% of chord

Power: 18 to 20 inch
 loop of .080 Pirelli



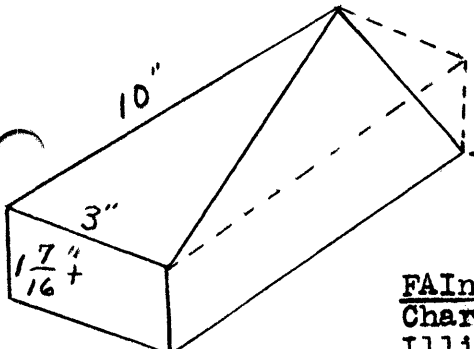
Prop: 18 x 30
 2 1/4" blade width

Wing Posts - Front = 3 1/4"
 Rear = 3 1/4"



Leading Edge

Full Size Prop Outline



Prop Block

FAInt DIP
 Charles Sotich
 Illinois Model Aero. Club

	Weight	Area
Wing	.017 oz.	218 sq. in.
Stab	.005 oz.	70 sq. in.
Fin	.001 oz.	11 sq. in.
Fuselage	.015 oz.	
Boom	.004 oz.	
Prop	.008 oz.	
Total	.050 oz.	

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

JULY 1962

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

The month of June brought eight members to NIMAS, one of them from Finland:

JIM BAGGI, 17390 Riopelle, Detroit 3, Michigan
BOB BIENENSTEIN, 9821 Colwell, Allen Park, Michigan
BOB DEBATTY, 3130 Maple, Berwyn, Illinois
RONALD HIGGS, 25 Rossander Ct., Scarborough, Ontario, Canada
VIC HOTZ, 319 Homewood Court, Chicago Heights, Illinois
PHIL KLINTWORTH, 834 Brooklawn Rd., Birmingham, Michigan
STAN SMITH, 4418 Urban Road, South Euclid, Ohio

ESKO HAMALAINEN, Pirttipolku 5B, Maunula/Helsinki, Finland

Decals - At Last!

The final tally of decal votes showed that #1, the local design featured in the March issue, to be the leader. Delivery on the finished decals has been promised in time for them to be mailed with this issue of INDOOR NEWS, or at least in time for the Nats.

Since there are quite a few of us who are strangers to one another, your editor would like to suggest that each of us who attends the Nats "splurge" with one decal and make a name badge to wear for easy identification. We plan to use heavy celluloid or light plexiglas as a base for the badge and to fasten the decal and a nameplate to it. The main thing is ready identification so we can get acquainted, and to advertise our organization even further than it has already been.

Handy Dictionary

Year by year, the dictionaries of our language change their content, using popular usage as a guide. For some time now, your editor has been waiting for common usage to define a pronunciation for NIMAS. Now, seven months after we organized, it appears that this pronunciation will be: NEE-mas (to rhyme with Christmas) If this is at variance with usage in some parts of the country, please let us hear from you.

NIMAS Projects

With over fifteen NIMAS members at the Detroit Semi, it was almost inevitable that future plans for NIMAS would be discussed over a beer or even between rounds at the coliseum - and they were, both places.

One of the most interesting projects to come up, and one of the most important, is the development of a set of NIMAS measurement standards - starting with standards of measurement to define rubber torque output. Firelli varies from batch to batch, and even varies on motors cut from the same hank of rubber - so lets tie it down to a known and repeatable standard so everyone understands what anyone says about his own rubber.

It was also suggested that a survey be made of all our indoor sites, cataloging them by ceiling height, condition, and availability. This might be worked up into a booklet to help wandering members find their way around, and to give a basis for comparison of different sites.

Two other suggestions dealt with awards - first, a perpetual trophy for Indoor Stick at the Nats (there isn't one set up right now); and an award to the person or group deemed to have made the greatest contribution to Indoor during the past year.

If you like any of these suggestions, or have some of your own, let us know how you feel.

****NIMAS MEETING AT NATS?****

After considerable discussion with many people, it seems that the best time for a NIMAS meeting, if it can be arranged, would be right after the closing of indoor flying on Monday, July 23. Actual time and place will be announced poster-wise at the indoor site, since this will undoubtedly give the widest contact with all indoor flyers, members or not.

It would seem most important to have an agenda ready before the meeting - please mail suggestions to:

Bud Tenny - Contest Official
c/o National Model Airplane Championships
Naval Air Station
Glenview, Illinois

It probably would be a good idea to get any agenda suggestions in the mail no later than July 19, 1962, since I'm scheduled to arrive early to help with judge training. See you all at the Nats!

****FAI INDOOR REPORT****

Results From The Semi-Final Elims

WEST COAST - Moffet Field, June 3, 1962

Carl Redlin	35:15	35:28	70:43
Joe Bilgri	33:47	36:29	70:16
Carl Rambo	31:05	35:11	66:16
Lew Gitlow	30:40	31:48	62:28
Frank Cummings	30:05	31:05	61:10
Warren Williams	26:24	30:52	57:16
Bill Atwood	20:17	35:38	55:55
Hu Entrop	21:37	32:46	54:23
Bruce Paton	28:15	25:08	53:23
Bud Romak	22:34	28:07	50:41
Hal Cover	21:55	27:23	49:18
Phil Hainer	22:10	25:15	47:25
John Lenderman	19:27	12:51	32:18

CENTRAL AREA - Michigan State Fair Coliseum, June 16-17

Bob DeBatty	24:50.4	25:40.6	50:31.0
Dick Kowalski	25:32.0	24:45.0	50:17.0
Bill Hulbert	25:20.4	24:51.2	50:11.6
Paul Crowley	24:01.8	24:44.3	48:46.1
Charles Sotich	24:56.2	23:48.0	48:44.2
Don Kintzele	24:33.4	23:36.3	48:09.7
Tom Neumann	23:03.5	22:34.4	45:37.9
Stan Smith	22:32.4	22:41.2	45:13.6
Ed Stoll	22:06.8	21:41.8	43:48.6
Phil Klintworth	19:49.0	22:59.8	42:48.8
Lou Willis	17:49.2	21:10.5	38:59.7
Bud Tenny	18:06.0	16:55.2	35:01.2
Clarence Mills	19:49.2	15:09.0	34:58.2
Mike Karlak	21:07.2	13:08.0	34:15.2
Vic Hotz	16:44.4	16:52.0	33:36.4
Frank Pavliga	17:21.9	15:47.4	33:09.3
Jim Baggi	17:10.5	15:05.4	32:12.9
Harry Harps	9:29.7	20:46.5	30:16.2

EAST COAST - Lakehurst NAS, June 3, 1962

Due to the collision-or-not-collision question raised when Julius Rudy's sixth round flight terminated on the string of a balloon being used to retrieve a model, the East Coast member of the U. S. FAI Indoor Team has still not been chosen.

FAI Indoor Committee Chairman Joe Bilgri ruled that there would be a fly-off for the team slot between Bill Bigge and Julius Rudy, and this fly-off is scheduled for July 8 at Lakehurst.

Also as a consequence of the mix-up, the rest of the Lakehurst results are not available in final form. However, Bigge's total, announced last month is 64:54.4. Rudy's total, not counting the flight he was allowed in case of a favorable ruling - 54:42.8. Ray Harlan posted a total of 56:08.2, and single high flights for two other qualifiers - Jim Grant - 26:45.3; John Tricolo - 26:45.5.

REPORT ON DETROIT

Smooth Electra flight to Chicago - amazed hostess asks, "What's in the boxes, bodies?" --Bull session with Pete & Charlie Sotich & Vic Hotz on Chicago-to-Detroit drive -- Welcoming crew "takes care" of Chicago crew, Kowalski, Baggi, & Klintworth at motel until wee hours, DeBatty & Kintzele up late at Bob Bienenstein's house - Tommy Neumann played it cool & went to bed early.

Test flying & first 3 rounds uneventful in beautiful conditions - everyone getting acquainted - hydrogen generators and balloons all over - "Dead bird" dives with wings folded are common both days -- Frank Pavliga over-powered slightly - thrilling 30 seconds in the rafters before the fatal plunge, it looked as if he might make it for a while -- "Lucky" Kowalski flirting with rafters in second round for 8-10 minutes, takes the lead with third round flight that drifts across the hall twice -- Everyone vows to "get more sleep" tonight, but few do.

Results at end of round 3: Kowalski 47:17.4, Neumann 45:37.9, Kintzele 43:46.6, Crowley 43:12.2, Klintworth 42:48.8, Smith 41:47.9.

4th round - DeBatty pushes into 2nd place with 24:50.4 beautiful flight - climb-out @ 52 RPM for 14 minutes - lightly tips beams several times while Neumann & Kintzele "needle" him - Bob is too sleepy to react -- Kowalski in second by precious few seconds.

Between rounds 4 & 5 comes discussion of future NIMAS projects - Kowalski offers suggestion for rubber torque standard - 5 voices in unison, "Aha! A volunteer!"

Round 5 - De Batty inches up, so does Kowalski to hold first - Stan Smith hangs his ship solid, has to get it down in pieces - complete tail section glides down like perfect "mike" HLG!

Round 6 - Kowalski still leads until last 3 flights - Hulbert flies and misses by less than 6 seconds - DeBatty makes it by 14 seconds, and it is up to Kowalski. He winds for 28 minutes and all is OK for 11 minutes. His test flights had shown that this time was possible - but it was not to be. The model tagged a beam lightly, flips upside down and loses 30' altitude in recovery, landing 2:33 short of winning - tough break for a fine competitor!

Unusual model features noted - Sotich, Neumann & Smith used highly swept wing tips - they slide off obstructions more easily -- Smith had dyed film on one wing -- Detroit flyers using 20" dia. high pitch props & .093 Firelli - the tighter you wind it, the more it flares.

Thanks to - Pete Sotich for many miles of personal taxi service - Hardy Broderson for service beyond the call of duty in loaning repair facilities - Oakland Cloud Dusters for donating first place trophies for all U. S. Semi-Finals - Detroit Balsa Bugs for second & third place awards - Balsa Bugs and especially Bob Blenenstein and Norm Gura for a very smoothly run contest - Mike Karlak, our roving "circulation manager" - - and to all who made this a very enjoyable trip.

REPORT ON MOFFET

by TOM FINCH

Carl Redlin took all the marbles with flights of 35:15 and 35:28, made in the first two rounds. In general, conditions were rather bad due to unpredictable drifts caused by outside winds up to 30 knots. Taking nothing at all from Carl, he was rather fortunate to get two flights to the floor as he did.

With Carl sitting on top, the pressure was really on the rest of the fellows. By the end of the fifth round Rambo, Atwood, and Bilgri were all within striking distance; Rambo and Atwood having flights of 35 plus and Bilgri with 33 plus.

The sixth round started off with conditions slightly improved but drift still pretty tricky. Of the three, Atwood got off first and climbed well but drifted into the wall at 15 or 20 minutes. Meanwhile, Bilgri got away on a real all out effort. He needed nearly 37 minutes, but it didn't look as if he had the necessary altitude. However, he hit some pretty good air and hung on quite well; the only difficulty was that he was descending right over a couple of trucks parked off to one side and very close to the wall. At 35 minutes it was obvious that he had the altitude but was too close to the wall. He ballooned the model but apparently waited too long to do it and the bad air and drafts brought him down 27 seconds short.

Rambo meanwhile broke three motors trying to get one that would take the necessary turns and got his last flight off just a minute after the closing of the last round. The flight did make it up and down to the floor but was, I believe, only about 33 minutes so that it wouldn't have won if he had gotten it off in time.

The other two who might have been contenders, Lew Gitlow and Frank Cummings, both had their troubles. Lew

ended the day with no models due to broken motors and the rafters and Frank had a real streak of bad luck. His best ship was damaged in the box before the meet and he just couldn't seem to get enough turns in the motors during the meet.

One new development of some interest did show up. Bill Atwood was running a set-up using a set of gears two motors. The motors were geared in parallel; that is, the gears were in the front end so that the gears drove a gear to which the prop shaft was attached.

QUESTIONS AND ANSWERS

Last month a question was submitted to a panel of three flyers, but too late for the answers to be returned for this issue. The question:

17. From a standpoint of structural reliability, is it better to attain a given weight of structure by using a large cross-section of very light wood or a smaller cross-section of stronger wood for each component, assuming equal quality of wood in each case?

Bill Tyler, one of the all-time indoor greats and the first to break 30 minutes with a B stick, offered some comments on question 13, which covered the height of wing struts. Sez Bill:

It doesn't matter how high or low the wing struts are designed. What does matter is that they are long enough to allow sufficient depth for proper bracing of the wing. Imagine the triangle formed by the front view of the wing spar, strut and bracing wire. If the strut is too short the effect of the bracing wire will be insufficient.

With braced sticks, (no bending action) the ideal place for the wing would be right on top of the stick to cancel out the looping tendency of the high wing-braced stick ship under full power turns, which not even down thrust will fully control.

****INDOOR AT THE NATS****

The site for the indoor Nats will be the Rockwell Armory in Chicago, 2653 West Madison Street. The ceiling is 75' up and cleaner than many Cat. II sites. Floor area is about 150' by 165', somewhat limited for the Nats, entirely usable.

In another part of the building there are two lecture rooms with 22' ceiling that probably will be available for test flying. It behooves all NIMAS members to set an example of test flying and flying courtesy to avoid the "kicked-over bee-hive" appearance that is possible in sites with limited floor area if the flyers aren't careful.

Although the beams will not present a major problem of hang-up - there are hanging light fixtures which will cause some problems. It will be wise to have your own balloons for retrieving, and imperative that you use care and consideration for other models while retrieving.

The best of luck to each of you, and may the best flyers win!

****DRAFTSMAN WANTED****

Several months ago we "advertised" for volunteers to help get various sets of plans in shape for publication. Obviously, we have received help in this department, and it is out of a sense of fair play that we ask for more help in this department. The material gradually is building up so that an appreciable amount of lead time can be granted and the volunteers have a fair amount of time to plan the drawing and make it. At present all our draftsmen are working on future projects, further help would both ease the load on them and help you editor have time to build some models.

If you feel you could help with this phase of the publication of INDOOR NEWS, please contact Bud Tenny, Box 545, Richardson, Texas.

RECORDS? MAYBE!

Indoor record applications, or at least reports on them, have been rather scarce this month. Maybe this column will have to go underground for a few months!

From Bill Haught in Baltimore comes confirmation of these two records by his son, Billy on May 6, 1962:

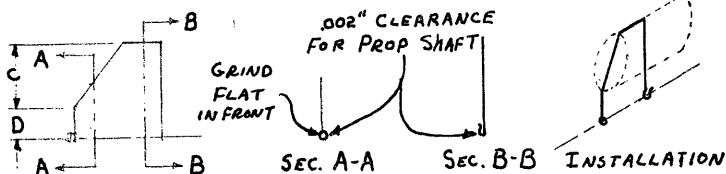
CATEGORY II - 5th. Regimental Armory, 75' ceiling
Junior A ROG - 6:20.4, Billy Haught
Junior C Stick - 11:46.6, Bill Haught

HINTS AND KINKS

We continue to present suggestion to simplify the task of building and flying indoor models - and to remind our readers that this column can use more ideas. Please send any necessary sketches with your ideas, keeping the sketch neat and with good contrast, and a maximum of 6" wide.

Another Thrust Bearing

Our favorite thrust bearing is one suggested by Charles Sotich. It has the advantage of extreme reliability and fairly light weight, and uses readily available material.



As can be seen from the sketch, this bearing mounts inside the fuselage on the stiffener web at the front of the stick. When formed from .015 music wire, typical weight runs .0012 oz.

Use a piece of music wire .002" larger than the prop shaft as a mandrel to wrap the front end of the bearing, and needle nose pliers to form the rest of the fitting.

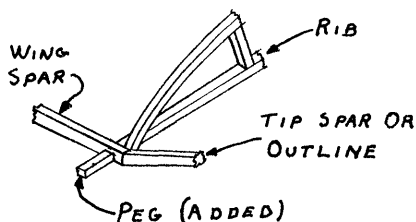
Dimension "C" will be determined by the depth of your stick, while dimension "D" determines the clearance of the prop shaft and motor. By test, .015" music wire will safely hold .080" Firelli, so tailor the wire size to the rubber size you plan to use.

After forming the bearing, grind the front end flat and check that the prop shafts will clear. Mount the bearing carefully, using a straight wire through the bearing to aid in alignment with the stick.

BRACING HINT

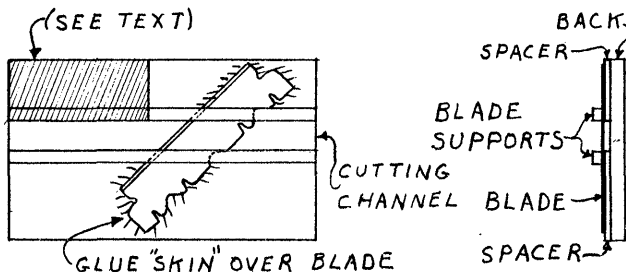
Beginners often shy away from bracing because of the supposed time and difficulty. This idea, used since 1953 by Reg Parham, makes it possible to brace a wing starting from scratch in less than an hour.

The idea is to put a very small balsa peg on the wing frame every place the wire will touch, and use the peg as a hook to hold the wire. The entire wing can be braced with one stringing, the tension weight added, and then the wire glued into place. See sketch:



Balsa Stripper

Periodically the balsa stripper appears in articles on model construction, one of the latest times was in the "Parlor Mite" article, p. 26 of Feb. '62 M.A.N. Here is an improvement on that stripper:



BALSA STRIPPER

The back piece is made from very hard balsa, the spacer thickness determines the thickness of cut, and the blade supports are hard scrap, added to re-inforce the blade mounting. The free end of the blade in the original stripper had a tendency to wander when cutting thick spar stock, so the extra spacer and support was added to the blade. The width of the cutting channel determines the maximum thickness of sheet that can be cut, and should be as narrow as possible. The cross-hatched area may be removed so that "double stripping" may be done, which increases the versatility of the instrument.

In normal stripping, the stripper is held in the right hand with the blade facing to the left, and the stock in the left hand. Pull the wood slowly through the stripper while exerting even pressure against the bottom of the cutting channel with the right edge of the stock; take it slow, and practice makes perfect. To double strip a spar, (useful when a perfectly square strip is needed, or when that "perfect sheet" of balsa is thicker than the spar you wanted to make) run it through the stripper rotated 90 degrees from the first cut; support the spar with a scrap which pushes it flat against the edge of the spacer and use the left thumb to hold the spar against the bottom of the cutting channel. In this fashion .024" square strips can be cut from 4 lb. .032" sheet.

Final precautions: use Gillete "Super Blue Blades" for best results, be sure to keep the blade free of glue in the cutting area, pull rather than push when double stripping small spars after a start is made.

NEWS FROM AROUND THE WORLD

ENGLAND - COVENTRY

Arthur Barr's latest letters reported on the May and June flying sessions in Cardington airshed.

The May session was still bothered by drafts from windows not yet repaired and heavy weather outside. Few really serious flights were attempted, but Arthur did log 19:44 with a "C" after conditions settled down. Ray Monks and Ron Draper were testing new FAI ships also.

Although conditions were better in June, the usual rough air up to about 50' prevailed, causing some trouble in getting above it. Ron Draper almost topped 30 minutes and Arthur boosted his best Cardington time to 26:24.

FINLAND - HELSINKI

Esko Hamalainen reports that the Finnish FAI team has been chosen, with the elims being held under a 45' ceiling. This site is the best available in Helsinki, and times ran from 17 to 20 minutes. Top time of 20:07 was made with a 270 sq. in. model pulled by a 20" dia. 40" pitch non-flaring prop.

ILLINOIS - CHICAGO

Weekly indoor sessions have continued in the Washington Park Armory in Chicago. Best time (90' ceiling) was turned by Tommy Neumann the week before the Detroit FAI Semi - over 28 minutes with his FAI model!

MARYLAND - BALTIMORE

Bill Haught reported on the annual Baltimore meet held in the 5th Regimental Armory. An unusual arrangement of events permitted all models to compete directly, by flying against the existing record for that model class.

In addition to regular AMA classes, events for the Ranger 21 prefab kits and for Guillow WWI Flying Scale kits.

They get the Armory free, and it has about twice the floor area of the Rockwell Armory in Chicago.

NEW YORK - NEW YORK

NIMAS/East, the eastern newsletter by Richard Miller, reports that Pete Andrews built a ship "for practice" and flew it at the East Coast Semi - and will have a better one out for the July 8 session.

TEXAS - DALLAS

With a limited attendance, the June 29 Walnut Hill session turned up two new site records - Easy I glider moved up to 0:17.0 and E-Z-Bee jumped to 6:25.2. Jim Clem's E-Z-Bee threatened to up it still further, but hung on every flight.

WASHINGTON - SEATTLE

News from Seattle has been pretty slim, even though these boys are real sharp - maybe they are too modest?? At any rate, the last letter from Hu Entrop said they are losing most of their sites, but are still looking for others.

THE STATE OF THE ART

Last January, during the rather hectic flying at the Great Lakes Indoor Air Meet, Mike Karlak set a new B Paper Stick record of 14:57.0.

On page five the details of Mike's model, the Buckeye, are shown. The model is rather similar to Phil Hainer's "Bumper" (April INAV) and very similar to Ted Gonzoph's Category III record holder, which will be featured next month.

It is of more than passing interest that the Cleveland site where the record was set is quite similar to the Rockwell Armory in Chicago, where the Nats will be held on July 23, 1962.

THE HAND LAUNCH GLIDER

PART EIGHT

by RICHARD MILLER

DESIGN (cont.)

The Stabilizer

Once we have come to some more or less definite conclusions as to what we want in the way of a wing we can turn to the attendant problem of the auxiliary surfaces necessary to support the wing in flight.

Flying the wing by itself, without and additional elements, is the ideal we are forced to abandon. By providing most, if not all the lift, the wing is, after all, financing the expedition through the air in quest of higher times and anything we hang on it is bound to be costly in some degree. In this respect the wing is somewhat like a race horse. The horse could undoubtedly run faster without a jockey but wouldn't know where to go - nor how to get there. So the 100 or so pounds on the horse's back in the price for getting it to the finish line.

The closest approach to the ideal of the jockeyless horse as far as we're concerned is quite obviously the flying wing glider. A lot of work on flying wings has been done in the full scale field but despite the excellence of some of these gliders (notably the Hooten and Fauvel series) they have apparently been unable to overcome the inherent design problems adequately to compete with the more conventional machines.

The rub, of course, is that without a stabilizer (or the alternative of sweepback and wash-out) the glider has no longitudinal stability and without longitudinal stability things are pretty rough. And while, as was pointed out earlier, wash-out is not particularly detrimental in low speed flight it does have serious drawbacks at higher speeds. Furthermore the high speed problem in the indoor HLG, which may have a high- to low-speed ratio on the order of 8:1 or more, is potentially a greater problem than it is in the full-scale sailplane with its ratio of about 4:1. Thus it seems that we are about as likely to see the twin pusher replace the Boeing 707 as we are to see a successful tailless IHLG and indicates that our problem is not whether we shall have a jockey on our horse or not but rather how shall we mount him and what instructions to give him.

Thus, dismantling our metaphor, we come to the next logical step in design - usually the next in procedure and certainly the next in importance - the size, shape, placement, etc. of the stabilizer and rudder and their total aerodynamic relationship to the wing.

A Lever At The End Of A Stick

Performance and stability, whether in golfing irons, racing yachts or the IHLG, are almost invariably mutually preclusive. With the single exception of stabilizer tilt I doubt that there is any single stabilizing technique which does not impede performance, nor any means of increasing performance which does not necessitate some sacrifice in stability.

In this respect successful design consists of, on the one hand, of keeping as close to the proven aerodynamic ideals as possible and on the other of paring away, degree by degree, at the stabilizing elements; of making a series of compromises between various sets of factors - weight/strength, dihedral/effective span, etc. - then bringing them into harmony with one another. And the successful designer is the one who makes the most effective compromises, the one who treads closest to the precipice of instability, yet keeps a sure footing.

In no other instance does the resolution between the conflicting demands of performance and stability take greater judgement, nor cause more problems, than in the determination of adequate longitudinal stability. This is particularly true in the case of the hand launch glider.

In the first place the task of the non-movable stabilizer is a difficult one. Part of this difficulty comes from the fact that the HLG wing, like most others, tends to produce its best results (highest lift/drag) at an angle-of-attack very close to the stall point of the airfoil. It is therefore up to the stabilizer to keep the wing flying at this critically high angle-of-attack (probably 7-8°), to keep it from slipping across the razor's edge into a stall, and finally to bring it back to a normal flight attitude as quickly as possible in the event of an upset.

Although both the size of the stabilizer and the tail moment arm are important factors in the longitudinal stability equation it is the stab's angular setting with regard to the wing - decalage - which determines, more than anything else, its effectiveness. By mounting the stabilizer at a somewhat smaller angle-of-incidence than the wing we enable it to fly at a greater margin of safety than the wing (vis-a-vis the stall point) and to maintain its purchase on the passing airstream when the wing has gone over the edge.

The Decalage Compromise

The effectiveness of the stabilizer, its ability to put out energy for the maintenance of longitudinal stability, varies directly with the amount of decalage (or longitudinal dihedral as the British call it). Yet, at the same time, each additional degree of decalage causes the stabilizer to fly at a more wasteful angle-of-attack. In short, the energy used for stability purposes is drawn directly from the performance potential.

But decalage has another serious drawback beside which the slight losses caused by the stabilizer are trifling. This is the looping tendency, only half of which can be tolerated in a good HLG for quite obvious reasons. As is well known the looping tendency results primarily from the negative incidence in the stabilizer and increased radically with any increase in the speed of the model. From this we can see why the HLG, with its extreme low- to high-speed ratio, can tolerate only a shadow of decalage; no more in fact, than a good Martini has Vermouth. And we'll devote a lot of time to that presently.

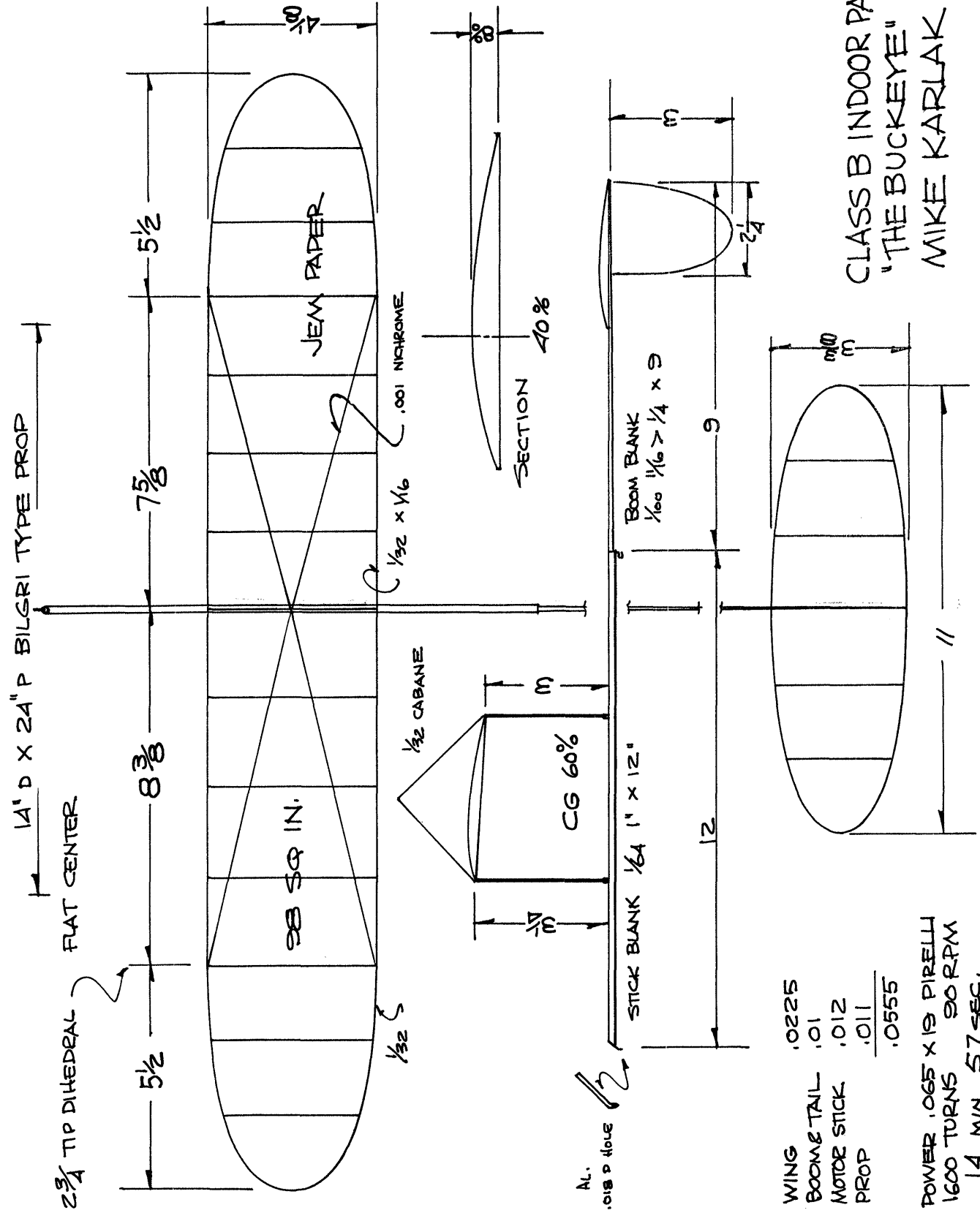
The Tail Volume Coefficient

Given this specific, small and arbitrary amount of decalage as a constant (thinking of the setting as 0-0° is a little misleading) we can now calculate the tail volume coefficient for our design using the area and the moment arm as factors.

The tail volume coefficient is a felicitous method of calculating, and expressing in a single factor, the complex relationship between the aerodynamic forces of the wing and stab; an expedient manner of predicting within general limits the degree of longitudinal stability of the model; a very handy tool for the HLG designer; and finally a small, well directed blow against the conceits of ignorance and folly.

The coefficient is arrived at by dividing the product of the stabilizer area X the moment arm by the product of the wing area X the wing chord; (the moment arm here being measured from the CG to 25% of the stab's MAC). The number which results from this calculation may fall within fairly wide bounds. If the designer is disposed toward a small symmetrical stabilizer and a forward CG (45-50%) he may come out with a number as small as .7; if on the other hand he favors a large lifting stab and a rearward CG (60-65%) the number may be something like 1.1, perhaps higher.

Next month we will take a look at these two schools of thought concerning the stabilizer and its potentials.



CLASS B INDOOR PAPER
"THE BUCKEYE"
MIKE KARLAK

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

AUGUST 1962

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

NIMAS membership climbed to a grand total of ninety-eight members during the month of July, with the following indoor flyers joining the fold:

BILL DUNWOODY, 985 Ft. Salonga Rd., Northport, New York
OTTO HEITHECKER, 33151 Willow Lane, Fraser, Michigan
BRUCE PATON, L. M. Cox Mfg. Co., Inc., Box 476,
Santa Ana, California
FRANK PAVLIGA, 245 N. Roanoke, Youngstown, Ohio
GERALD SKRJANC, 1671 East 34th. Street, Lorain, Ohio
ED SMOLA, 159 Prentice Road, Painesville, Ohio

HANDY DICTIONARY

From charter member Dave Copple comes the pronunciation used on the West Coast: NI-mās, and Ronald Higgs sez Canadian accents will probably wind up with: NEM-as.

No matter how we say it, NIMAS stands for the nicest group of fellows it has been our pleasure to meet, all banded together for the purpose of insuring that indoor model flying never again dies out, but instead goes on to new heights of achievement and fellowship.

FIRST NIMAS MEETING

After a long day of flying indoor, followed by a long evening of processing models for the next day, about 20 NIMAS members assembled for our first meeting. After the usual introductions and chit-chat, several items of old and new business were discussed.

The list of NIMAS projects suggested in the July issue were discussed, and some approaches to the business of determining the quality of rubber were discussed by Bill Bigge and Dick Kowalski. Phil Klintworth reported on his plans for a site survey form, giving emphasis to factors which would enable the reader to have a clear picture of flying conditions in each site.

The first opportunity for NIMAS to act in an advisory capacity came at this meeting, also. Frank Ehling, Technical Director of A. M. A., recently came across the old Stout Commercial Trophy and decided to rejuvenate it. Frank then asked for an official NIMAS opinion on what use it could be put to. After due deliberation, we suggested that it be used as a perpetual trophy for indoor stick, but that care be taken to keep the past history of this trophy alive and to preserve, if possible, the names of the original winners, who were competing in outdoor rubber-powered cabin events.

More on Decals

The production of our decals was consistently hampered by high and changing humidity, which in turn seriously slowed delivery on the finished article. A partial shipment was hand-carried to the Nats by Kowalski, and several members received their decals at the Nats.

It all boils down to this - your decals should be in your hands before or with this newsletter, and if you do not receive them by August 15, you have been overlooked and should notify me at Box 545, Richardson, Texas

It Ain't So!

If you have written recently and haven't received any answer, please do not assume your editor has died on the vine. When he left for the Nats, there was a backlog of over 15 letters - upon his return, fifteen more awaited. Hopefully, these will soon be answered, and thing will come back to a more normal state of affairs.

Contest Board Meeting

Almost everyone attends one or more meetings at the Nats, and we were no exception. By invitation, we sat in on the Free Flight Contest Board meeting called by Bob Hatschek, since there were indoor rules proposals under discussion. Dick Kowalski, as Central Area Indoor FAI Chairman also attended.

We feel that significant progress was made, in spite of the fact that there were only five board members or their representative present. In effect, any vote taken would not be final, but would reduce the number of mail polls needed to complete any single item.

One of the first trends to appear was the apparent demise of the solid stick proposal - it appears likely that an official rejection of this proposal will soon be made.

The series of IHLG rules proposals came under discussion that evening, and some progress was made toward straightening this problem out, but not in time for the 1963 rules.

Finally, considerable discussion of the unworkable and unenforced "winding rule" (Par. 4.7 in the AMA rule book) was made, and recommendations by Kowalski were made a part of the minutes of the meeting. It appears hopeful that this ambiguity in our rules will also be eliminated.

RESULTS FROM THE INDOOR NATS

JUNIOR IHLG	1. Jim Skarzynski	0:49.2
	2. James Lewis	0:47.6
	3. Dick Robinson	0:47.2
	4. Dan Neumann	0:43.2
	5. Dan Vogt	0:41.1
SENIOR IHLG	1. Tommy Neumann	1:05.5
	2. Dan O'Malley	0:58.2
	3. Faust Parker, Jr.	0:54.2
	4. Larry Miller	0:49.4
	5. Larry Loucka	0:49.3
OPEN IHLG	1. Otto Heithecker	1:05.0
	2. Robert Larsh	1:04.0
	3. Arnold Zimmerman	1:03.2
	4. Jim Baggi	1:02.8
	5. Tem Johnson	0:57.8(0:57.6)
	Reid Simpson	0:57.8(0:54.0)
JUNIOR PAPER STICK	1. David Erbach	11:18.8
	2. Jan Servaites	9:15.2
	3. Ronald Roharik	7:24.6
	4. Bernie Wisniewski	6:06.3
	5. Billy Haught	5:44.9
SENIOR PAPER STICK	1. Jim Skinner	12:53.2
	2. Shaye Diebolt	10:29.9
	3. Terry Hamer	10:04.3
	4. Tommy Neumann	9:12.9
	5. Dennis Kargol	8:54.0
* OPEN PAPER STICK	1. Phil Klintworth	15:51.0
	2. Bill Bigge	14:59.6
	3. Bill Gough	14:15.0
	4. Ed Stoll	13:42.0
	5. Ted Gonzoph	13:41.9
JUNIOR INDOOR STICK	1. Jim Skarzynski	14:15.0
	2. Jan Servaites	10:48.9
	3. David Erbach	9:12.0
	4. Billy Haught	9:02.6
	5. Mary Alexander	9:02.2
SENIOR INDOOR STICK	1. Jim Skinner	19:09.2
	2. Dennis Kargol	13:06.1
	3. Chad Krogh	12:46.0
	4. Tommy Neumann	9:23.1
OPEN INDOOR STICK	1. Phil Klintworth	23:29.0
	2. Ted Frasol	21:04.7
	3. Dick Kowalski	19:51.9
	4. C. V. Russo	19:25.5
	5. Ted Gonzoph	18:52.3
	6. Ed Stoll	18:38.9
	7. Don Kintzele	18:05.6
	8. Gerald Skrjanc	17:56.0
	9. Charlie Sotich	15:38.2
	10. Walter Erbach	14:04.2

JUNIOR CABIN	1. David Erbach	7:35.8
	2. Jim Skarzynski	6:38.6
	3. Ronald Roharik	6:17.0
	4. Herbert Schubert	0:07.0
SENIOR CABIN	1. Tommy Neumann	10:29.0
	2. Jim Skinner	5:58.1
	3. Shaye Diebolt	5:53.3
	4. Dennis Kargol	5:35.0
OPEN CABIN	1. Bob Champine	15:50.3
	2. Charlie Sotich	10:23.1
	3. Dick Kowalski	9:49.3
	4. Phil Klintworth	8:17.2
	5. Bill Bigge	7:06.1

NATS REPORT

A complete, and we hope accurate, report of the Nats results appears elsewhere in this issue, but we would pass on impressions of the trip and flying as we saw it.

As we feared, the air was pretty crowded all day long, but especially during the HLG session. Drift was high all over the building most of the day, except right in the center, and collisions were pretty frequent all day long. The Navy furnished helium for balloons, and so those fortunate enough to hang on lights without sticking solid were able to fish them down. However, there are some kind of projections on the top of the light fixtures that often foiled attempts to remove a model in one piece.

It appeared that everyone went out of their way to avoid snagging models with the balloons, but it is a pity that this courtesy did not extend to keeping the floor clear of people. One time in particular, twelve models were in the air, which would allow a maximum of twenty-four people on the floor (twelve timers and twelve owners). Even these people should have been on the sidelines, since visibility was good enough for the timers to keep track of the models and the owners could do nothing for their models except pray in case of danger to the model. At the same time the twelve models were counted, a quick check showed close to ninety people out in the flying area, most of them with no connection with any models at all.

The high points of the trip for us occurred on the Saturday previous to the indoor session, as we attended a practice session at the Washington Park Armory. This turned out to be a very relaxed flying session, which surprisingly enough was poorly attended.

We saw Tommy Neumann hit 1:10+ with his glider for the first time, and our own ships turned in the highest times ever for Category II flying. The real joy, however, was the completely relaxed atmosphere of a casual indoor session, the likes of which we haven't seen before. This is the real joy of indoor flying, rather than the high level of pressure which exists during a contest. The Chicago area flyers are really fortunate to have an armory available almost every week all year long.

ON GUARD!

Almost immediately upon our arrival home from the Nats, a brief attempt to relax and unwind with the latest copy of MODEL AIRPLANE NEWS was shattered by the lead article on page 29. In the unlikely event you haven't seen it, this was a three-picture-and-lengthy report on flights made in a 42' x 60' gymnasium with an .010 powered R/C model.

Complete model details, design suggestions for this type of flying, and the statement that indoor R/C flying is the answer to cold weather problems pretty well completed the article, but one other thing grated harshly as we read on: "Here are a few tips to put you into the act in case they open Lakehurst for indoor R/C: - - -"

Maybe this doesn't hit you as hard as it does us, but we know of more than one indoor site permanently barred to model builders because model builders sometime in the past had operated power models in the site, with the easy-to-predict result of fuel mess and worse. Such ill-advised and inconsiderate actions on the part of a selfish few seems to be the norm in these days, and the hobby suffers as a result.

Our immediate action, which we suggest you reinforce with letters of your own, was a letter of protest to the editor of the article and copies to the editors of each of the three model magazines. The letter said in part:

"In this time of rapidly vanishing sites for all types of models, please do not encourage any group to use the facilities of another group when there would be the slightest chance of causing the site to be closed down. This applies in the case just mentioned, and for F/F in R/C only sites, and for F/F and R/C on U/C sites, no matter where or when it occurs. The loss of a site due to lack of consideration and/or misuse by any group is now acute - and should be editorialized against rather than encouraged. Gas powered models indoors is unwise from a practical standpoint, dangerous from a safety standpoint, and intolerable from an ethical standpoint. After all, the powered models can be flown out-of-doors, and the reverse is not true."

As a final stop-gap for your own treasured sites, it would not be amiss to warn the sponsors or directors of your site that something like this might be suggested by other groups, explain the hazards to the sites and participants, and make sure that there is no chance of your group being blamed for the actions of some other group.

AND AGAIN - - -

The vast accumulation of mail awaiting us brought more disheartening and disturbing news - this time from New Zealand. For several months John Malkin has been in close contact with the proper authorities over the matter of his proxy entry in the upcoming World Indoor Championships. After his model and entry were received in England (shipped at his personal expense of over \$100), he was informed by letter from Henry J. Nicholls that due to the likelihood of damage requiring extensive repair to indoor models, proxy entry would be unacceptable.

Even though Mr. Nicholls was only acting in his capacity as FAI delegate for the S.M.A.E., it seems that some effort could have been made to have avoided such a gross neglect of simple human courtesy, especially since it has been common knowledge in most circles that John had contemplated entry for some time.

An even deeper undercurrent of concern arises from this action, something that strikes at the very foundations of F. A. I. model competitions. At one time, the practice was to hold international model competition in the country of the previous year's winning team. Now, it seems that sites have been limited to the area in and around continental Europe. For years it has been custom to permit proxy entry for those teams unable to afford a trip to the contest site - and again this is being done away with.

It was estimated that it would cost over \$1400 per man to field a team from New Zealand - who could afford such costs?

Maybe the time has come to evaluate the entire F.A.I. model competition program. Is the site restriction and possible elimination of all proxy flying consistent with the concept of a "Model Airplane Olympics" as it has been in years past? Is it possible (perish the thought!) that this noble concept is degenerating into a European contest for Europeans, and possibly even a show place for state-sponsored Iron Curtain teams?

In days gone past, the feeling of true international competition was preserved quite well by moving the event to the country of the winning team, a feeling which isn't preserved by the mere entry of teams from several not-so-widely separated countries. Also, the proxy entry made it possible for distant countries to maintain touch with the event and be in better shape to win if the contest came close enough for them to participate in person. If the Malkin ruling is truly an opening to eventually do away with all proxy flying, as some feel, the FAI model competition program will truly have degenerated to merely a good European contest.

FAI INDOOR REPORT

East Coast Results

LAKEHURST - June 3, 1962		
Julius Rudy - 30:57.4,	34:09.4*	65:06.8
Bill Bigge - 30:48.2,	34:06.2	65:06.8
Ray Harlan - 28:14.2,	27:54.0	56:08.2
John Triolo - 22:02.7,	26:45.5	48:48.2
Jim Grant - 26:45.3,	11:35.0	38:20.3
Edgar Franklin - 13:31.5,	13:44.6	27:16.1

*This flight was made on a re-start allowed after collision with a balloon string being used to retrieve another model, pending a ruling by Joe Bilgri. Joe ruled that

there should be a fly-off between Bigge and Rudy, and that fly-off was held July 8 with these results:

Round	Bigge	Rudy
	-----	53.8
	-----	9:22.0
	26:39.2 *	20:31.5 *
	15:02.8	12:09.6
	30:47.0 *	17:51.0
	25:19.6	24:10.0 *
Best 2 *	57:26.2	44:41.5

CENTRAL U.S. TEAM MEMBER RESIGNS

A rumor making the rounds during the last of the Nats stated that Bob DeBatty would be unable to make the trip to the World Indoor Championships for unspecified personal reasons. This was confirmed by a call to Bob, so this team berth will be filled by Dick Kowalski. With this change, the U. S. Indoor Team is:

WEST COAST	Carl Redlin
CENTRAL AREA	Dick Kowalski
EAST COAST	Bill Bigge
MANAGER	Joe Bilgri

FOREIGN FAI INDOOR TEAMS

Finland

Public Hall in Helsinki - 45' ceiling
 Esko Hamalainen 20:07
 Harry Raulio 17:28
 Arto Tauria 14:30

Manager - Reino Hyvarinen

Germany

The German Championships will be held in Dortmund on August 12, and the site there has a 75' ceiling. The only advance info available on possible team members is that Max Hacklinger has made many flights over 30 minutes in the site, so only an unusual run of bad luck will prevent Max from being on the team.

Great Britain

Good flying conditions at Cardington have been very spotty, and some concern is being felt over the short time remaining before the World Championships. The British Championships will be held in Cardington at the August session, but no recent reports have given the date.

Hungary

So far there has been no news of indoor activity for team selection in Hungary, although we assume they will again have an entry.

New Zealand

As mentioned elsewhere, John Malkin has submitted a proxy entry from New Zealand. John has received word from Henry Nicholls that proxy entry would be unacceptable, but Reg Parham and others have gone to bat for John, in an attempt to get his entry certified.

RECORDS? MAYBE!

LAKEHURST RECORD TRIALS, July 8, 1962

CATEGORY III, Lakehurst #6

Senior D Stick - 30:26.0, Drew Morris

NATIONAL MODEL AIRPLANE CHAMPIONSHIPS, July 23, 1962

CATEGORY II, Rockwell Armory, Chicago, 75' ceiling

Junior C Cabin - 7:35.8, David Erbach

Junior C Stick - 14:15.0, Jim Skarzynski

Senior C Cabin - 10:29.0, Tommy Neumann

Senior Paper Stick - 12:53.2, Jim Skinner

Open Cabin - 15:50.3, Bob Champine

Open Paper Stick - 15:51.0, Phil Klintworth

Junior Helicopter - 3:42.2, David Erbach

L. A. SMOGGUTTERS' CAT. I RECORD TRIALS, June 28, 1962

CAT. I, Culver City Vet's Auditorium, 34' 9" ceiling

Senior Paper Stick - 8:06, Sonny Myers

Open Helicopter - 5:21, Hal Cover

QUESTIONS AND ANSWERS

Some time ago this column posed question #17 and polled some flyers on their opinion and practices with regard to that question.

17. From a standpoint of structural reliability, is it better to attain a given weight of structure by using a large cross-section of very light wood or a smaller cross-

section of stronger wood for each component, assuming equal quality of wood in each case?

Tom Finch, present holder of the Cat. II A ROG record and the Cat. III B Stick record makes these comments:

"First, we'd better attempt to define what is meant by "strength" as applied to wood for indoor models. There are two factors involved, they are: stiffness or resistance to bending, and ultimate strength or the maximum load that a part will carry before failing. Generally, one would talk in terms of strength per unit area, but for purposes of comparison I think it makes more sense to consider strength per unit weight. In general, lighter wood is stiffer on this basis while the heavier wood is more flexible but will take a higher load before breaking. It is on this basis that the choice of wood must be made. Which of these characteristics is more important in the particular usage? There are two basic structural members involved in an indoor model; tubes and strips. Generally, a fairly light wood is employed for tubes. For very light structures an extremely light wood is necessary to keep thicknesses up to workable levels. For spars, it is another story. General practice has been to use fairly heavy wood, about 6 or 7 pound stock. One reason for this is probably that, generally, good light spar stock has not been available. However, recently we have been able to obtain some exceptional 4 to 4½ lb. wood with fairly long grain that makes beautiful spars. In summary, then, light wood is best if you can obtain good wood, but good spar stock in the 4 to 4½ lb. bracket is hard to come by."

Charlie Sotich, who flies Category II almost exclusively, and has to contend with obstructions on almost all flights, made the following comments:

"Light wood seems to have the characteristic of breaking with a "snap", often followed with a small puff of dust. When a wing or other structure is made of this type of material, I have found that the wing (or other part) tends to crack very easily when it bounces off an obstruction while flying. Using wood that has a higher density, and usually higher strength, requires the cross-section to be reduced to keep the weight down. If the heavier wood is stringier it won't crack so easily on impact. I prefer the wood that is stringy and slightly heavier (about 6# stock) to the light wood for several reasons:

1. It won't break as easily so I can do more flying and less repairing.
2. Good 6# wood is easier to obtain than 5#, or 4# stock.
3. Using heavier wood, a finished model is likely to be heavier, but strong, so it can be flown under most conditions. Using light wood, parts are often too weak and won't permit any flying until some bracing is added."

NEWS FROM AROUND THE WORLD

CALIFORNIA

Reading between the lines in a letter from Hal Cover, we might guess that the Smogcutters have found one of the best Cat. I sites around - ceiling at 34' 9" and only two obstructions in the form of speaker boxes. Where? The Culver City Veteran's Auditorium!

The times at a record trials held there were quite good - top glider time (balsa) was 36.5 by Sonny Myers, a Senior. Sonny also put up 8:06 for a new Paper Stick record, plane design by Hal Cover. Hal's helicopter went for another record - 5:21, and Frank Cummings and Tom Finch were also out trying for "A" and "D" respectively.

ENGLAND

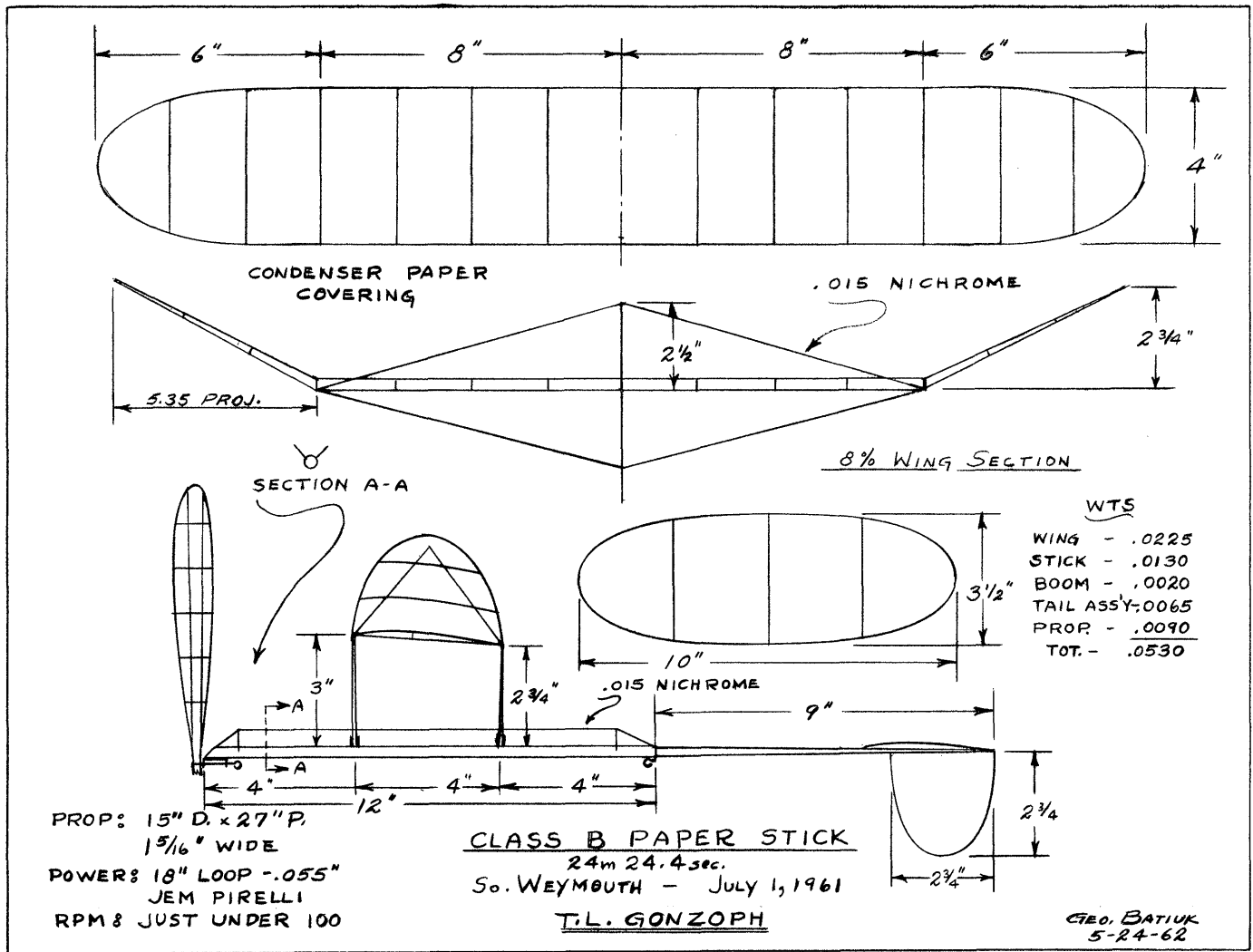
From Reg Parham and Arthur Barr comes reports of the recent practice sessions in Cardington. The weather for all their sessions so far has been rather bad, and the repair work on the hangar is still going on. Conditions have been so bad that no one has really been able to fly his ships to full potential, and there is growing concern over picking the British team for the Championships.

In addition, some housing on the base has been torn down, so some of the Championships entrants may have to be put up in Bedford (about 2 miles from the base).

FINLAND

The public hall in Helsinki, where the Finnish FAI elims took place, has been made available to the flyers every weekday during the summer months - lucky boys! Esko Hamalainen also predicts that the 45' site will be seeing flights over 23 minutes as the boys progress.

Esko flies copilot on a "Caravelle" for FINNAIR, the



largest Finnish airline, making regular runs to several cities in Europe. FINNAIR, incidentally, sponsors the Finnish FAI team transportation costs to the Championships each year.

NEW ZEALAND

After hard work by John Malkin and others in the Upper Hutt Aeromodellers, the N.Z.M.A.A. (equivalent to A.M.A. here) adopted two ceiling categories, divided at 30', and changed the flying procedure so an indoor flyer can now hold his model while winding. The club is still working to get indoor classes returned to the agenda for the N. Z. Nats.

The Vogue Theatre (in Upper Hutt?) is the present scene for all the club's indoor sessions, and has a 26'+ ceiling. Easy B (Wilmington rules) is the most popular event, and the top Easy B time is 6:19, set by Brian Roots. It is reported that John Malkin is hard after that record, so it may not stand long.

STATE OF THE ART

Somehow, we missed meeting Ted Gonzoph at the Nats, and didn't get to compare his fifth place winning ship with the one shown here. In his last letter, he indicated plans to duplicate this model for Category II except for higher prop pitch than shown here.

The details of power, flight time, and R.P.M. show up on the plan, but Ted sez an earlier version using a 6% airfoil was "a great big zero". It would be interesting to build several wings for a given ship, changing only the airfoil, and test fly until enough flights under varying conditions had proved out the best airfoil.

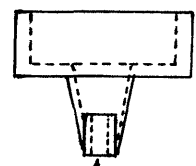
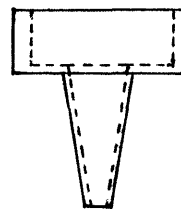
HINTS AND KINKS

Microfilm Pouring Spout

A uniform and carefully regulated pouring rate is a must for good sheets of microfilm, if all other factors are equal. For years, the practice has been to use a spoon or similar container to pour the film solution from.

The rate of flow is regulated by carefully tilting the cup for even pouring, while also regulating the water coverage by the speed at which the cup is moved across the tank.

Of course, if the flow rate is regulated and repeatable, much more uniform results and less waste can be had. Plastic squeeze bottles with detachable funnel-shaped spouts can be modified to deliver constant flow at the proper rate for your particular film. Refer to the two sketches below, and modify the spouts as shown:



CUT OFF END OF
SPOUT UNTIL THE
END HAS PROPER
INSIDE DIAMETER

TEFLON OR NYLON
INSERT DRILLED
TO DESIRED SIZE

If you have several of these bottles, the method on the left is easiest. Working carefully, trim the end of the spout until the remaining spout has the right size hole to give the proper color sheet of film. If too much material is removed, the tip can be heated until it closes down some, but this is not quite as satisfactory.

If desired, the same spout can be used for several different film solutions and film colors by making several different teflon or nylon inserts, each with a different hole size. A good place to start on hole size is #37 drill - gold and hazy brown sheets indicate the need for a larger hole, while red-green "saran wrap" film shows you have gone too far.

To use this gadget after making a trial modification on the spout, re-attach the spout to the bottle and cut out the bottom of the bottle. Pour two or three table-spoons of film solution into the gadget while using your little finger as a stopper for the spout. Leave the film bottle top off so there will be a place to set the gadget after pouring a sheet.

For right-handers, hold the filled gadget about one inch above the water at the right end of the tank. Start a uniform, sweeping motion toward the other end of the tank, while simultaneously unstopping the spout. About eight or ten inches from the end of the tank, cut off the flow while following through with the sweep. If the flow runs too close to the end of the tank, wet solution will bunch at the end of the tank, producing heavy film and drying too slowly.

After use, clean the spout with thinner, and store until the next time. This gadget will give uniform sheets time and again, and results repeatable the next time. However, no guarantee is made about picking the film up after pouring - you are on your own in that department!

THE HAND LAUNCH GLIDER

PART NINE

by RICHARD MILLER

DESIGN (cont.)

Two Schools of Thought

When it comes to determining the size of the stabilizer and the work it is to perform there are two schools of thought separated by numerous shades of varying opinion. One of the schools, the advocates of the small symmetrical stabilizer, feels that the surfaces need do no more than is implied in its name, and do it very modestly at that. The large lifting stab school, on the other hand, ask themselves why the stabilizer shouldn't be called on to perform a more versatile role. Both schools have the feeling that they have the best solution to a major problem of design. And both, of course, are right. At any rate, if they're not they should be.

The small symmetrical stab school reasons that inasmuch as every bit of stabilizer causes structural problems, adds weight, increases drag and compromises launch altitude that it is wise to keep the surface as small and unobtrusive as possible. Such as, for example, a 20% stabilizer on three chord lengths. Gliders such as Foster's 1:14 machine and the Sweepette fall into this category.

The large lifting stab proponents, although they're quite ready to admit the above claims, argue that this is not, by any means, the whole story. Why, they reason, when you've gone to all the trouble of selecting the wood, building the stab, aligning and attaching it to the model, then throwing the whole shootin' match as high as you can get it, why (they say) when you've gone to all this trouble, shouldn't the stab do some additional work on the way down?

People with such convictions are liable to go to a stab area of 30% or higher and use a lifting section as well. They are also liable to point out the fact that a lifting stabilizer can be tilted in such a manner as to be a considerable help in turning the model and getting it to recover more smoothly. Finally they would be apt to point out that a lifting, or at least non-symmetrical stab section is less liable to flutter during launch than a symmetrical section and that many builders use lifting sections, even when not concerned about lift, for just this reason.

How To Get What We Want

Once we have an idea what it is we want from the stabilizer we can begin the somewhat less difficult problem of assembling our elements in a manner best calculated to achieve it. Our first problem, as implied above, is general stabilizer effectiveness. Now as any able amateur aerodynamicist knows, a large stabilizer on a short moment arm (MA) is roughly equivalent to a small stabilizer on a long moment arm - at least as far as glide performance is concerned - and the Tail Volume Coefficient formula can be made to yield the same results from either point of view.

How then to proportion things? We are hedged in on one side by the fact that drag and structural limitations dictate an absolute size for the HLG stabilizer (thus

suggesting a long tail moment arm) and on the other by the limits which extending heavy fuselage wood rearward from the CG places on the TMA (thus suggesting a large stabilizer).

The juggling of these two possibilities - the large stab/short MA vs. the small stab/long MA - fortunately has a definite and coherent history which can provide us with some valuable information. If you recall, we examined (in part II) some bizarre looking gliders with 7" nose gaps and 4" tail gaps, roughly the opposite of what we know today. These gliders, dating from the early thirties, were representative of the large stab/short MA era and we can only imagine that things were that way because that's the way things were. In those days long TMA was associated almost exclusively with racing aircraft and speed models, bearing out the rule of thumb that the faster the normal speed of the model the longer the TMA. Thus the ultra slow HLG, like its full-scale counterpart, the sailplane, was short coupled.

Nonetheless in the decade 1935/45 the long TMA revolution took place and became fully established. It was unquestionably a major factor, along with polyhedral, in the sudden jump from sub-minute to 1:10-plus times. It was found that the long fuselage extension to the rear of the wing was not all that disadvantageous. The long tail boom could be made slender in the interests of resiliency and thus be kept quite light. The long TMA was also a welcome visual revolution as well according to Pete Nishanian. It accentuated the tail-hang-down-drag of the true indoor glider as it loafed through the air.

Salient Stabilizer Specifics

There still remain a good number of factors bearing on the design of the stabilizer. In general what applies to the wing and its design can serve as a guide for the stab as well.

Planform: For the sake of appearance, and in order to achieve a sense of unity in the design, it is not uncommon to carry the wing planform over into the stab. If the wing is elliptical, parabolic, or something similar in shape, there is little or no problem. Where the wing planform is less conventional it may prove a little more difficult to achieve harmony in this respect. The Sweepette is an excellent example of maintaining the spirit of the wing planform in the stab yet varying the stabilizer planform in such a manner so as to make it both structurally sound and attractive at the same time.

Aspect Ratio: Higher A/R is just as desirable in the stabilizer as it is in the wing, especially when using a lifting section. Bill Dunwoody seems to feel that an increase in stabilizer A/R has adverse effects on recovery but this seems a negligible point and one overshadowed by the likelihood of a little increased performance. The practical limit to stabilizer A/R is, of course, structural. Nonetheless I feel that the small additional amount of weight entailed (agrrr!) in increasing the A/R of the stab might be offset by performance gains.

Section: If the stab section is symmetrical the maximum thickness around the 35 to 40% mark should give the least drag. If you use a lifting section simply pay heed, on a reduced scale, to everything that applies to wing airfoils. As a general rule a thickness of about 1/16" should do quite well for gliders weighing 3/4 of an ounce or more. On gliders weighing in the neighborhood of half an ounce 1/20" stock should be adequate and for those around 1/4 ounce, 1/32" sheet. This is ultimately a matter of feel more than anything else and "what the traffic will bear" is determining factor #1.

-Hedral: The proponents of both dihedral and negative dihedral make reasonable claims for these variations, stating that such angling aids in recovery or in thermaling. My own experience has proved nothing either way; but it is certainly easy enough for anyone interested to experiment and come to his own conclusions. Chop off one side of the stabilizer, reglue it at the desired angle, and note the difference in performance.

A dihedralled stabilizer leads us in the direction of the "v" tail. This is possibly a rich area for the experimenter. To cast off on this strange sea will undoubtedly mean shedding a lot of well established ideas of HLG design and adjustment and experimenting at considerable length. But if the results are anywhere near as encouraging in HLG as they have been in full-scale sailplanes where the "v" tail has proven to be a considerable asset in several respects the pioneer will be richly rewarded.

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

SEPTEMBER 1962

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

Two more members joined NIMAS in August, bringing our membership to the century mark after eight months. We welcome these new members:

CARL W. FRIES, 8798 Sturdy Drive, Crestwood 26, Missouri
DONALD R. GOLDBERG, 1706 Foxchase Dr., Reynoldsburg, Ohio

Our one hundred members are scattered over five countries and eighteen states of these United States. Over half the Open indoor records and many of the Junior and Senior records are held by NIMAS members; over half the top five places in the 1962 Indoor Nats were won by NIMAS members and NIMAS made a clean sweep Open Paper Stick and Open Cabin. In addition we took three of the top five places in Open IHLG and nine out of ten places in Open Indoor Stick. How 'bout dat!

RULES?

So far there has been no word of any further action on any phase of our rules changes that are pending - it seems that we are hung again on complete inaction from the higher echelons of the F/F Contest Board.

AMA Elections

It is now just a very short time until we elect new officers to represent us in every phase of AMA official business. As soon as possible we should carefully consider the qualifications of the nominees for each office and make sure that the best man rather than the most popular one is elected to each office.

NEW STAFF MEMBER

We are greatly indebted to considerable help from a very cute young lady with this issue - in several places. Mailing labels, proof reading, grammar correction, and now some illustrations in this issue. If all the extra work doesn't scare her off, she soon will become a permanent member of the staff. Already her indoor models threaten to shame your editor off the floor!

****FAI INDOOR REPORT****

Late last month the Society of Model Aeronautical Engineers (British A.M.A.) announced the following entries in the second World Championships for Indoor Model Aircraft, to be held September 22-23 in Cardington aerodrome near Bedford, England:

FINLAND	1. Esko Hamalainen 2. Harri Raulio 3. Arto Tauria	Manager: Reino Hyvarinen
GERMANY	1. Max Hacklinger 2. Karl-Heinz Rieke 3. Klaus Hewell	Manager: Gunter Maibaum
GREAT BRITAIN	1. Ron Draper 2. Reg Parham 3. Ray Monks	Manager: Bert Spurr
HUNGARY	1. Zoltan Oscodi 2. Antal Egri 3. Geza Varszegi	Manager: Reszo Beck
U. S. A.	1. William Bigge 2. Carl Redlin 3. Dick Kowalski	Manager: Joe Bilgri
NEW ZEALAND	1. John Malkin (Proxy flown by E. Thorpe)	

Previous issues have reported the qualifying times of the teams of the United States and Finland, and no flight times are available for the Hungarian team. The qualifying times for the other teams are:

GERMANY	Westfahlenholle, Dortmund, Germany (75')
	1. Max Hacklinger 25:16
	2. Klaus Hewell 24:42
	3. Karl-Heinz Rieke 21:25

GREAT BRITAIN Cardington aerodrome, England

1. Ron Draper	61:27 (2 flights)
2. Ray Monks	61:08
3. Reg Parham	58:55

PROXY OR NOT?

Last month we reported on the initial effort to keep John Malkin's proxy entry in the World Championships from being accepted. Since then we have received reports that this issue had only been discussed by a minor committee of the C.I.A.M.

At this time it appears that a close watch should be kept on the proxy flying situation. Possibly we should be concerned that the matter is being discussed at all; certainly we should be prepared to arrive at a definite conclusion on whether we want proxy flying to be allowed in future years. From this vantage point it seems that we would lose a great deal in international flavor and spirit if proxy were eliminated. And if it is eliminated some time in the future, we should insist that at least one calendar year should elapse between the decision and final adoption of such a move. In all fairness, however, it seems that there really is no question about whether proxy should be permitted - without it only the wealthy or the state subsidized teams can participate.

****SUMMARY - FAI INDOOR ELIMS****

In a well planned and well executed system of elimination contests, ninety entrants of FAI local events flew against the stiffest competition on record. In the six quarter final contests, forty-one flyers qualified for entry in three semi-final elims. In the third round thirty-seven entrants were narrowed down to our present team in one of the hottest competition events yet seen. The entry breakdown is as follows:

The entry breakdown for the local elims is as follows:

WEST COAST	CENTRAL AREA	EAST COAST
Los Angeles - 10	Chicago - 14	Lakehurst - 9
Moffet - 13	Cleveland - 18	New York - 7
23	Dallas - 8	16
	Detroit - 10	
	Kansas City - 1	
	51	

The latest tally of money collected as a result of the FAI Indoor elimination system shows that \$368.50 was collected - quite a healthy piece of change from a phase of model flying that was "dead" a few years ago!

All of us who participated in the FAI indoor program this year owe a big vote of thanks to Joe Bilgri, Dick Kowalski, and Richard Miller for the planning, and to all the CD's who ran the meets, and to all the helpers who made each meet a success.

Although we have no indoor championships in 1963, we can and should start planning toward eliminations for the team for 1964. There is enough activity to hold at least one more elim on the West Coast, and at least one more in the East. For the benefit of flyers in the Central Area, planning should begin now to find and activate a site nearer to the geographical center of the Central Area. In 1961 none of the flyers who qualified in the South were able to get to Detroit for the semi; in 1962 your editor was the only qualifier from the South who made the trip.

STATE OF THE ART

Although the purpose of this column has been to report on models which have established a new national record, it will also be used to report other noteworthy developments in this field. In months to come we hope to show three-views of leading FAI models from all over the world, as this info becomes available. This month, however, we present models developed for a proposed event that never was adopted, to show once again that model builders need no more incentive than curiosity to tackle a project.

The event, solid stick class B paper covered models, proposed to eliminate all bracing, rolled tubes, and all "special construction techniques" and develop a beginner class of model. It becomes obvious that a 100 sq. in. unbraced model is no beginner project after you try one, and it is next to impossible to define such a model with rules that a beginner can read and still cover loopholes.

At least two flyers developed models for this class, Hal Cover in California and Charlie Sotich in Chicago. Hal's model has been flown in Wilmington (29' 11") for a time just under 8 minutes, and for 10 minutes in Moffet hangar. However, Hal feels that 14 minutes is a possible upper limit of duration for Cat. III. He reports some occasional trouble with the wing L.E. tucking under and that the solid boom sometimes twists in flight. With a weight of .060 oz. the limiting factor seems to be motor stick strength - .060" rubber is the largest practical.

Charlie's model shown here is the second he built, with the first having straight tapered wings and stab. Some trouble with wing tucking was experienced with the straight wing, but this was the only difficulty. The best time with the straight wing configuration in Madison Street Armory (75') was 12:22.

The wing shown was laid out by the parabolic development described by Ray Harlan in Zaic's '59-'61 Yearbook. The new configuration seems to have cured wing tucking and boosted the best time to 13:10 in the same site.

RECORDS? MAYBE!

There have been no reports of any record applications in our mail box this month - but there have been a couple of record trials held since the last reported date in the August issue. Until, just before press time, when we received our new Model Aviation, we had assumed there had been no records set.

Now we see that the following records were established in one of those record trials:

Open Helicopter - 8:11.0, Hal Cover 7/29/62
Open A R.C.G. - 21:52.0, Joe Foster 7/29/62

On this one we goofed - we were notified of the application, and erroneously understood it to be less than an existing record which wasn't so:

Junior Ornithopter - 0:20.0, Steve Houlihan

QUESTIONS AND ANSWERS

This month we have three new questions, the first on the previously discussed topic of model efficiency and the other two new topics - but all open to comments and suggestions from all sources:

18. Assume a model strong enough to handle full power without the flight surfaces warping or twisting under flight load: what flight adjustments or method of trim will give maximum flight efficiency (duration vs. power) for that model, without making major structural change?

19. Does anyone have a sure-fire method to prevent the rubber from creeping off the prop hook?

20. What kind of boxes or containers are best for storing and transporting indoor models, including the factor of maximum utilization of space?

Question #20, containers for indoor models, presents one of the more neglected aspects of our hobby. An ideal model box will offer maximum protection for the model, easy handling and storage of the box, and easy access to the model when it is time to fly. Needless to say, there are about as many different solutions to this problem as there are flying groups, plus a few.

Any box which is easy to handle and store usually is fairly light, small enough so it is not awkward to carry, and will fit easily into vehicles for transportation. The small dimensions will only be acquired by having the box well filled so there will be minimum "dead space" consistent with easy access to the model parts.

When the protection of the model is considered, this includes protection from dust, atmosphere (humidity), and shock from handling and transportation of the model. Dust and humidity protection suggests that the box will be air tight or nearly so, and shock protection includes careful mounting of the model inside the box.

Easy access to the model at the site implies that the box will open wide enough for easy removal of the model parts and simple but reliable mounting devices which will hold everything in place properly. Proper mounting means that each component is held in such a manner that it won't come loose by itself and that "g" loads from read bumps, accidental dropping of the box (horrors!) and bumps from handling will not damage the structure. Easy access also includes room to put your hands into the box to engage and release the fasteners if this is necessary.

Most of the various boxes for indoor models can be divided into two categories: "unit" boxes which hold no more than two models and usually only one, and multiple boxes carefully engineered to hold a large number of models of various classes. The hand launch glider flyers are almost unanimous in using a multiple box, sometimes with elaborate mounting arrangements for each model.

Almost all the boxes are constructed from either wood or cardboard, with cardboard seeming to be in the greatest use. Wooden boxes, carefully designed, are strong and durable and will give the most protection from atmosphere and dust if equipped with rubber sealing strips. However, unless one has access to wood-working equipment and is quite talented in using the machines, wooden boxes are usually quite expensive. Also, wooden boxes hit harder when they are dropped, are heavier to carry around, and usually are more awkward since the large investment tends to ensure that many models will be stored in each box.

Cardboard boxes are used (we suspect) much more often than wood because suitable boxes can often be found free if you beat the trash man to them, and cardboard is easy to work with. Here again, it takes careful planning to ensure air-tight construction and maximum utilization of space (new-found boxes almost never fit your models). On the minus side, cardboard boxes are more susceptible to puncture damage, and usually will not stand to have weight piled on them. They also seldom are waterproofed, and will hold moisture longer, and thus are subject to replacement more often.

Although we suspect that both types of boxes fill a definite need, our personal preference is for the unit box. A unit box, carefully tailored to the model size, (or conversely, the model designed to fit the box) makes maximum space utilization, exposes only one model at a time to danger, and permits one to leave unwanted models at home. If transportation is a problem, (it usually is) unit boxes can be stacked in a variety of arrangements so that many models and people will fit in one car.

For example, a recent excursion to a Cat. I session found five people, four gliders, eight Easy B models, and one B paper stick stashed in a '57 Ford sedan with room to spare. On the way to the Nats, the same car held two people and their clothes, two stunt models, two FAI models, four B paper stick models, one B stick, one Easy B, and complete repair facilities including bracing jigs. On the return trip another FAI box and assorted junk was added, all without impairing vision out the rear window!

The size of a proposed box is difficult to determine whether it be a unit box or a multiple one, but adequate space for many models in a large box takes quite a while to arrange. For unit boxes the length is usually just a bit longer than the wing span, the width just longer than the stab, and the height about two inches taller than the wing posts plus the dihedral. In this type of box the wing is mounted in sockets by the wing posts and the fuselage/tail group is mounted in U-shaped brackets and locked in. Props are mounted on individual hooks on the sides of the box (with safety catches) or the hubs are mounted in brackets with fasteners on the bottom of the box.

Clarence Mills (Chicago) showed us how he changed the wing mounting in a unit box so that two models would fit the same box and the wings could be installed and removed from the box more easily. He simply mounted the wing in sockets on a strip of 1/2" x 1/2" balsa as before, but instead of fastening the strip to the bottom of the box, he mounted a bracket on the side of the box and slipped the mount strip in vertically.

Now, the wing mounts on the side of the box, leading edge down and the top of the wing facing the center of the box. This leaves room for another wing on the other side of the box, and there already was enough room for another fuselage in the bottom of the box. Props can be mounted on either side of the wings and on the bottom of the box, or can be carried in a separate box.

Unit boxes, in order to afford maximum protection to the model, should be constructed similar to a shoe box, that is with a completely removable one-piece lid which is a snug fit on the bottom. The flaps in the bottom and the lid should be covered with another layer of cardboard glued in. If the lid is made the same depth as the box, this will result in a double thickness of cardboard all around the model, and greatly increases the strength of the box. The box will then resist crushing from any direction and will support considerable weight if it is necessary to pile stuff on it.

Under no circumstances should flaps be used as a top for the box. Flaps admit dust and moisture, endanger the model during removal, and will not support any weight on top of the box. They can also open up accidentally and submit the model to air currents - scrambled model!

Unit boxes of the type described can be made fairly easily, starting with larger boxes and cutting them down, or building from scratch with fresh cardboard. However, some container manufacturers will make such a box in job lots for about \$4 - and for less than \$3 in large numbers. The problem would be to get a group of fellows to all agree on what size the boxes should be!

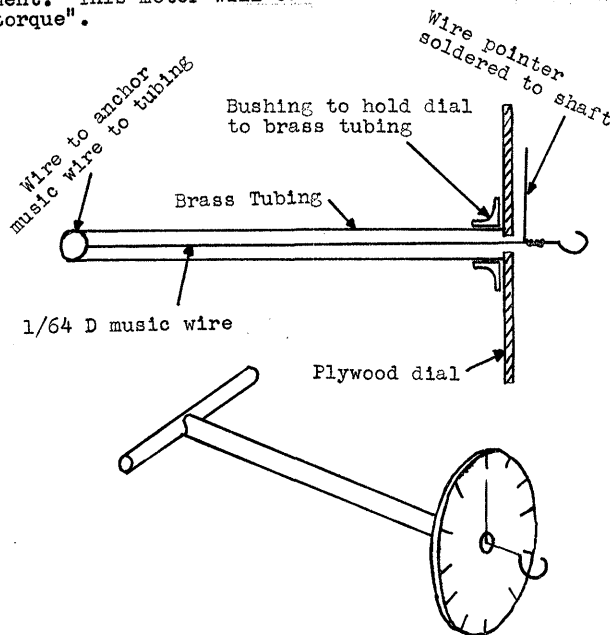
HINTS AND KINKS

Torque Meter

This torque meter, designed by Charlie Sotich, is intended to use for checking motors during the break-in to see if the rubber meets some arbitrary standard met by a motor you have used in the past. The construction and calibration goes as follows:

"It consists of a piece of 1/64" dia. music wire 6" long inside a piece of brass tubing. The wire is fastened in the back of the tubing by soldering it to a piece of 3/64" wire perpendicular to the brass tubing. A pointer is soldered to the other end of the 1/64" wire and a hook is bent in the end of the 1/64" wire also. A bushing soldered to the brass tubing holds a plywood dial which is graduated during calibration.

I calibrated the torque meter by fastening a 24" piece of 1/8" sq. balsa to the pointer (centered). I then moved a .1 oz. weight along the 1/8" balsa in 1" increments thus: move the weight to the 1" position, rotate the meter until the beam is horizontal, mark the pointer position on the dial, and repeat for each 1" increment. This meter will calibrate to about 1 inch-ounce of torque".



NEWS FROM AROUND THE WORLD

ENGLAND

After having firmly established himself on the team, at the British elims, Reg Parham started testing John Malkin's FAI model. Reg has been taking care of the model since its arrival in England, but it will be proxy flown for John by E. Thorpe.

FINLAND

The Finnish team attended the German FAI elims to get some experience in a higher ceiling. Generally low times prevailed due to turbulent air most of the day. It was valuable experience for the Finns, since the less-than-ideal air showed up weak points in their ships. Esko Hamalainen reports that he is changing over to the same wing construction as the Germans are using - a stressed wing which has greater strength to weight.

CALIFORNIA

Although the Wilmington sessions remain as record trials with Easy B events, interest is growing rapidly in indoor flying scale. Vic Hardin is the CD responsible for the growing scale interest, and is assisted by other members of the Flightmasters.

An added attraction - Lew Gitlow will hold classes in indoor building at all future Wilmington contests!

INDIANA

Chuck Borneman's group (Kokomo Knights of The Round Circle) has already started plans for regular indoor activity starting in November. Last year this group, flying at Bunker Hill AFB, had the only organized indoor activity in the state. For more info, contact Chuck at 1401 West Taylor, Kokomo, Indiana.

NEW ZEALAND

Flying sessions at the Vogue Theatre continue amid rumors that two other sites in New Zealand may soon open up. Times continue to climb, with John Malkin picking up a new Cat. 1 record with his Easy B - 7:12.3. John had almost broken the 6:19 set by Brian Roots on two previous occasions, and is now shooting for 8 minutes.

TEXAS

Although the Walnut Hill site in north Dallas still resists attempts to increase the high time above 9:08.5, the E-Z-Bee class times still are climbing. Hotshot class record is now 6:41.5 in Open, set by Bud Tenny. Don Chancey upped the Junior Hotshot record to 6:01.2. Don currently holds the IHLG record for the site at 0:25.0.

The September 21 session is the last regular session until after the basketball season, and there is a trophy set up for the high time of the last three sessions. So far the E-Z-Bee models are likely to claim it, but there are several models being readied for a real crack at a new site record.

FUN MODEL REPORT

Quite some time ago Wally Miller designed a small indoor model for his son to build - and created one of the most significant promotional devices ever used for our hobby. That original Easy B, as Wally's model was called, sparked the brainstorm of holding regular events for "formula" models.

The Easy B class, as flown in Wilmington Recreation Hall in Los Angeles, made an excellent event that everyone could fly. The novices and beginners flew it since the models were easy to build and lots of fun to fly. The experts flew it - Gitlow, Finch, Miller, Cople, and others - because a total washout of a model still cost them only a few hours. No matter what the level of the flyer's experience, the Easy B class presented a big challenge.

The challenge of a simple model might be obscure, until you try it. When two people compete with Easy B models, the challenge is between the flyers, and the formula evens out the score until it is almost 100% skill of building and flying. The possibilities for development and experimentation are limited only by the imagination of the flyer - and the resulting models are almost a perfect match for Category I sites.

In just about two years the Easy B and many different variations have spread all across the world. Chicago, Dallas, Kokomo, Kansas City, New York - even in Upper Hutt, New Zealand the "fun models" have become popular. All of the present New Zealand indoor records in their brand new Category I are held with Easy B models.

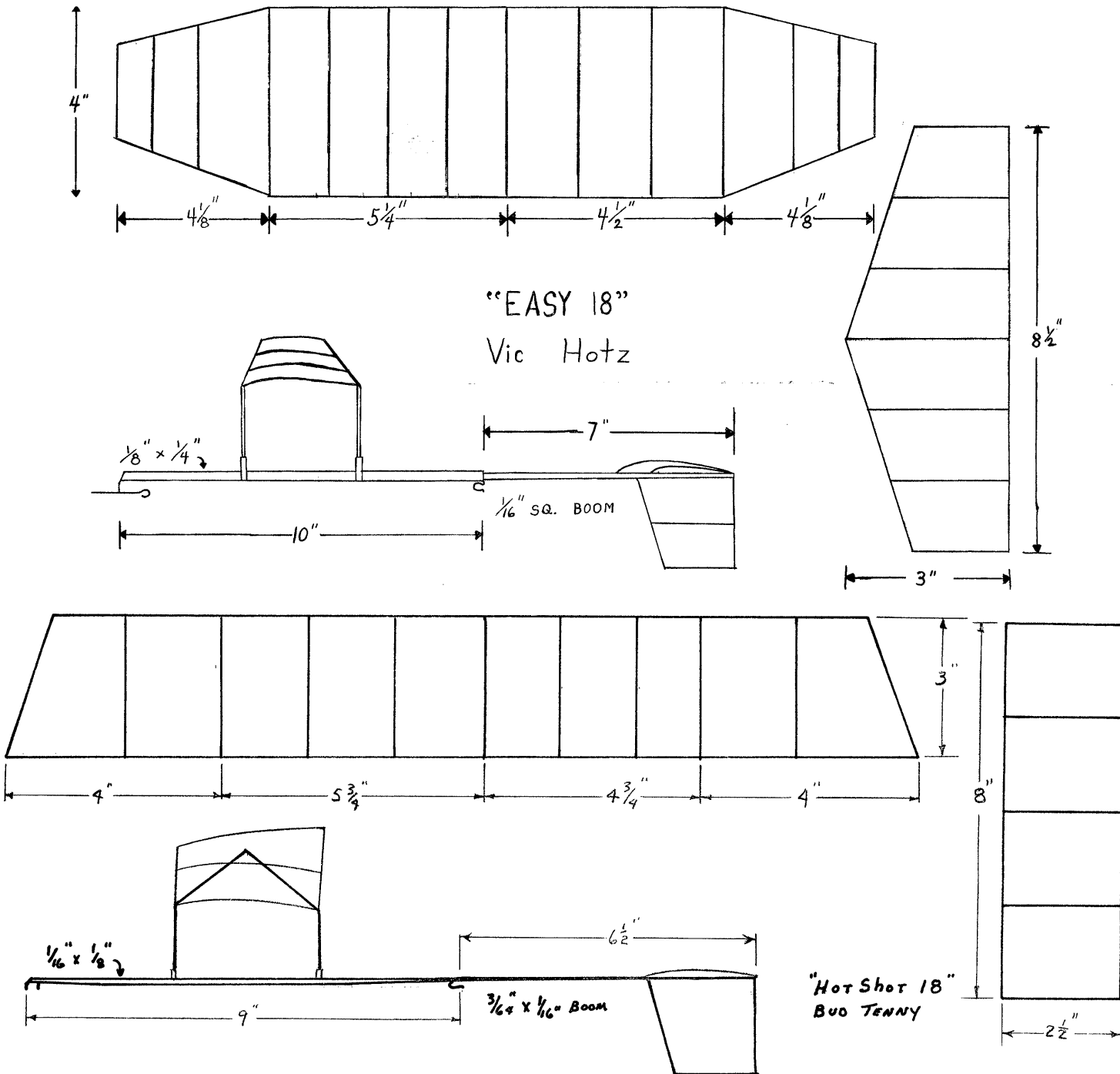
What is this magic formula? In the simplest form, it is a maximum wing span, maximum chord ruling coupled with requirement for an all-balsa prop. The original Wilmington formula was: All outlines must be straight lines, all components solid, no bracing, all-balsa prop, 18" maximum span, 3" maximum chord, maximum stab area 50% of wing area. Covering could be either paper or microfilm, and the novices usually started with paper.

In New Zealand the full Wilmington formula was adopted for the flying in the Vogue Theatre. In Chicago, the IMAC flyers eliminated the maximum chord and tail area rules, and specified paper covering. The winner, Vic Hotz's Easy 18, is sketched on this page. A $9\frac{1}{2}$ " x 15" prop and a 16" loop of Firelli supplied the "go" for 6:57 in a 75' ceiling.

In Dallas, the flyers had the most leeway of all: the 18" x 3" wing was specified with an all-balsa prop. The covering for the Novice class was limited to paper, and the Hotshot class was no holds barred. The complete simplification was an experiment to see if great inequalities resulted from loop-holes in the rules. So far, they have not - the Novice models are of the simplest construction and the expert "Hotshots" tend to build miniature indoor models complete with bracing and sometimes rolled motor sticks. Since it is expert against expert, no one stays on top for long, as it should be. The model which holds the building record for the Walnut Hill site (20') is

shown below. The top time for this model is now 6:41.7, and the limitation on higher times so far has been drift. Power for the record flight was a 12" loop of .040" of Firelli turning a 9" prop with blades mounted on the spar at 45° and a slight helix warped into the blades.

If you have a thriving group of avid indoor flyers, all of them gung-ho for contests and record trials, the "formula" model probably will do little for you. However, if you are a lone indoor flyer or have a small group and need more activity to justify the use of a site, this is the way to get more flyers. The fun models are simple enough that no model builder will admit to being unable to build and fly them, and beginners can build them with very little supervision. Combine a fun model contest with a record trials and the expert flyers can make their record attempts and the other entrants will make up the minimum of ten entrants to qualify the event as a record trials. That is, the experts will make record attempts if they can let the Easy B's alone long enough!

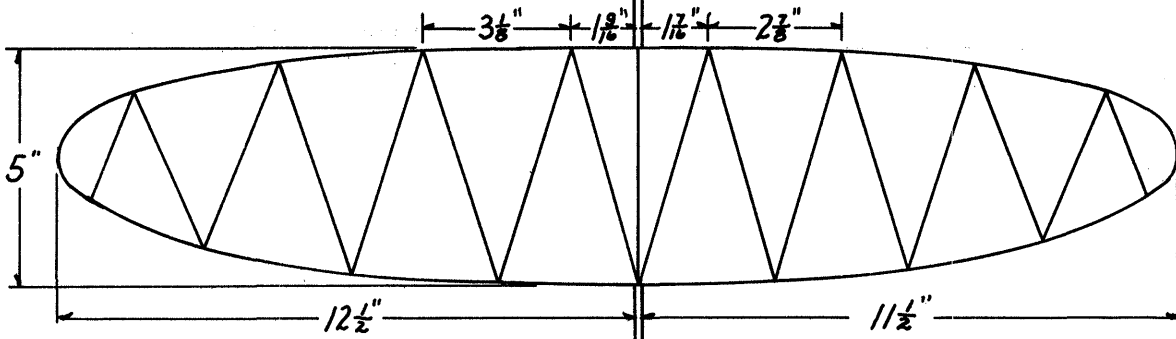


PROP
13" D - 24" P SINGLE SPAR
POWER
17" LDDP .080 PIRELLI

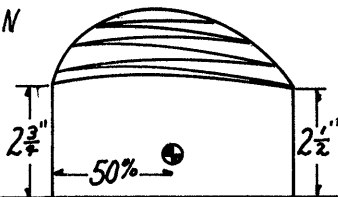
P.

WEIGHTS

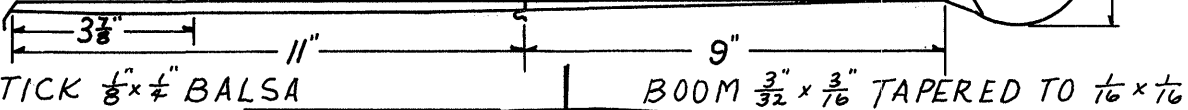
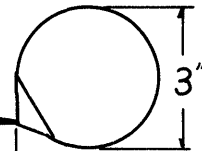
Wing	.025
Stab	.0074
FIN	.0013
MOTOR	
& Boom	.026
Prop	.0106
TOTAL	.0703



WASHIN REQ'D IN
LEFT WING



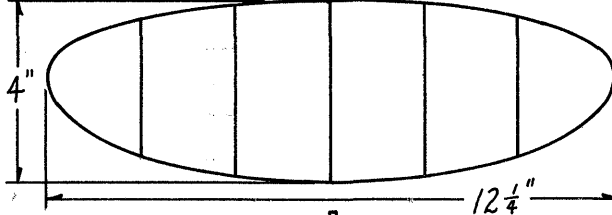
2" DIHEDRAL



MOTOR STICK 1/8" x 1/4" BALSA

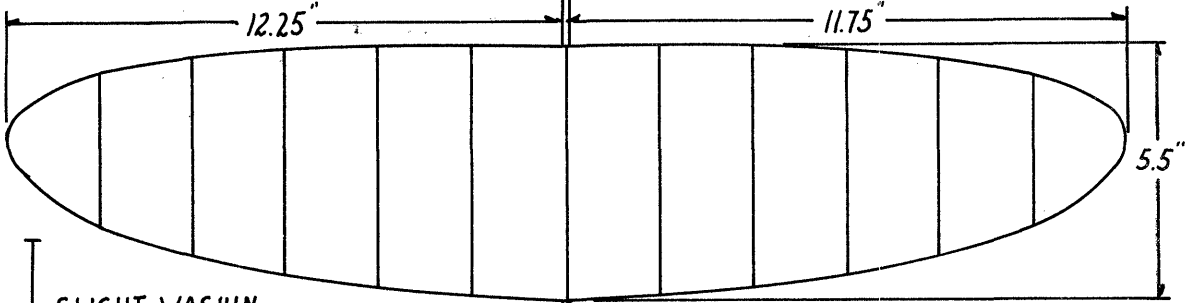
BOOM 3/32" x 3/16" TAPERED TO 1/16" x 1/16"

DESIGNED & FLOWN
BY CHARLIE SOTICK
Chicago, ILLINOIS
3-17-62

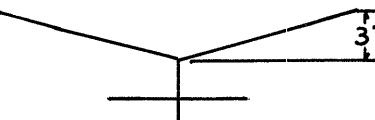
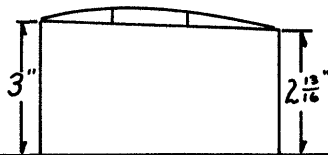


SOLID-BODY UNBRACED
PAPER STICK

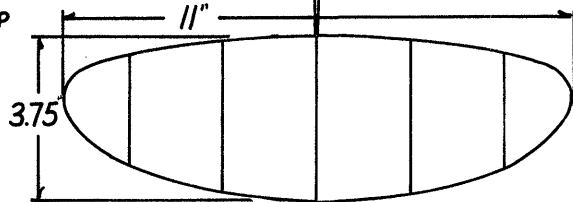
75' CEILING - 13:10
WING 99 SQ IN.
STAB 38 SQ IN.



SLIGHT WASHIN
WING OFFSET 1/4" TO LEFT



MONOSPAR PROP
13" DIAMETER



UNBRACED TISSUE STICK
MOFFETT FLIGHT TIME - 10 MIN.
POSSIBLE TIME - 12-14 MIN.
DESIGN - HAL COVER
DRAWING - LEE POLANSKY

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

OCTOBER 1962

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OFFICIAL RESULTS - WORLD INDOOR CHAMPIONSHIPS

Cardington, England September 1962

								<u>Total</u>	
1.	REIKE, Karl-Heinz	Germany	41:39	43:08	45:40	38:50	39:19	-	88:48
2.	HACKLINGER, Max	Germany	34:13	37:42	42:40	36:34	43:37	39:38	86:17
3.	REDLIN, Carl	U. S. A.	38:43	34:23	45:17	34:33	27:05	37:40	84:00
4.	DRAPER, Ron	G. B.	40:44	:07	24:50	33:55	35:48	25:33	76:32
5.	HEWEL, Kalus	Germany	30:03	35:07	33:54	:18	25:09	32:03	69:01
6.	MONKS, Ray	G. B.	28:31	33:03	21:26	26:51	34:36	32:50	67:39
7.	HAMALAINEN, Esko	Finland	32:57	34:05	12:28	:19	-	-	67:02
8.	EGRI, Antal	Hungary	32:25	34:01	30:57	17:58	22:16	25:35	66:26
9.	VARSEGI, Geza	Hungary	16:36	27:12	30:49	23:33	23:30	28:20	59:09
10.	BIGGE, William	U. S. A.	8:17	30:21	21:19	25:11	9:21	28:08	58:29
11.	MALKIN, John (Proxy: E. Thorpe)	New Zealand	19:25	22:01	28:03	24:53	25:04	24:09	53:07
12.	PARHAM, Reg	G. B.	26:44	23:54	25:46	11:26	19:37	25:20	52:30
13.	KOWALSKI, Dick	U. S. A.	32:46	11:39	18:25	19:33	11:31	-	52:19
14.	RAULIO, Harri	Finland	22:56	17:53	27:23	1:03	1:03	14:55	50:19
15.	TAURIA, Arto	Finland	:06	10:31	27:04	:07	23:13	7:29	50:17
16.	OSCODI, Zoltan	Hungary	15:04	:25	23:01	17:10	:10	:34	40:11

TEAM STANDINGS

1.	GERMANY	244:06	4.	FINLAND	167:38
2.	GREAT BRITAIN	196:41	5.	HUNGARY	165:46
3.	UNITED STATES	194:48	6.	NEW ZEALAND	53:07

We are very much indebted to Reg Parham for his air mail delivery of the results right after the end of the contest; and to C. S. Rushbrooke for sending the official version as soon as it had been prepared.

A careful scanning of the results above yields some interesting information: First, there were seven flights over forty minutes, and two of them were over forty-five minutes. Just a few short years ago very few people had flown for longer than thirty minutes, and now the new mark is just 50% higher!

A second observation from the results points up the rather high degree of consistency showed by the teams of all countries.

Something that doesn't show on the score sheet is which of the two high flights came first. This info is given in the commentary by Arthur Barr with his summary of the "most fabulous meeting of all times":

"Firstly, conditions: practically perfect. Although rather cold, very little drift - Saturday being the better of the two days. Organization was good with three time-keepers to each team who had to get in three flights on each day. The first forty minute flight was put up by Ron Draper (a new British record) and this really set the pattern of the meeting; with both Rieke and Hacklinger timing really high with their most efficient models. There was no doubt that the German team's aeroplanes were most consistent as seen by the results; with approximately 2000 turns and 45 RPM it was obvious that they were really good.

In spite of this, they were being pushed hard, particularly when Carl Redlin came up with a terrific flight of 45:17, the first to break the 3/4 hour mark. This was quickly followed by Reike with 45:40, and it was reason-

ably settled by this time, that with two other flights over 40 minutes the others would really have to pull something out of the bag to catch him. Both Carl and Max tried really hard in their last flights to do it, but it was not to be.

Dick Kowalski started off very well with 32:46, but from there on was plagued with atrocious luck; he had two collisions when well set for 35 to 40 minutes, suffering damage. One outstanding memory was Bill Bigge, having hung up, climbing out over the girders from a side catwalk, calmly taking his rubber motor off, stowing in an envelope, then gently launching his airplane to glide down from some 120 feet. Many hearts were in mouths.

Both the Finnish boys Raulio and Tauria, in spite of their inexperience, worked really hard to get their flights in, having suffered damage in earlier attempts, but did remarkably well. The New Zealand model of John Malkin's was ably flown by proxy Ernie Thorpe, assisted by Reg Parham.

With Carl's and Reike's last flights being made during the closing stages of the contest, everyone was gathered around the scoreboard anxiously awaiting the final results, although there was no doubt as to the winner; and so ended a most memorable contest."

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

Two more indoor flyers joined NIMAS in September, to bring total membership to 102.

JAMES E. GAFFNEY, 15004 Grapeland, Cleveland 11, Ohio
HARRY E. HARPS, 2837 Minto Drive, Apt. 16, Cincinnati 8, Ohio

The November issue will be the twelfth issue since INDOOR NEWS AND VIEWS was nationally published, and all subscriptions taken out before the middle of December were officially started with the December issue. Next month there will also be a statement of income and all expenses incurred to date.

RULES?

We regret to inform our membership that there apparently has been absolutely no action by the free flight Contest Board on any of many indoor rules proposals. Some of these proposals have been "pending" since 1960; some of them have been in the hands of two different CB Chairmen without ever having been circulated to the Board for preliminary vote! With the present rules-amending schedule, it is almost too late to get these proposals "into the mill" for consideration in time for publication for the 1964 rules!

NIMAS is currently considered as (unofficially) an advisory organization with regard to indoor rules, and it is felt that NIMAS and similar organizations should at least become official advisors with regard to rules for the special field of each organization. At one time, certain high official circles felt these organizations could and should become responsible for their own rules.

At one time your editor was optimistically in favor of NIMAS having responsibility for the indoor rules, but the somewhat lackadaisical response to the first NIMAS ballot somewhat cooled his enthusiasm for this project. Perhaps the response would have been better if there had been more at stake, perhaps not.

Our present problem, and a thorny one at that, is to press for action on all pending indoor rules legislation with enough vigor to make our voices heard. With the present rules machinery, we have absolutely no recourse when the CB Chairman ignores his duty to keep things rolling; in turn, the Chairman has no recourse if several CB members fail to answer their mail on rules queries from the Chairman.

We therefore urge that each NIMAS member contact the AMA VP for his area, outline the problem, and urge that he investigate the matter. Send a copy of your letter to the CB member for your area, and one to AMA HQ. Then, drop us a line outlining your own feelings on the matter so various ideas can be aired.

To summarize the magnitude of inaction we have decried in previous paragraphs, here are the proposals in question:

DETROIT-CHICAGO-WILMINGTON Proposals

Proposal "A" (IHLG) - Submitted for preliminary vote along with three others, no further action taken after CB members returned comments.

Proposal "B" (Scoring IHLG) Not submitted yet.

Proposal "C" (FAI Indoor) Not submitted yet.

Cliff Model Club IHLG Proposal - Same as Proposal "A"

Skyscraper's Proposal (IHLG) - Same as Proposal "A"

Hatschek's Proposal - Submitted with other IHLG proposals as composite alternate.

Solid Stick Proposal - Originally passed, recalled due to not being published in Model Aviation as required in the Rules Revision Guide; there have been enough negative CB votes to reject it this time around, but a full CB vote has not been called.

****AMA ELECTIONS****

Just over two months from now it will be too late for AMA members to return their ballots to elect officers for 1963 - even though the ballots haven't been sent out yet. In fact, the nominees for most AMA offices have not been officially announced, although precious little time is left for voters to decide upon the best qualified men.

The most important and influential office at stake, that of AMA president, has two nominees on the slate - John Worth and Maurice Teter. Beyond any doubt, each of these men was considered capable to fill the post, since each was nominated in good faith. Further, each man feels he can do justice to the job and presumably is aware of the extreme work load of this office, and so indicated by his acceptance of the nomination.

We have never met John Worth, and certainly have not heard anything but good reports of him, scanty though those reports may be. However, we do know Maurice Teter and feel obligated to make his qualifications and feelings known.

By far the most important qualification Mr. Teter has is experience with all facets of AMA business. Although Maurice has been a fierce competitor in the past, he has realized that high level administration and competition do not mix. Thus we find that 1948, his first year of administrative work with model airplanes, was the last year he entered a model contest.

Since receiving his Leader Member-Contest Director license in 1947, he has directed at least one Class AAA contest each year, and was active as contest director for Plymouth. He is an active Exchange Club member, serving on the Aviation Committee of the National Exchange Clubs. He has established two annual Class AAA meets in Texas, and is largely responsible for establishing the only permanent model park in Dallas.

On the national level he has directed the Nationals three times and is Chairman of the Nats Executive Committee which has total responsibility for planning the Nats each year. He has also twice served as Secretary-Treasurer of the Academy.

Mr. Teter has declined to express any detailed campaign platform, feeling the need to be better informed before promising solutions to several undefined but very real problems. However, he strongly feels that our rules revision procedure is in need of repair, certain fiscal aspects of the Academy need definition, that there should be better rapport between different geographical sections of the country, and that the FAI program needs to be brought into realistic perspective with the rest of the AMA competitive picture, especially with regard to representation vs. participation in the various events.

It is our personal opinion that Maurice Teter is very highly qualified for the AMA presidency, and has always demonstrated a high degree of personal integrity and a deep concern for the welfare of the AMA.

QUESTIONS AND ANSWERS

Last month question #18 asked for descriptions of flight trim and adjustments which would result in maximum flight efficiency of an existing model. Bill Tyler sent these comments:

"In addition to the specification that the flight surfaces will not warp or twist under power, you'd better add the assumption that the boom isn't floppy and that full power doesn't bow the stick too much. With those two additional qualifying factors in the assumption we can proceed with the discussion.

Don't test fly the model, test glide it! Attach a clay weight to the thrust bearing equivalent to the prop weight. Hook the motor (put enough turns in it so it doesn't sag or swing about) on the bearing. Try to test glide in dead air; launch from the same height each time and time the duration of glide. Once you've obtained maximum duration as a result of small changes in incidence mark the position of the wing struts in the tubes so you can duplicate the incidence setting. Then put the prop on and make the model fly at this incidence setting by using down thrust if necessary (use double thrust bearings for positive thrust adjustment). What you've actually done by test gliding is establish the ship's lowest sinking speed. This is the best adjustment for maximum duration under any circumstances. In high ceiling flying one can very easily be flying a ship out of adjustment and not be able to see it as the "flat" part of the flight occurs so high up you can't observe the model's flying speed or performance.

Power-off, power-on conditions of fully wound motors will cause high-wing ships to stall unless there is a certain amount of bend in the stick. This bend in effect increases the incidence of the stab at the beginning of the flight. Too much bend will make the model unflyable unless a brace is put on the stick and hooked to the end of the stab. This works in an emergency by the bracing wire pulling up the stab to compensate for the over-bend in the stick.

Stiffly braced sticks on high wing ships may cause stalls at the start of a flight even with some down-thrust added. Luckily most braced sticks have some bend so the problem isn't always acute. A power stall at the start

of the flight caused by a non-yielding stick can sometimes be controlled by moving the rubber knots forward before attaching the rubber to the rear hook. This moves the C. G. forward for the beginning of the flight, but it won't work on a really packed windup since the rubber is so tight it's like steel wire. (I've had ships wound up so tight the knots put holes through the bottom of my tick. Why the stick didn't fold up I'll never know. This happened on my paper B when it set a record of 22 minutes back in '56. Man, was that ship ever wound!)

On double bearings make certain that you don't glue them onto the stick so that you've built in right thrust into the model. This can be very disconcerting and has happened to more than one innocent builder.

Build washin into the inside wing panel while bracing as it's much easier to do at home than at a flying session. I favor offset center sections so as to keep the wing as "straight" as possible for less drag.

Depending upon your flying site and conditions, keep the flight circle as large as possible. Tight circling ships need more washin than wider circling models, and are harder to handle at the beginning of the flight."

Ray Harlan, also commenting on #18, has this to say:

"A lot depends upon the prop diameter and pitch, along with the ceiling height. Assuming the prop is not too large for the model's weight (so as not to allow it to be easily disturbed by gusts, convection currents, etc.) we would start with a motor equal to or slightly greater than the weight of the model (dry) and about 25 or 30% longer than the motorstick. I believe in quickly working up to enough turns to get the model 20-30 feet off the floor, with perhaps only one short flight to see that nothing radical occurs.

Regarding proper trim, one should attempt to fly the model just short of a stall, but not mushing, with turn to suit the site. The more nearly level the flight pattern (larger circle) is, the higher the efficiency is, in this case lift to drag ratio. Of course, small sites require tight turns to reduce girder hit probability. Level flight with turn can be enhanced with stab tilt.

Warps will either make or break a model. The wing should be flat except for the inboard panel (assuming tip dihedral) which has about one degree washin at the dihedral break. The rudder should be set to hold the proper turn, although I always augment it with just a little left thrust, more of a safety precaution to prevent right turn and stalls under power. The stab will sometimes need washin on the left side, along with tilt, to bring the model around in its turn under full power.

Thus, after the 20-30 foot test flights, in which cruise trim is set, turns can be increased by steps of 200 while power trim is corrected. Finally, the correct power is found, so that the model lands with just a very few turns left, yet cruises near the ceiling. Too much power shows itself quickly by taking the model high on low turns, and then deadsticking it, while too little power often plays inconsistent tricks, sometimes appearing fine, but later giving no performance whatsoever."

HINTS AND KINKS

Helium Source

Balloons have long been a necessary part of equipment needed to safely fly indoor models, and sometimes it is quite a bit of bother locating a source of helium or hydrogen to fill the balloons ahead of time. A portable source of helium would be the ideal solution, and would make "instant balloons" possible. You just inflate them as the need arises, in about three minutes per balloon.

Many chemical and laboratory supply houses stock small "lecture bottles" which can be purchased for about \$10, \$6 of which is a deposit on the steel bottle. These containers are about 12" long and 1 3/4" in diameter, and will fill about five average balloons to about 12" diameter. Since this is pretty expensive per balloon, these bottles can be used to supplement ordinary hydrogen generators and other balloon sources in cases of emergency.

Protection from Rubber Lube

Dave Call, one of the "old pro types" from the East Coast, makes the following suggestion to prevent indoor sticks from becoming lube-soaked:

"Firelli rubber requires a great amount of lubrication. The motor must be quite wet. This will frequently get excessive lube on the underportion of the motor stick. To avoid any weakening of this portion of the stick, I've used zinc stearate (available at any drug store) carefully but thoroughly rubbed into the pores of the balsal for at least half its diameter. This is a bit of extra work, but well worth avoiding a collapsed tube. After a day's flying is over, wipe this area dry with kleenex or cotton. Viola! Dry stick, ready for the next session. The weight increase is negligible."

RECORDS? MAYBE!

We presume that the top flight time for each team at the World Championships will be accepted as a new record for that country, and that Karl-Heinz Reike's 45:40 will be confirmed as a new world record. A summary of those flights follow:

Germany - 45:40, Karl-Heinz Reike (World Record)
United States - 45:17, Carl Redlin (Cat. III Class
D Stick, Open)

Great Britain - 40:46, Ron Draper
Finland - 34:05, Esko Hamalainen
Hungary - 34:01, Antal Egri
New Zealand - 28:03, John Malkin

From Dave Copple comes confirmation of two new records by Larry Reneger, flown at Wilmington in August:
CATEGORY I, Wilmington Rec. Hall, Los Angeles, 29'11"
Senior A ROG - 8:16.9
Senior B Stick - 10:38.6

NEWS FROM AROUND THE WORLD

CALIFORNIA

The Sky Hoppers of Orange County, spearheaded by Bruce Paton, have made a real breakthrough. For years indoor flyers have been seeking to use the blimp hangars at Santa Ana. A three-hour conference and demonstration resulted in monthly sessions for the Sky Hoppers with permission to have open AMA contests four times each year.

Although the quarterly contests are open to all AMA members, the monthly flying sessions are restricted to flyers who are both AMA members and members of the Sky Hoppers. However, the Sky Hoppers are opening club membership to interested indoor flyers outside the normal reach of the club.

COLORADO

George Batuik reports that indoor sessions held by the Martin Model Masters will begin in November, and will continue for five months. George can be contacted at 3066 South Osceola, Denver 19, Colorado.

HOLLAND

An inquiry after indoor information came from C. Wolthoorn of Rotterdam, after he read of NIMAS in AERO MODELLER. He related that the Dutch indoor record is 3:23.7, established in 1946. We sincerely hope that Mr. Wolthoorn will succeed in solving the many problems he will face in getting indoor started again in Holland. Anyone wishing to send words of encouragement can contact him at: Binnenrotte 110, Rotterdam-1, Holland.

MASSACHUSETTS

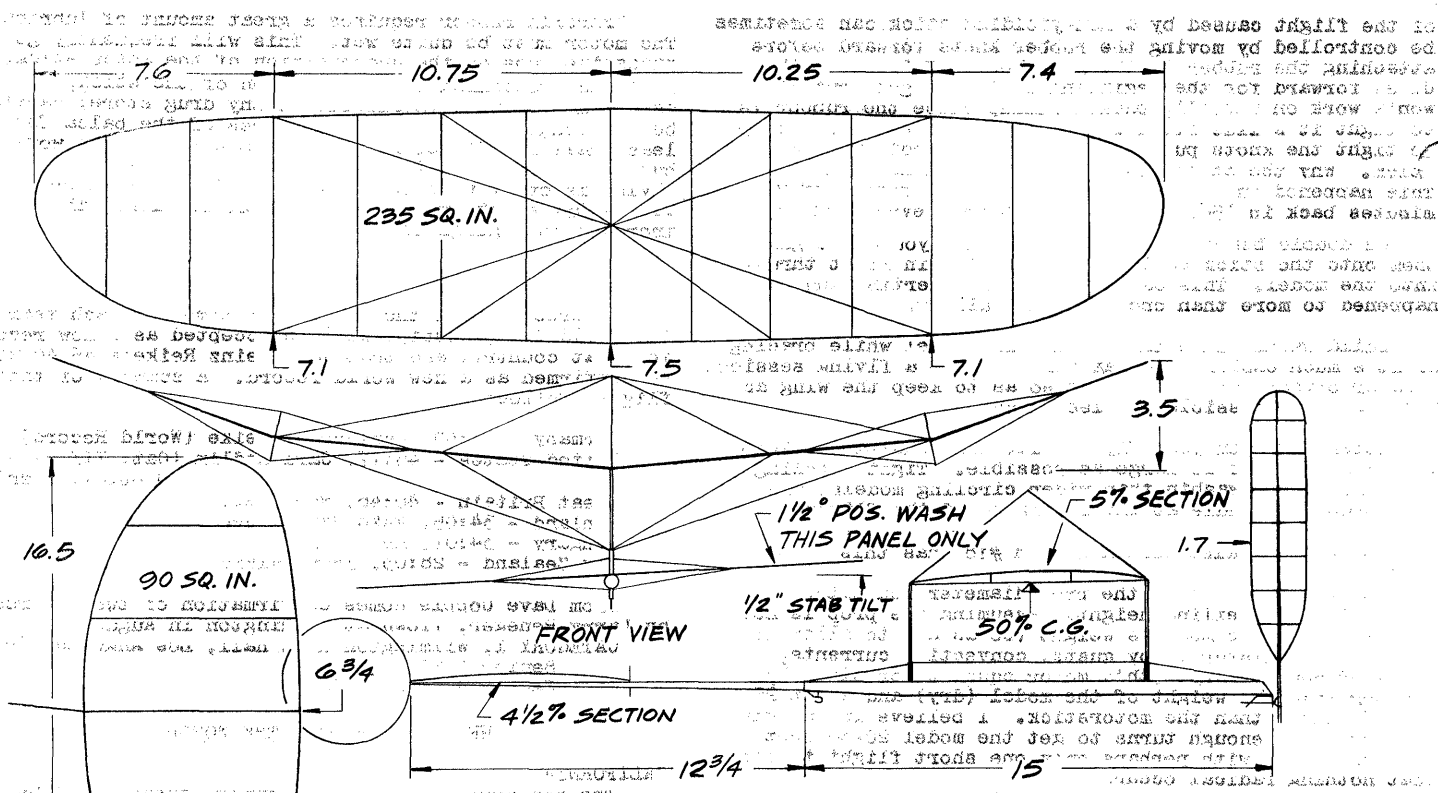
Ray Harlan reports that indoor activity is picking up in Boston, and that they will have monthly flying sessions in their 42' armory. Now that Larry Reneger has enrolled at MIT and joined the group, Ray sez that club members hold 7 records. For more info, contact Ray at:
71 Brighton Avenue
Allston 34, Mass.

DALLAS

The September 21 Walnut Hill session was scheduled to be the last until next spring, but the new winter schedule issued in September listed weekly sessions all through the winter - a real bonanza!

With a real nice trophy as an award for high time in the summer season, the September 21 session produced some startling times. In an exiting photo-finish for the trophy, the last two flights were 10:21.6 by Jody Brock, and 10:34.2 by Don Chancey. Both models were brand new class B sticks, and Jody's model was her first mike job.

The first weekly session, September 29, was plagued by drift that still didn't prevent Don Chancey from upping two site records: E-Z-Bee - 7:10, indoor stick - 11:30. Bud Tenny's "El Cubo" B paper showed good potential every flight and hung every time. Best flight - hung at 2:25, relaunched for a total flight time of 10:39.4.



WEIGHTS

WING	.0150 OZ.
MOTOR STICK	.0120 "
BOOM	.0025 "
STAB & RUDDER	.0040 "
PROP	.0085 "
TOTAL	.0420 OZ.

PROP SELECTIONS
 20" DIA. 40" PITCH
 20" 39
 20" 38

FAI CONTENDER
 DESIGNED BY
CARL M. REDLIN, JR.
 DETROIT Balsa BUGS

STATE OF THE ART

Due to prompt action by Carl Redlin in furnishing the plans and to Chuck Borneman in making the tracing, we have the first model to break the 45 minute mark. Carl's comments were made before the World Championships, and were suitably prophetic, or so it seems!

Last year Carl's models had underslung rudders, and we asked for comments on the subject. Carl replied, "As for underslung vs. aft rudders, I can't see any appreciable difference in high ceiling performance. However, I can build an underslung tail combination lighter than the aft rudder combination plus the desirable feature of having the C. G. shifted forward slightly with the rudder on bottom. The only reason I went to the aft rudder is because they take up less space in the indoor box, simple isn't it."

My props this year are lighter by .0015 with more flexibility (increasing pitch under high torque). Although the best time I've been able to reach this year has been just around 37 minutes, I feel the ships are capable of more when fully wound."

THE HAND LAUNCH GLIDER

PART TEN By RICHARD MILLER

DESIGN (cont.)

The Rudder

With the stabilizer designed and in place we can move on, once again in the order of importance, to the rudder, or vertical fin. Actually the rudder is a much better candidate for the analogous role of jockey (mentioned in Part 8) than the stabilizer is, for while the stab aids the wing in determining that the glider flies, it is the vertical fin, or rudder, which chiefly determines where it goes and how it gets there. Yet despite this versatility, rudder design, for the majority of modelers, consists of nothing more than trying to adorn the tail end of the fuselage with the pleasantest shape possible.

Of the numerous considerations in regard to rudder design - and there are many of them - that of size is unquestionably the most important. As is the case with the stabilizer absolute rudder size as such is of little importance; a big rudder is no more a big-enough rudder than a big-enough rudder is a big rudder! It is the effectiveness of the rudder as a steering and stabilizing mechanism which concerns us and this is a product of its moment arm as well as its size.

Up to this point we have pretty well followed in the tracks of the stabilizer; but now we part company. For when it comes to the determination of how much rudder effect (which we'll simply call "rudder" for convenience) is desirable there is only one serious School of Thought: The Least Possible School of Thought. To all intents and purposes the rudder should be as small as possible commensurate with the demands of stability. The only real problem which confronts us is determining how much that little bit is.

In light of the number of complicated factors which bear on the problem it would be fairly easy to make a reasonably difficult process out of determining the correct rudder size. We could take the burden of calculations on ourselves, grinding polyhedral, aspect ratio, wing planform, rudder placement, fuselage characteristics, blanketing, etc. through a Rudder Volume Coefficient as our full-scale brethren do and come out - hopefully - with something close to The Truth.

And if modifying rudder size were anywhere near the problem for us that it is for them we might be justified in this approach; but fortunately variations in the size of a HLG rudder can be made in seconds - and the results of the modifications can be observed almost as quickly. Consequently the best formula for rudder size reads something like: sheet balsa + razor blade + an hour test flying in the park = the proper area. Begin your experiment by gluing a small temporary rudder (5% of wing area is a good point of departure) to the fuselage. Now grab a knife or razor blade and go out to test fly. Keep cutting away at the rudder between test glides until the slight wing rocking and tail swinging known as Dutch Roll sets in. When it does, go back one step, just enough to firm up the glide, and you probably have

a rudder as close to the ideal size as you can get (although as you become increasingly familiar with the design the need for some slight additional change may become apparent).

By this process you have solved the complicated Rudder Volume Coefficient problem far better than you could have with the most up-to-date data processing equipment - even if you knew what to feed into the monstrous mathematical machine. In this instance the glider itself becomes the data processing machine, one in which all the flight factors, down to the last shimmering nuance, are present in precisely the correct amounts. But even more important than this is the fact that you can watch the clickity-clickity-clack of this machine with understanding and profit. If you are observant you will quickly see how the addition and subtraction of very small amounts of rudder (particularly around the critical area) have far-reaching effects on the flight of the glider. And if you are the least bit methodical you will soon absorb a sort of Rudder effect philosophy which will come in handy on many occasions.

Rudder Twist-Ratio

Close on the heels of size comes the next consideration in the design of the rudder: to put it above the fuselage, below, or to combine the two. And here we run smack dab into another of those characteristics which make the rudder the versatile - and frequently perplexing - surface it is. This is its ability, if so placed, to induce a pivoting movement around the vertical axis (the basis of any turn) and at the same time to cause a rolling movement about the longitudinal axis.

I doubt whether many model builders have a very good idea of how versatile a thing the rudder is and the variety of ways in which it can be used. I imagine that they put a rudder on top or on bottom simply because it suits their fancy, or because it makes assembly easier. Yet few surfaces can work better for the model builder than the rudder in achieving the sort of launch trajectory and characteristics he wants. By positioning the rudder in just the right place we can build certain adjustments into the design, thus doing away later with some of the problems of trimming.

What makes the rudder so helpful is the fact that it is subject to the "aileron effect." Ailerons, of course, are used for rolling and they achieve this because they are placed well away from the longitudinal axis. By the same token the rudder can be used to create a certain amount of aileron effect, provided it is placed in the proper relationship to the longitudinal axis.

So what we must keep in mind when using top or bottom rudder to turn a model is the degree to which the rudder tends to twist or roll the model into or out of the turn, to combine yaw and roll or to oppose them. Top rudder opposes these two effects, tending to roll the model out of its turn, whereas bottom rudder combines the two and tends to roll the model into its turn.

Now each rudder position, from the highest to the lowest, has its own particular characteristics and uses. To get an idea of the possibilities, let's take a look at what happens with a top, a bottom, and a centered rudder. The top rudder, because it opposes yaw and roll, gives the least "twist" of any of the possibilities. Most of us are familiar with the so-called "grass cutter." When launched side arm it usually does most of a half circle quite near the ground - cutting grass - before zooming up into the climb. This is shamefully wasteful, horribly inept, frightfully dangerous and simply not worth while. But it is not quite the whole story either, as we shall shortly see.

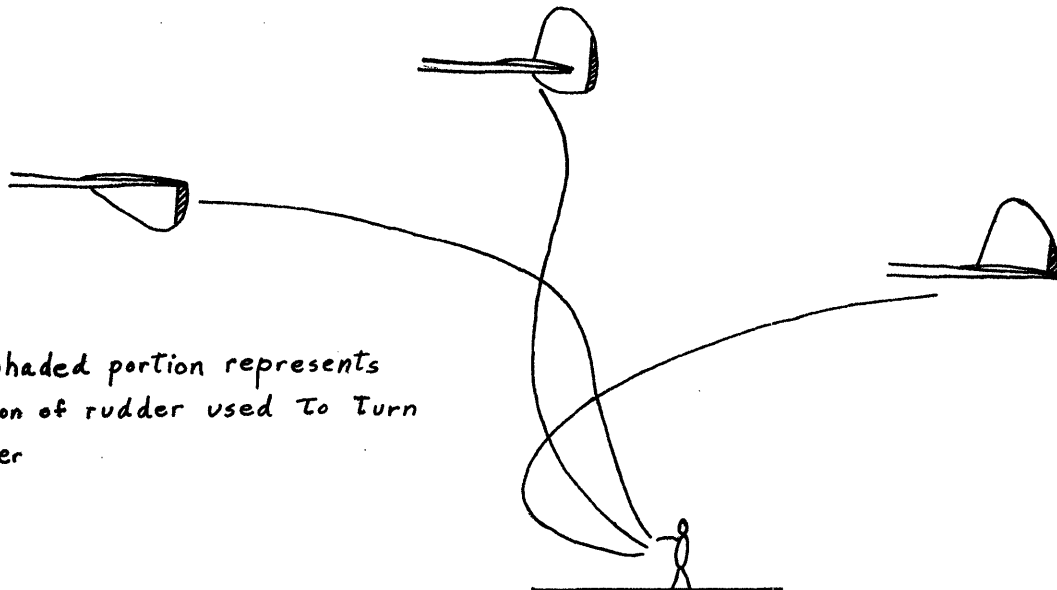
The other extreme is the sub-rudder in which case, with yaw and roll combined, we have the highest twist-ratio. With the usual launch this combination will result in the glider twisting right up off the deck - to the vertical - and probably rolling again in such a manner as to come out ahead of the launcher. Thus the sub-rudder is a sure cure for an intractably low angle of launch. It can also be used to advantage on practice gliders destined for use in a slight breeze due to the fact that it tends to get the glider somewhat upwind during the launch, thus saving downwind steps. But as far as efficiency goes it is not the thing. Just as a glider should not turn any more during its launch, neither should it twist. Each one is potentially wasteful and should be avoided whenever possible.

This would seem to leave the middle ground - once again - as the most fruitful. A centered, or Curly type rudder (with perhaps $3/5$ above and $2/5$ below the longitudinal axis) and with the overhang used for adjustment purposes, seems to be the most desirable compromise. This set-up tends to roll the glider in such a manner that the majority of its powered flight is as near vertical as possible - which is, of course, the object.

This aspect of rudder design then finally comes down to fitting whatever degree of twist-ratio that your particular launch demands. A very simple guide here is: the lower the angle of launch the lower the rudder position. If you launch at a low angle and are stuck with it then a sub-rudder may be the thing. If your launch is in the middle range then the centered rudder is probably the best. If you are one of the lucky ones who is already a step ahead of the game by having a high angle of launch, you can add to this the economy of a top rudder because of the small amount of roll needed when a glider is launched near the vertical.

And finally it might be added that the first place to begin tailoring someone else's design to your needs is by modifying the rudder. The other fellow's hot design may be hot for him with his launch and disaster for you with yours. Once you've determined what rudder placement best suits you - and experimentation here is easy - then you can put your rudder on the other fellow's design, and usually with some profit.

▨ Shaded portion represents portion of rudder used to Turn glider



INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

NOVEMBER 1962

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

The month of October brought three new members for NIMAS:

ERIC GREENWELL, 420 Memorial Drive, Cambridge 39, Mass.
LARRY RENGER, 420 Memorial Drive, Cambridge 39, Mass.
TERRY THORKILDSEN, 4082 South 5th St., Murray 7, Utah

Eric and Larry are students at M.I.T.; Larry is a senior and Eric is a junior (academically); both are members of the Tech Model Aircrafters, the model club at the school. Terry is our first member from Utah and flies with a pretty active group of indoor flyers.

Rudy Kluiber

In the past we had benefitted from the very helpful and thoughtful attitude of Rudy Kluiber, and it was a real pleasure to meet him in person at the Nationals this year.

Therefore it was quite disturbing to hear of Rudy's recent death. In spite of our brief acquaintance, we feel a deep loss at his passing. It is notable that two different persons are assuming his AMA duties for the remainder of this year - for Rudy was one of the few in the country to hold two AMA elective offices at one time.

All of us - Rudy's family, AMA, NIMAS, and modelers everywhere have suffered a great loss. Those who knew Rudy will agree that this is the greatest possible understatement that could be made.

AMA ELECTIONS!

Action taken at the 1962 Executive Council meeting brought forth a reform in the voting schedule which will permit the newly-elected officers to make appointments for 1963 before the start of the year.

While this change should permit AMA business to get under way more smoothly, it places a hardship on voting members who will have 15 days at the most to get their votes returned by the deadline.

Our reference for this statement is found on page 6 of the October 1962 Model Aviation which reads (in part):

"Ballots shall be published and distributed as soon after September 1 as printing and mailing time will permit. (About November 1 is the objective, depending upon printing schedules.)"

The other end of the schedule is set forth thus:

"The cut-off time for accepting votes shall be set and printed on the ballots as of November 15 (postmark)."

It is unfortunate that the deadline is so close, for normal mail deliveries from AMA vary widely in arrival time. From personal experience we can state that our copy of Model Aviation (presumably the ballot will be mailed with MA to save postage) has been as late as 10 days behind delivery to other members of AMA in the area.

Such late delivery certainly is unfortunate, and not usual, but it happens. And anyone who has recently moved stands the chance of being disenfranchised by this short deadline. The main point is that you should have already read that section mentioned above, and have made your choices. Now, get that ballot in!

****FINANCIAL REPORT****

This issue of INDOOR NEWS AND VIEWS is the twelfth regular issue under the subscription system. Income from subscriptions and memberships amounts to just over \$347, and expenses for eleven issues break down thus:

Printing costs	\$276.77
Postage (newsletter only)	70.05
	<u>\$346.82</u>

An additional expense which was greatly lessened by personal time donated by Hardy Brodersen was the \$50 for the decals.

During the past year, incoming mail has totalled over 500 letters, and your editor has originated over 600 letters in answer to incoming mail and in quest of information for the newsletter. By the time you receive this issue, his total expenses excluding office supplies and postage for letters will have climbed to about \$430, or about \$90 over income. This is a very favorable indication of the progress of the newsletter, which was priced on the basis of about 150 members and subscribers.

Of course, the object never has been to make money, but as soon as membership reaches a high enough figure, the added money can be used to expand the technical coverage. The expansion will depend upon something else, also. The material must be made available by those who have it. At the present time, about 80% of the paper depends almost entirely upon those readers and flyers who are willing to share their ideas, plans and comments.

The outstanding part of the story has been the help given gratis by many people. They have reported the news, written articles and comments, drawn plans, rounded up more subscribers and offered suggestions and criticism. Without this help (a list of names would just about cover the NIMAS membership list and a few besides) the paper has no life. Out here in the sticks (indoor is rather new in Texas except before WWII) we don't get news except by mail. It's just too far to cover much of the activity in person! Thanks to all, and keep up the good work!

****FAI INDOOR REPORT****

Some time ago we pointed out that, in terms of plans and preparation, the 1964 World Indoor Championships are not very far off. Total planning needs to include sites, team selection details, and model design. Right now some groups are beginning to hash over model design, and each flyer will undoubtedly contribute his own experience and ideas to the total technological effort. Site planning for each area will consist of finding and securing the best possible site and using it to the utmost.

Quite a bit of criticism is always levelled at team selection methods each year in all phases of our FAI program - some of it well-deserved and some not. Perhaps our team set-back this year will foster even more such comments, but we hope that more than just criticism will come out of any dissatisfaction that anyone feels.

It is doubtful that any selection method will find acceptance by everyone, and most methods will have some disadvantages for one group or another. In the form it is offered, the following suggestion would practically eliminate qualification for the team in an area where there were no blimp hangars, but this is easily overcome. The important thing is that it is a suggestion that has good features, and can serve as a starting point for more discussion and planning.

The suggestion is as follows: set up a period of time during which each contender files for an official time as often as he can, with a record kept of all his official times. After the cut-off date the team would be selected by choosing the flyers with the highest total of three attempts. The following advantages are offered for this system:

1. It makes for unlimited and boundless interest because a man doesn't meet sudden death. (Bad luck at one meet)
2. A hard luck first-or-second-trial flyer could come through with flying colors at a third or fourth trial.
3. It would not eliminate any flier because of conflict of interest or sudden trouble by missing an elim date.
4. It would enable more flyers to compete due to reasons mentioned above.

Also mentioned was an effect of this method - that choosing the team this way could result in more than one team member from the same geographical district - perhaps an all-western team. It is argued that this would give a stronger team - but we wonder. The final argument is that three top times is a better system than a single lucky flight, which is probably true - as long as the proper use is made of the top three times.

The major disadvantages of the above suggestion can be overcome by one modification. Change the scoring to award points to the flyers for each called official attempt in proportion to the top time for that site, then average the scores. This produces the most consistent fliers as team candidates, and the resulting competition will improve the state of the art to a high level.

It is hoped that everyone will consider this issue and the merits of the suggestions so far. Make your feelings known, along with suggestions on what to do to correct any shortcomings you may see. In this way we can arrive at the best plan - and let's do it soon!

RECORDS? MAYBE!

Last month's comment about all the top flights at the World Championships drew fire. Two different readers wrote to point out that: 1. Conditions for a U.S. record were not met, and 2. A precedent was set some time ago over a Wakefield flight by Hatschek. That's what we get for making uninformed assumptions!

John Malkin feels that his flight also will not be considered a N. Z. record, since stay-at-home flyers have no site that would permit a crack at that time.

QUESTIONS AND ANSWERS

One new question to add to the list appears below, but space does not permit a discussion of answers this month.

21. What is the normal range of thickness of microfilm, color by color, and what phenomenon causes the films thinner than purple (the end of the visible spectrum) to show gold and brown colors?

HINTS AND KINKS

All-Balsa Props

With the current boom in Easy B model flying, it is of interest to relate a discussion between Bill Bigge and your editor after the Parlor Mite article appeared (M.A.N. Feb. '62). At first reading, the prop construction method discussed in the article seemed to be merely forming a wet blade and air drying it. Bill commented thus: "Whenever balsa is wetted to make a bend, it should preferably be baked. For a prop blade, cut .020 soft aluminum sheet to the blade outline or a bit larger. Form in the camber and twist with the fingers. This results in a form that sheet balsa will readily conform to. Bind the wet blade blank on the form with thread, paper, or cloth. Bake it, trim to final size and assemble on the hub."

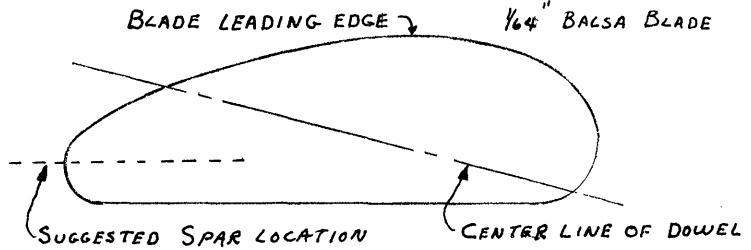
After some discussion between us, we decided that the repeated bending of a damp blade as discussed in the Parlor Mite article resulted in permanent pitch and camber by a slightly different mechanism - the wood is deformed (stretched on top and compressed on the bottom) until the relaxed state of the wood is the desired camber. That this results in a permanent shape seems to have been proven by a couple of experiments. Although high humidity will sometimes cause a baked prop to lose camber, this has not been observed with the formed (or deformed) props.

The second evidence to support this theory comes as the formed blade is sanded to reduce weight or increase flare, the blade relaxes and can be reformed again. We have on hand props that are nearly two years old that have shown no sign of losing their camber.

A handy way to add helix or twist and camber simultaneously to all-balsa prop blades and still produce a true-pitch prop is as follows: Make the hub assembly as usual, and cut out the blades and sand them to the proper thickness. Moisten the blades one at a time and wrap them around a 1/2" or 3/4" dowel with the axis of the blade inclined to the axis of the dowel as shown below.

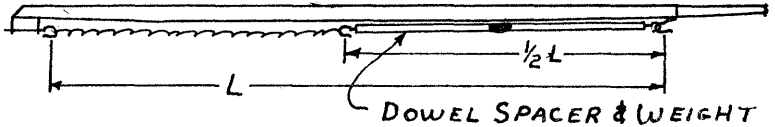
Rather than wrap the blades and holding until dry, wrap the blade around the dowel until the camber is much greater than desired, then release the tension. Several

such stresses as the blades dry out will produce the permanent camber mentioned above. Check the blades periodically against a Bilgri-type prop block to see that true pitch is being formed in, and finally, assemble the finished blades to the hub on the block.



More-For-Your-Money Test Flying

From Carl Redlin comes this hint for test flying new models or refining the performance of older ones: "To test my FAI models and props the past two years, I have been using a spacer (see sketch below) in combination with half-length motors to reduce flight turns and flight time by roughly one-half (more test flights per day's flying). With the spacer I'm able to see the models perform under full torque without the danger of landing in beams and without long waits between test flights. Works nicely, although the spacer and motor combination must be balanced very carefully. In testing with this system I have found that average prop RPM's for all practical purposes are the same as with full length motors. It's especially good for testing high ceiling props under low ceiling flying conditions."



NEWS FROM AROUND THE WORLD

CALIFORNIA - Santa Ana
Twenty-six flyers attended the first session at the Santa Ana hangar, with conventional models sharing air space with the flying scale enthusiasts.

Top times ranged up to around 30 minutes, with all-out efforts discouraged by heavy drafts near the top. When the installation of new ventilators is completed, the drift problem should be somewhat abated.

The first contest scheduled by the Sky Hoppers will be on December 2. Contact Bruce Paton for details of the contest at: 1010 N. Mirasol St., Santa Ana, California.

CALIFORNIA - Visalia
The Visalia Sky Kings have a very active indoor group that flies indoor scale, paper stick, and mike stick at their contests. The contact man for this group, Don C. Farnsworth, can be reached at 1607 W. Houston, Visalia.

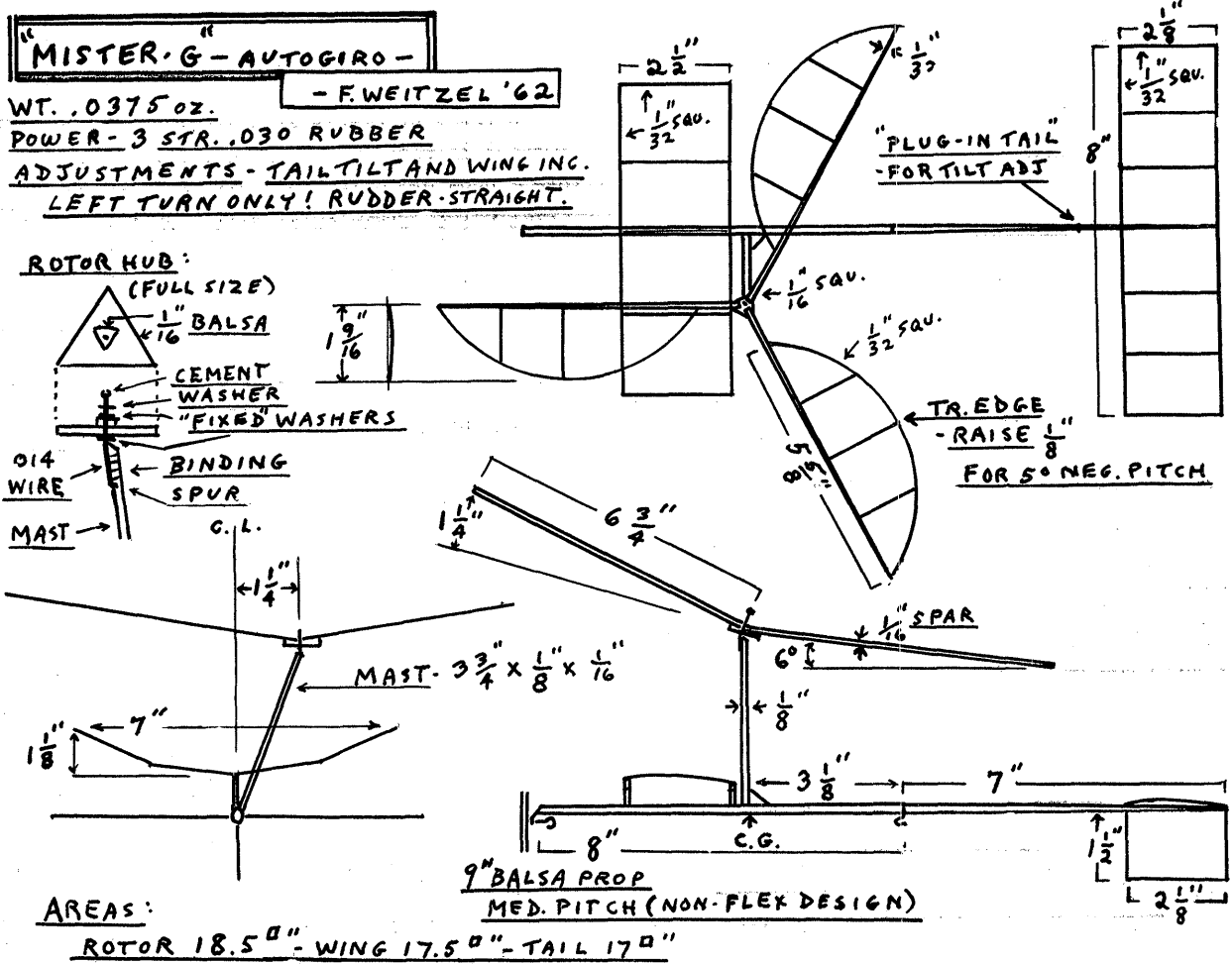
INDIANA
Chuck Borneman reports that the Knights of The Round Circle will hold their first indoor contest this season on November 18. The site is on Bunker Hill AFB; events are HLG and Easy B.

MASSACHUSETTS
The Tech Model Aircrafters have scheduled a series of indoor sessions at the M. I. T. Armory, located at the corner of Massachusetts Ave. and Vassar St. in Cambridge.

The next session is Nov. 17, 4:30 PM to 8:30 PM, and probably will be sanctioned as record trials. At present the sessions are open to the public. The Armory is 42', low Cat. II, but a good site.

NEW ZEALAND
The new site at Palmerston North turned out to be a top-notch site, 40' high and floor 80' x 150'. The Palmerston group started with Easy B types, and were awestruck by John Malkin's new FAI as it did 12:30. The club there is so enthusiastic that John feels that New Zealand records will soon be broken right and left.

UTAH
Terry Thorkildsen reports the availability of a 32' school gym and a 30' church gym. The group is active and their paper stick times are up in the 8 min.+ range. On December 28 they plan a contest, but hope to have a record trials a bit sooner. Contact Terry for more info, his address is 4082 South 5th St., Murray 7, Utah.



AREAS:
 ROTOR 18.5" - WING 17.5" - TAIL 17"

STATE OF THE ART

When any Category III indoor stick record reaches the 30 minute plus region, any new record set in that class usually represents only a minor increase in the time. The model for this month, however, went whole hog and upped the "B" Stick record by over 10%. Designed and flown by Tom Finch and drawn for INDOOR NEWS by Bill Tyler, the model follows current design trends. Of the model Tom says: "As for the ship, it is strictly conventional. Weight is .0225 oz., 35% stab with C.G. at 50%; 12" stick, 9" boom and a 15/27 monospar prop with a 1.5" blade width (constant chord ala Bilgri). Motor used was a 16" loop of .042 weighing .0305 oz.; the motor could probably have taken 2450 turns. I used single bracing on the stick to the wing sockets. This permitted the stick to bow a lot more than I am used to and caused the tail chasing. The prop was quite stiff with the spar right on center and, except for the bowed stick, would have reached peak altitude in about 6 minutes".

****CHANGE OF PACE****

Somehow, in the quest ever-increasing efficiency for our conventional models, only a few fliers accept the challenge of the less conventional classes such as autogyro, helicopter, and ornithopter.

To provide a change of pace, then, we present this autogyro by Fred Weitzel. Fred has been quite thorough in his development of this model, and we have sometimes been hard put to keep up with design changes. Anyhow, the design has jelled to a very interesting machine.

"Mister G" by Fred Weitzel

"Mister G" has turned out to be not only a good autogyro, but one that is especially suitable for small area flying. This is because of its naturally small flight circle, and the ability to bounce off walls and ride the ceiling like a small paper stick model.

The entertainment value of the model is increased by lively rotor action, which gives the flight good "eye appeal"; and the duration is aided by the prolonged climb.

The prospects for Cat. I look good, as an average of 1:30 has been made several times under only a 12' ceiling.

The following comments may be helpful:

Left turn only is used, with the rudder straight. The turn is adjusted by tail tilt.

The correct size circle must be used - too wide a circle will give a stall; too small a circle will kill the climb.

It is better to keep it light. A heavier model will need more power, and therefore more torque control to prevent a spiral dive under full power. Add some rotor tilt (left side high) and increase the rudder size. An extreme case may require more rotor off-set. A lighter model with less power may be directionally erratic after the climb. If so, raise the prop pitch. Note: In building light, do not reduce wood sizes for rotor spars and mast. If these are flexible, adjustment becomes difficult. Try to hit .040 oz. or less.

Construction techniques follow the usual indoor methods - the motor stick is 1/64" sheet, covering is microfilm, etc. The wing should be fairly strong - especially the front spar.

Rotor incidence - low incidence gives slow rotation, high incidence gives fast rotation. "In between" is good for slow climb and fast cruise. On this model, +16° seems necessary - it looks high, but works well.

Rotor position - locate the rotor mast at that spot which gives level posture towards the end of the flight.

The plans specify a non flexing prop, but since the plan and article were finished, Fred made more tests and relayed the following comments on flexible props:

"Trying a flex-prop gave some quite different results! The duration was much better, but bounce and recovery very poor! It seem the model was stalling out on the ceiling due to getting into a too nose-high attitude.

This was corrected by moving the rotor back 1/2" behind the C.G. This way, the model flies well with a "flexer" but only in a small circle (6') and doesn't climb much. Opening up the circle a little (with tail tilt) gave a better climb, but lots of incomplete flights (drift, poor recovery from upset, etc.)".

THE HAND LAUNCH GLIDER

PART ELEVEN

By RICHARD MILLER

DESIGN (cont.)

The Fuselage

Certain glider builders are surprised to learn that the HLG fuselage is anything more than a stick of slightly rounded wood which holds the wing and tail surfaces in some sort of alignment and handily protrudes beyond the l. e. of the wing in such a fashion that clay may be added to or subtracted from it, depending as we wish to cure a stall or a dive.

This limited view of the fuselage and its functions has no doubt come about in part due to the low position it is given on any list where the major glider components are graded aerodynamically. Practical matters, however, cannot be overlooked. In this respect Frank Lloyd Wright once remarked that anyone who purchased a house, no matter how daring the dwelling, had a right to expect that the roof be tight against rain. By the same token we should expect the glider fuselage - which takes a back seat to none when components are listed structurally - to stay together during the rough and tumble of flying no matter how exceptional the rest of the machine.

Actually then the HLG fuselage, far from being a stick, is a highly variable item. Each part of it has a specific function to which definite design considerations, some structural, some aerodynamic and some purely practical, apply. Consequently it should be designed and built to best fulfill these combined functions. To do this let's divide the fuselage into five arbitrary parts and examine each in turn.

The Boom

The boom, because it is the part of the fuselage most liable to break, deserves the most careful attention. In the early days of short tail gaps (and limited altitude) the broken fuselage was one thing. But with the movement to long moment arms - mentioned in Part 8 of this series - it became another. The incidence of breakage telescoped right along with the tail gap.

But if human affairs, as the historian Toynbee has forewarned us, is Challenge and Response, and if the Response is in proportion to the Challenge, then the stage was set for a new boom in HLG design. Who the pathfinders in this endeavor were I can't say. I picked up the trail amid the Skyscrapers, principally from Hatschek, and worked it out to my own considerable satisfaction. How satisfying this satisfaction has been is attested to by the fact that I have never (What, never? No, never!) broken such a fuselage since mastering the New Technique. This despite untimely plunges (somebody built a girder in the wrong place) into concrete from 100' and more.

The secret of this success, if anything so obvious can be considered a secret, is a lean, resilient fuselage of the hardest balsa (about 20 lb. stock as a rule) that can be found. When such a fuselage is properly constructed - and this is largely a matter of feel - it will have an even flexure between the wing t.e. and the stab l.e. Consequently it will tend to absorb impact loads evenly along its length, leaving no weak point to break. Its flexibility will cause it to give way to shock rather than trying to resist it. And while saving itself in this manner it will also provide a buffer between the hard knocks up front and the brittle q-grain tail surfaces.

The principal alternative to such a fuselage (and its historical antecedent) is one of lighter wood - as light as 7 or 8 lb. balsa - with a proportionately larger cross-section. Such a fuselage tends to be on the stiff side and this quality can be enhanced by several coats of dope which will give a tube-like effect to the boom.

Knowing all you do now about the virtues of the flexible (and twistable) boom of hard wood you may wonder why anybody would want to bother with anything else. This is a good question and all the answers to it are not ill-

tempered and contemptuous. Such fuselages are still widely and successfully used. But when you start comparing....

In terms of simple strength there is no particular argument between the two types. We know that the strength of balsa varies directly with its density; and that therefore a boom of 10 lb. wood having twice the cross-section of a boom of 20 lb. wood will not only be its equal in weight but in strength as well. What this definition of "strength" leaves out is how much further the small, hard boom will bend before it snaps... and all that this ability to yield implies.

Whether this flexibility is an unqualified advantage or not is another question. Wally Simmers, for one, wonders. Although it would probably be going to far too call Wally a wholehearted advocate of the stiff fuselage he is quick to point out some possible liabilities of the flexible boom. In examining photos of gliders being launched Wally (who always has one eye on component drag losses) has noticed a certain amount of blurriness around the tail surfaces, indicating some displacement. This, he feels, might be slowing things down a bit.

And he's right, it might.

And then on the other hand the surfaces might simply be moving into a less drag resistant position - thanks to the more flexible fuselage.

Of course this might not be the case either.

In any event this is not the whole case. Tail surfaces at the end of a flexible boom, if they whip, whip for only a short time (albeit a very critical one). There is the rest of the flight to be considered in terms of drag. If the fuselage spends its minute-plus coming down at around a 7° angle-of-attack, as there is every good reason to assume it does, it is doing a good deal more dragging than we might assume. This would argue for the slimmest possible fuselage.

We will finally have to leave it to the option of the individual as to where on the flexibility/stiffness spectrum he will alight. About most other factors of boom design and construction, however, there is generally less argument. A good boom usually tapers straight and uniformly, that is from the top as well as the side view, and has a cross-section as close to round or oval as possible. The cross-section is habitually deeper than it is wide, usually on about a 2:3 ratio or thereabouts. The reason for this (if you've ever wondered) is that vertically the fuselage must support the relatively large loads of the stabilizer while laterally it has only to support rudder loads.

The only fuselage that I have seen to date that violated this basic structural role was one of Pete Nishanian's which began in the normal fashion at the wing t. e. but flattened and widened at the l.e. of the stabilizer. The consequences of this were an extra-flexible boom which gave way slightly under launch loads, resulting in a little additional positive incidence in the stab. Consequently the glider went straight up when thrown that way. When, in the last few feet of the launch, the boom asserted itself against the airflow forces the glider whipped into a quarter arc.

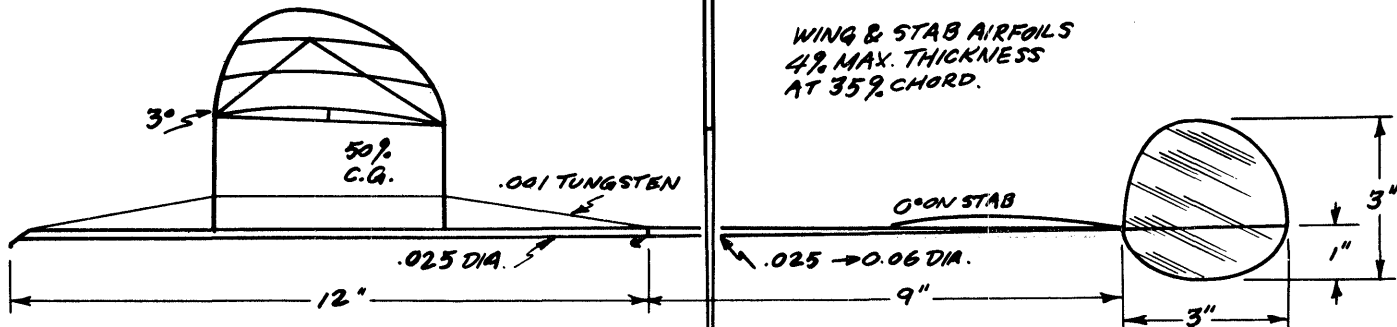
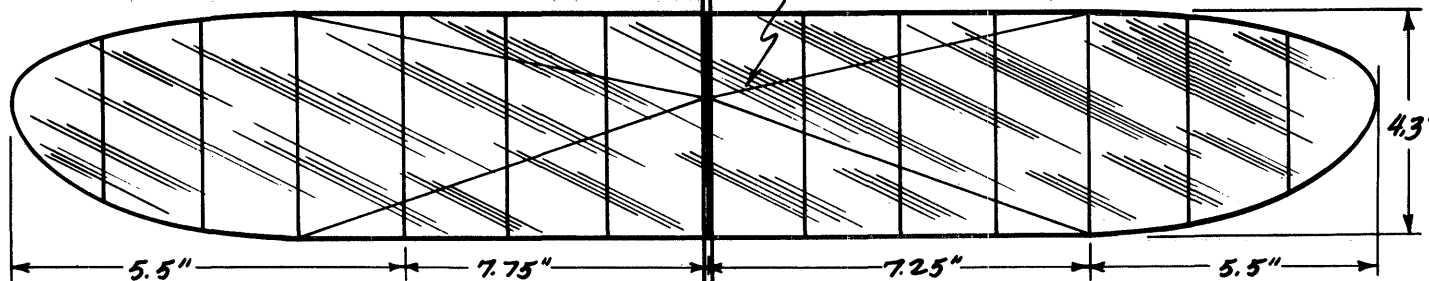
It is not surprising that, with the limited time available to us that day, we didn't get any really satisfactory results. We did, however, come close to some conclusions about what we had observed:

1. The minimum size of hard, well made booms is not so much limited by strength considerations as by flexibility. The boom in question was quite slender (the glider only weighed about .4 oz.) but stood up to unlimited throws.
2. The two-position boom may be just the thing for anyone chasing the bright bird of a straight-up launch. Perhaps the best approach is to begin with a fuselage on the heavy side and sand away between flights till the desired amount of "lay-down" is acquired.
3. The force necessary to depress the stab to its low position has to come from somewhere; and no matter where it comes from the launch altitude will suffer in some degree. Nonetheless the gains of a straight up launch may offset this by a considerable degree.
4. It was fun. Next month: More about the fuselage.

CLASS B STICK RECORD HOLDER 34:15.6
 BY TOM FINCH - HANGAR #1, MOFFET FIELD, CALIF.
 ESTABLISHED 6-3-62

MODEL SET RECORD WHILE NOT
 IN PERFECT ADJUSTMENT. SHIP
 HAS 36 MIN. MAX. DURATION. +

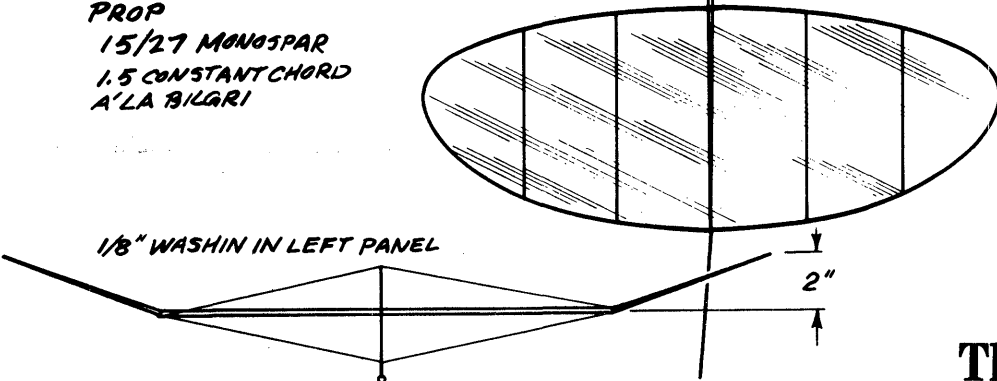
AREA: WING 99.0 (PROJ.)
 STAB 37.2, FIN 7.1
 POWER 16" OF .042 - 2350
 ON RECORD FLIGHT, CAN GET IN
 AT LEAST ANOTHER 100 TURNS.



WING & STAB AIRFOILS
 4% MAX. THICKNESS
 AT 35% CHORD.

PROP
 15/27 MONOSPAR
 1.5 CONSTANT CHORD
 A'LA BILGRI

STAB IS SAME
 AS WING TIP DIMENSIONS



WEIGHTS

WING	.0065
STAB	.0016
FIN	.0004
STICK	.0075
BOOM	.0014
PROP	.0050
TOTAL	.0224 OZ.

The Cleveland Press

2/5cc = 10.3
 15
 25.3

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

DECEMBER 1962

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N.I.M.A.S. Membership (Including INAV) \$3/year



****NEW STAFF MEMBER****

In the September issue we hinted that INDOOR NEWS might soon have a new and permanent member of the staff. Jody Brock and I were married on November 8, 1962.

We are living in Richardson, Texas, and we invite any readers of INDOOR NEWS to contact us if you're in this part of the country. Our phone number is AD 5-4035, and the area code is 214 if you're calling from out of town.

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

Eleven U. S. members and two members from overseas swelled the NIMAS ranks to 117, with every indication of continued growth showing up. Even more heartening is the flood of membership renewals, some of them well ahead of the due date.

SID BERNSTEIN, c/o Research Facility,
Rockland State Hospital, Orangeburg, New York
DICK GANSLER, 1303 N. Oakland, Fayetteville, Arkansas
PAT GREEN, 16880 Woodbine, Detroit 19, Michigan
FRANK KAROL, 6536 Mill Road, Brecksville 41, Ohio
ERNEST KOPECKY, 911 Garden Street, Union, New Jersey
TEDD KUBIT, 3714 Revere Ct., Cleveland 9, Ohio
Ens. A. A. LIDBERG, USS Klondike AR-22
c/o Fleet P. O., San Francisco, California
BILL LINDSAY, 216 Warrior Road, Drexel Hill, Pa.
LAWRENCE F. MZIK, 813 Bayridge Blvd., Willowick, Ohio
WALLY SIMMERS, c/o Midwest Model Aircraft Supply Co.
7541 South Halstead Street, Chicago 20, Illinois

CHARLES J. STILES, 401 N. Broad St., Philadelphia 20, Pa.
IRC Co. 6th Floor XLT

C. S. RUSHBROOKE, Model Aeronautical Press, Ltd.
38 Clarendon Rd., Watford, Herts., England
C. WOLTHOORN, Binnenrotte 110, Rotterdam-1, Holland

BACK ISSUES OF INDOOR NEWS

There are a few back issues available, mostly from recent months. These can be had on a first-come first-served basis for a handling charge of 25%. It would be convenient if the remittance is made in stamps.

Numerous requests have been received for early copies of Richard Miller's HLG article. Since these are out of print, a new run would have to be made. If those who are interested in such back copies would drop a line, we can figure prices and let you know how much they will cost.

****FAI INDOOR REPORT****

Bilgri Resigns

Joe Bilgri recently announced that he is resigning as Chairman of the FAI Indoor Committee. He served in this position for two years, and the committee had the benefit of his years of experience to draw from. Thank you, Joe, for all the time and effort you put into the program - it is appreciated very much!

Kowalski Appointed

Dick Kowalski, who was the Central Zone Chairman for the past two years, has been appointed as Chairman of the FAI Indoor Committee. In addition to his work with the committee, Dick served as Team Manager in 1961 and was a team member in 1962.

New Central Zone Chairman

Paul Crowley, 16835 Lilac, Detroit 21, Michigan, has accepted the post vacated by Dick Kowalski. Paul is the man to contact for information pertaining to FAI Indoor arrangements in the Central Zone.

1963 Team Selection Program

Dick Kowalski has issued the following statement on team selection methods for 1963 which will result in the formation of a U. S. team in 1964. Please send your comments and suggestions to Dick at 20203 Moenart, Detroit 34, Michigan.

"It is quite possible that team selections for the 1964 World Indoor Championships will be made during 1963 in one of the following manners. Since there appears to be some criticism regarding the 1962 team selection method, we would appreciate any comments any interested flyer might like to make about our thoughts.

1. Use the same system as was used last year, in other words, Local Elims, Quarter Finals, and then a Zone Semi-Finals. The three top men would be qualified to fly at a Semi-Flyoff to be held at the Nationals. This system could only be possible if transportation to the Nationals could be arranged, and this is being reviewed right now. This method would obviously give the very best team since only the cream of the crop would be flying. The ultimate team selected would be chosen on a true national basis rather than the less national basis now used.
2. Use the same method as above except that perhaps two Semi-Flyoffs would be held - one on the West Coast and one on the East Coast. One team member from the West and two from the East would tend to satisfy the national aspect, but this would be considered as an alternative in the event that it was not possible to arrange transportation to a centralized Semi-Flyoff.
3. Use the same program as was used in 1962.

These proposals are mentioned only to communicate our thoughts and some possibilities and are not to be considered as multiple choice "pick one only" type of thinking. Every year we hear "Monday morning quarterbacking" but seldom, if ever, does anyone take the time to comment before the program planning is complete. Bear in mind that no program will ever satisfy everyone, but we do our best to field the best team and keep as many as possible happy. When proposals such as these are presented and we hear no comments, we automatically feel that everyone is happy with our plan and continue with no restraint.

The time to firm up our thinking is drawing near and it is hoped that by the January issue of INDOOR NEWS some concrete plan can be announced. If you have criticism or suggestions regarding the program outlined here, act immediately so that you may be heard."

From an editorial point of view, it seems that plan #1 would be the best possible choice, provided that the transportation can be arranged. Without transportation, plan #2 would impose more severe penalties upon fliers in the Central Zone than the 1962 plan did. At the same time, lack of a site even slightly comparable to the Finals site also restricts the Central Zone flyer. It behooves the Central Fliers to somehow activate one of several sites not now in use so that a more realistic approach to trim may be made.

Since the entrants from the Central Zone comprised over half the total entries last year, we deserve some consideration. However, we must help ourselves find a place to fly - it should be centrally located and as high as possible. There are buildings over 100' here but can we get in???

Change FAI Models?

Boyd Felstead, our member from Australia, injects these comments for our consideration:

"What I feel now, as regards FAI specifications, that the wing span should be reduced to 2/3 the present limit. I am suggesting that the 35.4" projected span be reduced to approximately 24" for several reasons:

1. The smaller size ship would circle tighter with less chance of drift or hangups.
2. The smaller ship is easier to transport, which is important when travel to other countries is involved.
3. With 40 to 45 minute flights, it takes a long time to complete a contest - the Class B (approximately) size should reduce duration to about 30 to 35 minutes.
4. The smaller wing area would present a bigger challenge than we now have.

What do the other NIMAS members think?"

FOR SHAME!

Last month I warned of an announced deadline for AMA ballot return, commenting that a late arrival of the ballot could really throw things in a bind.

Almost as if that warning were a prediction, the ballots were late. I was all set to lambast AMA HQ for their usual (I thought) lack of planning, only to find that some of the very people who set up the early ballot procedure were responsible for the failure of HQ to send out the ballots on time.

In complete disregard for the established deadline, about half the area VP's failed to turn in the nominations for 1963 offices until quite late; only extreme effort on the part of HQ got the ballot out as early as it was.

If the following seems to be off the subject, bear with me: Early in November, AMA HQ was faced with the problem of finding out quickly how various Wakefield fliers felt about increasing flight time for Wakefield maxes from 180 seconds to 210 seconds. Knowing full well that many AMA members have to be forced to answer mail, Frank Ehling inserted a clause stating that failure to answer the questionnaire was an automatic vote for 210 seconds.

Democratic? Hardly! However, the answers poured in, along with lots of invective aimed at Frank and his "ballot stuffing" methods. At this point I heartily congratulate Frank for having the guts to do it!

It is enlightening to hear just who answered promptly and screamed the loudest. One incumbent AMA VP who had ignored important AMA mail for some time answered by return mail. Another elected official whose regular AMA business had been neglected for months was loudly vocal, but he also answered promptly.

On the other side of the coin, many officials who take their jobs seriously avoided complaint, however strongly they felt the injustice. You see, they have been answering their mail and know how hard it is to get answers from some other officials.

There is a moral in this story for all AMA members: We have permitted our elections in some areas to become a popularity contest - electing officials who are not willing to assume the duties that go along with the prestige of the office. Make no mistake - some of these "popularity leaders" are highly capable, and would be just the men for the jobs, IF they would only work.

It is no exaggeration to say that the AMA is headed for trouble if all the elected officials do not perform the jobs that go along with their elective posts. And it is a sad commentary on those officials that their past performance made such drastic steps necessary.

We have two alternatives that will allow us to avoid the difficulties of non-working elective officials. We can, as a group, institute a performance review that would prevent such an official from being eligible for any office again, and indeed prevent him from holding office for a whole term if he had been elected for a term longer than one year. Or, we can all start paying around \$100 apiece for our sporting licenses so there is enough money to hire the work done. Either way, we can "fire" those who won't work!

Supplies, Anyone?

As our hobby has grown, the little specialties that we need increase in number - and special wood is hard to find. The following addresses are of indoor suppliers who strive to fill our needs:

MicroDyne Precision Products (Lew Gitlow)
P. O. Box 65774
Los Angeles 65, California

Micro-X (Gerald Skrjanc)
1671 East 34th Street
Lorain, Ohio

Jem Products (Walter Erbach)
2979 Dudley
Lincoln, Nebraska

Great Lakes Indoor Air Meet

Every year people from hundreds of miles around the Cleveland area attend one of the most amazing indoor events ever held. The Great Lakes Indoor Air Meet, with no entry fee, features regular indoor events plus special events for youngsters in four ages groups below age 16.

For more information and for entry blanks, contact Chuck Tracy, CLEVELAND PRESS, Cleveland 14, Ohio. It will be possible to test-fly your models on December 30, 1962 in the Public Hall from Noon to 6 PM. Oh, yes - the contest will be held on January 6, 1963, from 10 AM to 6 PM in the Public Hall in Cleveland. The site has an 80' ceiling and the floor measures 120' x 140'.

RECORDS? MAYBE!

With the resumption of regular contests and record trials in all parts of the country, new records are now being set. The following flights were filed as possible records:

WILMINGTON RECORD TRIALS, November 9, 1962
CATEGORY I, Wilmington Rec. Hall, Los Angeles, 30'
(30' ceiling)
Open C Cabin - 8:23, Bruce Paton

TECH MODEL AIRCRAFTERS RECORD TRIALS, November 17, 1962
CATEGORY II, M. I. T. Armory, Cambridge, Mass.
(42' ceiling)
Senior A ROG - 8:46.8, Larry Renger
Senior C Stick - 16:40.1, Eric Greenwell

Late word from Ray Harlan, CD for the Tech Model Aircrafters, is that those two records have been homologated.

CATEGORY I RECORD TRIALS, Murray, Utah (32' ceiling)
Senior B Paper - 8:39.5, Terry Thorkildsen

NEWS FROM AROUND THE WORLD

CALIFORNIA - SANTA ANA

The first contest held in the Santa Ana hangar by the Sky Hoppers of Orange County was a huge success - they gave out \$90 worth of trophies and still made a little! The air was cold enough to kill any hopes of records, but the events were hard-fought - an average of 12 entries per event. Partial results: Open Stick - 34:16, Tom Finch; Open Cabin - 20:44, Bill Atwood; Easy B - 15:57, Bill Atwood; Paper Stick - 15:01, Hal Cover; HL Glider - 1:18, Lee Hines

Trophies were awarded through third place, and third place in Paper Stick was picked up by Anne Gitlow, the wife of Lew Gitlow.

Bruce Paton has announced (for the record) that the Sky Hoppers don't have exclusive use of the hangar. Any group that purchases third party insurance (about \$21) and obtains a license to use government property can get permission to use it. The Marine Commandant requested the Sky Hoppers to handle individual requests, so a \$6 membership fee to the Sky Hoppers plus AMA license will cover all requirements.

ENGLAND

There was one more session in Cardington in October, but conditions were again fairly poor, and only Ray Monks topped 30 minutes.

Some headway has been made toward forming an Indoor Group in England, with a committee of four working on policy and sorting out rules and classes. The group will have representation on the S.M.A.E. Council, also.

HOLLAND

Our new NIMAS member in Holland, Mr. Wolthoorn, has been flying in a gymnasium with a friend every two weeks. He states that they are looking for a site with a higher ceiling, since they are beginning to outgrow the gym.

INDIANA - KOKOMO

Chuck Borneman reports that 21 contestants turned out for the first indoor contest at Bunker Hill AFB, and that Open Easy B had 11 entrants. These were most heartening results, and a big increase over last year. Top Easy B time by Chuck Meyers was 5:58.2, top HLG time by Bob Larsh was 38.6 for a new site record. Their next contest tentatively set for Dec. 16, contact Chuck at 1401 West Taylor, Kokomo, Indiana

ILLINOIS - CHICAGO

The winter indoor season has opened in Chicago, with the opening of Madison Street Armory, 2635 West Madison Street on every Saturday for one year. The flying will be scheduled as follows:

1st, 3rd, & 5th Saturday of month - 9 AM to Noon - HLG
Noon to 4 PM - Rubber

2nd & 4th Saturday of month - 9 AM to 1 PM - Rubber
1 PM to 4 PM - HLG

KANSAS - WICHITA

The 27' Wichita University Girl's Gymnasium is the site for three flying sessions this winter. Regular classes are A ROG and HLG. Contact Stan Chilton, 446 Ida, Wichita Kansas for details.

MASSACHUSETTS - CAMBRIDGE

In an attempt to take one more crack at some Cat. II records before the end of the year, The Tech Model Air-Crafters obtained a sanction for their December 1 session. However, conditions were quite bad and few flights were even completed. Their next contest will be February 9. Contact Eric Greenwell, 420 Memorial Dr., Cambridge 39.

TEXAS - DALLAS

A November 17 record trials and contest produced good flights and 15 entries in three events, but good air in the 20' Walnut Hill site lasted only half an hour - not enough to "zero in" on any records.

The indoor flyers are rejoicing over the planned Cat. II record trials and contest in S. M. U. Coliseum on Dec. 22. This proved to be an excellent site the one previous time it was used. Drift was very low and the air was very buoyant, so the 50' ceiling may permit flights near 25 minutes after some practice. Contact Jim Clem (CD) 3505 Rosedale, Dallas, Texas or Bud Tenny, Box 545, Richardson, Texas for more info.

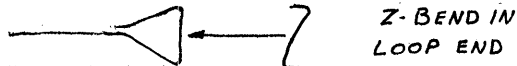
UTAH - MURRAY

Terry Thorkildsen reported on the site for their November record trials, and noted that it had a 32' smooth ceiling. Another contest in a 30' gym is to be held on December 28. Contact Terry at 4082 S. 5th St., Murray 7, Utah for more information.

QUESTIONS AND ANSWERS

In the September issue question #19 was posed, asking how to prevent rubber from creeping up on the hook. One suggestion, given us some time ago by Dick Ganslen of Fayetteville, Arkansas. Dick suggests that powdered resin be placed on the hook and inside the rubber loop. This prevents most rubber creeping quite effectively.

Another approach to rubber creep is used by several members of the Cliff Model Club of Dallas. They make a special hook like the sketch below, with an S-bend in the hook that tends to prevent the rubber creeping.



Last month question #21 pertaining to the thickness of various colors of microfilm was presented. At first glance this seemed to be a simple question, but it has opened a real Pandora's Box of side questions and considerations. A study of the physics of light and thin films reveals that it is difficult to measure these films in the first place, and that two different films could be showing the same color and be much different in thickness. We will report on this further as more information is available.

STATE OF THE ART

In our report of the Nats, we indicated that flying conditions were somewhat less than desirable. In spite of the extreme turbulence, Bob Champine set a new record with his winning flight in Indoor Cabin. Here is the three-view of his model, as drawn by George Batuik.

The fuselage truss was built up in this fashion: each cross-member was cut to length so that it approximated an equilateral triangle with the fuselage side and the preceding cross-member. Four cross-members were cut for each station, to assure symmetry of the finished fuselage. The truss reverses on opposite sides, so that top and bottom cross-members also will form a truss.

HINTS AND KINKS

Most of the innovations and developments that turn up in our hobby are simple modifications of existing ways of doing things, yet each makes a contribution in terms of reliability or convenience. So it is with all our suggestions this month. (Sketches on back page)

Modified Rudder

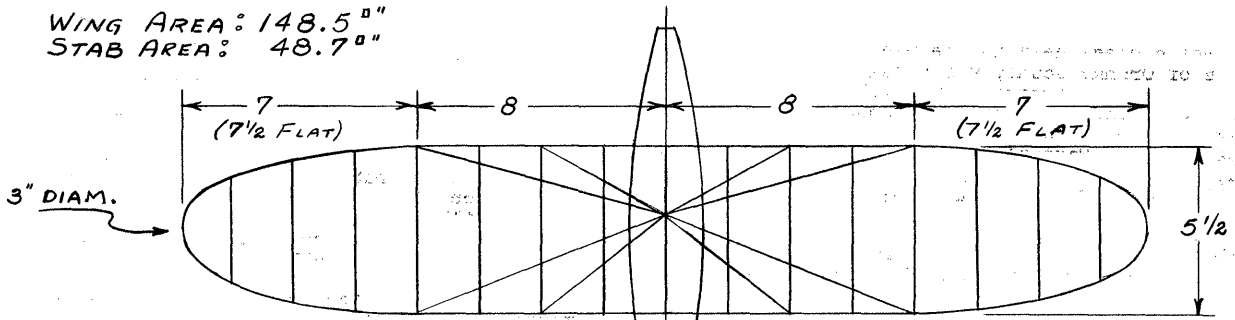
Last June, we observed an unusual rudder on Stan Smith's FAI model. Quite often, trailing rudders have a tendency to be weak at the point of attachment to the fuselage. Stan's rudder was shaped as shown, with a recessed place which provides two glue joints instead of the usual one. The result is a much more reliable and sturdy rudder mounting, at very little increase in weight.

Wing Bracing

When we ran into Bill Atwood at the Nats, we were quickly into a bull session. One of the things that we discussed was the bracing on Bill's FAI model. It is reproduced here, but we almost missed the whole works. It seems that Bill was sketching on one of the work tables in the hangar - and they wouldn't let us bring it home! Bill has found one disadvantage with this type of bracing - it is a bit hard to always remember the long top wire when handling the model.

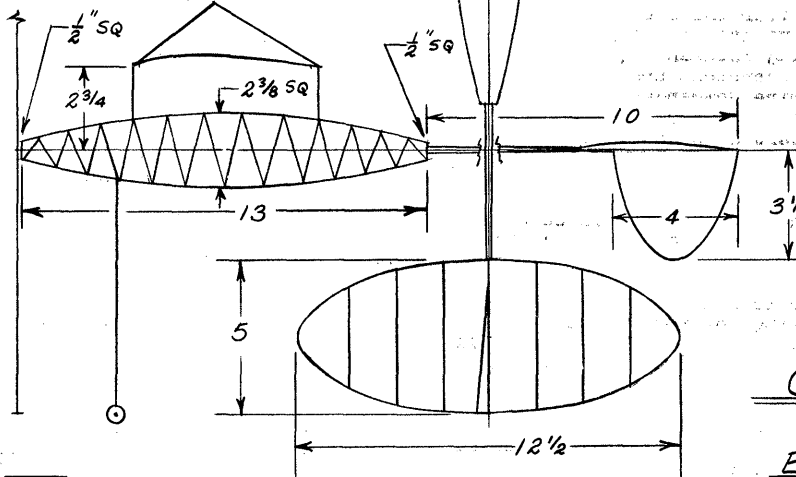
Bruce Paton tried Bill's bracing, then modified it as shown in the second sketch. Note that both the front and rear of both tips are braced on Bill Atwood's model, while Bruce used only leading edge bracing on the tip. He found that by leaving the trailing edge unbraced the flying was not materially affected, but the model would slide off obstructions more easily.

WING AREA: 148.5^{sq}"
 STAB AREA: 48.7^{sq}"



PROP. ~
 17" D. 25" P.
 MONOSPAR

POWER ~
 .065" - 12 1/2"



WTS. (oz.)

WING + FUS.	.031
TAIL + BOOM	.011
PROP.	.010
GEAR	.004
	<u>.056</u>

CLASS "C"

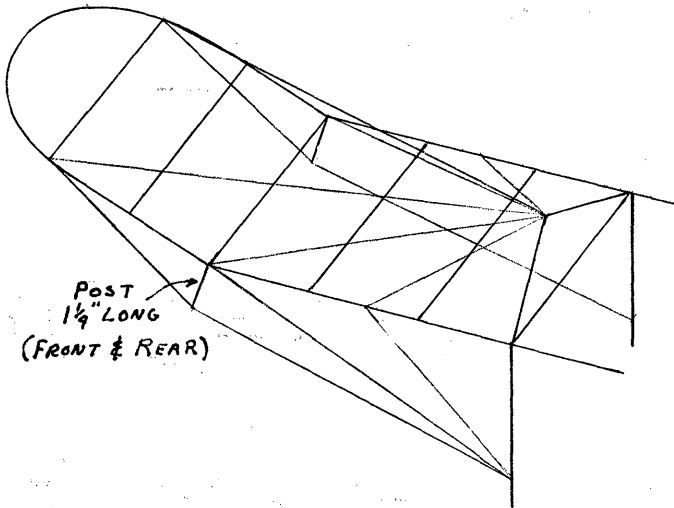
BY
BOB CHAMPINE

CAT. II RECORD

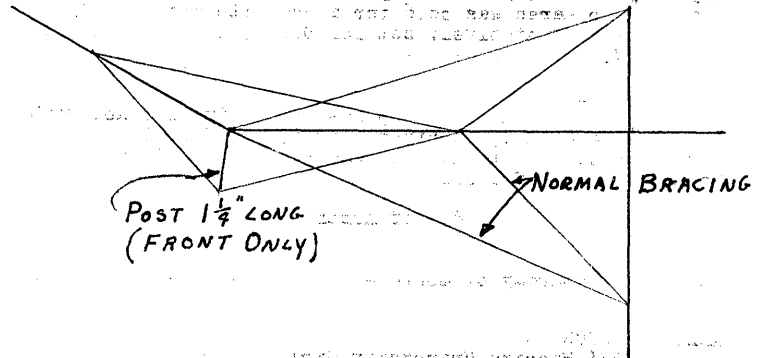
—15:50.3—
 JULY 1962 @ NATS

GEO. BATHUK

WING
 STAB



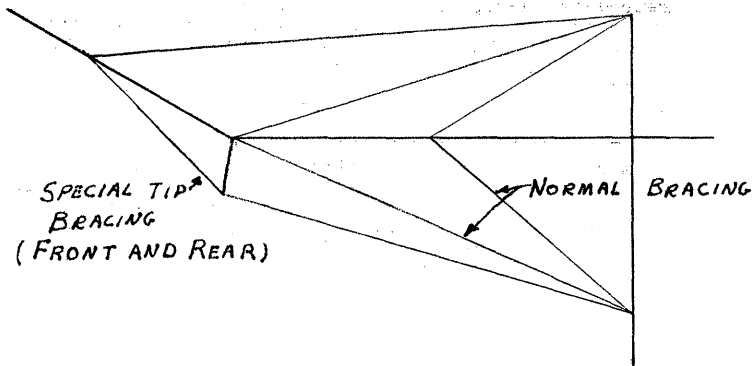
POST
 1 1/4" LONG
 (FRONT & REAR)



POST 1 1/4" LONG
 (FRONT ONLY)

NORMAL BRACING

BRUCE PATON'S BRACING



STAB
 BOOM
 TWO GLUE
 JOINTS

SPECIAL TIP
 BRACING
 (FRONT AND REAR)

NORMAL BRACING

BILL ATWOOD'S BRACING

STAN SMITH'S RUDDER

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

JANUARY 1963

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

NIMAS membership climbed to 122 as these five joined in the month of December. On the other side of the coin, the rate of renewal continues to be high.

REGGIE BATTERSON, 3503 Lawson Street, Richmond, Virginia
EMANUEL RADOFF, 61 Springbrook Rd., Livingston, N. J.
BUD ROMAK, 85 Sullivan Drive, Moraga, California
JIM SKINNER, Box 656, Donner Hall, Carnegie Institute of Technology, Pittsburgh 13, Pa.
HUBERT F. SCHUBERT, 428 Kansas Ave., Lorain, Ohio

Sites We Don't Have!

For a while, Richard Miller was cataloging (for our mutual misery) sites of former years that we no longer can use, and sites that have since been built that we aren't using now. We have expanded the list, and would appreciate further help in noting these sites. Here is a partial list:

Hangar #1, Hitchcock NAS, Texas. Near Galveston, this hangar was on the same pattern as those we use at Lakehurst. Unfortunately, Hurricane Carla caused quite a bit of damage to this building and it has been torn down - before we had a chance to use it!

Brittannia Assembly Hall, Bristol Aircraft Works, Filton, England. This is the largest hangar in the world and encloses $7\frac{1}{2}$ acres of land with a 1054' long shed that is 420' high! The total volume enclosed is 33 million cubic feet of air!

City Auditorium, Albuquerque, New Mexico. Stan Chilton spotted this one, and said it looks like a 75' ceiling. The seating capacity is 6500, and might be a good place if it could be used.

The Sketchbook

For some time Lew Gitlow has been selling his Indoor Sketchbook for \$1 - an outstanding buy. This little book has dozens of hints, suggestions, and other vital info on our hobby.

Lew is now working on a new Sketchbook, and can use some contributions to help fill the proposed 64 pages. He is interested in kinks, theory, ideas, testing gear, and not so much in plans. He will acknowledge your contribution in the book, and you will have the satisfaction of helping to make up one of the few books available that are up-to-date how-to-do-it on indoor model building. Congratulations are due for Lew's efforts in the behalf of our hobby - so few of us are willing to make this large an effort!

IT'S LATE??

Unlike Ken Sykora, editor of SCATTER, the excellent newsletter devoted entirely to FAI outdoor FF, we haven't resolved to "never come to this typewriter without a little glue on the fingers.....a little balsa dust in the hair", but we do try to meet a publication date of about the 7th of the month. Perhaps we should build more and fly a little more??

Last month the troubles multiplied like rabbits - a late start followed by a delay at the printer followed by Christmas rush mail....but we're still in business! This month, we're early to try to save postage before the big increase.

FAI INDOOR REPORT

Team Selection Program

Our early cut-off date may miss a late letter, but as of this writing the following actions are under way pending final approval:

1. The team members are to be picked at a flyoff during the 1963 Nats. Probably the flyoff will be between the top three winners of the Semi-Final Elims held in each

of the three zones. Transportation, with some reservations as to the starting point, will be available to take the Semi qualifiers to the Nats.

2. The CD's of the elims last year have been contacted to see if they will repeat this chore this year. For those in the Central Zone, please contact Paul Crowley, Central Zone Chairman, 16835 Lilac, Detroit 21, Michigan for the latest plans.

If Chairmen for the East and West Zones have been picked, word has not yet arrived as to their identity. Eastern and Western fliers, contact Dick Kowalski for info - 20203 Moenart, Detroit 34, Michigan.

3. Those planning elims should try to plan to hold those elims before the end of April. Please notify your zone chairman or Dick Kowalski if you intend to hold these elims, and get the dates nailed down as soon as possible.

World Championships Cat. II?

Germany has asked to hold the World Championships in 1964. If their offer is accepted, the site will be Cat. II - about 70' ceiling. This should give fliers without blimp hangars a better edge toward winning a slot on the team - and also sharpen the competition somewhat!

Two Central Semi Elims?

The possibility of holding a South Central Semi-Final elims in addition to the one usually held at Detroit is being explored. A large number of indoor fliers in the South have been contacted to determine just how many are interested. The response, plus other considerations, will determine whether the second elims can be held. If you are affected by this issue, please voice an opinion, pro or con. Address these comments to Bud Tenny, Box 545, Richardson, Texas.

FAI ÷ 2?

Last month Boyd Felstead's suggestion for small FAI models, about half the span of the present models, was presented. Comments received here were all in favor of this proposal, and Boyd received several comments, all against the idea. At any rate we are pleased to find a topic that people will comment on!

"MODEL AIRPLANE NEWS"

In years past, our hobby has had quite a bit of support from MODEL AIRPLANE NEWS magazine, including NIMAS membership for Walt Schroder, Editor. The February 1963 issue, (due about the time you receive INAV) will carry several indoor features. The cover is a color shot of indoor subjects, a construction article of an FAI job by Dick Kowalski leads off the contents, and Joe Bilgri's report on the World Championships tops the reading. The models which topped 40 minutes are featured in three-view presentation, with full-size plans of Rieke's model and in Kowalski's article. This looks like a good one, and we are grateful for the support of our hobby.

AN OPEN LETTER TO BILL EFFINGER

Bill Effinger, a long-time industry leader, authored "Tech Talk" in the Jan./Feb. AMERICAN MODELER, which is billed as a tour of events at the Nationals.

Dear Bill;

For years I have known you by reputation - the reputation of being one of the outstanding leaders of the industry, and an old-time model builder besides.

However, as editor of INDOOR NEWS AND VIEWS and as a member of the National Indoor Model Airplane Society, I must protest your recent comments about indoor models in the "Tech Talk" article in AMERICAN MODELER.

In your preliminary remarks you charge that all the current National Records are high as a result of rules changes which abolished old records - yet the only major

change in the indoor rules has been the addition of Category I & II flying. The present Cat. I "D" Stick record of 15:24 was set in a 28' ceiling with a model that would have been legal years ago!

You say that indoor needs to be pepped up, but the four events at the Nats have increased in popularity until a blimp hangar is crowded all during a 12-hour competition day. At Dallas and Chicago, where we have no blimp hangars, we really need two days for the event so every one can get a chance to fly. Where are all these people coming from if (as you say) indoor has little to offer to the newcomer?

You say that we need new events - and suggest ones like indoor CL speed and stunt, battery powered FF, and ultrasonic controlled RC type models. All over the country, many dedicated indoor fliers spend much of their time and effort attempting to secure the use of sites - and to keep them once they are in them. Just one time with any of the events you propose would be sufficient to permanently close the sites we have labored to get.

You see, when the managers of potential sites are contacted, the initial reaction is one of horror. "Model AIRPLANES! They will break the place up!" Only after they are shown a microfilm model, or see an Easy B fly in their office are they convinced that it is safe. Can you imagine their reaction to .025 powered stunt or speed jobs? If you think I've overstated the case, please try to set up a site for indoor flying. Please do - we need more sites!

You propose events that can be flown indoors as "rainy day event insurance" - but, after all, our models cannot be flown out-of-doors even if it isn't raining! You are willing to risk our hard-won sites for the sake of "pepping up" indoor flying. In short, the events you propose could eliminate our type of flying entirely.

Further, in spite of the fact that the Navy is saying that the Nationals has grown too large for their station facilities, you propose even more events! You propose to hold these events in Navy hangars, even though this is against Navy regulations!

There is one final point you have failed to consider: For all the new and "peppy" events you suggest, it costs more to fly the models one time than it costs to build and fly an indoor model! Indoor modeling is about the only form of competitive flying which is within the reach of all people regardless of financial circumstances. It is the only form of model flying where the performance cannot be substantially improved by spending huge sums for equipment.

Sincerely yours,

Bud Tenny

Dear Mr. Effinger:

I am afraid I will have to challenge your comment, "Indoor flying does not offer much to the newcomer..."

Since I had never heard of indoor model airplanes until last July, and am just beginning to realize how ignorant I am on the subject, I believe I qualify as a newcomer.

I was hooked after building my very first model, a paper-covered Easy B. For anyone who enjoys creating things with his hands, isn't satisfied until they are just right, and has a competitive spirit, indoor modeling is a fascinating hobby. And what a thrill it was when that very first plane actually flew! This first model, incidentally, has competed with great success against models built and flown by several experienced indoor flyers.

I find pouring microfilm to be great fun, and the microfilm models even easier to cover than the paper ships, although they're much less durable when subjected to the inexperienced handling of the newcomer. Those bracing wires always get in the way of my hand!

I have started a new model and I'm impatiently trying to get time to build an ornithopter, a helicopter, a scale model, a Class A ROG, and then an ROW model. Not enough variety?

Bud and I will both be competing in the Nats next summer - see you then!

Sincerely,

Jody Tenny

STRUCTURAL ANALYSIS

The September issue contained a report on two models that were designed especially for the solid motor stick class which was finally defeated unofficially if not yet officially.

Bill Bigge was moved to mathematically examine the properties of solid motor sticks, and while he was at it, the properties of most of our other structural members also. It all boiled down to about seven pages of math - "not too much calculus involved." He offers these flat statements without the math, but will furnish the math if you gotta have it:

1. A motor stick is lighter for the same stiffness and clearance if the cross-section narrows toward the top than if it is rectangular or narrows toward the bottom, saving up to about 5%.
2. A motor stick is stiffer for the same weight and clearance if the edges are not rounded. Rounding the lower edges is about $2\frac{1}{2}$ times as bad as rounding the upper edges. A section 2 mm x 4 mm with a $\frac{1}{8}$ mm radius on the edges is 2.9% less efficient than a rectangular section of the same area with the height equal to twice the width.

After making the assumptions that the cross-section of a motor stick is homogeneous and non-concave, Bill recommends that:

1. The edges be rounded enough to avoid crushing.
2. The cross-section be made narrower at the top, if it is not too much trouble to do this accurately.

Bill goes on to say of other structural members:

"I recommend rectangular cross-sections in general for all members because they are easier to make accurately and are usually slightly more efficient. Prop spars should perhaps be round because it is then easier to attach the ribs nicely. However, round prop spars are structurally more efficient only if:

1. Strength and not stiffness is critical, and
2. The angle between the side of a square cross-section and the direction of load exceeds a certain value. If prop spars are properly placed and properly matched, strength may indeed be more important than stiffness."

Bill's comments should be especially interesting to Easy B fliers (solid motor stick) and to FAI fliers. We will need to make more efficient models, starting with the structures and moving out. Many people who have been examining the information available on the German models tend to discount some small differences in weight and other minor details, then pounce on some radical departure and say "That can't possibly make that much difference!" I am willing to say that any one detail of these models won't make a lot of difference, but if you add up the effect of six or seven $\frac{3}{8}$ gains it amounts to a lot! In other words, anyone who wins at the World Championships in 1964 will (barring luck) have made sure his model is nearly perfect in every phase of design and construction. Further, he will have made sure (as did the Germans) that he is totally familiar with the model under all flight conditions.

NEWS FROM AROUND THE WORLD

CALIFORNIA - VISALIA

In THE INFORMER, newsletter of the Visalia Sky Kings, Don Farnsworth reports that basketball schedules have temporarily filled their sites. A search is under way, and any suggestions will be welcome. Contact Don at 2040 Cecil Circle, Visalia, California.

CALIFORNIA - WILMINGTON (LOS ANGELES)

Sanctions for all twelve monthly contests at Wilhall are being applied for, with Wally Miller leading off as CD for the first three months. Scale fliers note: On Feb. 8 the Indoor Flying Scale Annual will be held. The high point flier will win an 18" engraved trophy. Wally Miller's address: 22142 Welby Way, Canoga Park, Calif.

CANADA - WINNIPEG

D. H. McRae reports that some flying is done in a 22' auditorium in Winnipeg. On rare occasions, they get to fly in a RCAF hangar with 40' ceiling. Since they are hoping to increase activity there, Mr. McRae will welcome inquiries - Box 15, Group 33, RR 1, Winnipeg, Manitoba.

CANADA - VANCOUVER

Greg Stevenson, of the Vancouver Gas Model Club, has written asking for contributions on indoor subjects for their club newsletter, HOTHEAD. Several club members are now flying in a site with 35' ceiling, getting good results from Bilgri's Ditto and Floppy. NIMAS, arise!! Send contributions to: 3885 West 65th. Ave., Vancouver 13, B. C.

MISSOURI - ST. LOUIS

Carl Fries reports that the St. Louis Arena is strung like a birdcage with wires, but that they are hoping to set up some flying sessions in a church gym. Contact Carl at: 8798 Sturdy Dr., Crestwood 26, Missouri.

MARYLAND - BALTIMORE

The annual indoor meet in Baltimore will be held on Jan. 27, 1963 in the 5th Regiment Armory on Hoffman St. near North Howard St. Events: HLG, Indoor Stick, Prefab Kit, Flying Scale. Contest hours: Noon to 4:30 PM, test flying 9 AM to Noon. CD: Howard Weil, 4014 Chatham Rd. Baltimore 7, Md.

NEW YORK - ORANGEBURG

Sid Bernstein has rounded up quite a few fliers and a 29' auditorium in Orangeburg. The major activity is now in B paper and HLG, but other types are welcome. Even Richard Miller has flown with this group and holds the HLG site record at 28 sec. Contact Sid c/o Research Facility, Rockland State Hospital, Orangeburg, New York.

TEXAS - DALLAS

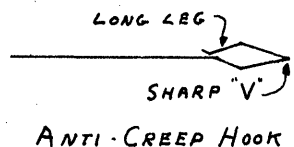
Excellent flying conditions helped Don Chancey and Jerry Murphy set new Cat. II records (see RECORDS? col.) at the second indoor contest this winter. The site, SMU Coliseum, has ideal construction for draft-free flying with the flight area 20' underground and the entire site surrounded by a corridor. It is hoped that this site will be available for more contests after basketball has finished up. Contact: Bud Tenny, Box 545, Richardson, Texas to be sure of receiving contest notices.

QUESTIONS AND ANSWERS

Several times in the past, we have received questions about rubber motors and their handling. We still hope to receive a promised article on the subject, but in the meantime, these questions can be summarized in these three questions:

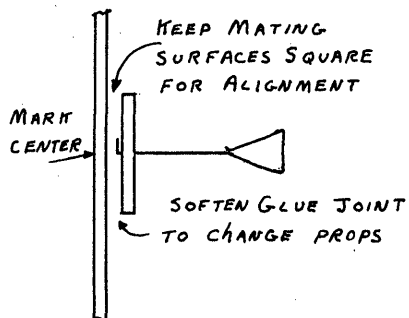
22. What is the best way to break-in a motor?
23. Is there a difference between pre-winding and break-in? If so, when is each used?
24. What is the most effective way to use the technique of "backing off" turns?

Last month, we sketched a prop hook with a Z-bend that prevents rubber from creeping up on the hook, in answer to Question 19 about rubber creep. Dick Kowalski suggests the hook sketched below:



Dick gives the credit for this hook to Carl Goldberg, and claims that it has seldom failed him - and it is easy to bend! The sharp "v" forces the rubber to stay put under tension, and long leg against the shaft also helps prevent the rubber from slipping off.

Bill Haight, who agrees that the Z-bend hook really works, notes that such a hook is hard to thread through the bearing. His solution is to leave the hook and a reinforcement stub on the model, and to spotglue the prop to the stub. He cautions that the front of the stub and the rear of the prop should be left square and flat for good alignment. It is also good practice to mark the center of the prop for reference. Note the sketch below:



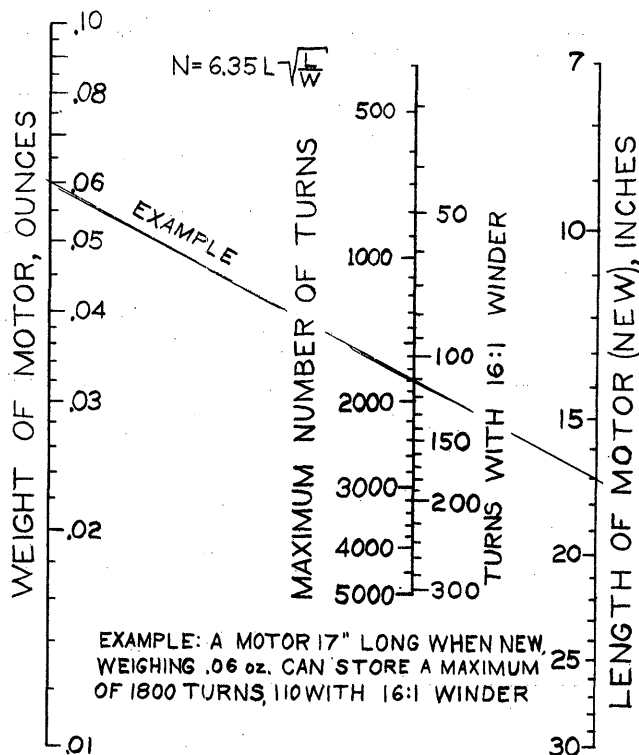
PIRELLI NOMOGRAM

The June 1961 M.A.N. published an article on Firelli rubber by Bob Hatschek, and Bob gave this formula for number of turns:

$$N = 6.35L(L/W)^{1/2}$$

- N = number of turns
- L = length of the motor in inches
- W = weight of rubber in ounces

Charlie Sotich worked up the following nomogram based on Bob's formula. The constant, 6.35, is of course for Firelli. Because of variations in the rubber, the air temperature, winding technique, and other variables, this nomogram is intended as only a guide. Under many sets of conditions most motors will take more turns, but this nomogram will give a good starting point.



RECORDS? MAYBE!

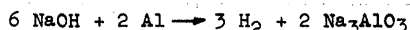
S. M. U. RECORD TRIALS, December 22, 1962
 CATEGORY II, SMU Coliseum, Dallas, Texas - (56')
 Jr. A ROG - 8:10.9, Don Chancey
 Jr. B Paper - 12:01.0, Don Chancey
 Open Ornithopter - 2:10.0, Jerry Murphy

HINTS AND KINKS

For some time, several groups around the country have been using hydrogen-filled balloons to retrieve indoor models from certain unfortunate perches. The hydrogen is "home made" with various types of chemical reactions in home made hydrogen generators.

Before describing a typical generator, we should examine certain dangers associated with the use of hydrogen: Unlike helium, which is chemically inert, hydrogen is violently explosive if ignited when mixed with air or oxygen. Since hydrogen-filled balloons are always likely to break or puncture, such a mixture can be formed as the gas escapes from the broken balloon. If this happens near an overhead heater, the explosion can result even if the heater is not running since they usually have a pilot light for automatic start-up.

Our typical generator, as used by Charlie Sotich and other Chicago Aeronuts, uses this chemical reaction:



Charlie describes the equipment and operation thus:

"My generators consist of quart "pop" bottles that are wrapped with masking tape. In case the bottle breaks

or cracks, the chemicals and glass fragments won't go flying around. The ingredients are lye and aluminum foil, both obtainable at most grocery stores at low cost.

I use a fairly large 10¢ balloon and I find that about .35 oz. of aluminum and 1.6 oz. of lye fill these balloons to a good size (.3 to .5 oz. of lift).

I have a plastic cup that I use to measure out the lye and I pour it into the bottle through a plastic funnel and add about 3/4 of a pint of water. The amount of water used controls the rate of reaction. Very little water gives a very concentrated lye solution and a very fast reaction. More water slows down the reaction. I prefer a slower reaction, because when it goes fast, steam is generated which later condenses inside the balloon, reducing its lifting capability. If steam is generated, it gets the balloon and bottle too hot to handle. It usually takes me about half an hour or more to fill a balloon this way.

Preparation of the foil can also control the rate of reaction also. I roll the aluminum foil into a fairly tight wad, so that not too much surface area will be exposed. The foil is dropped into the lye solution and the balloon is then put over the neck of the bottle.

To make the balloons easier to fill with hydrogen, I blow them up with air in advance to prestretch them and reduce the pressure needed to fill them."

Since the lye solution is a highly caustic agent, we need to remember that accidents can happen while handling it. The work area should have free drainage and there should be some way to flood the area with water in case of spillage. The pressure generated with this method is low, so the main danger from fast reactions is not an explosion, but rather spillage due to cracked and leaking generators if the bottle is overheated. Be CAREFUL!!

Adjustable Tail Incidence

During a recent visit to our house, Bob Champine showed us the adjustable tail and bracing system that he uses on his FAI ships.

Figure 1 (plans page) gives the over-all view of the tail bracing system Bob uses with the adjustable tail. Of the bracing, Bob says, "This worked very well and there was no tendency for twisting - probably because the tail is working at such a low lift coefficient and the pitching moment is low."

Figures 2 and 3 illustrate the adjusting mechanism. On an unbraced tail it would be very simple, just a post on the rear of the tail boom and a tissue socket on the rear of the stab to slide up and down on the post. This permits incidence adjustment of the stab similar to the system normally used on the wing.

The adjustable tail gets a bit more complicated when the tail is braced, as shown in figures 2 and 3. The front bracing post fastens to both the boom and to the stab leading edge, while the rear post fastens only to the stab trailing edge. The fin also fastens to the stab, on the opposite side of the socket. Thus, when an adjustment is necessary, the entire bracing system and the fin goes along for the ride. Things may get a bit crowded around the back of the model, so Bob suggests that a small wire hook be used to move the socket up and down on the post for adjustment.

Bracing Hint

Larry Renger passes on this hint, which was dreamed up by Ray Harlan. Figure 4 is almost self-explanatory, but the idea is this: Instead of a notch in the post or a small peg glued on the post, Ray uses a longer sliver of wood with a pin hole punched in it. The wire is then threaded through the hole during bracing and glued after the alignment is complete.

STATE OF THE ART

This month our model set the Cat. I B Stick record of 10:38.6 in a flight at the home of Cat. I flying - Wilmington Rec. Hall in Los Angeles. The outstanding part of the story is that Easy Breeze is a Wilmington formula Easy B - solid motor stick, all-balsa prop, and no bracing of any kind. The builder, Larry Renger, left for school without realizing that he had set a record. In a letter to Dave Copple, CD, Larry said:

"Thanks for letting me know about the B record. Not the faintest thought had entered my mind about it except that an Easy B couldn't possibly stand a chance against a real mike B, or even a tissue one. I think it is a neat event for several reasons, and not the usual ones at all. For one thing, the lack of bracing and solid motor stick force one to learn about wood choice, giving gross evidence when an error is made. The sheet balsa prop requirement allows more convenient experimentation, and when necessary, prop tip clipping to match power to a ceiling in an emergency. In a discussion with one of the professors here, it developed that in some cases a flat bladed prop with a constant pitch angle (no warp at all) could be the best, but that no one really knows much about the subject. It is my personal opinion, however, that in the case of a tractor indoor model the whole aircraft is efficient enough that a "true-pitch" prop is best. Enclosed are the plans to my Easy B, the "Easy Breeze". The odd triangular tips were suggested by Ray Harlan to allow lighter wood at the tips while still maintaining strength. The all-up weight (less motor) is .023 oz. (not at all a fantastically light ship)."

THE HAND LAUNCH GLIDER

PART TWELVE

by RICHARD MILLER

EXCUSES

In recent months Richard Miller has changed jobs, and the new one has had him gadding around the country interviewing people. Some of those who have occasion to write to Richard and to me have noted some difficulty in contacting him. Not too long ago Richard passed on the following gem - newsletter editors please note:

"Let me suggest the multiple post-card technique for recalcitrant contributors. Take - buy that is - a number of U. S. Government Post Cards, like 5, 6 or 7. Address them all to the person in question. Then, on the backs, write a series of progressive messages....

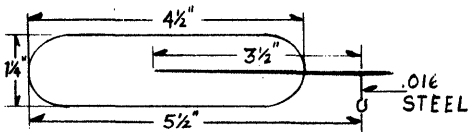
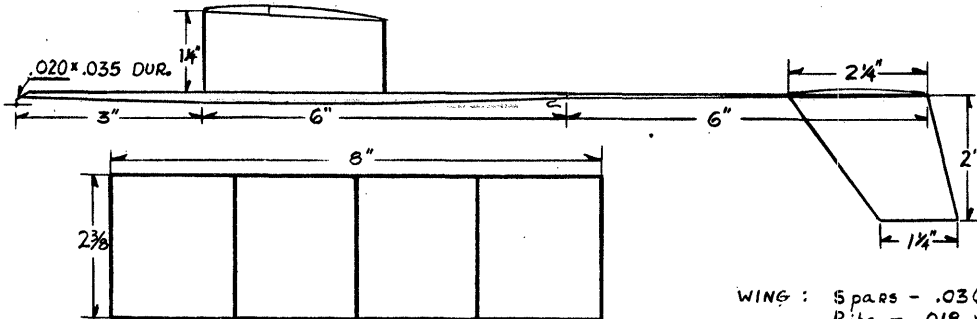
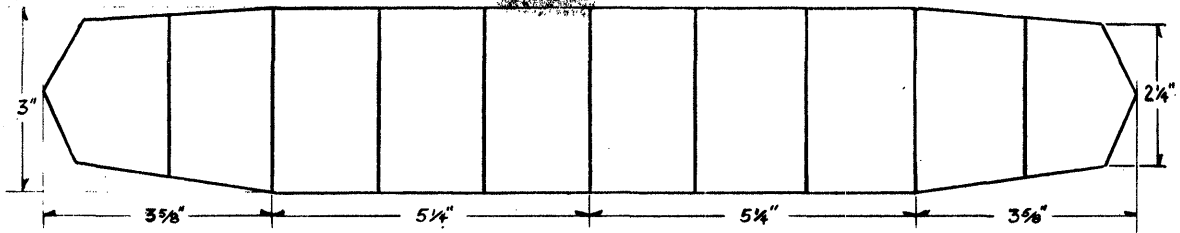
1. I have the distinct impression that during 1958 you promised me a drawing of the "SuperSplooch"...
2. The more I think of it the more certain I am about that "SuperSplootch" drawing.....
3. Yes, I remember distinctly. You said you'd have "SuperSplootch" to me during May ...1958 that was...
4. Now, when you do the "SuperSplootch" drawing....
5. You Bum,

With the cards thus prepared to your satisfaction begin mailing them. Mail one on Saturday, another on Monday, a third on Tuesday - skip a day - then one on Thursday, one Friday, etc. Recalcitrant contributors can quickly be broken down in this manner."

However, after Richard's article failed to arrive, I followed his instructions only to receive an interesting series of excuses such as:

"Dear Sir: Thanks kindly for your timely request for our illustrated list of excuses which, as promised, will always be sent on request. Your interest is timely and heartwarming....."

So, please bear with us and we'll catch him soon. He has promised to visit Texas in his travels and, if necessary, he shall be staked out at hard labor until the words come forth! Perhaps a girl-shaped glider or a glider-shaped girl could also be offered as inducement?? Actually, Richard is not malingering - this we know. There is nothing so conducive to unproductive activity as quite a bit of travel, unless it is a lot more travel.



GARY BREEZE

Designed by **LARRY RENGER**
 AMA Record Holder - Sr. B Stick
 10.38.6 - 29' 11" Ceiling

WING: Spars - .030 x .650 → .03
 Ribs - .018 x .020
 Compression Ribs - .030 x .030
 Posts - .060 Rnd.
 Dihedral - 25° Each Tip

STAB: Spars - .018 x .036 → .020 * Ribs - .018 x .018

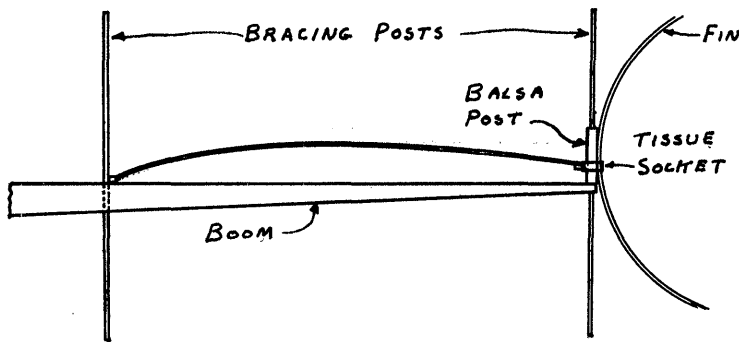
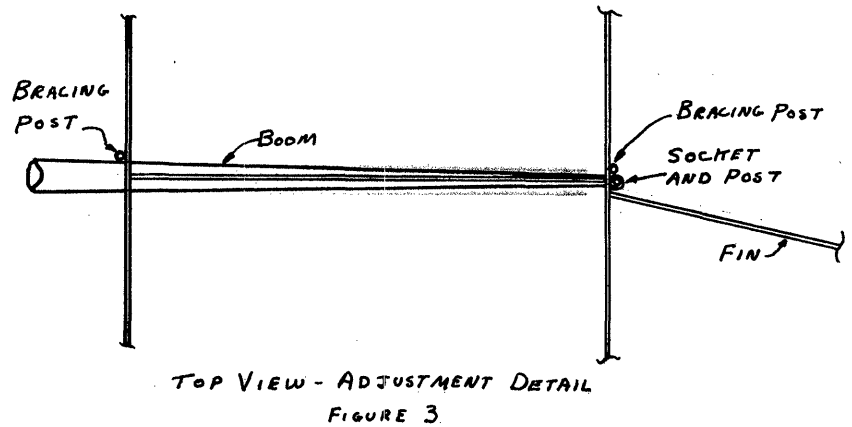
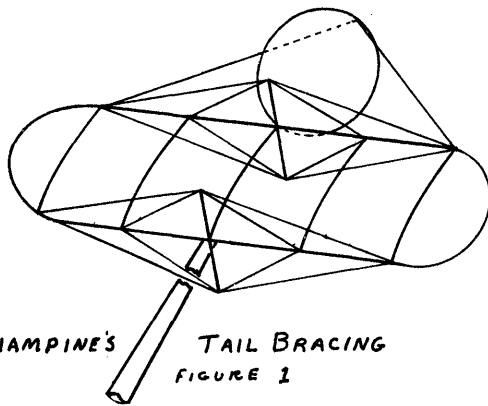
Rudder: .020 x .020

Prop: 25" True Pitch - (Warp on Block)
 Blades - .012 → .009
 Boom - .060 Rnd.

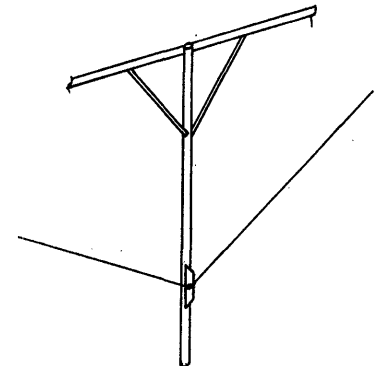
Motor Stick 3/16 x 1/8 Oval → 3/32 Rnd.

Tail Boom .040 Rnd → .020 Rnd.

Polansky



STAB ADJUSTMENT DETAIL
 FIGURE 2



RAY HARLAN'S WING POST
 FIGURE 4

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

FEBRUARY 1963

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

Eleven new members joined NIMAS during January, and now our ranks number 133 members. However, INDOOR NEWS also has 15 subscribers who haven't joined NIMAS but still help carry the message.

J. O. BAILEY, 14724 1/2 Lemoli Ave., Gardena, California
NORMAN BURGDOFF, 9822 Whitcomb Lane, St. Louis, Missouri
DAVE CALL, 5628 North 2nd. Street, Philadelphia 20, Pa.
BOB CROWLEY, 2211 Royal Oaks Dr., Irving, Texas
NORMAN C. GETZLAFF, 19606 Elmere Ave., Cleveland, Ohio
LARRY LOUCKA, 3542 Sackett Ave., Cleveland 9, Ohio
LARRY MILLER, 13706 Tyler Ave., Cleveland 11, Ohio
JOSEPH POLOSO, 4710 Osman Place, Bronx 70, New York
STANLEY J. SCHUTE, 47 Walnut Street, Millis, Mass.
RALPH WILSON, 2534 Brooklyn Ave., SE, Grand Rapids 7, Mich.

JACK ERIKSEN, 44 Seaview Tce., Mt. Albert, New Zealand

C. S. Rushbrooke

Last week we received the unhappy news that C. S. Rushbrooke passed away early in the month. Even though we never met him, we respected "Rushy" for his dedication to the hobby we all share. He will be missed all over the world, for his influence spread far beyond the borders of England.

FF CB Back in Business

Phil Klintworth has been appointed as Chairman of the Free Flight Contest Board. He has already prepared a course of action, and the backlog of CB business should soon be cleared out.

AMA President John Worth hopes to be able to help Phil clear out the backlog by shortening the six-month study period to three months so that the proposals left over from 1960 and 1961 can be accepted or rejected in time for the 1964 Rule Book. This should help the HLG fliers, as their records picture has been beclouded for some time by impossible times set with "make" IHLG.

****NIMAS BALLOT****

Some of the old-timers may well say, "Oh no! Not again!" However, over half the present NIMAS members have never seen the ballot and haven't had a chance to express an opinion of pending indoor rules proposals.

FF CB Chairman Phil Klintworth has expressed the hope that NIMAS will play a major role on indoor rules proposals. At the present, we can serve in two ways to help with these proposals. First, we can act as a clearing house for new rules proposals and help to clarify new proposals and get them into shape for the Contest Board to consider. Second, we can act as an advisory group to the Contest Board so they can better fill our needs. To this end, we use the ballot as an expression of your feelings. For the ballot to have real meaning, it should be returned by all NIMAS members who will fly under these rules.

As with all responsibility, we will have to carry our part of the load or official NIMAS action will be without meaning. The individual NIMAS member can fulfill his responsibility by filling out the ballot (included with this issue as mailed to members) and send it back as soon as he can. Now is the time for us to prove we can be depended upon - if the return is scanty, it will only prove that we don't really care. If that turns out to be the case, NIMAS will have lost its best chance to be of service to indoor flying.

To fill in newer members, the ballot covers these issues: Solid Motorstick B Paper, Indoor HLG, FAI Indoor, and an opinion poll on Class D Indoor Stick. The "solid stick" proposal was originally passed by the FF CB in the form of suggestion to the CB that this would be a fine idea and the wording was unsuitable for inclusion in the Rule Book. Further, it was passed with the assumption that it had been published in MODEL AVIATION. When this was found to be untrue, the proposal (now in the form shown under number VII on the ballot) was re-submitted

for the six-month study period. Since this proposal was put forth as a "beginner" class, which it is not, (if you don't believe it, build one to the letter of the rule) we feel that it cannot serve any good purpose, and would eliminate the most popular rubber event we have.

Proposals #I, IV, V, and VI all deal with methods to close the loop-hole that permits microfilm covered gliders that "soar" to compete with balsa gliders. #I and #V close the door on the possibility of this type of glider, while #IV (intended to replace large sections of the rule as it stands) establishes a class for each type of glider. Proposal #VI, suggested by Hatchesek as an alternate that combined the best features of the other IHLG proposals, presumably would not still be in the running unless Phil Klintworth felt it should be submitted with the other proposals.

Proposal #II (separate from other HLG proposals) deals with a change in scoring IHLG and has no effect on the elimination of "mike" gliders.

Proposal #III is self-explanatory, and again is not intended to "go with" any of the other proposals by the Detroit-Chicago-Wilmington groups.

#VIII was included on the ballot merely as an opinion poll to determine if there was any feeling for an enlarged limit or no limit on Class D Indoor Stick wing area.

Last time, there was some confusion about the IHLG items on the ballot and some members voted for two of the proposals and thus negated their vote on that matter. Therefore, please note these stipulations:

1. Vote for only one of the following: -I, IV, & V.
2. Vote for or against these on their own merits: -II, III, VII & VIII.
3. Votes cast for VI in lieu of a vote for one of those in stipulation #1 will be reported to the CB as an indication of feeling that this proposal has sufficient merit to be submitted.

Since items on this ballot cover every phase of indoor flying except Indoor Cabin, each NIMAS member who actively flies contest (except specialists in Cabin) has a stake in the outcome of these rules proposals. Please feel free to omit a vote on an issue out of your field, but please do return the ballot. These are your rules! Return the ballots to Box 545, Richardson, Texas.

****SPONSORED JUNIOR MEMBERSHIPS****

Last month our mail yielded up a check for \$9 from a NIMAS member who prefers that his name not be used. He felt that many juniors, very interested in indoor but with a limited budget, could use some encouragement in becoming NIMAS members. So his check is the start of a fund to sponsor junior NIMAS memberships, with the cost to the junior only \$1.

As with all matters of policy, the NIMAS charter members were consulted on this fund. It has been decided that the fund will be handled in this manner:

1. Any AMA Chapter or Charter Club may nominate one of their junior members as the most deserving junior indoor flier in their club. In the case of fliers in areas with no clubs, special consideration may be made.
2. The club will then notify INDOOR NEWS of this nomination, the junior will pay \$1, and the balance will come from the fund.
3. Each club is limited to one such membership per year unless the club wishes to donate additional money to the fund for extra members.
4. Each junior is eligible for sponsored membership for one year only, but he may renew as a regular member.

The staff of INDOOR NEWS is happy that this fund has been started, and has added \$3 to the fund. This now makes six Sponsored Junior Memberships available, and we invite further contributions to the fund.

****FAI INDOOR REPORT****

FAI Indoor Committee

Since last month the entire FAI indoor committee has been activated. The members are:

CHAIRMAN:
Dick Kowalski
20203 Moenart
Detroit 34, Michigan

EASTERN ZONE:
Bill Bigge
5131 Mass. Ave. NW
Washington 6, D.C.

CENTRAL ZONE (North):
Paul Crowley
16835 Lilac
Detroit 21, Michigan

CENTRAL ZONE (South):
Bud Tenny
Box 545
Richardson, Texas

WESTERN ZONE:
Dave Copple
823 S. Mariposa, Apt. #1
Los Angeles 5, California

Elimination Schedule

A complete series of elimination contests will be held in each of four areas of the United States, the extra area coming from having the Central Zone split into two geographical areas, due to the wide-spread activity there. Following a policy established by Joe Bilgri in 1961, a flier may consider himself in that area which will be the easiest for him to reach at elims time. In case of doubt, contact the nearest zone chairman for more info.

The following dates have been announced for elims, and those marked * have been confirmed.

West Coast Local Elims

Wilmington, California - April 12, 1963*
Andy Faykun, 9410 Dayton Way, Beverly Hills, Calif.

Santa Ana, California - April 14, 1963*
Bruce Paton, 1010 N. Mirasol St., Santa Ana, Calif.

West Coast Quarter Finals

Santa Ana, California - May 5, 1963*
Bruce Paton, 1010 N. Mirasol St., Santa Ana, Calif.

West Coast Semi-Final Elims

Santa Ana, California - June 2, 1963
Bruce Paton, 1010 N. Mirasol St., Santa Ana, Calif.

Central Zone Local Elims

Cleveland, Ohio
Chuck Tracy, c/o Cleveland Press, Cleveland, Ohio

Chicago, Illinois
Pete Sotich, 3851 West 62nd Place, Chicago, Ill.

Detroit, Michigan - April 21, 1963
CD not named yet.

Dallas, Texas - March 17, 1963
CD not named yet.

Central Zone Quarter-Final Elims

Chicago, Illinois
Pete Sotich, 3851 West 62nd Place, Chicago 29, Ill.

Detroit, Michigan - May 12, 1963
CD not named yet.

Dallas, Texas - April 20, 1963*
CD not named yet.

Central Zone Semi-Final Elims

Detroit, Michigan, June 8-9, 1963
CD not named yet.

Dallas, Texas - May 18, 1963*
CD not named yet.

East Coast Quarter-Final Elims

Lakehurst N. A. S. - May 5, 1963
C. V. Russo, 143 Willow Way, Clark, New Jersey

East Coast Semi-Final Elims

Lakehurst N. A. S. - June 2, 1963
C. V. Russo, 143 Willow Way, Clark, New Jersey

Chairman Kowalski has announced the following stipulations regarding the holding of elimination contests:

Local Elims

1. Must be held before the end of April, 1963
2. At least three entries must be flown.
3. Can be flown under any ceiling.

4. Entry Fee: Open \$2.50, Seniors \$2, Junior \$1
5. Use FAI rules as provided by the FAI Committee
6. No rounds to be used, other than those made necessary by the site.
7. Top 50% of entrants qualify for entry in Quarter Finals. A qualifier unable to attend Quarter Finals is obligated to notify the next in line.

Quarter Finals

1. Must be held before the end of May.
2. Qualifiers are entitled to enter any or all Quarter Finals held in their Zone.
3. Should be held under the highest appropriate ceiling available.
4. Entry Fee: All contestants, \$3
5. FAI rules exclusively, as above.
6. Rounds will be used, or if possible, the C.D. may elect to require 3 flights by a certain time limitation.
7. Qualification for the Zone Semi-Finals:

EAST COAST:

- Northern Area - Top 10 or top 80% of entry, whichever is fewer.
Southern Area - Top 5 or top 80% of entry, whichever is fewer.

MID-WEST:

- Detroit - Top 12 or top 80%, whichever is fewer.
Chicago - Top 8 or top 80%, whichever is fewer.
Dallas - Top 6 or top 80%, whichever is fewer. (This may be amended pending further planning on the South Central Semi-Final.)

WEST COAST:

- Northern Calif. - Top 8 or top 80%, whichever is fewer.
Southern Calif. - Top 10 or top 80%, whichever is fewer.

Zone Semi-Finals

1. Must be flown before the middle of June, about 4 weeks after the quarter finals in that zone are completed.
2. Qualifiers are entitled to enter only that Semi in their zone.
3. Should be flown under highest available ceiling.
4. Entry fee: All contestants, \$3
5. FAI rules exclusively, as above.
6. Rounds will be used, or if possible, the C.D. may elect to require 3 flights by a certain time limitation.
7. Qualifiers: 1st, 2nd, and 3rd place winners at all three Zone Semi-Finals. (This may be amended later, due to the Southern Semi.)
8. To qualify for free transportation, qualifiers must:
 - (a) Commit himself to the Committee Chairman within 7 days after the Semi-Finals, otherwise the next man in line will be given his transportation.
 - (b) Commit himself (in intent) to attend the World Championships, in writing, at the same time as transportation is requested. (Provided that he wins a team position.)

Semi-Flyoff

1. FAI rules exclusively, as above.
2. Time limitations to be decided by the Committee, when necessary.
3. Will be flown during the week of the National Championships but not during the National Indoor Championships meeting.
4. Entry fees: All contestants, \$5.
5. 1st, 2nd, and 3rd place winners will comprise the 1964 U.S.A. Indoor Team providing: They re-affirm their commitment to attend the World Championships during 1964 within 90 days following the Nationals.

FAI INDOOR RULES

The FAI Indoor Committee recommends the following to be used until such time as the C.I.A.M. prints an Official Indoor Rule Book.

1. A model is said to be an Indoor Model only when it can be flown properly within an enclosed room.
2. The wing span of Indoor Models shall not exceed 90 Cm. (35.4") Other structural details are left to the contestant only.
3. Only rubber power is permitted.
4. Flying time shall begin when the model begins its independent and unaided flight.

5. The time of flight shall cease when the model lands or hits an obstruction during flight and remains stationary, that is to say, has no flying motion for six seconds. In this case, the timer shall continue to time for an additional six seconds after the moment of impact and shall then subtract six seconds from the flight time.
6. If, while in flight, the model drops any of its parts, the flight time is calculated only to the moment of the dropping of the part.
7. It is strictly forbidden, during a contest, to influence the flight of the model, either by the hands or by any object, or by producing an artificial air current, except as follows: "Balloons may be used to alter the flight path, although the balloon or the tether may only be in contact with the model for a period of 10 seconds and not more than twice during any flight."
8. All flights are official and recorded except when the model collides with another model already in flight. The contestant may, at his option, declare the flight a "no start" but the decision must be voiced to the timer at the moment of separation of the models.
9. The total of the best two flights of all 6 shall determine the winner.
10. Each contestant is allowed 3 models to complete his flights.

FAI # 2?

Last month we used this same heading to announce more comments and stuff about Boyd Felstead's proposal to lower the maximum wing span for FAI Indoor models by 1/3, or to about 24" span. Boyd pointed out that our comments had shrunk the model more than he intended - and he's right! However, we used this gimmick (or intended to, anyway) to point out that the new size would be about 1/2 the wing area of the present FAI class. All clear?

Now, on to the battle. A surprising number of fliers are expressing comments in favor of the change, with one major point in favor being that the outcome of the World Championships both years was largely affected by drift. The smaller models with potential maximum flight time 35% less (based on current prevalent estimates of maximum potential time - "B"=35 or 36 minutes; "FAI"=55 minutes) would certainly be less affected by drift.

The major point expressed so far against this proposal is that the rules should not be changed indiscriminately. There should be a very good reason for any rules change, rather than to change the rules for the sake of change. We should be sure that such a change will benefit the FAI program and the fliers before we seriously consider it.

One other interesting protest of the proposal came from Bill Bigge: "Note that FAI is a smaller size than the full 'D's'. If reducing the size did not reduce average flight time, it would be rather pointless. If it did, it would be gravely wrong. Let's not throw away the quest for the natural ultimate which, for me at least, constitutes the appeal of indoor as against outdoor aeromodeling."

THE LAB

Tests And Measurements

The indoor fliers of the world are faced with an interesting challenge - that of developing the best possible man-and-model teams to try and win the World Indoor Championships.

Last year at the Nats and the Detroit Semi-Final, NIMAS members came up with the idea of a set of standards for test and measurement. These "NIMAS Standards" were to be practical standards, non-destructive in nature if possible, and should be such that anyone could build the equipment and make the tests for himself.

In our correspondence with one another, we mention that such-and-such rubber is better than the last we had, that a new film formula makes better film than we've ever had before, etc. However, we have no standard tests to base these comments on, so they are less meaningful than they might be. Why tests? We all test our building materials some way to see how good they are. Our present testing is rule-of-thumb - but everyone has a different thumb! It has been proven that no group endeavor can function effectively without a system of meaningful communication to transmit results from one member to another. NIMAS Standards can furnish the language for communication so that our test results can be understood and used. This is the only way we can truly advance the state of the art efficiently.

The purpose of this new column, which will appear as material is received and organized, will be to encourage systematic testing and development. A rubber testing article has been promised, but we welcome suggestions for test topics and testing methods. We envisioned a series of tests for microfilm solution, and have used and evaluated some of these tests.

Testing Microfilm

In order to fully describe and test any film solution, several parameters or characteristics need to be evaluated to give a complete picture. For example, nitrate dope is nitrate dope, but various samples will have different amounts of solvent. This will affect the viscosity of solutions mixed with the dope, and thus change the rate of pour and spread. These are suggested characteristics for film testing:

1. Viscosity (of any sample solution). The simplest test would be rate-of-flow from a standard orifice. We selected a 2 milliliter eye-dropper and ground off the tip until the orifice was .100" in diameter, then marked it off at the 2 ml. and 1 ml. points. In use, it is filled to the top and permitted to drain. The rate of flow is timed from the upper mark to the lower, which will give comparative viscosity for various samples.

2. Standard pour rate. In order to duplicate color in successive sheets of film, two factors must be duplicated: rate of flow and rate of distribution. Fifteen different jets were made for the microfilm pouring spout (INAV, Aug. 1962), but so far no non-mechanical method of duplicating the rate of distribution has been devised. Tests indicate that close duplication of these two parameters will give close duplication of film color and weight, but without a mechanical pouring mechanism this test will remain subjective.

3. Rupture strength. This test mechanism has been well tested, and results are fairly well defined. Test frames 6" x 12" from 1/4" square balsa were used to make the test samples, and the cured film was loaded in the center by using half a table tennis (ping-pong) ball and lead shot. Some light samples (about .0006 oz./100 sq. in.) have withstood 81 lead shot loaded into the ping-pong ball before rupture. One sample weighing about .0012 oz. per 100 sq. in. supported over 200 lead shot and still did not rupture! The cup was running over!

4. Weight per unit area. This test requires only a very sensitive scale and the ability to wreck large sheets so they can be weighed. (It seems such a waste!) These sheets should be about 300 sq. in. for good accuracy.

5. Dimensional stability. This is important if we are to build very light models - non-stable film will soon warp all but the heaviest structure. So far, no test apparatus has been devised. Suggestions, anyone?

6. Stickiness test. We propose to prepare small frames 1" square, cover them with film, and cure them. This test "patch" will be put in contact with the larger frame of the same batch and the force required to separate the patch from the film will be measured. Very "dry" films will not stick, and very sticky samples would doubtless fail to separate.

7. Two parameters that could be tested are flammability and rate of cure. The first is important if you trim with a hot wire, and the second if you are in a hurry to use the film. Comments, anyone?

RECORDS? MAYBE!

Just after we went to press last month, Pete Sotich sent a list of records applied for after a record trials in Chicago on December 29, 1962. They are:

CHICAGO AERONUTS INDOOR RECORD TRIALS, December 29, 1962

CAT. I, Madison Street Armory (Lecture Room) (22')

Jr. Helicopter - 3:52.4, David Erbach
 Sr. C Cabin - 3:35.2, Tommy Neumann
 Sr. Helicopter - 2:41.4, Dennis Kargol
 Open Helicopter - 5:41.7, Walter Erbach
 Jr. Ornithopter - 0:30.1, David Erbach

Cat. II, Madison Street Armory Drill Hall (75')

Jr. B Stick - 14:14.3, David Erbach
 Sr. B Cabin - 4:08.4, Dennis Kargol
 Sr. Autogyro - 0:16.8, Dennis Kargol
 Sr. Helicopter - 3:26.1, Dennis Kargol
 Open Paper Stick - 16:19.6, Charles Sotich
 Open B Cabin - 5:23.5, Walter Erbach
 Open Helicopter - 5:50.8, Walter Erbach

STATE OF THE ART

This month the featured model has several unique and interesting features, along with the distinctive planform. It was designed and flown by Tommy Neumann and holds the Category I "D" record. At one time it also held the Senior Cat. I "D" record. It has also held the Sr. Cat. II record, as Tommy see-sawed back and forth with Jim Skinner during the 1962 FAI elimination contests. The design holds a high time (unofficial) of over 28 minutes in the Madison Street Armory, set during a practice meet just before the Central Zone Semi-Final in 1962.

The design features which differ from common practice are the swept outlines on wing and stab, semi-stressed dihedral and an up-swept rudder. The rudder location is believed to give better handling under drift conditions, while the swept outlines and semi-stressed dihedral give a better chance of sliding off lights and obstructions such as are common in our Cat. I and Cat. II sites. The major objection to this bracing scheme, according to Tom, is that the wing tips wash-in during a tail slide after hang-up, forcing the model to fall over upside down.

HINTS AND KINKS

Ever since the advent of low ceiling flying, one of our major problems has been controlling the climb of our models so that we can avoid hang-ups. In the past, we have braced our fuselages so that they will be lighter for a given degree of stiffness. Although we first saw this combination of altitude control and fuselage bracing as used by Dick Kowalski, in recent months we have had several different variations of the same theme come in as suggestions.

Figure 1 (page 5) shows a side view of the bracing scheme. The total weight added to an unbraced model is low, and consists of a length of tungsten wire, two adjustment plates made of 1/64" balsa, and enough glue to add these parts to the model. Figure 2 shows a close-up of the adjustment plate and method of installation. The wire is formed into a loop at one end (figure 3) and the opposite end is secured to the fuselage at the rear hook.

During the adjustment procedure, the fuselage is permitted to bow under full winds so that the peak altitude reached will be just below the ceiling. If you have to fly in a higher ceiling, the wire can be moved up to a higher set of notches to permit a higher peak climb. Figure 4 shows a feature which should be built into new models scheduled to use this technique. Since the posts "bottom out" in the sockets (they must be cut to length) the sockets should be reinforced with a balsa plug at the bottom.

After having used this technique on two models so far, we can whole-heartedly recommend this as the most useful adjustment we've seen. Incidentally, the model is assembled as usual, and then the bracing wire is passed through the wing bracing, hooked over the thrust bearing, and then hooked into the proper notches.

One other suggestion: Lew Gitlow has suggested that a short length of jeweler's saw blade be substituted for the front adjustment plate, and a wire peg for the rear plate. The saw blade has much closer spacing than is possible to make in balsa wood, thus permitting finer adjustment.

Prop Block

The continuing good results and simplicity of the Bilgri-type mono-spar prop makes it the most popular prop design to date. One difficulty has always been that the spar, when large enough for the required strength, is so high that it is difficult to join the narrow blade outline to the spar. Bob Champine uses a router to gouge out clearance for the spar near the hub, permitting the outline to be built flat on the block and still join the spar in the center. Bob also (see figure 5) uses small balsa scraps to outline the blade, assuring identical size blades.

AIRFOILS

Since the subject of airfoils has largely been left out of this newsletter (primarily due to lack of info) it is high time we establish this column to air such information as we receive it.

The Equiangular Spiral

This curve, or perhaps it could be called a family of curves, has one outstanding feature of convenience. If ribs are cut to this curve, they can be trimmed in length by cutting off the trailing edge. The rib that remains has the same % thickness and the high point is located at the same % of maximum chord. Thus it becomes unnecessary to plot new ribs for different chords - just make a template for the largest chord you need and cut all ribs with that template.

This airfoil is somewhat involved to plot, but here is the method. First, the general equation of the curve is: $\rho = ae^{k\theta}$ where:

- ρ is the distance from the origin
- $e = 2.718281..$ the base of natural logarithms
- a is an arbitrary constant
- k is a constant which determines airfoil thickness
- θ is the angle ρ makes with x axis (in radians)

LET $a = e^{-\pi k}$
 THEN $\rho = e^{-k(\pi-\theta)}$ OR $e^{-k(180-\theta)/57.29}$
 (if θ IS IN DEGREES)

LET $k = 4.58$ (8% THICKNESS)

$\rho = e^{-4.58(180-\theta)/57.29} = e^{-.08(180-\theta)}$
 $-.08(180-\theta) = \ln \rho$
 $.08(180-\theta) = \ln \frac{1}{\rho}$

The following values of k will give the thickness indicated:

k	9.2	7.35	6.1	5.25	4.58	4.05	3.65
T	4%	5%	6%	7%	8%	9%	10%

Richy Earle "turned the crank" for us and produced the following set of values for k=4.58 (8%):

θ (degrees)	$\ln \rho$	ρ	θ (degrees)	$\ln \rho$	ρ
90	-7.2	<.001	170	-0.8	.449
105	-6.0	.0025	172	-0.64	.527
120	-4.8	.0082	174	-0.48	.6185
135	-3.6	.0273	176	-0.32	.726
150	-2.4	.0907	178	-0.16	.852
160	-1.6	.2018	179	-0.08	.923
165	-1.2	.301	180	0.0	1.000

To further clarify this method of plotting airfoils, see the sketch at the bottom of this page.

NEWS FROM AROUND THE WORLD

CALIFORNIA - SANTA ANA

High winds outside the hangar caused all the helicopters to be moved inside. This, plus cold weather held times down on Jan. 13. Some flights: Cummings - 37:55, (300 D); Finch - 33:56 (C); Redlin - 32:30 (FAI); Atwood - 32:10 (geared FAI).

The Feb. 3 RT was going full blast until the entire Marine squadron was mobilized at 3 PM and the hangar was opened to move the helicopters out. Before that, these times were posted: Cummings - 34:29 (1100 turns, 300D, RPM 321); Gitlow - 32:02 (B); Bilgri - 33:29 (FAI); Atwood - 32:40 (geared FAI); Paton - 31:38 (geared FAI).

CANADA - VANCOUVER

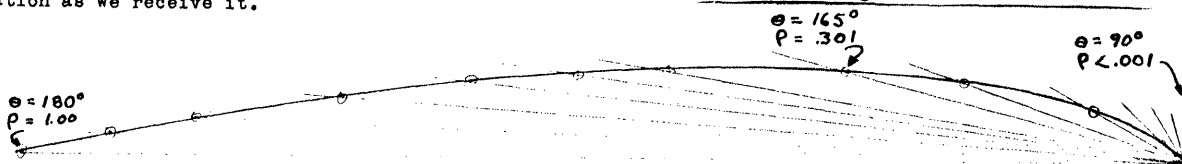
Last month we asked for contributions on indoor to be sent to Greg Stephenson (we even mis-spelled his name) in Vancouver, Canada. As some of you found out, we gave the wrong street address. It should be: Greg Stephenson, 3885 West 36th Avenue, Vancouver 13, B. C., Canada

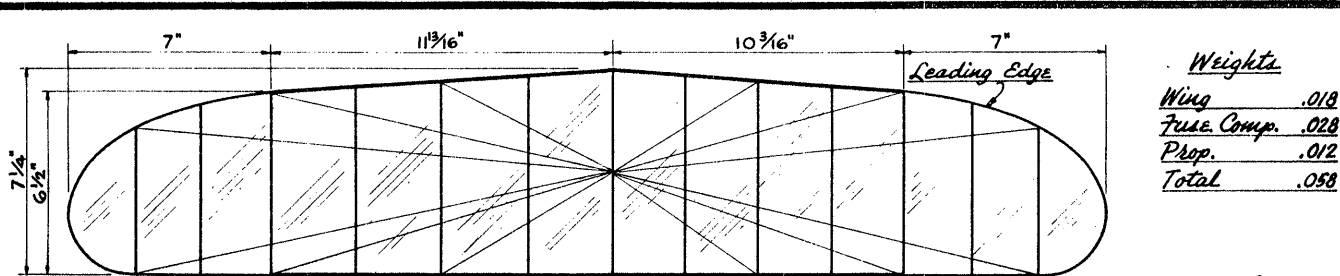
COLORADO - DENVER

George Batuik reports that a new site 40' high with floor 118' x 290' has been opened up. The Martin Model Masters have already held two indoor contests, with three more coming up. Contact George at 3066 S. Osceola, Denver, for more info.

FINLAND - HELSINKI

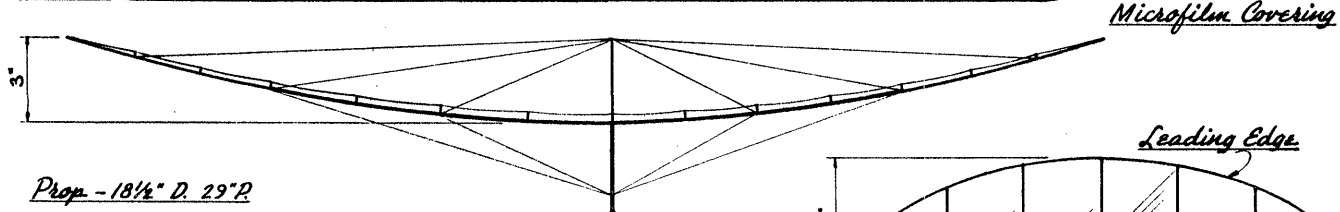
The Annual New Year Contest was held in the Helsinki exhibition hall in very cold weather. FAI times: Esko Hamalainen - 13:52; H. Raulio - 9:20; K. Karma - 8:55. The activity is very slow in Helsinki due to the extreme cold - but the skiing is fine!





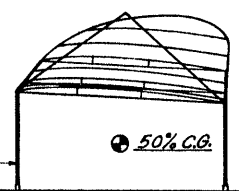
Weights

Wing	.018
Fuse Comp.	.028
Prop.	.012
Total	.058

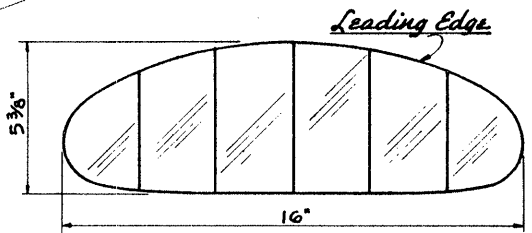


Prop - 18 1/4" D. 29" P.

Airfoil 5% thick @ 36% Chord

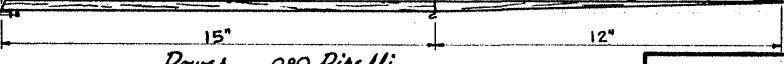


Wing Mounts - Front 3 1/4" Rear 3"

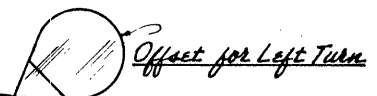


4 1/2"

50% C.G.



Power - .080 Pixelli



Offset for Left Turn

F. Parlija '62

F.A.I. CLASS 'D' INDOOR MODEL
Designed by THOMAS A. NEUMANN
CHICAGO AERONAUTS

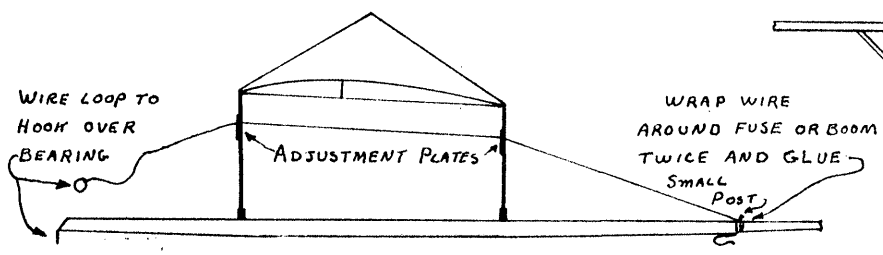
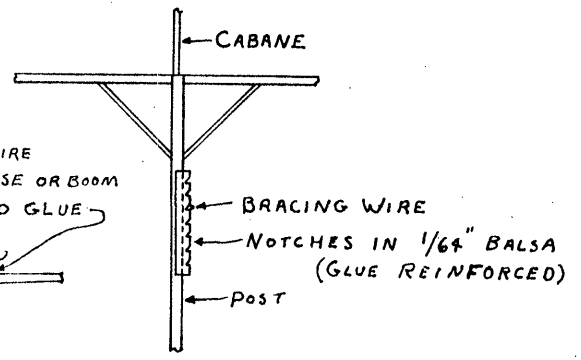
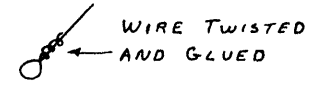


FIGURE 1



ADJUSTMENT PLATE DETAIL
FIGURE 2



DETAIL OF LOOP
FIGURE 3

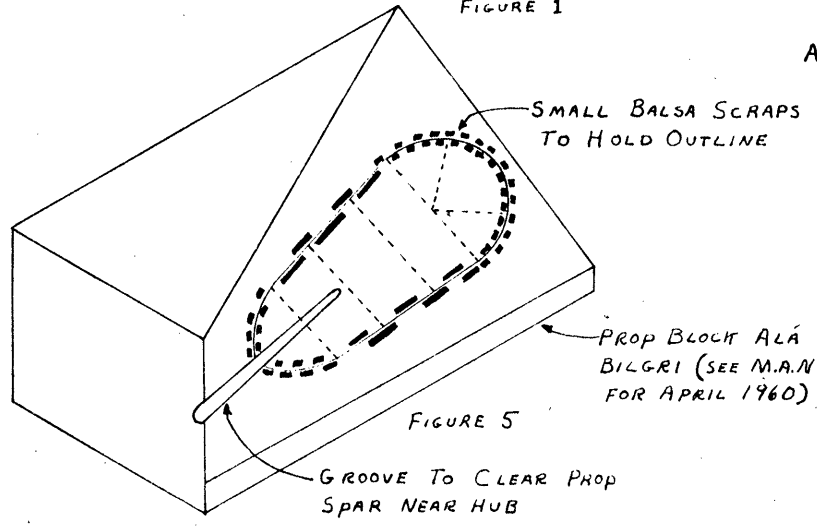
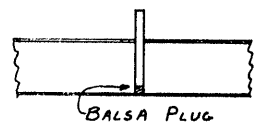


FIGURE 5



BALSAPLUG
SECTION OF FUSELAGE AT WING SOCKET (BOTH SOCKETS)
FIGURE 4

INDIANA - KOKOMO

Chuck Borneman's contests are well attended by fliers from all over, and the events are hotly contested. Easy B times are over 7 minutes, with less than a minute between 1st and 3rd places. HLG times are up to 42 sec. with top time now held by Bob Larsh. The Kokomo MAC has challenged the Chicago Aeronuts to an Easy B and glider contest. The challenge has been accepted and the bash takes place February 3.

MASSACHUSETTS - CAMBRIDGE

The Tech Model Aircrafters of MIT have a monthly flying schedule in the MIT Armory on these dates: Feb. 9, March 2, March 23, April 20, May 11. Contact Eric Greenwell, 420 Memorial Dr., Cambridge 39, Mass.

MISSOURI - KANSAS CITY

The Sodbusters club is planning a scale indoor contest sometime soon. For info write Jim Dunkin, 10411 East 39th Terrace, Kansas City, Mo.

NEW JERSEY - UNION

The Union M.A.C. has been holding indoor contests in the Union High School Auditorium (30' ceiling). This club has several top-notch indoor fliers as members, and they are helping train the other club members. They have two more scheduled sessions: February 28 and March 28.

NEW ZEALAND - AUCKLAND

Jack Eriksen reports that a monthly indoor session is held in a 22' site in Mt. Albert. The times run to 11:51 (Spar class HL) (Cat. I record) and to 7:34.2 for tissue. Jack was somewhat apologetic about these times, but they are pretty good for that ceiling height!

NEW ZEALAND NATS

The N. Z. Nats held indoor for the first time in 12 years. Twenty-four advance entries boiled down to 12 fliers making official flights. 1st and 2nd place models were tissue covered Bilgri "Ditto" with 6:48.7 and 5:26 respectively. Third place was an Easy B with 5:16.7. The site was a cluttered 30' with very rough air that held lighter mike ships to lower places.

OHIO - CLEVELAND

Over 270 contestants braved cold and turbulent air to fly for trophies to fourth place at the Great Lakes Indoor Meet held in the Cleveland Public Auditorium on Jan. 6. Top times: HLG - Otto Heithecker - 1:09.2; Pre-Fab - 2:23, Mike Karlak; B Paper - 12:18.2, Otto Heithecker; Indoor Stick - 15:32.4, Don Eble.

MORE ON EFFINGER

We are very grateful for all the support and letters we received after our "Open Letter To Bill Effinger" in the January issue. Bill Cullen, a member of the Long Island Gas Monkeys, adequately summed up the matter in these words:

"As regards 'pepping up' - or popularizing indoor flying; Please - Hands off! In my opinion, indoor, and the outdoor FAI events, are the highest form of the art, and I don't want them watered down to some common denominator. Rather, I want to improve myself and my airplanes until I can beat the "experts" at their own game.

This is the challenge behind our sport that makes it worth the hours that we spend on it, and from which we derive our pleasure. This is also the challenge that will catch and hold the interest of that one young fellow in a thousand who has the potential to be a serious student of the art. (If we can make him aware of it.)"

QUESTIONS AND ANSWERS

Bill Bigge lumped questions #22 and 23 together and made the following comments on break-in and winding rubber motors:

"Motors may be broken-in by stretching or pre-winding, but pre-winding is probably better. Pre-wind several times, increasing the number of turns until the maximum is reached, keeping the motor well lubricated. A motor wound several times to the practical maximum produces consistent torque on re-winding.

The most effective way to back off is as little as possible. The Germans were taking off exactly one winder turn in transferring to the rear hook. If the torque is excessive, let the prop spin until flexure or RPM looks normal."

Since several groups of low and medium ceiling fliers wind to maximum and back off a certain number of turns to regulate the peak altitude, it would be interesting to hear from some of these fliers for a better description of this technique.

THE HAND LAUNCH GLIDER

PART 12A

by RICHARD MILLER

A WORD OF EXPLANATION!

As Bud pointed out in the last issue of INAV my new assignments for American Modeler and Air Progress have kept me hopping for the last several months; 11,000 miles on the Chevy since August will give some idea of the amount of traveling. Not only was the work load heavy but the constant moving made it momentarily impossible to carry on with NIMAS/East and the HLG series. Although I felt bad about this there was nothing, under the circumstances, that I could do about it.

The regrets about the NIMAS/East activities were softened a little by the state of local conditions. Nobody bothered to contribute as much as a 'boo' to the newsletter and attendance at the armory was downright disgraceful. There were seldom more than 3 or 4 people at a flying session. However quite a number of people had been swindled into paying for the newsletter and now that it has been discontinued might want to make some claims. A fair restitution will be made.

With the HLG series resumed (at least for the time being) this leaves only an explanation of the contributor-bugging technique. Apparently Bud didn't understand that the method (outlined in Jan '63 INAV) applied only to SuperSplootch plans. For installments to the HLG series it is as follows: Take - buy that is - a number of U. S. Government Post Cards, like 25, 26 or 27. Address them all to.....

PART 12B

DESIGN (cont.)

Lowering the Boom

Even the most casual comparison of the altitude achieved with a straight, or almost straight-up flight path, and that reached by the traditional corkscrew climb shows a decided gain in favor of the former. Further, it implies that the two-position stab might be the key to generally higher flight times and makes consideration of the flexible fuselage boom as a means of getting those two positions a profitable area to nose around in.

We know from experience that the difference between a properly adjusted glider and one that doesn't quite make it over the top is a shadowy fraction of a degree of trim. We further know that this difference is critical enough to determine whether the glider will recover from a dive or not, and that the faintest of touches on a very small portion of the stabilizer trailing edge can decide the issue. This variation is so slight that it should properly be measured in (angular) minutes, of which a degree has 60. And while we're reflecting about all the agonizing moments that a few minutes of uplift can bring us we can also take time to thank whoever invented longitudinal stability for giving us this minute margin without which our gliders would not fly.

While it usually proves somewhat bothersome to tread this razor's edge of trim in search of the perfect setting, we find that the tables are turned when we want a little extra work out of the combination for other purposes. If the deflection is small, so will be the energy we need to get it. Of course it does set us the task of shaping the boom to precisely the dimensions necessary to get the results we want, but by using the practical approach of trimming the boom during actual flight tests this should not prove to be a great problem. There is the danger of going too far but at least two solutions come immediately to mind. The first is to glue some wood back on, preferably a strip of lighter balsa; the second is to trim away a little stab area if possible.

Now if we're going to work it so that we have slightly fewer minutes (of angle) during the climb we can easily manage to have a few more when, near the top, the stabilizer straightens out the boom. Having seen that a hair's-breadth of decalage can save our skin we can hope that the addition of one breadth more can do at least half that much again. It will certainly tend to dampen stalls more readily and by this token should prove helpful in the abrupt transition that will result from a straight-up launch. And it might even be enough to get around that tip stall problem from which the high A/R designs like the Hi-Hat suffer.

Finally this experimenting with the fuselage, particularly trimming it down to marginal dimensions that affect its flexibility to the point where the launch path is changed, should give a keener appreciation of the structural functions of balsa. Needless to say, good wood and workmanship are essential prerequisites.

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

MARCH 1963

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

Six new members joined NIMAS during February, and at least one has already returned his ballot!

EDWARD R. CENKNER, 19581 Goulburn, Detroit 5, Michigan
W. G. GRAHAM, 1743 Grant Ave., Winnipeg 9, Manitoba
DAVE NICOL, 4497 West 214 St., Fairview Park 26, Ohio
LAWRENCE PACIFICO, 11148 Condon Ave., Inglewood 2, Calif.
GERALD RITZ, 9520 Greenwood, Des Plaines, Illinois
ROSS STECKEL, 7437 Collet Avenue, Van Nuys, California

****SPONSORED JUNIOR MEMBERSHIPS****

The fund which was started last month has now grown to \$22. This amount will subsidize eleven junior memberships, with the cost to the junior being \$1. So far, no clubs have forwarded nominations, so we still have the entire fund available.

****NIMAS BALLOT****

There has been a most heartening number of ballots returned so far, but we still have a long way to go for the optimum 100% return. If you still have your ballot, please vote on those proposals concerning the events you fly and return the ballot as soon as possible.

Contest Board Action

Chairman Phil Klintworth has distributed to the FF CB a memo reviewing the Solid Motorstick proposal and introducing a proposal for the addition of F.A.I. Indoor Models as an AMA category. He plans to follow up with action on other outstanding proposals at an early date. Good Work!

Back Issues?

There are a few back issues of INDOOR NEWS available on a first-come-first-served basis. For NIMAS members the cost is 25¢ handling charge, and for non-members the price is 10¢ per copy.

We have a few copies of back issues on hand that are available to NIMAS members for a 25¢ handling charge, or for non-members the price is 10¢ per issue. In addition, we plan to reprint back installments of "The Hand Launch Glider" by Richard Miller. We have some orders now, and if you would like to complete your set, let us know which issues you want. Since the number of orders will help to determine the method of reprinting and also the price per copy, get your orders in soon!

IS YOUR WING AREA LEGAL?

Some time ago it was customary to use the formula $\text{Area} = 0.8 \times \text{max. chord} \times \text{wing span}$ (projected) to figure the wing area of the parabolic development planform with "v" dihedral.

On page 206 of the 1959-61 Zaic Yearbook, Ray Harlan gave an excellent discussion of this problem, and proved that the coefficient should be .8333. This results in a larger wing area than would have been figured by the old method, which could be a shock if your area was pretty close to begin with.

This topic comes up here by request of Frank Ehling, who received a letter a while back asking about this very topic. By the way, the same article by Ray also has the formula for the same planform with tip dihedral. We won't reproduce it here, since it is quite complex, but if you like a neat mathematical discussion, try Ray's article.

FAI INDOOR REPORT

Local Elims Schedule

Due to late confirmation of sites and late planning, this may not be a complete listing of local elims. Please check with the FAI Indoor Committee rep for your zone if you want more info.

DALLAS, TEXAS, March 17, 1963

Bud Tenny, Box 545, Richardson, Texas
MOFFET FIELD, CALIFORNIA, Hangar #1, March 24, 1963
Joe Bilgri, 1255 Blackfield Dr., Santa Clara, Calif.
(Please contact Joe at least 10 days in advance so he can complete security info for the Navy.)
WILMINGTON, CALIFORNIA, April 12, 1963
Andy Faykun, 9410 Dayton Way, Beverly Hills, Calif.
SANTA ANA, CALIFORNIA, April 14, 1963
Bruce Paton, 1010 N. Mirasol St., Santa Ana, Calif.
CHICAGO, ILLINOIS, April 20, 1963
Pete Sotich, 3851 West 62nd Place, Chicago, Illinois
DETROIT, MICHIGAN, April 21, 1963
Paul Crowley, 16835 Lilac, Detroit 21, Michigan

FAI Indoor Committee

CHAIRMAN:

Dick Kowalski
20203 Moenart
Detroit 34, Michigan

EASTERN ZONE

Bill Bigge
5131 Mass. Ave., NW
Washington 6, D. C.

CENTRAL ZONE (North)

Paul Crowley
16835 Lilac
Detroit 21, Michigan

CENTRAL ZONE (South)

Bud Tenny
Box 545
Richardson, Texas

WESTERN ZONE

Dave Copple
823 South Mariposa, Apt.#1
Los Angeles 5, California

WE GOOFED!

Last month we published a list of rules suggested by the FAI Indoor Committee. Rule #10 stated that only 3 models may be used by a contestant to complete his flights. Actually, the C.I.A.M. has ruled that there shall be no limit on the number of models used. Sorry!

LOW CEILING FORUM

Last month we received the following comment:
"I have read numerous magazines, etc. on indoor works, but they all leave me COLD. They are talking to someone I am sure, but I doubt if it is any of the indoor fliers in our area. I can't even imagine what this 75 and 150 foot ceiling flying would be like; we, and I think a great many fliers, can use help, suggestions, and results of experiments in 25 to 35 foot gyms where you can't keep bouncing from basket to basket without getting hung up. In other words, starting with a basic 8 or 9 minute plane what do you do to get 10 minutes? I believe you have the idea."

As most of you know, the Dallas area indoor fliers are blessed (or afflicted) with fairly frequent access to the Walnut Hill Recreation Center, a 20' gym in North Dallas. We have had excellent cooperation from Clarence Frank and Glen Dalton, who manage the site as part of the Dallas Recreation program. The only fly in the ointment here is that this building always has drift to some degree, which effectively prevents most attempts at systematic experimentation (it's most frustrating for three flights out of four to hang up at 8 min.+ with 18' of altitude and lots of turns left!).

Our main problem has been to live with the drift and hope for those rare occasions when it stops. During those few times the mike record (for the site) was boosted to 11:30 (B stick), and the paper time was set at 10:39. It is safe to say that without this site indoor flying would be dead in this area; and your editor and the others can feel kinship with the author of the above comment.

So let this be a plea in behalf of Low, LOW Ceiling Fliers everywhere: Please pass on all comments and suggestions you have for improving times in sites with less than 30' ceilings. Next month we will kick off the Forum in style with comments for the glider fliers by Lee Hines. Anyone else??

AN INDOOR LIGHT BOX

by RICHARD MILLER

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

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

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

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

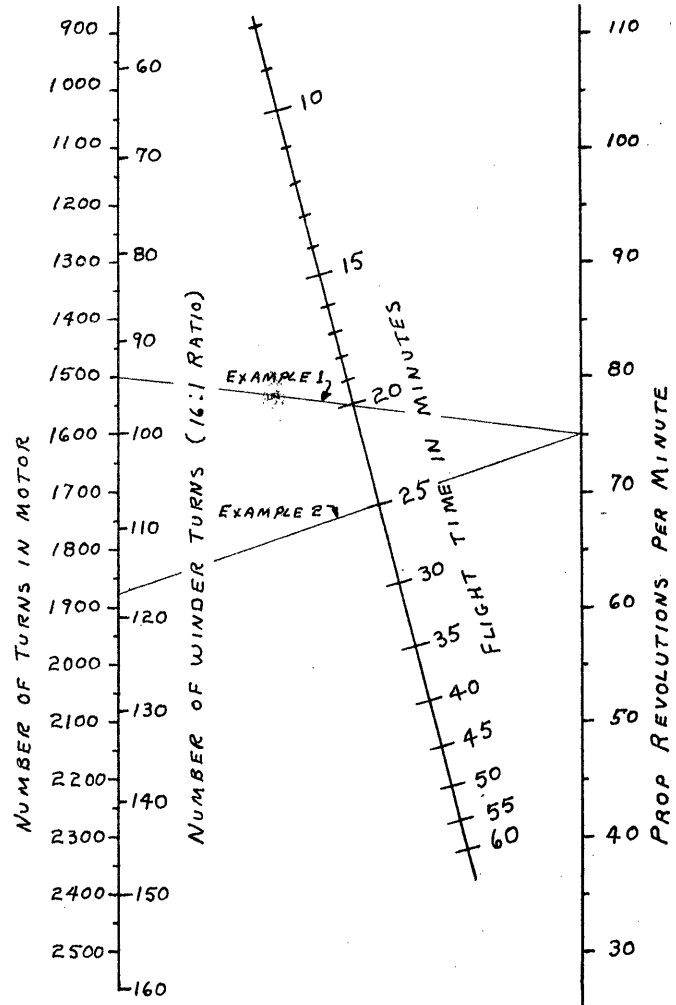
Although the glass didn't cost very much - \$2.50 for the two pieces - I think you can do better. I looked for, but could not find, ordinary glass shelving. These standard glass shelves have several advantages, not the least being that they are manufactured in the long thin shapes we want. Secondly they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

(continued top of next page)

WHAT'S THE R.P.M.?

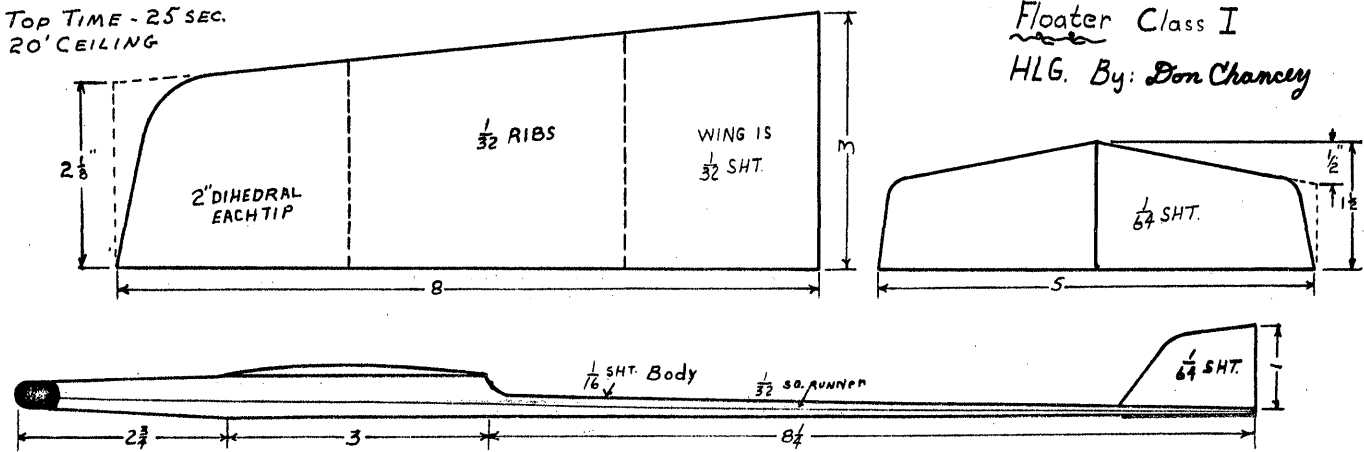
A major factor of indoor model performance is the RPM of the propeller. As an example, it would be almost a practical impossibility to carry enough turns in the motor to fly for 30 minutes if your model's prop RPM is higher than 80. In a reverse example, many low ceiling models use only part of their turns, landing with quite a few turns left. A smaller prop would use more turns, and possibly the total flight time would be higher.

To use the chart, determine how many turns were used in a flight (unwind and count the remaining turns, subtract this number from the number you started with), and lay a straight edge across the chart at the number of turns and the flight time; where the straight edge crosses the RPM line read the RPM. Example 1: 1600 turns (100 winder turns) were put in and the model landed with 6 winder turns (96 turns) left in the motor. This leaves about 1500 turns used during a flight which lasted 20:05. This figures to be (from chart) 75 RPM. Example 2: With an RPM of 75, it would take almost 1900 turns for the same model to fly for 25 minutes.



FLIGHT TIME & R.P.M. CALCULATOR

TOP TIME - 25 SEC.
20' CEILING



Floater Class I
HLG. By: Don Chancy

Either, or any way you try it, I think you'll find the ability to look into the wood you're working on, rather than simply at it will be well worth the modest investment in time and money.

RECORDS? MAYBE!

ANNUAL INDOOR MODEL AIRPLANE MEET, January 27, 1963
 CAT. II, 5th Regiment Armory, Baltimore, Maryland
 (75' ceiling, beams at 50' and lights at 35')
 Open B Cabin - 11:56, Bob Champine
 Open B Cabin ROW - 3:50, Bob Champine

QUESTIONS AND ANSWERS

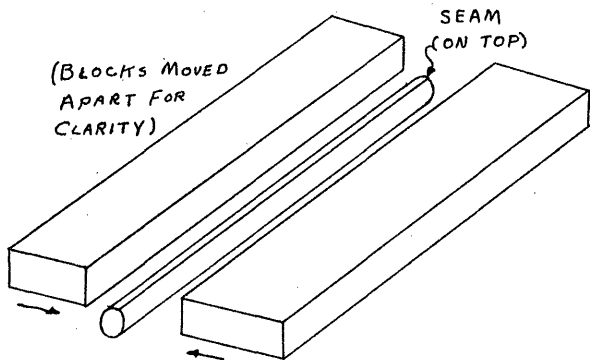
'Way back in November, this column posed the question about the range of thickness for microfilm. We continue to be amazed at the wide range of things which must be considered in attempting to answer this question. So far, two different correspondents have noted experiments along this line, so we hope to be able to cover this question soon. Meanwhile:

25. How do you avoid twisted seams in motor sticks and tail booms?

First, wood with uniform grain must be used, and the blank must be sanded uniformly. Next, it must be perfectly aligned when it is rolled on the form, and a good glue that does not "pull" should be used. Lew Gitlow has suggested these methods for rollong sticks and booms:

Use condenser paper or light tissue as an aid in rolling these tubes. While the sanded blank is soaking, fasten (with saliva or water) one edge of the tissue to the form, and roll up one layer on the form. Carefully align the blank on the tissue next to the form and roll up the blank and the rest of the tissue. Put in the oven at lowest heat for a few minutes and then unroll and glue the seam.

Place the rolled blank between two pieces of 1/4" balsa with the seam on top. Carefully arrange the blank and the jig pieces until the seam is straight and just closed. Then glue the entire seam before removing the stick from the jig. (See sketch below)



THE HAND LAUNCH GLIDER

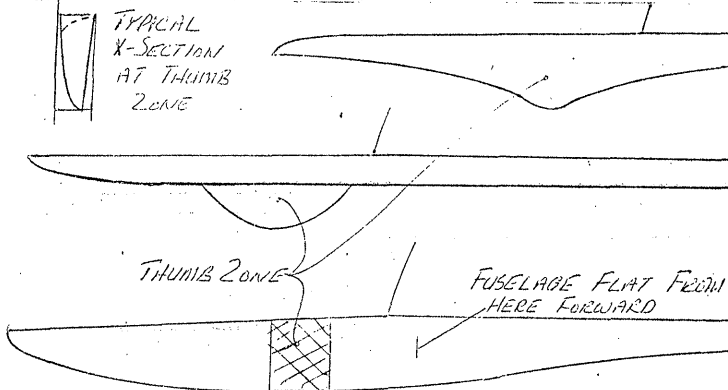
PART 12 (cont.) by RICHARD MILLER
Finishing the Fuselage

Although none of the remaining sections of the fuselage is as important as the boom each one has a specific job to do and should be designed so as to best do it. That part of the fuselage directly ahead of the wing where we hold the glider between our thumb and middle finger when launching it is an area with a very definite function. It should provide a convenient point of purchase and along with a properly designed and executed finger grip make the glider fit our hand the way a comfortable old glove might. This easy feeling in the hand, which some gliders have and others haven't, can contribute a lot more than you might suspect to good control.

If the fuselage, where we press against it with the thumb - the "thumb zone" - is rounded and not too deep it is not going to give us the kind of grip we need. Why not, then, make this area both flat and deep enough to give us a fair degree of purchase? (And while we're about it why not keep it flat all the way to the nose in case we want to add a lead slug up there later?) We can also

flatten the right side of the fuselage to an extent, but the fact that the middle finger rests laterally on that side makes it less essential.

As a rule of thumb (agrrr!) I make the T-zone about 1/8" deep for every 10 sq. in. of wing area; and because most of my gliders are close to 50 sq. in. this dimension is usually 5/8". And because my hand is fairly large I find that the thumb area is 4-3/4" forward of the wing t.e. - although this will vary with the individual. One more factor of personal preference enters finally - whether the flat area will be bevelled to any degree (giving a sort of V-shape to the fuselage cross-section). This will determine to some extent the amount of bank the model assumes during the launch. I usually have trouble getting my gliders banked enough during the launch and use the bevel to offset this.



A few scattered sections remain. We will not want those portions of the fuselage onto which the wing and stabilizer will ultimately be cemented to be true and in a proper relationship to each other. The piece of wood that supports the stabilizer is both heavy and a long way from the C.G. so it pays to trim it to fare-thee-well. What remains now is to put all these pieces, controlled as they are by the moment arms we desire, together into a functional entity.

Insomuch as most fuselages are invariably deeper at the front than at the rear, stringing the elements together usually includes throwing a curve in somewhere along the line. Sharp curves should be avoided at least in places where there is liable to be stress - such as the top of the fuselage just behind the t.e. of the wing which seems to be a favorite thinning-down spot. Lee Hines uses a very gradual sweep - on the Sweepette - in that area but also keeps the fuselage deep enough right there so that breakage is highly unlikely. An alternative is to put the curve under the wing where it is liable to do no damage, drop it down to include the thumb zone, then bring it back up to a fairly sharp nose.

Next month: Design Resume and an Exhortation.

A WORD OF REBUTTAL

An open letter to Richard Miller:

Dear Richard;

As I read "The Hand Launch Glider," part 12B, some of your words on flexible booms used to lower decalage for climb straightening brought some thoughts to mind of observations of my past gliders.

Naturally, many sizes and shapes of tail booms have been constructed for those gliders, with varying flexibility and density; also (naturally) with varying results.

I first want to make it clear that I feel your methods for achieving the climb you desire (as described in part 12B) to be so impractical (and virtually non-reproducible) that one's mentality would be severely shaken by frustration.

I secondly feel that good wood and workmanship, no matter who is the builder, will not be the help you think.

Recalling specific examples now, the shallow, wide (more round than oval or teardrop) type of boom sometimes decreases decalage at launching speeds. The difficulties which arise are, in my mind, (1) that flexing and therefore decalage varies with force applied during the launch and is therefore virtually non-repeatable; (2) the chances of harmonic high speed flutter and/or twisting of the tail assembly are high; (3) the possibility of much boom

breakage due to marginal structure. The last is much more likely at a crucial time due to our natural tendency to put the last few pounds of force into the launch in an all-out effort to win. Unless you have specific methods (which I can't envision) your booms would surely be marginal in strength.

May I ask, Have actual models been constructed to attempt to evaluate the hypothesis? What would be the boom cross-section and rate of taper for the test models?

The most recent experience I have had with flexing and its effect came with the latest "Sweepette 13," which was the first I had built for an unlimited ceiling. For various reasons, I made it strong with 6 lb. wing stock and a spruce fuselage. The finished weight is 20.5 grams. The cross-section of the spruce is teardrop and I now feel that I went a bit small, since on an extremely hard launch it would whip just at launch and go off at an angle many degrees to the right of the desired climb, in fact nearly horizontal for an instant. This has happened on previous gliders of all designs and types. I realize, by the way, that the mass and volume of the tail assembly components are companions of boom flexure. I am sure in this case that the tail components were light enough, smooth and shaped well aerodynamically, and that the boom was simply too weak.

As some may recall, I recorded times of 1:16.2 at Moffet in December 1961, 1:12 at Moffet in March 1962, and 1:18.1 at Santa Ana in December 1962. What may amaze you (or bore you) is that all of these times were achieved with the same glider. This is also the glider mentioned above. The weight remained the same, even though a new stab was fitted before the March session.

In conclusion, I feel that two-position stabs might have some merit, but boom flexure does not seem to be the doorway to 1:20 and up. Now, I will "put up my dukes" and await your comments.

Vehemently yours,

Lee Hines

NEWS FROM AROUND THE WORLD

CALIFORNIA - SANTA ANA

The Sky Hoppers of Orange County are really active in indoor now, flying in a Cat. I site and the hangar. The new site is the Santa Ana Boy's Club Gym (19'), and the times are in the 8-10 minute range.

Their March 3 contest had a total of 52 entries, and lots of bad luck. Several cabin entries scratched due to rubber breakage, Frank Cummings lost a "300" to a few curious pigeons, and several other fliers suffered from drift all day. Contest results: Stick - 33:43 (C Stick), Tom Finch; Cabin - 18:12, Cummings; Paper Stick - 21:00, Bill Atwood; Easy B - 15:07, Sheridan Asklund, HLG - 1:01, Dave Bales; Biplane Scale - 60 points, Joe Bailey, Monoplane Scale - 64.5 points, Joe Bailey.

ILLINOIS - CHICAGO

The weatherman was right for once in Chicago - he forecast snow which came on schedule and cut down on the entries in the Sixth Annual Chicago Aeronauts Indoor Contest. However, 27 contestants made 41 entries in 6 events and fought hard for top honors. The results: Jr. Paper Stick - 10:16.6, Dennis Kargol; Open Paper Stick - 13:14.0, Charlie Sotich; Jr. Stick - 18:40.5, Dennis Kargol; Open Stick - 22:03.2, Charlie Sotich; Jr. HLG - 0:53.8, Dan Neumann; Open HLG - 1:07.0, Tom Neumann

LOUISIANA - SHREVEPORT

Mark Valerius, prexy of the Shreveport Sky Demons, is trying to find an indoor site so the club (mostly C/L speed fliers) can branch out and also dodge winter weather problems that go along with C/L flying. Good Luck, Mark!

MASSACHUSETTS - CAMBRIDGE

The Tech Model Aircrafters of M.I.T. are making very good use of the M.I.T. Armory (42' ceiling, 37' usable). Three club members have topped 45 seconds with HLG in the Armory, and at the March 3 session Ray Harlan turned 10:25.4 with his B Cabin.

The next M.I.T. session is on March 23 - contact Eric Greenwell, 420 Memorial Dr., Cambridge 39, Mass. for info.

NEW YORK - ORANBURG

Flying sessions still are being held in the Rockland Hospital gym, where the fellows are blessed with a 30' clean ceiling. That ceiling helps to account for the good amount of activity in the site, but they have a bit of drift to contend with also.

Recent sessions have seen Ted Pfeiffer out with a very nice flying indoor scale job, and Pete Andrews with a fine new "300"D.

TEXAS - BRYAN

Our good buddy Lee Polansky is continuing his work with juniors, and just recently staged a HLG contest in the 20' gym at St. Joseph's Church. Thanks to his fine coaching, he has a real live-wire group.

VIRGINIA - LANGLEY FIELD

The USAF has given permission for the indoor fliers at Langley Field to use a hangar there. The ceiling is 22' with enclosed beams, and the drift is low. This is a real break for these fellows, since they have been looking for a site for some time.

STATE OF THE ART

In the 1962 FAI elims, Jim Skinner placed 4th in the Cleveland local elims and 4th in the Detroit Quarter-Final with this design. He elected not to fly at the Semi, but his high time at Detroit was a new Senior Cat. II D Stick record which has stood for almost a year. Of the model Jim says, "I am not using the 1/32" wing spars again; they only cause trouble. 1/16" x 1/32" 4 lb. stock seems to be about right for most planes."

Of the prop, he comments, "It is quite similar to Kowalski's 20" prop, except for a slightly wider blade. I believe that a prop with a narrow, high pitch blade is just 'slicing the air into ribbons' - doing plenty of pulling but not very efficiently. Look at the blades of an electric fan - wide and large. Extremely low speed aerodynamics may work differently than expected. Until I can prove some of my ideas or until someone develops a better prop, I will use the design I sent you, or Kowalski's design. For high ceilings, of course, a single spar prop seems to be best."

HINTS AND KINKS

Phil Klintworth sent in our lead-off hint, but it is several hints all rolled into one. The most apparent idea is the tungsten wire brace running the length of the boom, across an adjustment plate like those used in the adjustable fuselage bracing featured last month. This wire serves two purposes: first, it controls and/or prevents tail boom "droop" as the model ages. Second, it permits handy adjustment of the tail incidence.

The real versatility of the bracing post is that it can be used as a center post to brace the tail, or the adjustment plate and incidence wire can be added to an existing model with a braced tail. If the tail is not braced, only the top half of the post is needed; if you use underslung rudders, use only the top half of the post and run the tail bracing to the l.e. and t.e. of the fin.

Now comes the fun: The Detroit Balsa Bugs have long recommended using a small doubler around the boom at both the l.e. and t.e. of the stab. Phil suggests that the boom be made two-piece, with the joint where the front doubler usually is. This saves precious boom wood by giving better utilization of normal size wood (a boom takes just enough wood from one piece that you can't get another from that piece). It also permits a much lighter grade of wood to be used for the rear portion.

Bracing Hint

Larry Renger suggests that the compression member of extension, tensioned properly, and glued at your leisure, shown in Fig. 1. The bracing wire can be run around the extension, tensioned properly, and glued at your leisure. The extra length is then trimmed off after the glue is dry.

"Quickie" Compression Ribs

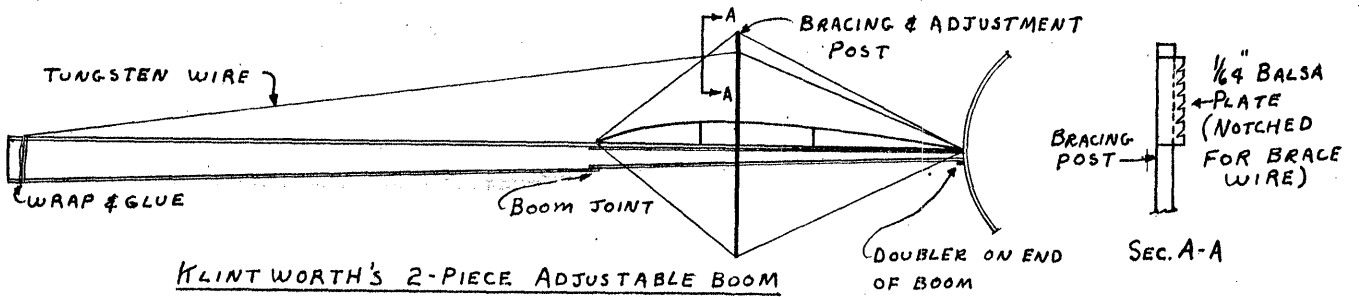
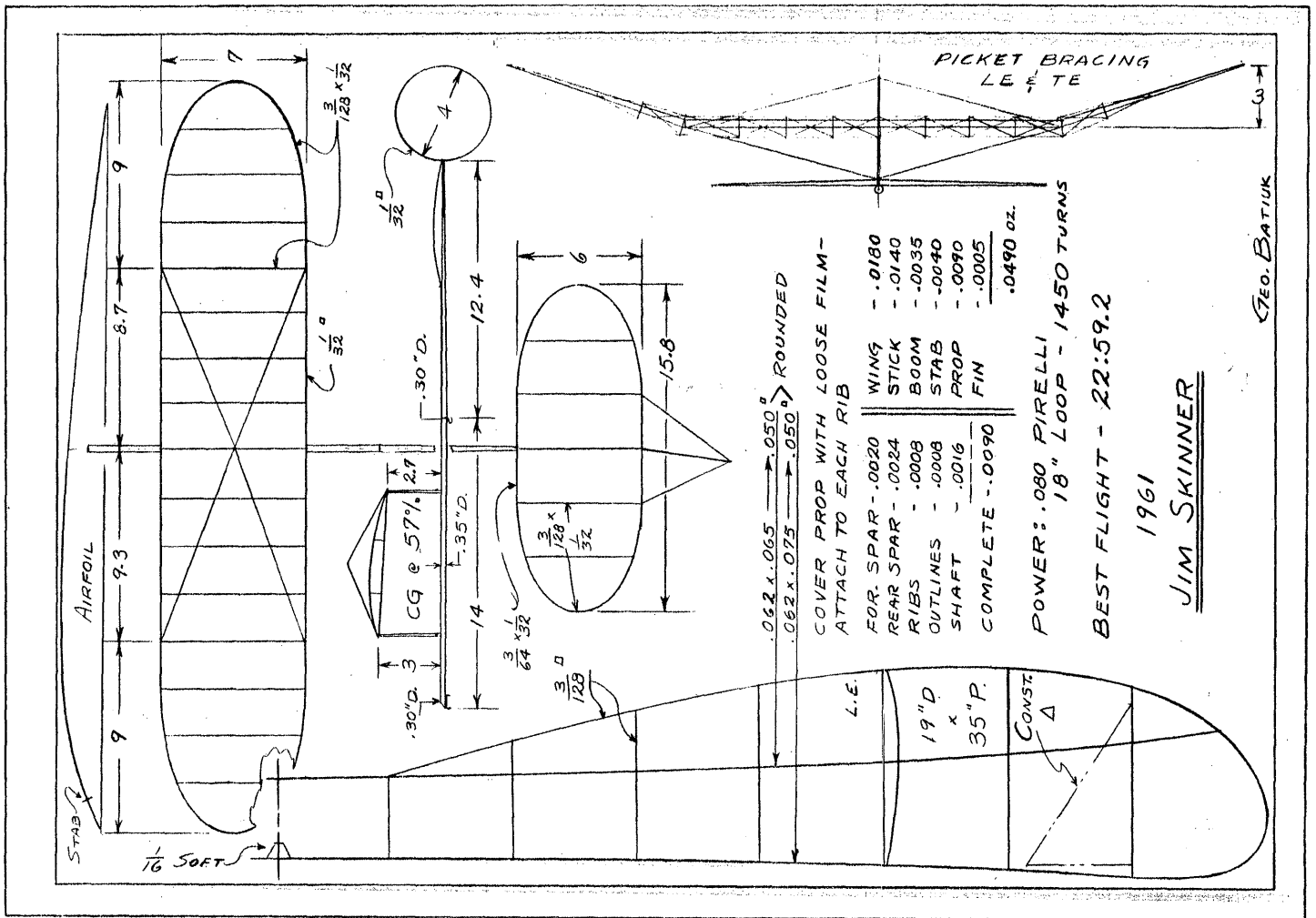
Charlie Sotich showed us this one - it saves lots of time making compression ribs. Instead of cutting the exact length of cross-piece to fit between the members, glue the brace to the side of the rib as shown, then trim it off flush with the rib after the glue is dry.

Another Bracing Hint

For some time we had been using small pegs glued to spars and wing posts to hold the wire during the bracing operation. Later, in case of re-rigging or field repairs, the peg may be soaked loose. (More fun!) If a slightly longer scrap is used with a bevel to hold the wire, thinner can be used to loosen the wire without soaking loose the whole peg. The weight increase is negligible.

And Another!

Eric Greenwell uses Scotch tape to join bracing wire to the bracing tensioner weight - quick and easy!



COMPRESSION MEMBER ACTS AS BRACING WIRE SUPPORT

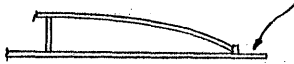


FIGURE 1

CROSS-PIECE GLUED TO SIDE OF RIB



FIGURE 2

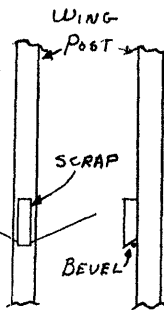


FIGURE 3

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

APRIL 1963

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

New members who joined in March:

RONALD GANSER, 2500 Mission Street, Pittsburgh 3, Pa.
HARRY LEHRMAN, 524 Cross Street, Malden 48, Mass.
V. F. PLACHY, 8227 Cedar Avenue, Cleveland 3, Ohio

Contest Board Action

In balloting during March, the Free Flight Contest Board officially rejected the Solid Stick Proposal. The proposal was in a second study period necessitated by a premature vote by an earlier Contest Board. This action finishes the proposal beyond recall.

A second proposal on the same ballot received sufficient votes to send it into the study period as called for in the Rules Revision Guide. The proposal, to add FAI Indoor Models to the AMA list of indoor model categories, was submitted to the Contest Board in its entirety, complete with the FAI Indoor rules currently in use, rather than in the abbreviated form used on the NIMAS Ballot.

NIMAS BALLOTS!

For those who have not yet returned their ballots, we will not accept those mailed after April 15. A full report of the return will be made next month.

SPONSORED JUNIOR MEMBERSHIPS

This fund increased by \$2, for a total of \$24 or 12 "vacancies" to be filled by nominations. At present we have two "loners" (fliers who are not affiliated with a club) under consideration, and perhaps we will reach a decision by next month.

OOPS!! (AGAIN!)

Last month's article had a few more goofs than we really needed, but the only one that mattered occurred in Richard Miller's exciting tale. Just below the picture of the gliders on page 3 the word "not" appears. It should not - and we have agreed to 30 lashes with a wet noodle, providing someone can hold on to a wet noodle that long.

FAI INDOOR REPORT

Chairman Kowalski Reports

The following items have been acted upon by the FAI Indoor Committee: Due to the large number of indoor fliers on the West Coast, the number of qualifiers for the Western Zone Semi-Final has been changed to the top 80% of the entrants at each Quarter Final held there. Qualifiers for the Nats Semi-Flyoff from the Dallas Semi-Finals will be allowed on the ratio of one qualifier for each six entrants, up to but not exceeding three people.

Nats Semi-Flyoff

The Nats Semi-Flyoff will be flown in the Hangar at Santa Ana NAS on either August 1-2 or August 2-3. Bruce Paton will be organizer and contest director and will make the final decision on contest procedures. However, there is a majority in favor of not using rounds, rather to fly three flights on the first day and three flights on the second day and to allow unlimited test flying. Transportation is available for three East Coast qualifiers and three Central Zone qualifiers with pick-up points at Washington, D. C., New York City, and Chicago Illinois. A plan is being formed to raise funds for at least one South Central zone qualifier's transportation, but no word is available now. Further details will be forwarded to those eligible for transportation as they are selected.

An Appeal For Support

During the program last year it was noticed that some fine indoor fliers did not get around to entering any of the elims held. Since the success of F.A.I. Indoor and especially the future of our team depends so much upon

the backing of all modelers, we urge you to plan to enter and support any and all FAI meetings held in your area whether you plan to try to make the team or not. Our team consists of only three fliers and a manager, but the hopes and ambitions they carry with them on the trip abroad coincide with our own. This is something they can not win in competition; but we can give it to them with a minimum of effort by proving that indoor fliers are a "stick together bunch". So let's all get out and FLY FAI.

Local Elims Schedule

WILMINGTON, CALIFORNIA - April 12, 1963
Andy Faykun, 9410 Dayton Way, Beverly Hills, Calif.
SANTA ANA, CALIFORNIA - April 14, 1963
Bruce Paton, 1010 N. Mirasol St., Santa Ana, Calif.
CHICAGO, ILLINOIS - April 20, 1963
Pete Sotich, 3851 West 62nd Pl., Chicago, Illinois
LAKEHURST NAS, NEW JERSEY - April 21, 1963
C. V. Russo, 143 Willow Way, Clark, New Jersey
DETROIT, MICHIGAN - April 21, 1963
Paul Crowley, 16835 Lilac, Detroit 21, Michigan
LANGLEY FIELD, VIRGINIA - April 23, 1963
Bob Champine, 25 Beechwood Dr., Yorktown, Virginia

Quarter-Final Schedule

DALLAS, TEXAS - April 20, 1963
W. A. Burt, 2334 Mockingbird Lane, Garland, Texas
SANTA ANA, CALIFORNIA - May 5, 1963
Bruce Paton, 1010 N. Mirasol St., Santa Ana, Calif.
DETROIT, MICHIGAN - May 12, 1963
Paul Crowley, 16835 Lilac, Detroit 21, Michigan
CHICAGO, ILLINOIS - May 18, 1963
Pete Sotich, 3851 West 62nd Pl., Chicago, Illinois
LAKEHURST NAS, NEW JERSEY - May 19, 1963
C. V. Russo, 143 Willow Way, Clark, New Jersey

Results From Local Elims

DALLAS, TEXAS - March 17, 1963 (Ceiling height 42')
Nine entrants and five qualifiers

	Total
1. Stan Chilton 7:27.2 12:11.8	19:49.0
2. Bud Tenny 7:35.2 11:48.5	19:23.7
3. Jim Clem 7:04.2 8:22.8	15:27.0
4. Don Chancey 8:08.5 6:56.0	15:04.5
5. Mike Fedor 7:13.6 6:29.6	13:43.2

MOFFET FIELD, CALIFORNIA - March 24, 1963
Nine entrants and five qualifiers

	Total
1. Carl Redlin 37:35 37:07	74:42
2. Carl Rambo 33:35 33:28	67:03
3. Manny Andrade 34:17 31:59	66:16
4. Bud Romak 34:17 ?	?
5. Joe Bilgri ? ?	?

INDOOR FLYING SCALE

INDOOR NEWS AND VIEWS has not voluntarily shunned the scale fliers - but rather none of them would help by sending information. However, we now have some information on hand and we're on the trail of more. Here are the rules used by the Wilmington Indoor Model Airplane Club, the first all-indoor club ever formed:

1. Any aircraft may be modeled from kit or plans.
2. Maximum wing span is 24". Wings must be covered on both sides.
3. Prop diameter shall not be greater than 35% of wing span.
4. Builder must supply proof of scale to be awarded scale points.
5. Two Model Groups will be recognized: Monoplanes and Biplanes.
6. Models must R. O. G.
7. Unlimited attempts to obtain four official flights.
8. Time starts when the model is released and is official if the model becomes airborne for five seconds or more.
9. Time stops when the model touches down, or when the flight ends due to a collision with a fixed object. If a model bounces and still continues its flight while above the floor the timing continues until the flight ends.

CALLING ALL PHOTOGRAPHERS!

As many of you may have seen, the February issue of Model Airplane News had a color photo of indoor models as the cover. Here is the story behind that cover:

THE M.A.N. COLOR COVER

by SID BERNSTEIN

As an indoor enthusiast and professional photographer I have always been amazed and awed at the fantastic color patterns refracted by microfilm. I was equally amazed by the fact that I had never seen a good color photo of these elusive colors. So when word was received that Walt Schroder had plans for a gala indoor issue I felt this was an exceptional opportunity to plan a still-life layout and record some of the beauties of indoor mike ships.

Instinctively, after many years of advertising illustration experience, I started to plan layouts and collect props for a still-life illustration for the M.A.N. cover. I chose to do a still-life because of the controlled lighting needed to capture the colors refracted by microfilm. Trying to shoot a mike job in flight and still get suitable color would be impractical. It would require multiple flash light sources and many sheets or rolls of expensive color film to get both the color refraction as well as the action and composition.

In a still-life set-up you can show the subject clearly and control the lighting to an ultimate degree. I dug up a tissue "B" stick, recovered a baby R.O.G. and "B" stick, and repaired an old glider I had. To add some interest to the photo I put a flashy red ribbon on my stop watch and some yellow clay on the nose of the glider. This boosted the price for props to a total of 29¢!

The real problems came after I had set up a roll of blue seamless paper as my background, set up the models and started to light the photo. In order to pick up the color, six photofloods were placed in various positions. The placement was so critical that movement of a light several inches one direction or another would cause loss of color from the film. Another problem arose when the heat from the photofloods made the models flutter. This was solved by bracing the mike ships in every conceivable manner - such as drops of glue on prop shafts to prevent prop movement and composing the picture so the models touched each other and supported themselves.

The question that might arise now is if I had so much movement problem why not use flash. In order to work at the small lens aperture needed to give proper depth of field, a tremendous output of flash bulbs would be needed. Also the danger of popping flash bulbs and the heat they give might damage the delicate mike ships. Cooler strobe lights could have been used, but the cost for a 6 or 8 unit multiple strobe outfit is formidable.

So, the practical solution was photoflood lighting regardless of the problem of battening down all the models to prevent movement.

Finally the moment of truth arrived. All the models were steady and I was ready to make the final exposures. I say "exposures" since I used what is known as bracketing. This is a technique of making an exposure at the meter reading and then making several other exposures both longer and shorter than the "normal time." This is done to cover any possible exposure miscalculations and also to yield a wide variety of transparencies from light overexposure to dark richer underexposure. For the technically minded here is the technical data:

Camera - 5 x 7 Karona view with 4 x 5 reducing back.

Lens - 180 mm Zeiss Tessar lens.

Film - 4 x 5 Eastman EKTAcrome, Tungsten balanced film (3200° Kelvin)

Exposure - Basic exposure 3 seconds at F .45

Lighting - Photoflood diffused plus a row of 3200° K. #1 and #2 photofloods.

LOW CEILING FORUM

Have you performed a series of experiments aimed at improving performance in low ceiling sites? Here is the place to report the success or failure of those experiments, for the benefit of low ceiling fliers everywhere. It is important to record the experiments that fail, since what wouldn't work in some situations might work at other

times, or with different methods of application. Try to keep track of and relate as many different factors as you can - until we find out more about the business we won't know what isn't important!

The emphasis will be on those low, LOW ceiling sites - since this is the most common site available and since there seems to be a larger number of problems which mingle in their effect.

This month, Lee Hines, designer of the Sweepette, has the floor. The Sweepette series was developed in two low ceiling sites - the 20' Inglewood Recreation Center and the 29' 11' Wilmington Recreation Center, so Lee's remarks should be quite pertinent to our purpose.

LOW CEILING GLIDER TIPS

by LEE HINES

I feel that picking the wood for Cat. I gliders is the most critical single factor. This is important for weight vs. strength considerations and for control of warps. It seems that warps have more effect in Cat. I, and the flier must constantly watch for changing humidity. A change in humidity will cause warps to appear or old ones to change.

While flying, watch closely what other gliders are doing in different sections of the building. Vents, fans, or just plain holes in the wall may cause "jet streams". Be very careful of small cracks and splits in the glider, since the time will drop even if the glider doesn't fly apart on the next launch!

The desired launch for optimum performance is as follows: 1. Know your launching spot! 2. Generally, a step or two is taken to add kinetic energy to the launch. 3. With the glider held in a left bank (experiment here, it differs from glider to glider), pitch the glider with a straight movement of the arm and a forward snap of the wrist. (A twist will shatter the fuselage or wing if the glider is competitive.)

Here are some observations on low ceiling glider design principles: Slightly more incidence (angular difference) is needed as the ceiling shrinks, slightly larger stabs are needed as the ceiling shrinks, and Sweepette type gliders climb higher for a given weight and glide ratio and will roll out better than straight-wing gliders. Also, higher efficiency is indicated by the fact that the stab size is smaller than on normal gliders and it flies that way.

Wings for Cat. I gliders are the toughest to build. I generally make a light cut exactly on the high point after breathing on the top surface and bending to form undercamber. Be careful not to form washin in either wing. Squeeze thin non-shrinking glue into the cut, allow it to dry and sand it smooth. The cut should have imparted more undercamber and also made a slight ridge on the top. I used this to good advantage on the Sweepette 16 Mk. III. (This glider holds the Cat. I Open record of 0:37.0 - Ed.)

Progress in performance seems to have slowed considerably, but I feel some help may come from going to a 17" wing span and carefully calculating new wood sizes and weights. This ought to improve stability and aid the glide somewhat. One further comment - tip washout was a must on all Sweepettes.

RECORDS? MAYBE!

CHICAGO AERONUTS INDOOR RECORD TRIALS, March 30, 1963

CAT. II, Madison St. Armory, Chicago, 75' ceiling

Senior A R.O.G. - 9:01.2, Dave Erbach

Senior B Paper - 13:20.8, Dennis Kargol

Senior B Stick - 12:17.5, Dave Erbach

Senior Helicopter - 5:15.0, Dave Erbach

Senior Ornithopter - 1:01.0, Dave Erbach

Open B Paper - 17:41.8, Walter Mumper

CAT. I, Lecture Room, Madison St. Armory, 22' ceiling

Senior Helicopter - 5:17.0, Dave Erbach

Senior Ornithopter - 0:46.3, Dave Erbach

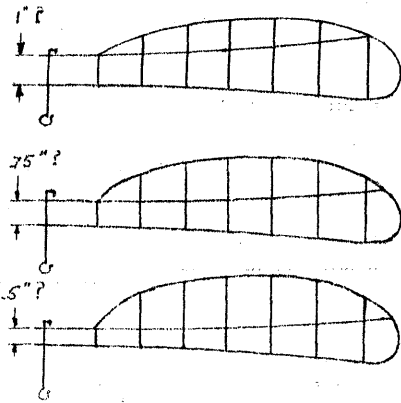
PROP FORUM

Many times when information about a contest winning model is presented, details about the prop are often glossed over or just plain neglected. As a result, prop information is scarce and poorly defined. We hope to correct this lack by presenting prop designs, tested or speculative, test results, gadgets, and other such information as it is made available. We invite contributions and discussion of this vital subject, seeking to advance the state of the art as far as possible.

Two-Spar Props

In the past, it has often been the practice to drive two-spar props from the rear spar so that the prop will flare to a greater degree than if it were driven from the front spar. Jim Skinner suggests that three versions of the same basic prop may be advantageous in adapting a given model to different sites. All three props sketched below are the same pitch and diameter and are built on the same form. The only difference in blade area arises from the change in shape near the hub due to a different location of the front spar - all the ribs are identical from prop to prop and the outline pieces are identical in length.

Note in the sketch below that each prop is driven from the front spar and the prop shaft is loose in the rear spar. As the sketch shows, moving the front spar changes the blade area location to control the blade flare in a manner similar to off-setting the spar in mono-spar props.



FAST CLIMB
(more blade area behind front spar)

MEDIUM CLIMB
(same area each side of front spar)

SLOW CLIMB
(More area ahead of front spar - lots of flare)

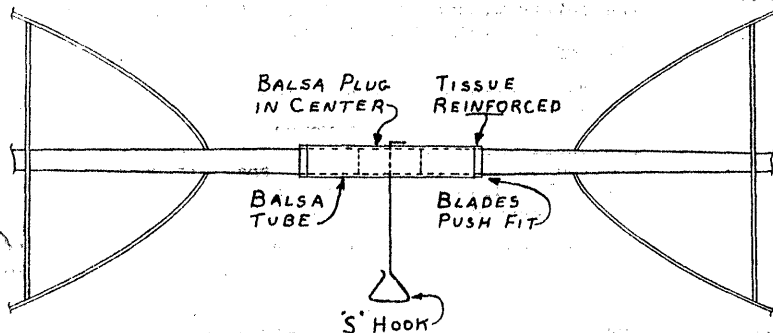
Prop shaft attached to front spar and loose in rear spar so that most of the power is applied to the front spar.

Adjustable Pitch Props

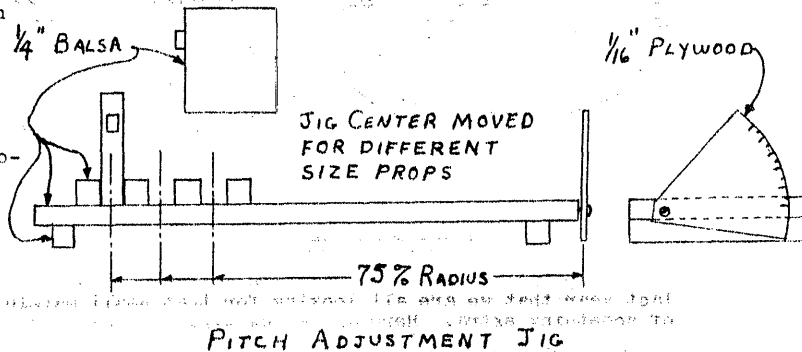
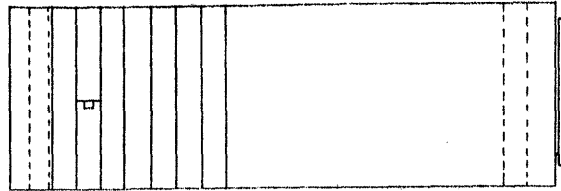
Arthur Barr reported that several British fliers have been experimenting with adjustable pitch props in an effort to get a closer match of prop-and-motor to the model. The basic prop construction is sketched below, and the only major difference in construction is that the hub is now a hollow tube into which the blades are a snug fit. The blades are built on a form corresponding to the highest pitch desired from that particular prop; the prop is assembled and adjusted with the aid of the adjustment jig shown below.

Completely aside from the fact that the props can be adjusted to varying conditions on the field, this arrangement has the advantage of permitting permanent attachment of the hub in situations like nose plugs of cabin models, the individual blades are easier to build, cover, and repair than one-piece props, and such props can be packed and stored more conveniently than other types.

One consideration that may prove to be on the negative side is the fact that adjustable pitch props conform to the so-called "true pitch" only at the design (maximum) pitch. As the pitch is made lower, the blade area nearer the hub is at an angle much lower than a conventional prop would be. Since this is a deliberate design feature of some props now being tried, only time will tell if this feature is a drawback or not.



ADJUSTABLE PITCH PROP



PITCH ADJUSTMENT JIG

THE PERILS OF CHARLIE

Ron Wittman is finding out that there can be a few draw-backs to trying to build indoor models while in the armed services. Here is one such hazard:

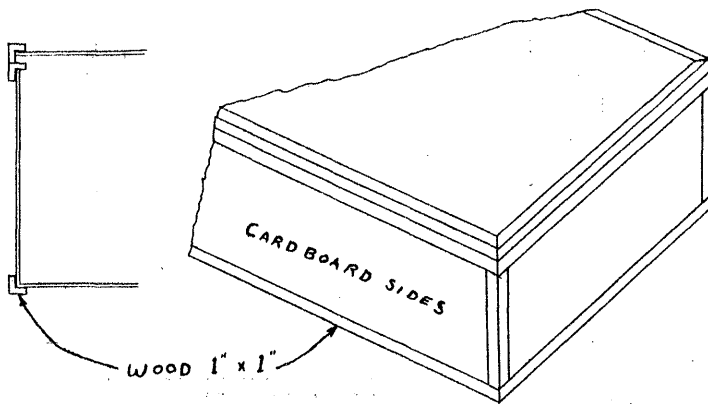


HEY CHARLIE! YOU EVER SEEN AN INDOOR MODEL?

HINTS AND KINKS

Model Boxes

The problem of storing and transporting indoor models is always with us, and here is another solution to that problem. Clarence Mather says: "I have built several cardboard-wood boxes and learned some things the hard way. Large pieces of good quality cardboard can be cut from refrigerator cartons that appliance stores are happy to donate. Wooden edging adds much to the box's performance of shape and dimensions. The sketches show the general construction. The wood angles can be cut from 1" x 1" stock on a bench saw or by the lumber yard for a modest fee. The angles should be left about 3/8" thick. I found that smaller wood sizes were likely to warp. The cardboard is glued along all joints and tacked in place. Such a box 9" x 19" x 37" holds two FAI jobs, weighs 3 or 4 pounds and costs a couple of dollars at the most (having the wood cut at a lumber yard)."



RE-INFORCED MODEL BOX

Hints From Lew Gitlow

"Competition in Indoor has been so keen during the last year that we are all looking for that small margin of something extra. Here are a few tips that will add to consistency and efficiency:

1. A thrust bearing or rear hook that breaks loose in a contest can eliminate a model that has been trimmed out and ready for the all out effort. A few wraps of tungsten wire touched over lightly with cement is insurance that costs little in weight.
2. While covering props I apply saliva to all the ribs as well as the outline to insure true sections throughout the span of the prop. If the film does not stick to a rib the film is made to adhere after the prop is covered by using a fine brush and saliva from the underside of the prop.
3. Torque meter tests show that if a motor is stretched out a few inches the torque will be increased by as much as 15%. I intend to go back to designs with long motor tubes for all competition."

NEWS FROM AROUND THE WORLD

CALIFORNIA - MOFFET ELIMS

The results shown elsewhere in this issue fail to tell the whole story of this meet. Tom Finch made a 37 minute test flight with his FAI, only to have it blow up in his hands as he prepared to launch an official flight. The magic 40 minute mark was almost reached during the day by Frank Cummings. His model had to be ballooned out of the "jet stream" at about 30 minutes, but the watch was left running out of curiosity. Total time - 40:13.2. Joe Bilgri has announced that Moffet Hangar #1 will probably be available until September. In addition to the elims already scheduled, Joe is scheduling Record Trials each month until September. If you plan to enter these meets, Joe must have your name, address, and place of birth at least 10 days in advance of the meet.

CALIFORNIA - SANTA ANA

The Sky Hoppers of Orange County are now flying Cat. I from 7 PM to 10:30 PM on the third Monday of each month. The site, the Santa Ana Boy's Club, has a 20' ceiling. Contact Bruce Paton, 1010 N. Mirasol St. in Santa Ana for more info.

COLORADO - DENVER

The Martin Model Masters have just closed out their indoor season, finishing with a contest on March 17. Their top times: Stick - 11:45.5, Hal Blubaugh; Paper - 6:57.2, Shaye Diebolt; IHLG - 0:32.4, Bob Lynch.

ENGLAND - COVENTRY

Very little flying has been done in England, and the long and cold winter has been used to design, plan, and make those little "extra" gadgets we all wish we had. The English Indoor Committee, elected during the FAI Indoor Championships last year, is working on new rules and looking for various sites all over the country. They are hoping to utilize smaller halls that will be available more often, so that more fliers will have a chance to develop.

ILLINOIS - CHICAGO

Pete Sotich, encouraged by the fine turnout for the December Record Trials, scheduled more record trials in

addition to the FAI Elims already set up in the Madison Street Armory. One record trials was held March 30, and another is set for April 27. The Aeronuts and the other Chicago area fliers really "get with it" at record trials and contests, as a look at the record will show.

INDIANA - KOKOMO

Extremely bad weather forced cancellation of the challenge meet between the Kokomo Aero Team (their name) and the Chicago Aeronuts. However, a few hardy Aeronuts went anyway and they held an impromptu meet. Perhaps it is just as well - the Bunker Hill site has been closed for remodeling, cancelling the March meet and maybe the April one. Check with Chuck Borneman, 1401 West Taylor, Kokomo, Indiana for latest info.

MICHIGAN - DETROIT

With the three elims coming up soon, FAI practice flying is picking up in Detroit. Phil Klintworth reports the following times: Klintworth - 24 min. and 26 min.; Kowalski - 26 minutes; Paul Crowley - 24 minutes.

MISSOURI - ST. LOUIS

Indoor fliers in St. Louis finally located a school gym and hope to keep using it. A misunderstood heating system created unusual drift problems the first time out, but they know what was wrong now. Next time the times will be longer and more people will be ready.

NEW JERSEY - LAKEHURST

Fine work by C. V. Russo has resulted in eleven dates scheduled with the Navy in Lakehurst, the three elims listed in FAI Indoor News plus eight record trials. The RT dates are: April 7, May 5, June 2, July 14, August 11, August 25, September 8, and October 6. Perhaps if the demand is great enough the Navy will permit a winter schedule also. Russ had long felt that more flying time was needed for faster advancement, and this schedule will make it possible.

NEW ZEALAND - AUCKLAND

Jack Eriksen reports that it was proposed to modify the existing N. Z. indoor rules so that there will be two classes of tissue models and two classes for mike. The proposed classes are to be over 18" span and under 18". Simplified rules such as these will surely help the sport to grow, and these sizes will make good use of existing sites.

OHIO - AKRON

Indoor activity in Akron is a little slow due to lack of sites, but Bill Hulbert has been setting up some dates in the 40' Akron Armory. Contact Bill at 174 Castle Blvd., Akron 13, Ohio for info on flying sessions.

TEXAS - DALLAS

The FAI local elims were held in the very cluttered 42' ceiling Drill Hall at Dallas' NAS. Stan Chilton came down from Wichita and Mark Valerius brought some fellows from Shreveport, which made Dallas fliers hopeful for future inter-city contests. Since the former building record was only 9:25, the two top times of 12:11.8 and 11:48.5 represent a fair advance.

VIRGINIA - LANGLEY FIELD

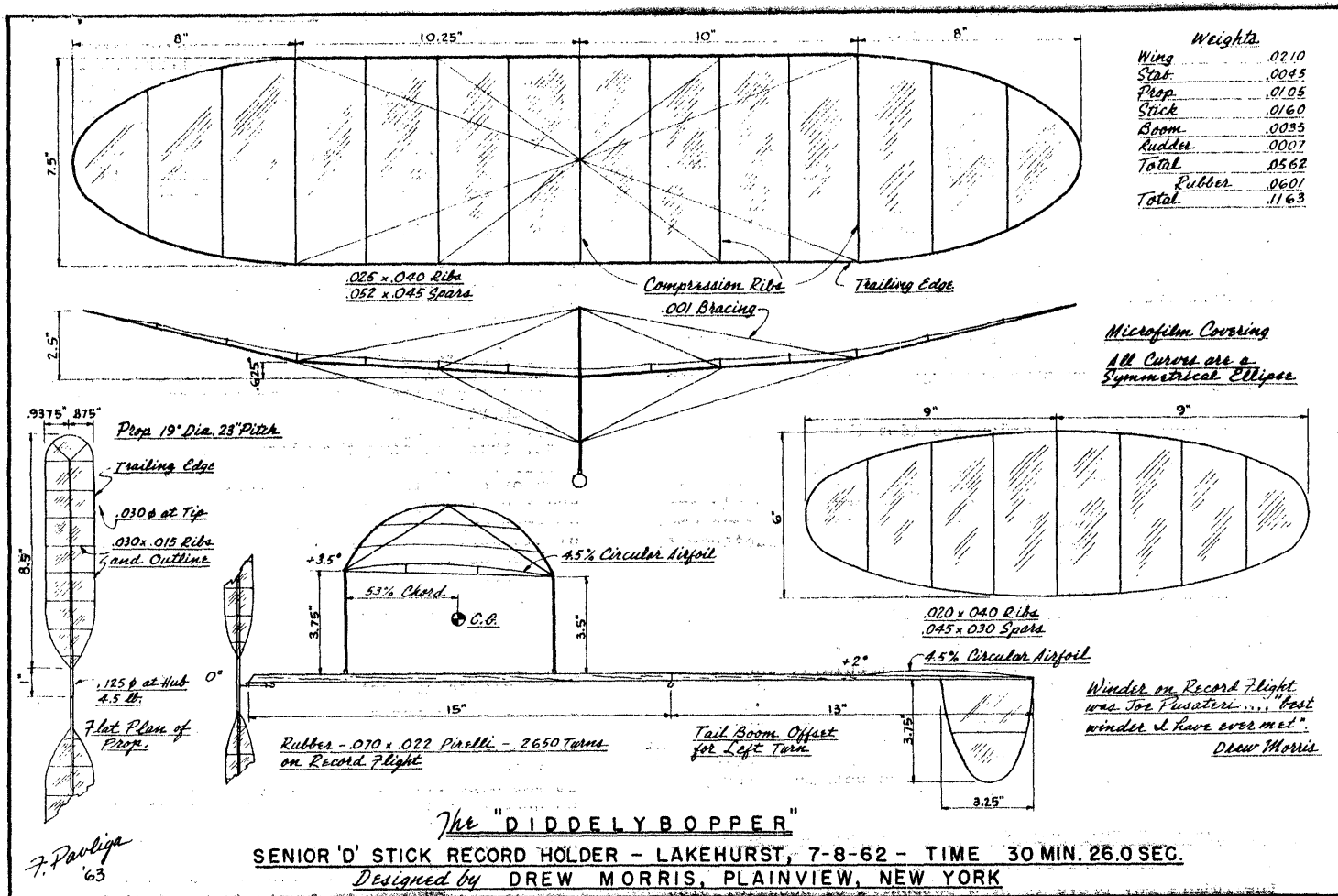
The first record trials for the Langley group showed some pretty fair times, but drift from a big window which was jammed open almost created a microfilm outdoor class! Record attempts were made by Bob Champine and three Junior Champines - quite a formidable group! The next record trials will be held on April 12. Contact Bob Champine, 25 Beechwood Drive, Yorktown, Virginia for more details.

STATE OF THE ART

The model featured this month is designed by Drew Morris, and with it he became the first senior to join the Thirty Minute Club. Incidentally, the same flight smashed the long-standing Senior D Stick record formerly held by Ray Harlan.

The series of flights which resulted in this new mark is described by Drew: "The first flight, made on a 19" loop of .075 rubber, was wound to 2000 turns by Joe Putateri. After holding the burst, the model still started to bounce off the rafters. It must have hit 20 times, but didn't hang. After a tense 16 minutes it started down and dead-sticked half-way down for 25:13.

We then used a 21" loop of .070. Succeeding flights were 27:29 on 2200 turns, 28:06 on 2400 turns, 30:26 on 2650 and 27:15 on 2800 turns. Needless to say that by the time we got 2800 turns into the rubber there wasn't much left of it. When we re-measured the rubber it had stretched 4"! Under the right conditions I can probably get another few minutes from this model."



THE HAND LAUNCHED GLIDER

DESIGN (concluded)

PART 13 by RICHARD MILLER

REBUTTAL TO THE REBUTTAL

Dear Lee:

Part 13 of the HLG series was prepared and forwarded to Bud some time before your "Word of Rebuttal" arrived. Inasmuch as it contains some answers to your questions I will not repeat them here.

Let me begin by saying that I never assumed that a successful two-position stabilizer via flexible boom would be an easy thing to achieve. Despite the fact that my initial experiments (on two gliders) succeeded beyond what I had hoped to achieve in the early stages of trial and error I am still convinced that the problem is not easy.

Let me next add that none of the three gliders I have seen fly with purposely flexible booms (one of Pete Nishanian's and the two of mine) have encountered flutter or the other problems which you mention. Thus it is possible to get what you want in the way of controlled flexibility.

Perhaps you stopped experimenting a little too soon. Some day I hope to prepare a learned paper showing that every development of substance in the History of Civilization from the wheel to the corn plaster was subject to Failure on the First Attempt. I have grown to accept FFA, or FOFA, as a way of life. That's why I was so suspicious when my first flexible-boom HLG worked as well as it did.

Finally I do recall the very fine times you have done with the latest Sweepette. Reading them does not bore me. You are altogether too close. Otherwise why would I be fooling around with anything so illogical, impractical and controversial as a flexible boom?

Richard

At the end of last month's installment you were promised an Exhortation. However times are good and Exhortations never were so dear that we couldn't afford to dispatch a whole volley as readily as one. So gird up thy loins. You were also promised a Design Resume and you will, accordingly, find it conveniently spread throughout the Exhortations, most singularly in the first.

Exhortation #1 Don't believe anything you've read about design - in this series or elsewhere. Don't believe it, that is, unless your experience has proven it to be true. In other words, remain a skeptic. Don't take other people's word for what 'Z' will equal if 'A' is added to 'B' and divided by 'C'. Prove it to yourself.

Why did I go to all the trouble to write several thousand words about design then? It was a desire, first of all, to set out in some order the results of my own experience. I much prefer to think, however, that rather than providing the final word on the matter I am submitting a guide against which the reader can compare his own experience, a sort of sounding board from which he can hear the echo of his own conclusions. Therefore, don't make design theory by me or anyone else responsible for how your models fly. You are the responsible one.

Exhortation #2 Experiment! Careful study of all the articles ever written on rudder theory is worth less than one session in the park with an old glider, some spare balsa and a razor blade. An hour spent like this can provide more insight into what happens when a surface is modified (if not why) than all the hours of burning midnight oil combined.

There seems to be a deeply-ingrained idea among model builders, and a very unfortunate one - that once all the components are glued in place and the glider (or whatever) is performing in a more or less satisfactory manner that nothing further in the way of design should be done. They tend to look upon finished machines the way many citizens do on the Constitution - as something not to be

meddled with. By this thinking one process stops at the workbench and another starts on the flying field. Actually this need not, and should not be the case. The processes should overlap. The construction tools should go along to the flying field. Design, construction and adjustment are all interrelated to a very high degree: Adjustment can be designed in as readily as a design can be adjusted; modifications in the structure of the glider during test flying - as we shall shortly see - can be a bigger help than the traditional adjustments.

So use old gliders to design new ones. A model is a much better test bed for new ideas than the drawing board. Cut, add to, hack, change, realign - never stop designing the model until it won't fly any more. Then still continue to design it in its descendant which, hopefully, embodies the design lessons it taught.

In just a moment a partial list of possible experiments which you can subject one of those no-longer-new gliders to when you have the urge. First, another Exhortation.

Exhortation #3 Abandon the idea that a glider must be uniform or symmetrical. The general look of a HLG is of something that should be the same on both sides. Furthermore it flies, flight is graceful, and there is all but irresistible tendency on the part of keenly symmetrical minds to associate gracefulness with structural harmony and uniformity, and a concomitant reluctance to skew, imbalance or otherwise create disproportion.

These pernicious pitfalls in human nature, nevertheless, must be resisted with a stout heart. Full scale airplanes (with pilots to make them go left or right at will) are not symmetrical. Not even birds are. So why should a hand launch glider be, particularly when it's designed to do an unsymmetrical thing, or at least a symmetrical thing in an unsymmetrical manner? We already know, for example, that our asymmetrical hand necessitates a finger grip on one side or another, that stab tilt can be a big help in trimming a model and that weighting one wing tip can mean the difference between so-so performance and an outstanding flight.

These are only some of the functional irregularities that have been discovered to date. Others may be lurking where you least expect them. The top scoring machine of the future may prove to be a potpourri of peculiarities devised of dissimilarities and composed of a complex of curious quirks. Of course it may not be too, but you never know until you try.

Suggestions For Experimentation

Wing

Make 4 panels from 2, 6 from 4 or 8 from 6. Clip one tip and see what happens; then find what must be done to offset the results - like adding weight, tilting the stab or changing dihedral angles. Add weight to the other tip. Change existing dihedral angles. Skew the wing. Add turbulators.

Stabilizer

Shorten one side of the stab. Cut off one side and reglue it so as to get dihedral, anhedral or tilt. Try reverse tilt. Trim stab size down until the model will no longer fly, watching what happens to the C.G. and stall recovery. Add a turbulator to the stab.

Rudder

By all means one of the most fertile areas for experimentation - and one of the easiest to work in. Rudders are almost invariably larger than they need be - not to mention too large. Trim down the rudder size bit by bit until the model becomes unflyable. Glue a top rudder on the bottom, a bottom rudder on top. Move the rudder forward, rearward. Offset it to one side. Don't just stand there. Do something!

Fuselage

In the case of the fuselage I would like to relate a specific example partly because it bears on last month's discussion about a two-position stab, partly because it illustrates what a little creative experimentation can produce, and partly because the results were so dramatic.

One evening recently, finally determined to find out more than I knew about fuselage flexibility, I went out to the local flying field with a beat up, second string 'Omega', a razor plane and a block of coarse sandpaper. At the outset the glider launched in a more or less normal manner except that a shade too much negative incidence in the stabilizer (a long time fault of the glider which became a virtue for this experiment) made it loop slightly over the top. My intention was to slim down the boom until this characteristic disappeared.

I took three good shaves off the bottom of the boom before I began to get any action and continued after that to sand the bottom with heavy sandpaper between flights. Very shortly things began to happen. For one thing, as the boom got lighter it was possible to take clay off the nose, thus reducing the weight of the glider. But the payoff was in the launch. When I got into the critical area of boom size the trajectory began to straighten out and the glider, naturally, spent more of its time going up vertically and got higher. At the same time launch circle kept getting smaller until it was down to about 225° or about 5/8 of a circle. Finally the still air time crept slowly up till I was getting a good ten seconds over what I had come to expect of this particular glider even at its best trim!

I was very impressed when I had finished. I had been pretty well aware for some time that there was a more or less precise dimension for the other components of the glider, and I had been building what I had considered to be decent fuselages. But it had never occurred to me that there might be a precise dimension for the boom as well as for, let's say, the thickness of the stabilizer. It was also obvious that to get that dimension it would be necessary to trim the fuselage under actual flight conditions - whether you want 'lay down' in the stab or not. Finally I was struck by the fact that, although I had begun with what I considered a thin fuselage, the boom I finished with was ridiculously thin, being a 1/8" more than 1/8" deep in front of the stabilizer. Yet all of that it was probably stronger in its lightened state than it had been before.

The feel of the fuselage boom indicated that the downward deflection might be easy to measure, and it was. With the fuselage securely clamped and supported as far back as the wing t.e. a weight of one ounce, suspended from the boom immediately in front of the stabilizer, caused a total droop (measured at the t.e. of the stab) of 5/16"! Needless to say this figure can only be interpreted in light of the tail gap, which in this case was 10"; the stabilizer area (about 13 sq. in.) and the fact that the fuselage was made of hard (20 lb./cu.ft.) and resilient balsa. In any event it gives a figure for comparison and a rough guide to work from.

Exhortation #4 Enjoy yourself! From some of the foregoing it might sound a little too much like Deep Endsville. It was really just fun.

MAY 1963

NATIONAL INDOOR MODEL AIRPLANE SOCIETY

NIMAS members who joined in April:

- PAUL CROWLEY, 16835 Lilac, Detroit 21, Michigan
- BRUCE FOXWORTHY, 11 Marion Road, Montvale, New Jersey
- JUSTIN MURRAY, 4287 Lakeville Road, Petaluma, California
- ED STOLL, 7319 Marjorie, Detroit, Michigan

P. D. CURTIS, 15 Titania Way, Meadowridge, Heathfield, Cape, South Africa

Sponsored Junior Memberships

Since the last report, the SJM fund has grown by two full memberships, bringing the total to \$28 which covers 14 sponsored memberships.

So far we have received four nominations (two since the last report) and one nominee has accepted. Bruce Foxworthy (listed above) is the first sponsored member, and was nominated by Sid Bernstein and Richard Miller.

Bruce is 14 years old and has been building models since he was six, but, to quote Bruce, "Until I was 9, they all failed to fly." His first indoor model was an original, covered with Jap tissue, which flew for 30 seconds in his living room and for 1:15 in the Rockland gym in Orangeburg. The model was inspired by the experience of attending one of the sessions held by Sid Bernstein a few weeks before.

In spite of this experience, Bruce had never seen any microfilm - and had only heard about it. When he was doping a glider one day, he accidentally dropped some dope in a nearby pan of water. After examining the colorful result for a while, he decided this must be microfilm, and confirmed it with a call to Richard Miller. He then managed to lift a 24" hoop of film and cover an indoor model, all without instruction!

Contest Board Action

Early last month Chairman Phil Klintworth sent a memo to the Free Flight Contest Board which detailed four IHLG proposals (the same four as on the NIMAS Ballot, including Question VI, Hatschek's Alternate Proposal). He asked that the members be ready to rate the proposals in order of preference on a ballot to be called about May 1, 1963. The results of this poll will determine which one of the proposals will go into the study period.

On the same memo (and to be voted on at the same time) was Question II (on NIMAS Ballot), the Detroit-Wilmington-Chicago proposal to change HLG scoring to be the total of the best three of nine flights. Acceptance of this proposal will place it in the required study period before it will be finally accepted or rejected.

PFFT!!

A middle aged modeler all thumbs
Taking microfilm just as it comes
Decided one night
To shrink it up tight
Had a swoosh and a pile of charred crumbs.

HB

N.I.M.A.S. BALLOT REPORT

A total of 56 ballots were returned, just slightly less than 50% of those eligible to vote at the time the ballot was issued. That seems to be about par for an American non-presidential election! The results stack up as follows:

	For	Against	No Vote
I. Detroit-Wilmington-Chicago HLG Proposal	32	11	12
II. Detroit-Wilmington-Chicago HLG Scoring proposal	36	16	3
III. Detroit-Wilmington-Chicago "Add FAI" proposal	44	5	6
IV. Cliff Model Club HLG proposal	2	28	25

- V. Skyscrapers HLG proposal
- VI. Hatschek's alternate proposal
- VII. Solid Stick proposal
- VIII. Survey - unlimited "D"

The Free Flight contest board had the Paper Stick proposal and passed period - at least we know that these the approval of NIMAS members. Also that it would be fruitless to initiate the wing area limit on Class D. On several members failed to read the and voted for more than one of the proposals, and in one case a vote was proposals. These cases account for counts registered above.

FAI INDOOR REPORT

Quarter-Final Schedule

- SANTA ANA, CALIFORNIA - May 5, 1963
Bruce Paton, 1010 N. Mirasol St
- DETROIT, MICHIGAN - May 12, 1963
Paul Crowley, 16835 Lilac, Detroit
- CHICAGO, ILLINOIS - May 18, 1963
Pete Sotich, 3851 West 62nd Pl.
- LAKEHURST NAS, NEW JERSEY - May 19, 1963
C. V. Russo, 143 Willow Way, Clatsop

Semi-Final Schedule

- EAST COAST SEMI-FINALS - June 2, 1963
Lakehurst NAS, New Jersey
C. V. Russo, 143 Willow Way, Clatsop
- CENTRAL ZONE NORTHERN SEMI-FINALS - June 9, 1963
Paul Crowley, 16835 Lilac, Detroit
- CENTRAL ZONE SOUTHERN SEMI-FINALS - June 16, 1963
SMU Coliseum, Southern Methodist Univ., Dallas, Texas
Jim Clem, Box 75, Addison, Texas
- WEST COAST SEMI-FINALS - June 23, 1963
Santa Ana M.C.A.F. Hangar, Santa Ana, California
Bruce Paton, 1010 N. Mirasol St.

*Note change of date and change of location

Results From Local Events

- WILMINGTON, CALIFORNIA - April 12, 1963
Seven entries and four qualifiers
Tom Finch 13:03 12:0
Bruce Paton 11:03 8:0
Warren Williams 9:19 9:3
Sheridan Asklund 9:15 8:4
- SANTA ANA, CALIFORNIA - April 14, 1963
Six entries and three qualifiers
Bill Atwood 37:17 31:1
Frank Cummings 37:00 28:2
Lew Gitlow 31:27 28:0
- CHICAGO, ILLINOIS - April 20, 1963
Nine entries and five qualifiers
Bob Kintzele 25:28 23:5
Bob DeBatty 24:05 24:2
Charles Sotich 23:20 23:0
Curtis Janke 24:53 19:3
Dennis Kargol 17:41 21:1
- LAKEHURST NAS, NEW JERSEY - April 21, 1963
Fourteen entries and seven qualifiers
Bill Bigge 27:43 29:1
John Triolo 26:26 28:1
Ernie Kopecky 28:06 26:2
Edgar Franklin 26:59 24:0
Ray Harlan 27:26 23:1
Merrick Andrews 25:50 23:4
Ted Gonzoph 23:38 22:5

26	23
17	19
45	6
40	4

already rejected
into the study
actions meet with
it is apparent
a proposal to lift
final observation -
giving instructions
three active HLG
st for all the HLG
ome of the "no vote"

- Santa Ana, Calif.
- 21, Michigan
- Chicago, Illinois
- 1963
- New Jersey

- New Jersey
- June 8-9, 1963 (tent.)
- 21, Michigan
- June 8, 1963*
- Univ., Dallas, Tex.

- California
- Santa Ana, Calif.

33 (30' ceiling)

Total
25:07
19:08
18:53
17:57

180' ceiling?)

68:30
65:21
59:27

' ceiling)

49:25
48:29
46:28
44:25
38:51

1963 (170' ceiling)

56:54
55:44
54:28
51:04
50:45
49:31
46:37

the model from a hang-
e initial contact of

usually somewhat simpler
, and one can fairly
e prepared to fold sev-
ops, but the technique
piring FAI team member.

requires the following
a casting reel heavy
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n, (2) a fishing line
r visibility) and long
(3) a good helium-filled
line easily to the top.

simple. It consists
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ct should be made 180
it is no more diff-
.010" music wire,
needle.

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on altitude. (2) Get
, get it up! (3) Adjust
s the outboard wing tip
ine in that spot.

gain, judge the dist-
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ees, move the line
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odel on its next trip

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that leading edge.
your balloon or line

DANGER

WS carried a couple of
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f indoor flying. Bill
the newsletter, and
1.

AMERICAN MODELER, Bill
tended to indicate he
l from sleeping sick-

DETROIT, MICHIGAN - April 21, 1963 (65' ceiling?)

Eleven entries and six qualifiers			
Paul Crowley	23:44	23:43	47:27
Dick Kowalski	25:09	20:12	45:21
Ed Stoll	23:20	18:39	41:59
Phil Klintworth	18:04	23:05	41:09
Clarence Mather	19:07	21:58	41:05
Hardy Brodersen	18:48	18:21	37:09

LANGLEY FIELD, VIRGINIA - April 23, 1963 (22' ceiling)

Three entries and two qualifiers			
Bob Champine	7:58	9:23	17:21
R. Batterson	5:02	7:34	13:36

CLEVELAND, OHIO, April 27, 1963 (32'+ ceiling)

Fifteen entries and eight qualifiers			
Lou Willis			31:14
Ronald Ganser			28:26
Larry Mzik			26:04
Joseph Hindes			25:27
Norman Getzlaff			25:00
William Hulbert			23:39
Frank Pavliga			21:57
Dave Nicol			20:16

Quarter-Finals Results

DALLAS, TEXAS - April 20, 1963 (56' ceiling)

Five entries and four qualifiers			
Stan Chilton	14:59	16:09	31:08
Don Chancey	14:58	13:44	28:42
Bud Tenny	10:48	12:48	23:36
Mike Fedor	10:18	10:07	20:25

MOFFET FIELD, CALIFORNIA - April 21, 1963 (180' ceiling?)

Five entries and four qualifiers			
Bud Romak	34:14	35:51	70:05
Lew Gitlow	32:37	34:07	66:44
Joe Bilgri	?	?	
Carl Rambo	?	?	

SANTA ANA, CALIFORNIA - May 5, 1963 (180' ceiling)

Six entries and five qualifiers			
Carl Redlin	36:04	38:37	74:41
Bill Atwood	33:47	38:34	72:21
Frank Cummings	32:49	37:57	70:46
Tom Finch	30:28	36:21	66:49
Bruce Paton	30:04	31:07	61:11

****MODEL STEERING VIA BALLOON****

by BRUCE PATON

One phase of FAI indoor modeling that has been neglected is using a balloon to divert the path of a model as allowed under FAI rules. I am surprised at the number of good indoor modelers who fail to practice the diverting technique sufficiently to become adept at it.

More often than a few times the modeler waits too long while his model drifts toward girders or other obstructions; he then rushes madly around looking for a balloon to borrow. Often he finds that the foresighted guy who brought a balloon is using it himself. By the time he locates an unused balloon the model is already in the girders.

If he successfully locates a balloon he rushes madly to the spot immediately below the impending disaster, sends the balloon aloft and either: (1) disintegrates the model with a direct hit by the ascending balloon or (2) gets the balloon up in time for the line to hit the prop, and with one revolution securely attaches the line to the prop hub.

This avoids the girder collision but how does he get the model down unscathed? It's impossible to shake it loose, so he very slowly starts winding the line back on the fishing reel; slowly but surely the model descends to within reach. He usually has forgotten to set the drag on the reel; as he releases his hand from the reel handle to grab the model, the balloon starts up at about 30 MPH. If you have yet to see this occur, I think you can imagine what happens.

With considerable practice it is possible to start at the "impending disaster" side of the model's circle, miss hitting the prop, engage the line with the leading edge of the wing at the center, and carefully walk the model away from the girders. However, if the model is disengaged within ten seconds after original line contact as required under FAI rules, the resulting circle is not much better than it was initially. This procedure was learned in testing models to be flown under FAI

rules and was used only to rescue up, the flight time ending with the line.

The diverting technique is a than the above mentioned procedure easily become proficient at it. eral wings and wreck a few good is absolutely necessary for any

It is really quite simple and equipment: (1) A fishing pole with enough to stay on the floor when foot diameter helium filled ball or other line (preferably white) enough to reach the ceiling, and balloon large enough to take you

The actual technique is quite of contacting the outboard wing line so the model turns to the r line, into a circle perfectly ce then releasing contact. The cont degrees from "impending disaster" icult than threading a needle while standing ten paces from the

A few items noted here will balloon is at least 10' higher th the better). If you have bum de friend at some distance direct y the balloon up early. If in doub the balloon so the line just miss on the first circle and hold the (4) When the model circles around ance between the line and the mod (5) Immediately after the model pa twice the distance judged toward circle. You now have the line w (it says here) of contacting the around.

It would be well to mention r fishing pole. With a simple math will be discovered that if a mod and your balloon is at 150', mov the model's altitude requires 15' floor. And, if you misjudge by itude, this requires 12½ feet of Hold the pole horizontal so you e one direction or another. It's s sounds, since corrections can be ways as the model approaches for

An instant after the prop pa pole tip so the line hits the lea polyhedral break. As contact is stepping back. Retain contact l to rotate the desired number of e either in a circle exactly cente circle slightly upwind of the dr want the model to travel should 1 steps 3 and 5 above. Contact w allowed ten seconds, since a 180 three seconds of contact.

Release contact by moving the angle from the leading edge outbc this motion a fast but deliberate bunch of garbage (commonly refer bracing) attached to the leading might be embarrassed by being una easily. If your model flies with never mind, I won't get involved

The old adage "practice makes here. It's best to practice at l ice often. Bring your own gear a word of caution: avoid hitting y clear of the prop. After a few f it's better to put a little beef Also, keep an eye out to make sur doesn't foul someone else's plane

MORE ABOUT BILL E

The January issue of INDOOR M protest letters aimed at Bill Efi turbing comments about the sport wrote us after receiving a copy c we followed up with a letter to E

In one of the recent copies c made a rather clever comment wh thought that indoor fliers suffer

ness since we opposed his suggestions. (From the number of letters of praise and agreement we have received, it is safe to assume that all indoor fliers oppose him.)

Bill's latest reasoning is that the new indoor(?) events he is promoting will be necessary to get enough people interested to open up new sites, primarily the big domes such as are under construction in Houston. In our answering letter we said in part:

"There is some doubt as to what we can do about it, but I feel the indoor fliers are far more wide awake than you think. Maybe you do realize it and are just trying to cover up. I must stress one more time that your continual reference to the proposed "new indoor events" can only bring harm to one of the few pure forms of model flying left.

You say "I hope they (meaning indoor fliers, I presume) wake up to the fact that we will shortly have enclosed baseball and football fields in many of the big cities. We will need new events if we want to get enough people interested to use them for flying."

What you fail to realize (or blatantly refuse to recognize) is that our plight of no sites or inadequate sites will certainly not be alleviated, and probably will be aggravated by your program. First, if these sites are opened for powered events, indoor models can not co-exist with them in the same flying space. Second, it is highly likely that your program will develop into a paid attendance type of activity (Fine, sez your boss as he rubs his hands in glee and watches sales boom) - sort of a no-risk Go-Kart deal. With this precedent firmly established, indoor fliers (with no revenue-producing potential) will have to pay high fees or not use the site.

Finally, in those smaller cities where the spectator participation would not support one of those wonderful domes (by the way, just how many such domes are now planned? I have only heard of one!) the kiddies will clamor for permission to use the same sites indoor fliers (the real ones) have worked to get to fly their 'indoor models.' A few sessions and mishaps with these wonderful creations of yours, and the sites will be closed forever. What is gained?

"BARRACKS, TEN-HUT!!"



THE LAB

In the February issue this column was initiated and we pointed out the desirability of a series of standard tests for our materials and procedures. Then we set up a series of proposed tests for microfilm. We have had a few comments on these tests and have some suggestions for further tests.

We proposed a viscosity test as one factor that could be recorded and controlled. The immediate reaction was that viscosity is worthless for rating film - and this is so, if you mean to compare different types and formulae of film. The intended purpose of the viscosity test was to check different batches of the same formula for uniformity between batches, and to check on solvent evaporation between the time you poured a few sheets last month and when you are ready to use it next time.

Lew Gitlow has the following to say with regard to the rupture test: "One must work with a single color, that is, each sheet must be uniform. (Gold to blue means that the sheet is twice as thick in the blue area.) Then, the same color should be used throughout all tests. If you are measuring tensile strength it is important to have the weight distributed uniformly on each segment of area. Each test must be made on equal areas of film."

On weighing film, Lew says, "Use 10 in. square hoops to give 100 sq.in. This saves work in the long run. Tear off the film, weigh it directly and you will have the weight/100 sq.in. A balance that takes the weight of a hoop can't be sensitive enough to weigh the film."

Lew continues, "The stickiness test could be of some use in my opinion, but the consistency of results after at least four trials, and the % of deviation from the mean are as important as the technique, and paramount over the data."

Ron Draper of England suggests the following tests to add to the list:

1. Initial setting time. To be recorded as the time it takes for the film to set after being poured or until colors and/or wrinkles appear. He also suggests that these times be noted as a function of water temperature.
2. Evenness of film. Count the number of colors you can see in one sheet of film. This would give a good clue to the spreading qualities of a given formula.
3. Pouring thickness. This test would record how thin a sheet could be poured from a given batch and still be useful. From the little information we have on tightening film as the Germans do (for uniformity of wing sections) it appears that most surfaces will not withstand a thicker film than gold if it is to be tightened, or else the structure will be deformed.

We posed a question on how the stability of film could be measured. Ron Draper suggests that two thin wires be supported with a balsa frame and freshly-poured film that has dried off be attached. The wires would bow together in proportion to the tension in the film as it cures, thus giving a measure of the dimensional stability. The rate that the bowing develops would also give a clue to the rate of cure, or how long the film needs to age before it is safe to use.

Next month: A quality test for rubber that is non-destructive and can be applied on the field.

NEWS FROM AROUND THE WORLD

CALIFORNIA - MOFFET ELIMS

Cool weather was the prevailing condition for the FAI Quarter Finals, but drift was quite low and a lot of test flying was done. Although the hangar is soon to be out of service as a flying site when the Lockheed RIFT project moves in, record trials are planned for May 19, and for some time in June, July and August. In each case Joe Bilgri must be notified ten days in advance if you plan to attend. Joe can be reached at 1255 Blackfield Drive, Santa Clara, California.

CALIFORNIA - SANTA ANA

Besides the FAI elims, the April 14 session in Santa Ana hangar also served as a general check on the hangar condition and the night lighting system. Some drift is still present at times, but the flying is very much improved over previous years. The lights in the hangar

were given a thorough check-out by running the session until 9 PM. The effect of the extra heat on the models was negligible, but the bright lights make it rough on timers and those using balloons.

CALIFORNIA - VISALIA

The Sky Kings of Visalia have scheduled a series of indoor contests in the Mt. Whitney High School gym. The contests will alternate between Easy B contests and indoor scale. Contact Don Farnsworth, 2040 Cecil Circle, Visalia, for schedules and dates.

ILLINOIS - CHICAGO

The Chicago Aeronauts have been blessed with very good conditions in the Madison Street Armory for their contests and Record Trials. This is reflected in the high times posted at each event.

Pete Sotich has concluded that the series of Record Trials held in the Armory this year has greatly increased the attendance average. When there is no sanctioned event on tap, the attendance is low - which doesn't hurt the feelings of those who do come. Plenty of room to test!

LAKEHURST ELIMS AND RECORD TRIALS

The first two sessions in Lakehurst #5 were beset by disappointingly cool weather, and the FAI elims were also bothered by smoke from off-base fires that filtered into the building. One of the highlights of the first session was the fine scale flying with several models by Ted Pfeiffer.

Timers were at a premium at the FAI elims, and a lot of valuable help was given by Lt. Thibodeau, Dave Call, Walt Dickensen, Mrs. Greenberg, Pete Tricolo, Alice Rudy, and Patricia and Lorraine Russo. CD "Russ" Russo gives these people full credit for the meet's real success.

LOUISIANA - SHREVEPORT

Mark Valerius reports that local times have jumped quite a bit after visits to the Dallas FAI elims - and proves all over again that newcomers can benefit a lot by visiting with fliers in other areas.

MICHIGAN - DETROIT

Gusty conditions prevailed in the Coliseum during the FAI elims, so everyone took it easy. Paul Crowley notes that the ballooning techniques are improving - only one flight was called because contact exceeded the ten second limit.

NETHERLANDS - ROTTERDAM

Cornelis Wolthoorn reports that he has upped the Dutch indoor record to 3:47 in the 20' site he has been using. A heavy school schedule has considerably slowed his building, but he hopes to get more flying in soon. So far, only a few have flown indoor, but he feels that more will soon start.

OHIO - LAKEWOOD

The All-Scholastic Aircraft Show and Record Trials, sponsored by the Cleveland Press, the St. Edward Aeronautical Society, Cleveland Recreation Division, and a host of aircraft sales agencies and aviation book publishers, was a no-entry-fee affair. Age classes for Freshman, Sophomores, Juniors, Seniors, and Open in both flying and non-flying events made it a big show, and prizes were awarded through fourth place. The record trials drew top fliers, as the list of new Cat. I records shows. (See Records? Maybe!)

SOUTH AFRICA - CAPE

Pat Curtis and five other members of the Western Province Model Aircraft Club (membership about 40) have been trying some indoor flying recently. In spite of a great lack of suitable supplies, the interest level is high and they are "hot to trot" on some more sessions. They are making quite good headway in spite of their lack of good materials, and they feel that progress will be a matter of more practice.

TEXAS - DALLAS

The rather bleak test-flying prospects in Dallas were relieved somewhat by the opening of Walnut Hill for the summer season of indoor flying. The schedule calls for a session on every other Wednesday from 7 PM to 10 PM, and the first session was May 8. This session was devoted almost entirely to testing of models to be flown in the South Central Semi-Final on June 8.

Walnut Hill Recreation Center, with a 20' smooth ceiling, is a prime flying site whenever the drift is low. The evening schedule we now have almost assures good air since the main cause of drift has been uneven heating due to the sunlight in the daytime.

VIRGINIA - LANGLEY FIELD

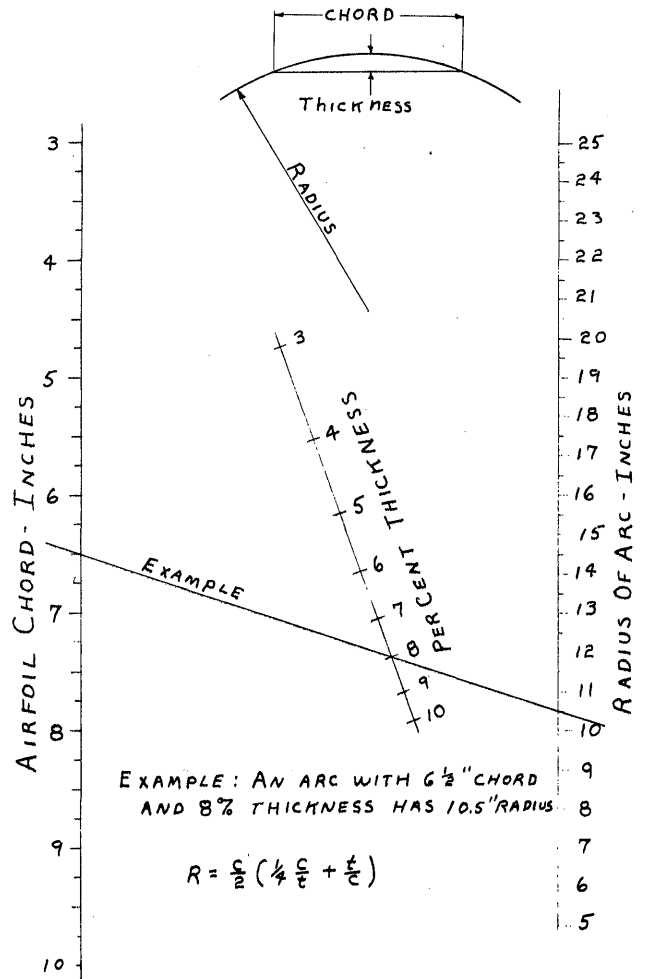
Once again drift conditions were poor in the 22' smooth-ceiling hangar site, this time due to high winds outside. Rubber times were low as a result, with the best time of the day set with a "D" stick belonging to Phillips - 9:27.7. The best non-FAI rubber time was by Woody Blanchard's paper stick - 8:45.5 Libby won the HL event with 0:17.0.

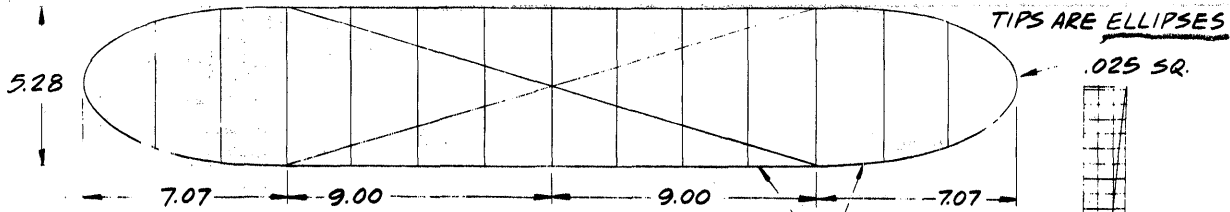
AIRFOILS

For some time reports have been filtering in from all over the world about experiments involving arc airfoils, so we saw the possible need for this nomogram to aid in design of airfoils of the arc type.

Normal airfoils (perhaps we should say conventional airfoils) can be plotted to that chord which will fit the longest station in a tapered wing, and the shorter ribs which are required can be made by cutting excess length from the trailing edge of a longer rib with little change in the airfoil characteristics. Not so with arc airfoils; if they are trimmed in length the new rib is quite a bit thinner (% thickness) than the root rib. Thus the ribs for a tapered wing must be individually plotted if an arc type airfoil is used. This nomogram will greatly speed up the process of making any wing with an arc, and we hope that enough people will try this type of wing design so we can find out if it is superior to the conventional method of doing things.

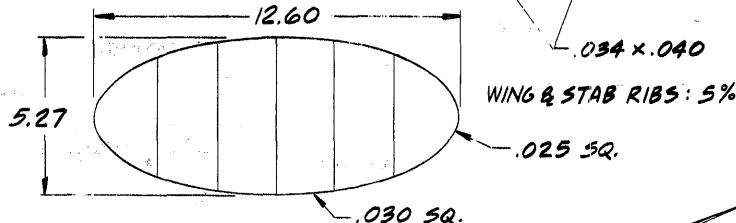
Charlie Sotich designed this nomogram, and its use is practically self-explanatory. Go to it, and let us know how the new one flies!





CRUSHER C

148 SQ. IN. C STICK
ERIC GREENWELL



WEIGHTS

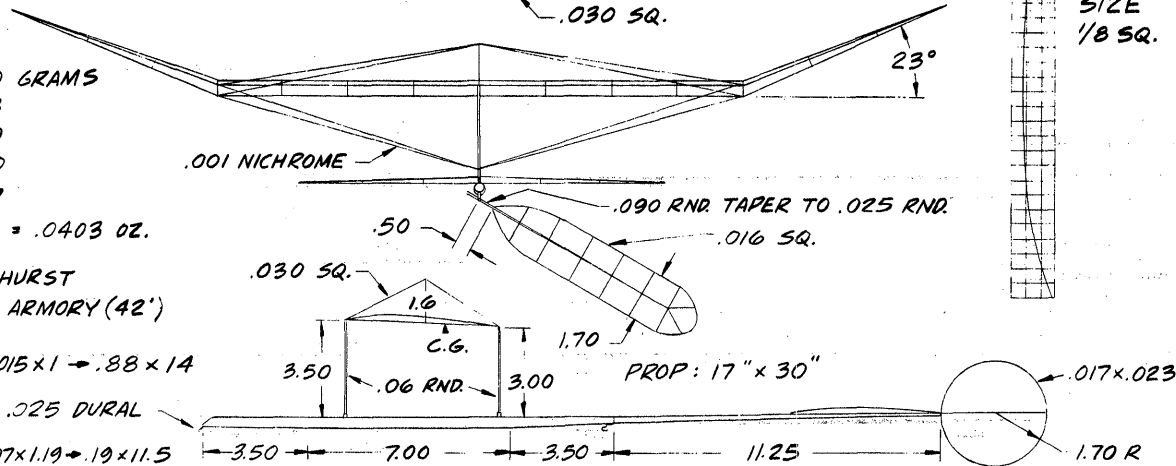
- WING .350 GRAMS
- STICK .448
- BOOM .090
- STAB .060
- RUDDER .007
- TOTAL 1.115 = .0403 OZ.

25:01 LAKEHURST
16:40 M.I.T. ARMORY (42')

STICK BLANK: .015 x 1 → .88 x 14

.025 DURAL

BOOM BLANK: .007 x 1.19 → .19 x 11.5



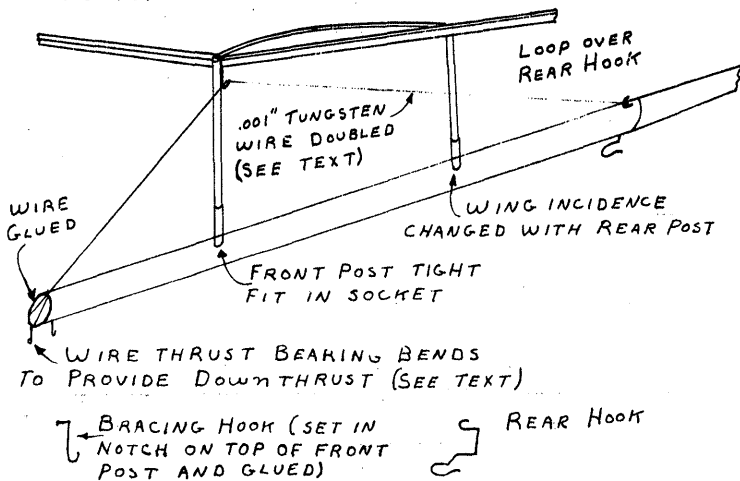
FULL
SIZE
1/8 SQ.

HINTS AND KINKS

Lightweight Fuselage Bracing

Another variation on the monowire fuselage bracing is shown below, as used by Jim Skinner. The bracing wire is a loop with the free ends glued to the front of the motorstick and the doubled end looped over the special rear hook. After the wing is assembled to the fuselage, the wire is strung across the hook on the front post and the motorstick is bent up enough for the wire to hook in place. Adjustment of the brace wire length can be made by trimming the length of the front post; wing incidence is adjusted by moving the rear post.

Two hints for the price of one: Jim's front thrust bearing is a music wire double bearing (INAV, July '62) that is made from .012" wire. This size of wire bends enough (on fully wound .055" Firelli) to give enough down thrust to avoid a power stall and to give a more consistent climb.



"Quickie" Microfilm Hoop

With an unusually good run of pouring film one night, Ron Ganser ran out of balsa hoops. He then discovered that the wire frames used for holding the crease in work pants while drying would work as a hoop. One drawback: since the wire frames don't float, it requires someone to help. The frames are adjustable, and ideal in size for "C" wings. A plus factor: since the frames are adjustable in width, the film can probably be slackeden for covering by making the frame narrower.

STATE OF THE ART

The Tech Model Aircrafters of M. I. T., under the expert guidance of Ray Harlan, have been making the most of their 42' Armory. The ceiling is cluttered down to about 35', which fairly well spoils any advantage the extra ceiling might have.

One of the seven records the club holds was set in the Armory, and represents a really fine flight, Eric Greenwell designed the model of the month, the "Crusher," and flew it to a Cat. II Senior C Stick record of 16:40.

RECORDS? MAYBE!

- DALLAS AREA FAI INDOOR QUARTER-FINALS, April 20, 1963
 - Cat. II, SMU Coliseum, Dallas, Texas, 56' ceiling.
 - Senior B Stick - 13:53.1, Nickey Jones
- ALL-SCHOLASTIC AIRCRAFT SHOW, April 21, 1963
 - Cat. I, St. Edward High School, Lakewood, Ohio (33')
 - Junior B Paper - 7:00.1, Bernie Wisniewski
 - Senior C Stick - 9:48.4, James Gaffney
 - Senior B Paper - 8:50.0, Jim Skinner
 - Senior B Cabin - 6:54.0, Larry Loucka
 - Senior C Cabin - 5:57.0, Larry Loucka
- CHICAGO AERONUTS INDOOR RECORD TRIALS, April 27, 1963
 - Cat. II, Madison Street Armory, Chicago (75' ceiling)
 - Senior Paper Stick - 13:22.8, Dave Erbach
 - Senior B Cabin - 6:24.2, Dave Erbach
 - Senior Autogyro - 1:21.4, Dave Erbach
 - Senior Ornithopter - 1:15.0, Dave Erbach

THE HAND LAUNCH GLIDER

PART 14

by RICHARD MILLER

DESIGN
(concluded again!)

Wing Loading and K-factor Comptability

When all other aspects of hand launch glider design have been combined to the satisfaction of the designer, there remain two vital factors of paramount importance to be considered. The first and most obvious of these is the rate of sink of the glider and the other is its altitude potential - the height to which we can hope to throw it. It can readily be seen that our total duration is going to be a product of these two elements.

(Therefore how this got included out of the main body of the 'Design' part of this series is a little difficult to say. But inasmuch as 'Construction' bears so heavily on wing loading, which is what we're getting to, perhaps this is the best spot for it.)

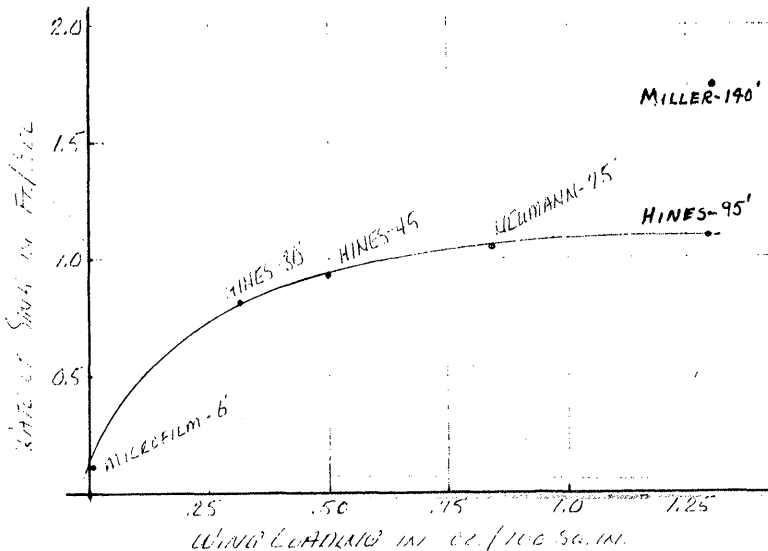
Rate of Sink

While duration is directly dependent on rate of sink, the rate of sink seems to be dependent in turn on wing loading. The design of the glider, particularly airfoil thickness and undercamber, will have a lot to do with the sink rate but all else equal it is wing loading which is the dominating factor.

To demonstrate the relationship between wing loading and rate of sink, and to give the reader an indication of how light (or heavy) he must build in order to be competitive, I have prepared the accompanying graph. This is risky business at best, however, in the case of Indoor HLG. There is a scarcity of accurate information about gliders, for one thing. For another there are variables such as estimation of height gained, time it takes the glider to get to the top of its trajectory, thermal assistance, corrections for projected areas and many more that are bound to make even the best figures somewhat haphazard.

Nonetheless we are fortunate in having one design which has made optimum flights under a variety of ceiling heights and one on which rather careful records have been kept - Lee Hines' Sweepette. Two of these are the standard Sweepette, one is Lee's 16" span version and one is the modification used by Tommy Neumann. At the low (rate of sink) end I have thrown in a (ugh!) microfilm glider to round out things. Data on the Sweepette have come from the published specifications of the designers and that on the microfilm glider from p. 142 of Zaic's Model Glider Design.

Glider	Area	Weight	Loading	Sink	Ceiling
Microfilm HLG	66.5	.0058	.009	.1-.15	6'
Hines - 30'	44.0	.145	.32	.79	30'
Hines - 45'	57.0	.285	.50	.87	45'
Neumann - 75'	57.0	.46	.84	1.09	75'
Hines - 95'	57.0	.75	1.3	1.19	95'



Even with a wide allowance for error I think that these figures show the strong relationship which exists between wing loading and rate of sink. There is undoubt-

edly a lot more flexibility under high ceilings than under low as the position of my Omega on the chart shows. This model had the same wing loading as Hines' 95' Sweepette (1.3 oz./100 sq.in.), went a lot higher, but came down a lot faster. Nonetheless I'm convinced that nothing like this range of altitude and sinking speed is possible under limited ceilings.

A couple of other things are worth pointing out concerning the graph and the curve. The first is that approximately 60 feet seems to be the highest one can throw today's HLG and achieve a 1 ft./sec. sinking speed. This is quite remarkable as anyone who has tried it will quickly agree. I have the feeling that heavy competition in low ceiling flying will cause the figure to inch up slowly in the years ahead. The other curiosity is how closely the wing loading in oz./100 sq.in. of the low and medium ceiling balsa gliders matches the ceiling height in feet. (Column #3 and #5) This can provide the person building for a limited ceiling height with a general index to guide him when it comes to determining the weight of the glider. He'll soon find out that knowing what weight to shoot for and building within those specifications are two different matters, however. And as he struggles with the area between them his respect for the low ceiling champs will rise accordingly.

K-factor Comptability

As we move from limited to unlimited ceiling conditions the second of our two factors, altitude potential, comes into play. Consequently there is a shift of emphasis. Building down to weight, which was the all-important thing under the limited ceiling, now becomes a secondary concern. Throwing the glider as high as we can, which is a product of our strength and general physical capabilities, replaces it as the primary consideration.

How far or how high we can throw an object depends to a much greater extent on the physical properties of the object than it does on our strength, however. Just about anyone of moderate strength can throw a BB (down boys!!) a hundred feet or so but I doubt that the strongest person in the world can throw an equal weight of Kleenex, loosely wadded, more than a few feet.

What we are concerned with in the case of the HLG is the amount of inertia we can impart to a glider - a Quotient of Inertial Input - on the one hand; and what the glider does with it on the other - a Quotient of Inertial Expenditure. I would guess that the Quotient of Inertial Input would depend directly on the distance, velocity and inertia with which one's hand moves during the launch and be related ultimately to the thrower's general physique, musculature, agility and motor responses. The Quotient of Inertial Expenditure would be largely dependent on the size and weight of the glider in question.

The problem, it seems to me, is to match these two quotients in order to get an optimum performance potential. Furthermore it seems to me the best way of matching them is to bring in the K-factor, expressed by Area/Weight^{2/3}. I am unable to go any further with this mathematical-mechanical formulation because I haven't the slightest idea in the world how to do so. Nonetheless I'm convinced that each individual is best served by one, and only one specific type of glider, large or small, heavy or light; that this type can best be expressed by the K-factor; and that it is possible to express mathematically the degree of K-factor Comptability between the physical properties of the glider and the morphological constitution of the launcher.

Perhaps some young mathematical Lochinvar will gallop out of the West one day with a reasonable formula by which to express K-factor comptability. Perhaps the whole problem is nowhere so complex as ignorance makes it seem. At best such a formula could only serve as a rough guide to anyone searching for just the right glider however, and he would have to rely ultimately on his own feelings and experience to direct him in his quest.

If and when he achieves this happy combination he becomes a candidate for a fleetingly magic moment which comes every so often to the lucky HLG thrower - one which, if you study this series of articles religiously, eat your Wheaties and live a blameless moral life, you too may stumble fortuitously on one day. It occurs during the launch, just in that fraction of a second before the glider and the hand finally part company. Your entire body is free of the ground and all your weight and energy can be felt in the end of the index finger, pressing into the finger rest of the glider. It is an electrifying experience and a certain sign that, whatever the limits of your strength or of the glider's design, you are getting the most out of the materials at hand. Watch for it, and make the most of it when it comes.

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

JUNE 1963

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

NIMAS members who joined in May:

ED BOJANOWSKI, 2250 South 24th St., Broadview, Illinois
FRANK CUMMINGS, 1112 West 254th St., Harbor City, Calif.
WILLIAM DOWNEY, 7486 Button Road, Mentor, Ohio
BILL GOUGH, 1536 W. Victoria St., Chicago 26, Illinois
E. C. HANFORD, 1417 Clemens Place, Reynoldsburg, Ohio

Thoughts For The Month

As we looked over the FAI Indoor results for 1963, a disturbing trend in local elims participation became apparent. Consider the following chart:

Location	'62 entry totals	'63 entry totals
EAST COAST		
Lakehurst	9	14
New York	7	0
Virginia	0	3
	16	17
CENTRAL ZONE		
Detroit	10	11
Chicago	14	9
Cleveland	18	15
	42	35
Dallas	8	9
Kansas City	1	0
Wichita	1	0
	10	9
WEST COAST		
Los Angeles	10	9
Aoffet	13	9
Santa Ana	0	6
	23	24
	91	85

Note that the overall total of starting contestants is less in 1963 than in 1962 even though total indoor activity was higher.

Many of the fliers who didn't enter (even experienced fliers) excused their failure to enter with one of two reasons: 1. I can't get off work to go overseas even if I should win, so why bother? 2. The other fellows have too much experience - I don't have a chance!

As a result, indoor modeling in general and FAI in particular lost two ways: First, some serious contenders were eliminated in the first round; second, the total income from the program is then lower, resulting in less money to finance travel expenses of the team members to the point of departure for the Finals.

The loss of serious contenders can be explained when we remember that half the local elims entrants were eliminated. To take Detroit as an example of less experienced fliers entering, there were eleven entrants and six of them qualified. If those five had not entered, Phil Klintworth, Clarence Mather and Hardy Brodersen would have been eliminated. Each of these is an experienced flier and deserved to go on.

All active indoor fliers should participate in the local elims, thus helping themselves and the program. The hobby loses by not having the experienced fliers in contention since these fliers help to advance the state of the art; those who don't enter lose the experience they would have gained, besides not having the valuable opportunity of finding out how their own efforts stack up against those with more experience.

The most important aspect of the revenue loss is related to the FAI program as a whole. Since this program must be self-supporting, the only way it can be kept alive is through voluntary participation of the fliers, or through donations - and donations are mighty few!

The chart above fails to point out another factor which acts as a deterrent to the development of the most

effective FAI Indoor Team - the lack of leaders for the program. To date, no one except active and serious contenders has volunteered to handle the administration of the program. Thus each year we have had at least four top fliers shackled with a mountain of administrative work, when they should be free to devote their time to research that will advance our team's chances in the Finals. It is a crying shame that many of our fliers who for one reason or another cannot participate at the Finals level still do not volunteer for the top level administrative posts and free the serious contenders for full time work on their models.

FAI INDOOR REPORT

We had hoped to have the complete list of qualifiers for the Semi-Flyoff in this issue, but two things stand in the way. First, we erroneously published the date of the East Coast Semi as June 2, when in reality it is June 16. Second, teen dances, complete with a false ceiling, have caused the Coliseum in Detroit to become unavailable. After frantic searches for another site (including the Madison Street Armory in Chicago) it was decided to move the Central Zone Semi to Lakehurst on June 16. It is very unfortunate that this was the only possible solution due to the very short time remaining before various deadlines. Late word from Pete Sotich indicates that none of the Chicago qualifiers will be able to arrange time off from work to make the trip, and there has been no word from Detroit and Cleveland on how many will be able to make the trip.

Quarter-Final Results

DETROIT, MICHIGAN - May 12, 1963 (65' ceiling)

Twelve qualifiers			Total
Dick Kowalski	25:26	27:44	53:10
Paul Crowley	26:02	26:23	52:25
Clarence Mather	22:45	26:43	49:28
Ed Stoll	22:10	21:44	43:54
Phil Klintworth	22:26	20:25	42:51
Joseph Hindes	20:12	21:07	41:19
Pat Green	17:38	17:20	34:58
Lou Willis	16:26	18:24	34:50
Ron Ganser	17:32	16:25	33:57
Bill Hulbert	15:42	17:51	33:33
Ed Cenknor	14:52	18:25	33:17
Norm Getzlaff	15:26	16:31	31:57

CHICAGO, ILLINOIS - May 25, 1963 (75' ceiling)

Charlie Sotich	24:20	24:17	48:37
Bob DeBatty	22:15	23:37	45:52
Don Kintzele	22:36	23:03	45:39
Curtis Janke	17:59	21:52	39:51

LAKEHURST NAS, NEW JERSEY - May 19, 1963 (170' ceiling)

John Triolo	34:29	32:26	66:55
Ernie Kopecky	29:05	32:52	61:57
Ted Gonzoph	27:10	33:09	60:19
Bob Champine	30:18	29:40	59:58
Ray Harlan	26:59	25:49	52:48
Pete Andrews	23:00	23:19	46:19
Julius Rudy	21:19	19:09	40:28
Reggie Batterson	14:36	15:17	29:53

Semi-Final Results

SANTA ANA, CALIFORNIA - June 2, 1963 (180' ceiling)

Tom Finch	41:27	35:15	76:42
Bill Atwood	37:10	37:56	75:06
Frank Cummings	36:40	37:46	74:26

DALLAS, TEXAS - June 8, 1963 (56' ceiling)

Stan Chilton	20:03	14:48	34:51
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PLANS FOR THE SEMI-FLYOFF

When we contacted Bruce Paton (GD) for info on the Semi-Flyoff, he said that he had no word of final arrangements as of June 8, 1963. Some time ago he notified both

AMA Hq. and the FAI Indoor Committee that it would take an AMA request through the Navy to secure the desirable two consecutive days for this event.

Therefore, as it now stands, the Semi-Flyoff will be held on August 3. There will be two rounds of 3 flights each, the first round starting at 10 AM and the last flight of the round to start no later than 3 PM. The second round will start at 3 PM with the last flight to start no later than 7 PM.

If the arrangements are completed for a two day schedule, the first round will be on the first day with official flights to start at 12 noon and the last to be no later than 6 PM; the second day will have a similar schedule.

THE LAB

Last month we promised an article on rubber testing; due to the press of FAI competition and administrative details Dick Kowalski was unable to complete the article. We hope to have it soon; please bear with us.

Prop Testing

The following in-flight test for propellers is passed on by Dick Kowalski. As presented, it does not permit measurement of absolute efficiency of propellers, but it indicates which prop of several is more efficient in the cruise portion of flight.

Propellor Efficiency - Schwebbeliestungs Method

Install a rubber motor of similar weight to that used in flight. The size is not important!! Put in enough turns to allow a mild climb. Just as the model ceases climbing and goes into level flight, measure the RPM (I count time for 10 revolutions) and measure the torque required. The lowest value of level flight RPM x level flight torque moment gives the highest efficiency. This test should be done in a draft free area since the downwind values are higher and the upwind values lower.

In the absence of a torque meter a fairly close approximation can be made by making several flights with the same number of turns in the same weight of rubber and averaging the results. (Editorial comments)

QUESTIONS AND ANSWERS

26. How do you repair holes in microfilm, particularly on wings which have been braced?

The ease of repair on microfilm depends primarily on the size of hole, but some holes seem to appear in the most inaccessible places! For holes much larger than one rib spacing wide (especially deep inside a braced area) it is usually better to strip the bracing back and recover the area.

For small holes no matter where the location, it is easy (after much practice) to repair the damage. Two basic methods can be used, depending upon the circumstances. The idea is to transfer a piece of film from the hoop to the wing without wadding it up or dropping it, which requires a support for the film.

Method #1: Cut a piece of newspaper or similar (not slick or hard finish paper) about half an inch larger than the required patch. Wet the paper with saliva all around the outside edge, place it on the film, and trim around the patch and paper. With sharp scissors trim off all the wet edge (this requires very careful handling) and lay the film side over the area to be patched. If your film is the dry type, the edges of the hole will need to be wetted with saliva before applying the patch. Lift off the paper and the patch will be (usually) in place and stuck.

Method #2: This time the film support is a very light balsa frame. Several can be prepared ahead of time and stored; in an emergency use a wing or stab tip or fin from a wrecked or spare model. Wet the edges of the patch area and lay the covered frame film side down over the hole. Wait a bit for the film to stick better, then thoroughly wet the frame and lift it off carefully. If the patch area is a compound curve such as the top of a wing, the frame may have to be wet to help it mold to the curvature.

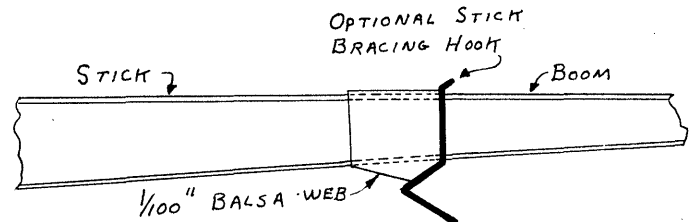
Fancy tricks!: Don Chancey uses pinking shears with method #1 - it gives an unusual effect, and the pinked edge seems to help support the film better. With method #2, the prepared frames can be round, elliptical, or of other fancy shape; careful trimming and careful patching will yield fancy patches of the desired shape.

Since film patching is a vital part of contest work, we welcome any further suggestions which might be of interest.

HINTS AND KINKS

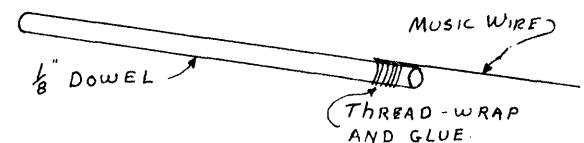
Improved Rear Hook

Rear hooks have remained much the same over the years and most of them have been hard to hook a "loaded" motor up to, and even harder to get the motor off in an emergency. Shown below is an improvement which is easy to hook up, and even a tightly wound motor will slip off easily by pulling the motor straight back. Use the usual balsa web re-inforcement to strengthen the mounting.



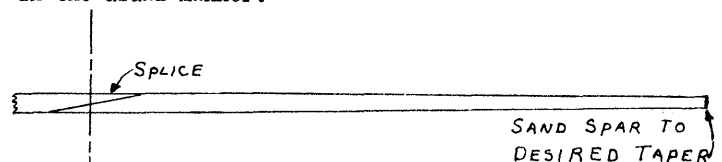
New Glue Stick

One night, when some friends across the table had "borrowed" the only glue stick we could find, we grabbed a piece of music wire as a substitute. We find that it is better than most glue sticks since the glue runs to the tip and forms a tiny drop, just right for those small glue joints. To a certain extent, the wire diameter will determine how much glue is applied. Of course, how deep you dip it and how thick the glue is also varies the amount of glue applied.



"Quickie" Prop Spars

Rather than taper a prop spar during the process of rounding it off, carefully taper the spar with a sanding block to the desired degree of taper, then sand it round in the usual manner.



NEWS FROM AROUND THE WORLD

CALIFORNIA - LANCASTER

Jim Kelly, who works for NASA on the X-15, has set up a record trials (Cat II) in an Air Force hangar at Edwards Air Force Base. Ceiling is 97', floor area is 300' x 400', and the date is July 6-7, 8 AM to 6 PM. For more info and entry blanks, contact Jim at 44246 North Cedar, Lancaster, California.

CALIFORNIA - MOFFET FIELD

No record trials will be held at Moffet in June, and it is possible that the trials scheduled for July 14 may be the last one. If you plan to participate, Joe Bilgri will have to have your name, address, and place of birth at least ten days in advance. Joe Bilgri, 1255 Blackfield Drive, Santa Clara, California.

CALIFORNIA - SANTA ANA

Besides the 41:27 flight that Tom Finch put up, there are two items which stand out: First, the humidity never got below 86% all day. Second, the drift was negligible all day and Finch didn't have to balloon the model at any time.

The Sky Hoppers of Orange County have their Quarterly Indoor contest coming up June 30. The following events will be held: Open Stick, Open Cabin, Paper Stick, Easy B, HLG, Monoplane Scale, and Biplane Scale. All age classes are combined in all events except for Easy B, which is split Jr. & Sr.-Op.. Entry fee \$1 per event, trophies to third place in all events.

FINLAND - HELSINKI

Esko Hamalainen reports a difficulty in common with several U. S. towns - someone is using their site! In April they had a contest, but since then and until June the site is taken up by an ice show from Moscow. After the show leaves, however, they will have access almost every day.

MICHIGAN - DETROIT

In the days of intensive test flying just before the Coliseum was closed to model flying, Dick Kowalski made two unofficial flights over 30 minutes below the 60' mark. Category II fliers take heart - it can be done!

OHIO - REYNOLDSBURG

E. C. (Scotty) Hanford reports that the Reynoldsburg high school gym is close to 35' with a smooth ceiling. The principal has said that the site could be available most school days until 11 PM provided he has an organization to deal with.

If there are any indoor fliers in Reynoldsburg or eastern Columbus, this may be your chance! Scotty may be reached at 1417 Clemens Place, Reynoldsburg, Ohio.

SOUTH AFRICA - CAPE

Members of the Western Province Model Aircraft Club held their second indoor session in a different hall with 25' ceiling, but the drift was high. This group has a lot of enthusiasm and their flight times go up quite a bit each session. This time they almost made 4 minutes with microfilm models in spite of the drift.

STATE OF THE ART

Some time ago Charlie Sotich held the Paper Stick Cat. II record; Mike Karlack upped it at the Great Lakes meet only to lose it to Phil Klintworth's winning Nats flight. Last December Charlie took possession of the mark once again with a model of the same basic design as before. Charlie tells the story of the model and flight:

"Two models of this design were built early in 1961. Since then a couple of new wings have been built to replace ones damaged in the light fixtures and girders at the Madison Street Armory. The original rudders were the conventional round type, but they were replaced since they were more susceptible to damage and took up more space in the box than this shape that I copied from Tommy Neumann.

On the flight that the model did 16:19.6 it went up to about 65 or 70 feet and cruised there below the girders, and came down without hitting any obstructions."

RECORDS? MAYBE!

WEST COAST FAI INDOOR SEMI-FINAL - Santa Ana, California
June 2, 1963 Cat. III, 180' ceiling
Open D Stick - 41:27, Tom Finch

SOUTH CENTRAL FAI INDOOR SEMI-FINAL, Dallas, Texas
June 8, 1963 Cat. II, SMU Coliseum, 56' ceiling
Senior Helicopter - 6:30, Nickey Jones

June 8, 1963 Cat. I, SMU Coliseum corridor 26' ceiling
Senior Helicopter - 6:31, Nickey Jones

Last month we listed five records from the April 27 Aeronuts session at the Chicago Armory. On the listing we received, one record was omitted and another was listed erroneously. The correct listing follows:

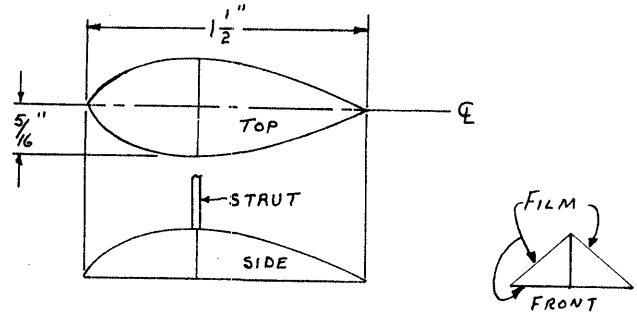
Cat. I, Madison St. Armory Lecture Room 22' ceiling
Senior Autogyro - 1:21.4, Dave Erbach

Cat. II, Madison St. Armory Drill Hall 75' ceiling
Senior Autogyro - 2:21.4, Dave Erbach

****CHANGE OF PAGE****

In recent years there has been very little activity in Cabin ROW events, and perhaps this is due to lack of information on the basic techniques. With the able aid of Dave Call we present the following on floats in case anyone is interested in trying something off the beaten track.

In the first sketch below, we show approximate dimensions for class B floats. Since the basic configuration is for two floats in front and one in the rear, the dimensions shown are suitable for the front floats. The rear float can be slightly smaller since it has no torque load and very little weight to support.



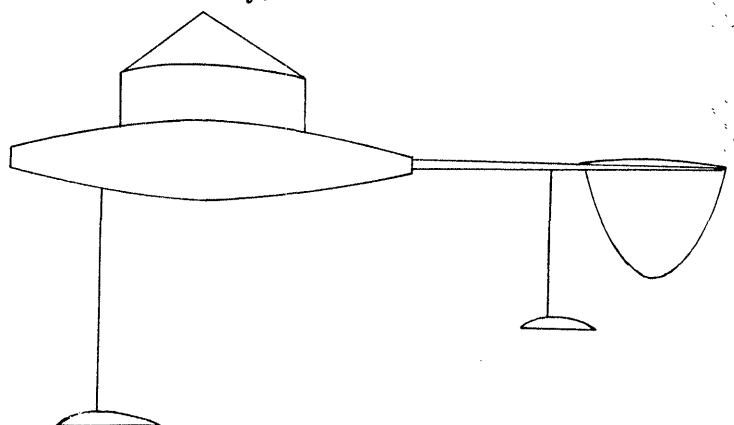
The floats are constructed from .025" - .031" stock. Build a jig - male and female to accept the stock thickness. Soak the outline strips in water, bend them over the form and bake in the oven until the wood is slightly brown. Assemble the framework and use a thinned solution of rubber cement to attach microfilm in the pale red and green range. Cover the three sides of each float separately and then seal the edges with rubber cement, allowing 48 hours to dry.

Apply zinc stearate to each section of film with a balsa spatula and rub it on with your finger. Repeat the process several times until the film appears "mother-of-pearl" in color. Blow lightly to remove the excess zinc stearate. Attach the struts and complete the assembly.

To check for leakage, immerse the entire float for ten seconds, then examine all the seams with an eye loupe or magnifying glass for leaks. If the waterproofing was successful, the float will emerge completely dry.

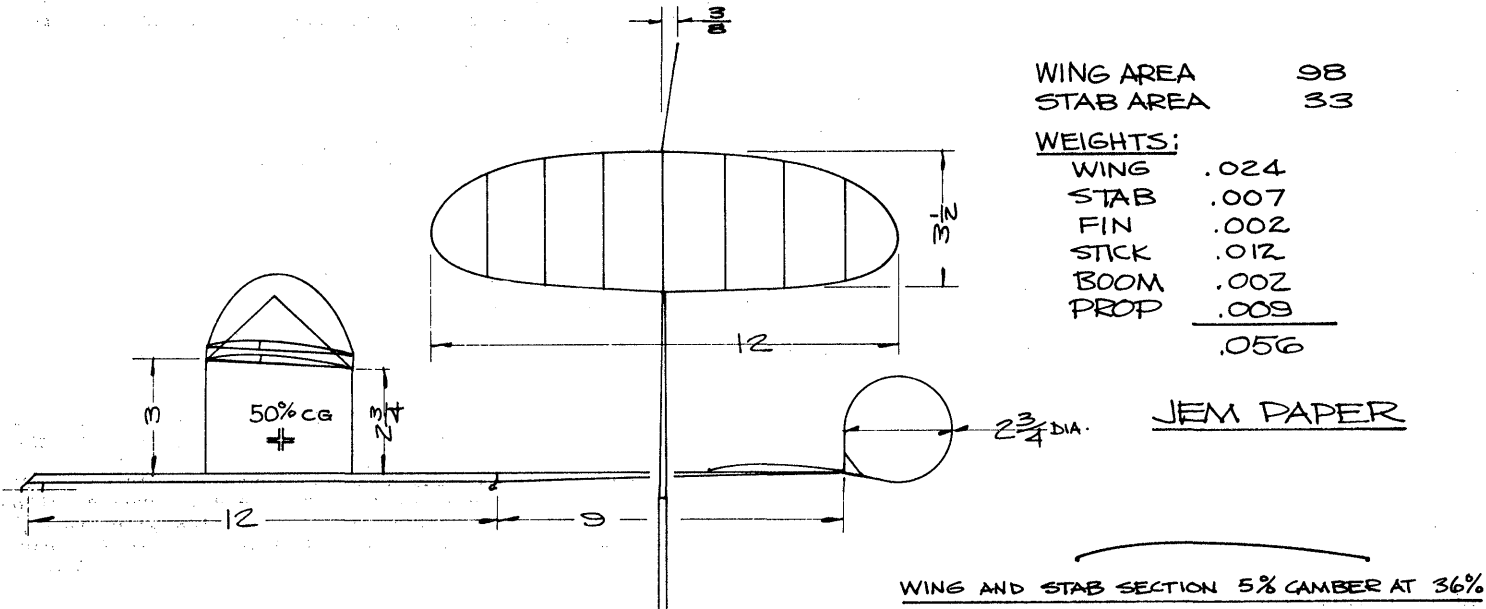
The strut must be made of firm, flexible wood. An unbraced "B" strut should be oval, .078" x .062" and taper to .062" diameter at the float end. The left strut should be stiffer to prevent the float from "digging in" on a full torque take-off. A typical weight for the float assembly (B Cabin) is .006 - .0065 oz.

Refer to the second sketch for mounting. The front floats replace the wheels, with the rear float added as shown. Take-offs are a matter of practice, and the art has to be developed. It looks like fun - bring your own tank and let's fly!



DEUCE DIP III INDOOR PAPER STICK

CHARLES SOTICH
ILLINOIS MODEL AERO CLUB

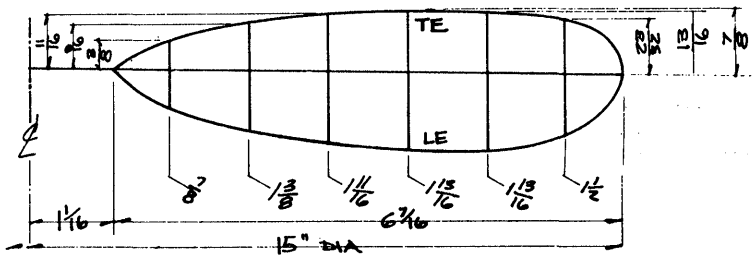
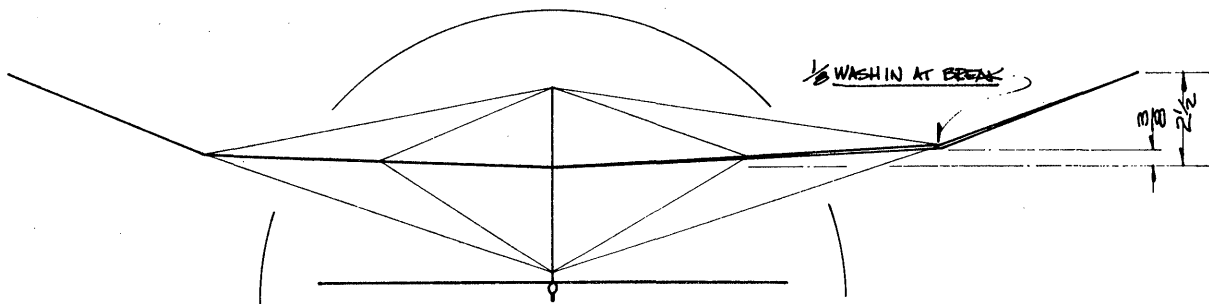
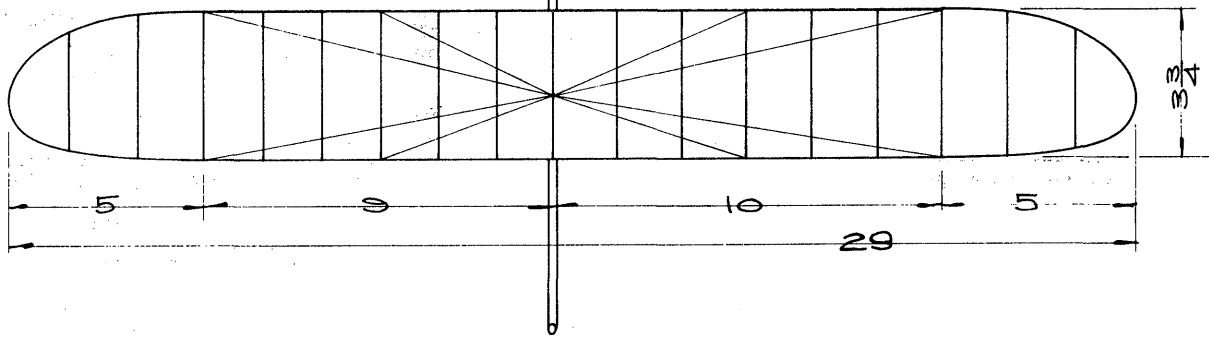


WING AREA 98
STAB AREA 33

WEIGHTS:

WING	.024
STAB	.007
FIN	.002
STICK	.012
BOOM	.002
PROP	.009
TOTAL	.056

JEM PAPER



PROP 15" DIA x 30" PITCH
MOTOR 18" LOOP .080 PIRELLI
BEST OFFICIAL TIME
16:19.6 12/29/62
BEST TIME ANYHOW
17:04.6 3/17/62 } 75 FT CEILING

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

JULY 1963

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NATIONAL INDOOR MODEL AIRPLANE SOCIETY

INDOOR SCALE TIPS

by ED STOLL

The month of June brought only one new member to the fold - Sponsored Junior Member James Mayes, 413 Sharr Ave., Elmira, New York. Jim started in indoor all on his own, after quite a bit of experience in outdoor free flight. His top IHLG time in a 20' ceiling is 23 seconds, and an average of 20 seconds - all with an original glider. In addition to this activity, Jim has formed the 7 member Elmira Indoor Model Airplane Club. The club membership consists of boys ranging in age from 11 to 14, who meet once a week at the local YMCA. A required club project is the club HLG, and most of the members have moved on to Easy B's.

Contest Board Action

Recent action by the Free Flight Contest Board approved the proposal to add FAI Indoor to the AMA roster of events, under the assumption that this was a final vote. It has since been discovered that the matter had never been submitted to the Board, and that it had never been published in Model Aviation. Since the proposal is to add an event, it will also have to be approved by the A.M.A. Executive Council. If it is approved, the three month study period will begin with publication in M. A.

At present the FFCB has a ballot covering the much delayed action to eliminate microfilm covered "soaring" indoor gliders. Some time ago the Board was asked to rate the four proposals which have been pending for over two years (the same four proposals that appeared on the NIMAS Ballot) and the results were about the same as the NIMAS Ballot results. Consequently, the Board has been asked to vote on the Detroit-Chicago-Wilmington IHLG proposal. The reporting date for the ballot is July 15. Second ballot, due at the same time, will accept or reject for preliminary study the Detroit-Chicago-Wilmington IHLG scoring proposal (for best three of nine times). Hopefully, we will have a report on these two ballots next month.

NIMAS ANNUAL MEETING??

So far no plans have been made for a second annual NIMAS meeting, but if one is to be held, it will surely be held sometime during the week of the Nats. If you make it to the Nats, watch the AMA bulletin board in the building hangar and also look for a poster near the timer's table on Indoor day.

FAI INDOOR REPORT

Semi-Final Results

EASTERN ZONE SEMI-FINAL - Lakehurst, New Jersey			
June 16, 1963 (170' ceiling - west end of hangar)			
Bob Champine	33:21	36:01	69:22
Ernie Kopecky	32:33	33:56	66:29
John Triolo	32:12	29:29	61:41
CENTRAL ZONE SEMI-FINAL - Lakehurst, New Jersey			
June 16, 1963 (170' ceiling - east end of hangar)			
Dick Kowalski	36:54	39:13	76:07
Joseph Hindes	38:14	36:28	74:42
Ed Stoll	36:48	35:09	71:57

PLANS FOR SEMI-FLYOFF

Just before publication deadline, we received word from Bruce Paton confirming plans for a two-day Semi-Flyoff. At present it is planned to schedule two rounds of three flights each on Friday, Aug. 2 and Saturday, Aug. 3 from 8 AM to 5:30 PM. Bruce is going to try to get the hours extended to about 8 PM, and plans to send details of the final arrangements to each qualifier as soon as possible.

INDOOR SCALE

Ed Stoll of the Detroit Balsa Bugs has probably had more rubber powered scale models published than any other flier that we know of. In addition, he has been active in the scale program of the Balsa Bugs. We feel, therefore, that these remarks will be of benefit to indoor scale builders.

Construction

1. Pick a model that is inherently stable.
2. Scale the model to suit the size of the building. For example, in a 27' ceiling a 16" wing span would be about right. In the 65' Michigan State Fair Coliseum the size could be increased to about 22".
3. Construct the model with the following items in mind:
 - (a) The landing gear takes quite a beating and must be properly reinforced.
 - (b) Keep the tail assembly and wings as light as possible.
 - (c) Scale rubber models are almost always tail heavy, therefore, the nose should be quite strong and the wood should be chosen with this in mind.
 - (d) Make sure that the front and rear motor hooks are strong enough.
 - (e) Be sure the fuselage is strong enough to take the stress of a fully wound motor.
 - (f) Plasticize the dope so as to avoid warps and use as little dope as you can get away with.
 - (g) Be sure the incidence angle is correct; biplanes in particular are difficult to adjust if there is a large variation in incidence angles between the two wings.
 - (h) Plastic props have improved to the point where they are quite efficient and the imported wood props from Japan are also very good. For maximum performance the carved wood prop is best.

Adjustment

1. Balance the model so the Center of Gravity is about 50% back of the wing leading edge; in order to do this you will probably have to add weight to the nose.
2. The model will probably circle to the left with torque most easily; however, warps may make it necessary to circle to the right.
3. For the first flight, wind the model to about 40% of maximum and launch it close to the ground. Observe the flight pattern and make any necessary adjustments. On subsequent flights increase the number of turns and make further adjustments as necessary.
4. Remember that a model flying under full power will react more severely, so be sure of your adjustments before going "all the way."

PROP FORUM

In the past few months your editor's building time has largely been spent on props - sometimes it seems as if there have been hundreds of them! We started with the assumption that blade elements of the so-called "true pitch" prop near the hub seemed to be at too high an angle to contribute useful thrust. This line of reasoning was prompted by observing that (apparently) the prop stalled partially during the power burst. This then caused the model to hover and hesitate at launch and to wander in the climb. The experimental props presented here were designed by "seat of the pants" reasoning and are not supported by theory in the normal sense. We are not opposed to theory - especially when it is clearly defined and applicable. However, it takes time to properly apply theory with any degree of success, and prop theory is now rather incomplete as applied to indoor models.

Two different approaches have been taken. Since the blade area near the hub is the offender (by hypothesis), why not eliminate it? Our first prop of this type (and the most successful to date) is shown in figure 1, and was built for a class B Paper Stick. Props with this much spar offset depend upon careful wood selection and careful repairs (if needed) to maintain even flare between blades. Careful observation shows that this prop flares some during the entire flight, and unmatched blade components will cause uneven running and wobble during the whole flight.

The second design approach is to retain the blade area near the hub, but to reduce the blade angle of this segment. This is accomplished by modifying the prop block

PROP OUTLINES
 FULL SIZE
 14" x 24"

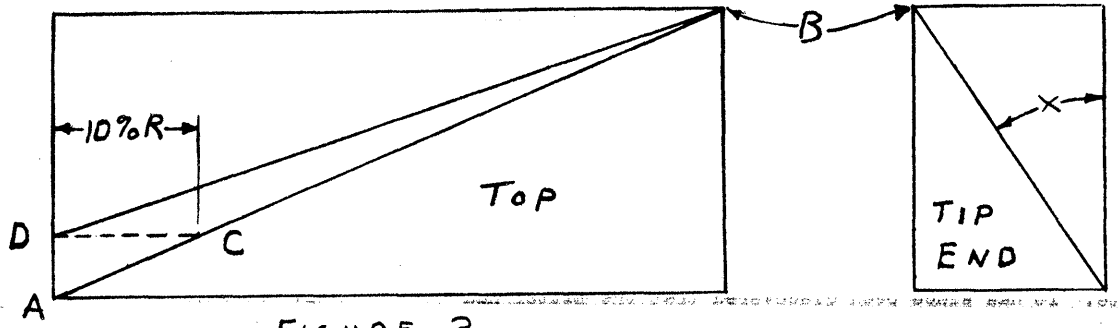
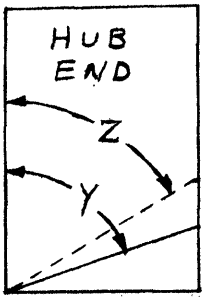
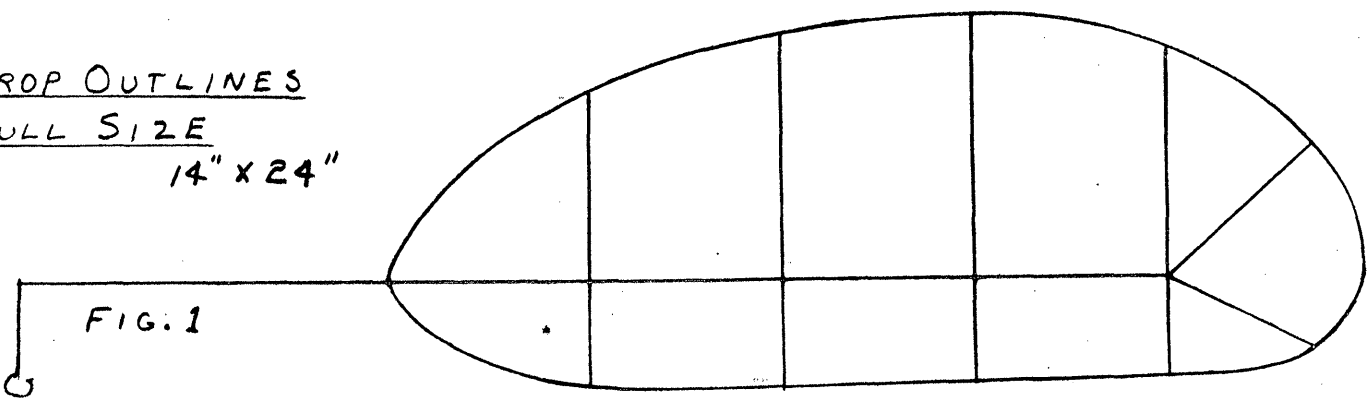


FIGURE 2

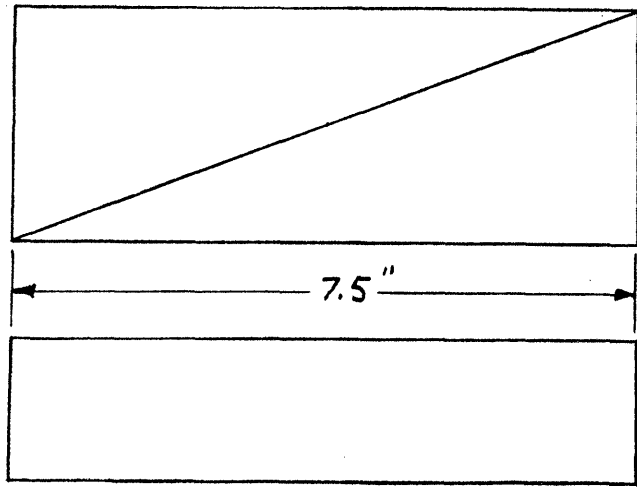
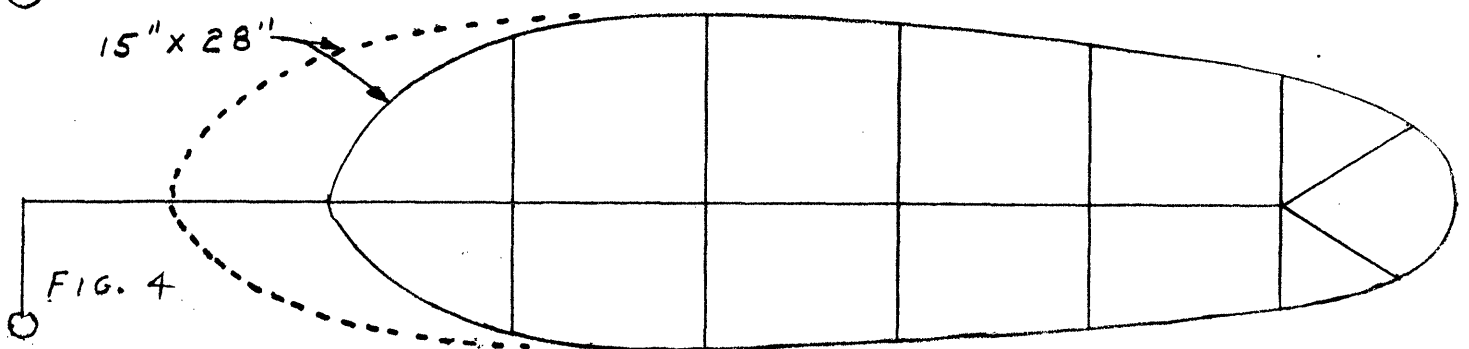
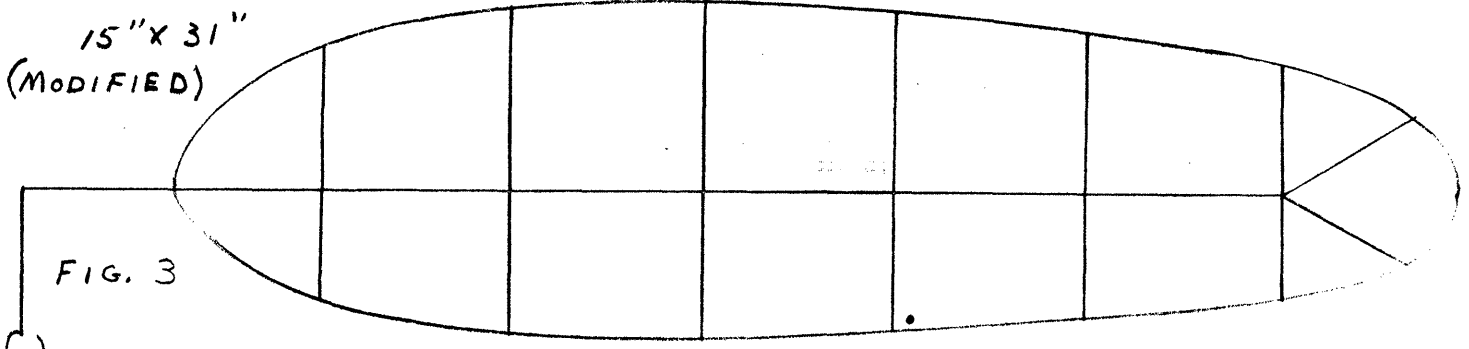


FIG. 5

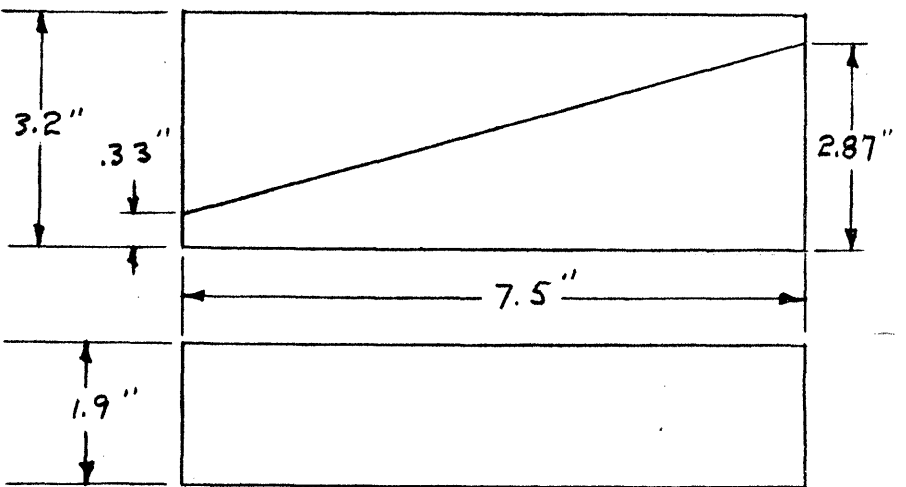


FIG. 6

as shown in figure 2. For the purposes of this series of tests, it was decided to limit the maximum blade angle to that angle which occurs at 10% of the radius on the conventional prop. This is done as follows: Compute the dimensions of the standard block and lay out the top carving line (line AB) as shown. Measure off 10% of the prop radius to establish point "C" (exaggerated for clarity in the sketch) and project in to the end of the block to establish point "D". The new top carving line is line DB, and a line is also needed from point "D" to the side carving line (bottom of the block). Note that the blade angle at the tip (angle "X" in fig. 2) is unchanged on the new block, but that the angle at 10% of the radius has been reduced from angle "Y" to angle "Z". Note also that the prop shaft will be placed perpendicular to the bottom of the block during construction just as for a normal prop.

A series of props were built to "get the range" and test the characteristics of the new props. As would be expected, the new props behave as if they were of much lower pitch than the standard prop. It will take extensive testing and a whole new approach to rubber sizes to determine the relative efficiency of this new prop design, but some general comments can be made by making certain assumptions as a frame of reference. These assumptions are: All test props equal in weight to avoid CG shifts in the test model, all test flights made with the same number of turns in the same loop of rubber, and preliminary test flights made on each set-up to check model trim.

Under those conditions the prop with reduced hub angle will climb at a higher RPM and for a longer time than the standard prop, while cruise RPM will range from the same to slightly higher on the same torque. Level flight will require less torque than the standard prop, and the ship will deadstick on the same rubber size that is correct for the standard prop. In other words, it seems that the peak torque required to reach a given altitude is less, and it requires less torque to maintain level flight. This leads to the conclusion that the same weight of rubber should be made up from a longer loop of smaller cross-section rubber in order to more nearly match the torque curve required for this prop design.

The prop with reduced hub area seems to exhibit properties quite similar to the standard prop except that climb and cruise RPM's are lower and it seems to use up more of the turns before landing.

The above comments were based on several props built for "B", "C", and "FAI" ships over the past few months, plus three props built especially for this testing program. The basic size chosen was 15" x 28", to be used with a 25" Paper Stick of conventional design weighing .044 oz. less prop. The test weight for all the props was .0086 oz., to match the prop of figure 1. Figure 3 shows the blade outline and rib spacing for the standard prop and for the prop with reduced hub angle, and figure 4 shows the amount of blade area reduction and the outline of the prop with reduced hub area. The standard prop and the one with reduced hub area were built on the same block (figure 5), and a special block was made for the other prop.

Since the modified props behave like low pitch props, an effort was made to more nearly match the props for the test. We elected to make the blade angle at 50% radius equal on the modified and standard props. This raised the tip angle of the modified prop to an angle equal to that of a standard 15" x 31" prop. Figure 6 shows the modified block. We welcome questions, discussion and criticism of this design approach, but our fondest hope is that someone else will independently test this design and check our conclusions. A further report on these props will follow after more testing is completed.

STATE OF THE ART

This month a double-barrelled presentation by George Batuik brings us the current record holding models of two classes - Tom Finch's FAI and Walter Mumper's Paper Stick.

Tom Finch's FAI ship made the first United States flight over 40 minutes which had not been steered with a balloon. (Frank Cummings, holder of several Cat. III records, made a flight of 40:13.2 a few months ago, but failed to steer his model out of the Moffet "jet stream" during the flight.)

Tom says of the flight (41:27): "It was done with a brand new ship with one of the props I made a couple of months ago. The prop was a 20" x 40" with an elliptical

outline (see 3-view for dimensions). I ran a 19" loop of .072 rubber that weighed .066 oz. Joe Bilgri wound for the flight and got in 1900 turns. He remarked that it felt pretty tight although he could have gotten in a few more. The flight peaked out at about 25 feet below the girders at about 12 minutes and landed with about 100 turns, never getting close to either the sides or the top of the hangar."

To follow up last month's presentation, we have the next Cat. II paper stick record holder. On March 30 this year Walter Mumper and Charlie Sotich engaged in a seesaw battle for the record. Charlie's best flight was a new mark of 17:25; Walter's last flight of the day went for 17:41.8. At the next Chicago Aeronauts Record Trials on April 27 Walter put the model up again for 18:54.2. Here are the stories of those flights: "With about half an hour left to fly and Charlie Sotich on the winder, 2000 turns were put in the .075 x 18" motor and a total of 160 turns backed off to release some of the initial torque. The motor still felt too powerful, so I held it for 6 or 7 minutes in hope of killing the climb a little. After about 3½ minutes the model climbed to just under the center girders, circling in and out of them and bouncing off various obstructions for several minutes. The model finally dropped out of danger (below the lights) at 12-13 minutes and touched down at 17:41.8."

"The model and prop with which I set the paper stick record on April 27 is exactly the same as the one I used to set the record on March 30. The only difference was the motor which was changed to .070 x 18" Pirelli. With Charlie Sotich on the winder again, 2160 turns were put in and a few turns backed off to reduce the initial torque. The model was launched, and it started to climb slowly for approximately 6½ minutes to an altitude of 60 feet where it leveled out and started to cruise. Then it slowly descended to the floor for 18:54.2."

RECORDS? MAYBE!

RECORD TRIALS - EDWARDS AFB, CALIFORNIA, July 6-7, 1963

Cat. II, 97½' ceiling
Senior B Cabin - 8:26.0, Steve Houlihan
Open B Cabin - 13:01.0, Warren Williams

NEWS FROM AROUND THE WORLD

CALIFORNIA - LANCASTER

The record trials at Edwards AFB, sponsored by the Antelope Valley Tailwinds, netted only two records. The air conditions were pretty turbulent "on top" and there was a fair amount of drift. Most of the fliers went away planning new power combos for the "next" time, however. The 97½' ceiling is near-maximum for Category II, and it is reasonable to expect that many of the Cat. II records now held in the Midwest will move west.

CALIFORNIA - SANTA ANA

The open contest held by the Sky Hoppers of Orange County in Santa Ana resulted in some pretty high times, and an O.O.S. paper stick flight. The times: Stick - 38:47, Bill Atwood; Cabin - 16:18, Warren Williams; Paper Stick - 19:55, Bill Atwood; Easy B - 13:16, Warren Williams; HLG - 1:06, Nat Antonoli.

The O.O.S. paper stick model belonged to Hal Cover, and it "escaped" into the blue when the hangar doors were opened without warning. Normally there is a 45 minute warning, but someone missed this time!

ENGLAND - COVENTRY

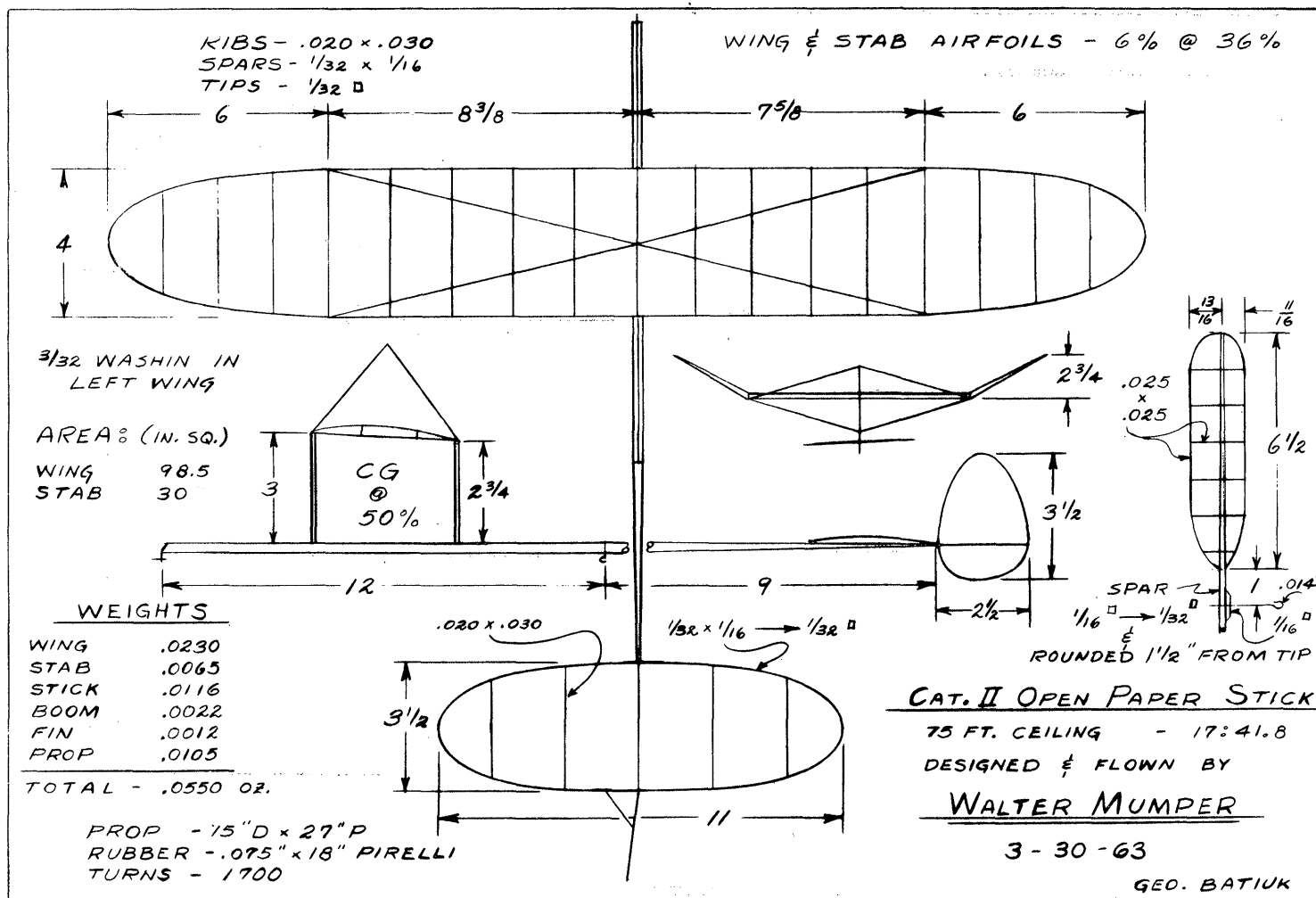
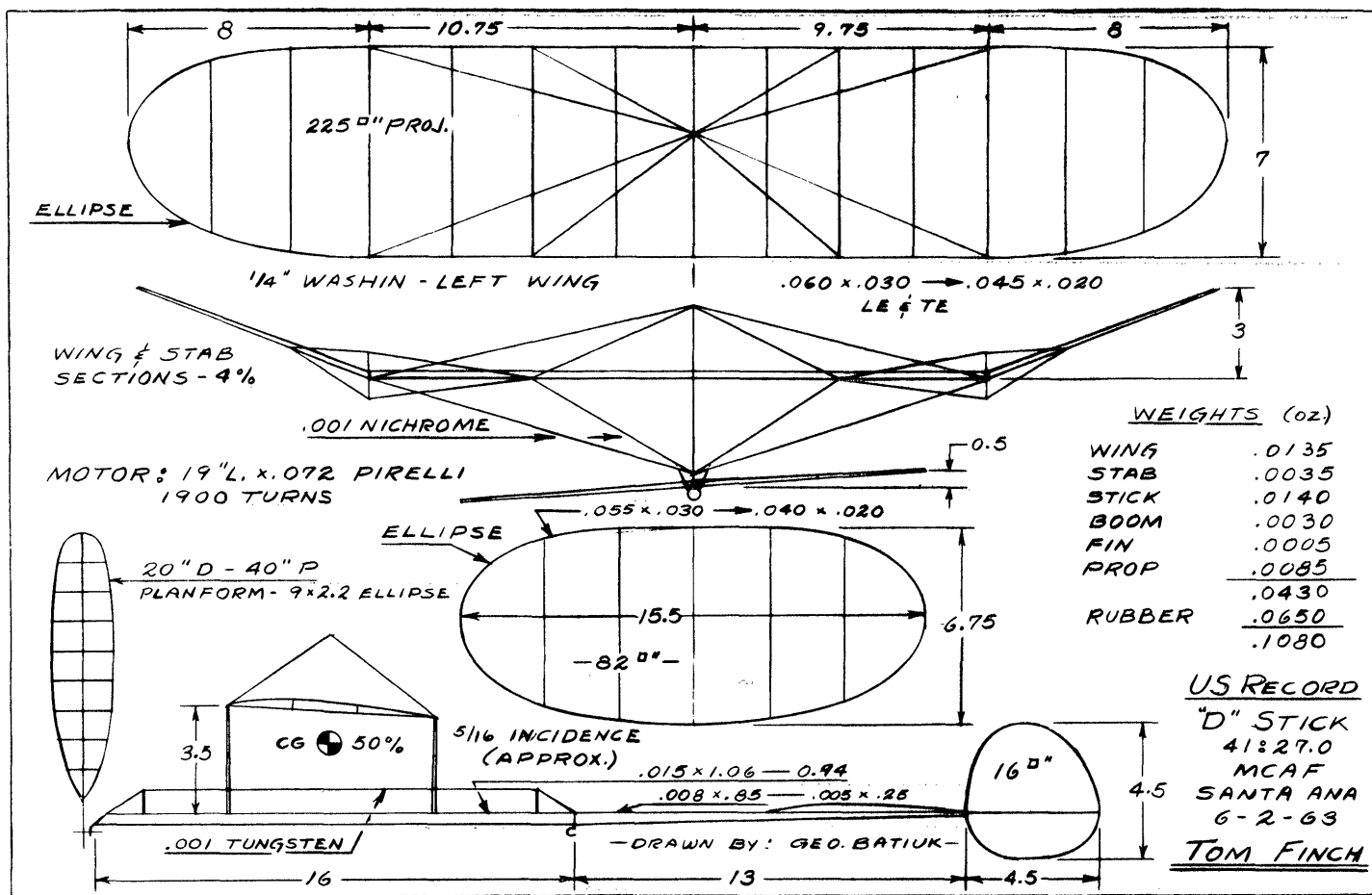
The first indoor session of the year was held on June 15-16 at Cardington. The meeting was blessed with very good attendance, including some newcomers to the sport. Ron Draper turned in the top time of 27:30, followed by Reg Parham with 26:09 and Arthur Barr with 25:04.

NEW YORK - YONKERS

Fred Weitzel, designer of the "Mr. G" autogyro, has turned to indoor scale models. He builds and flies them in his living room; lacking any contests that he can fly in, the models are proxy-flown by Hal Osborne at Santa Ana and Wilmington. His latest, a 1915 Wright model L, won Biplane scale at a recent Santa Ana meet - and that's a long way from workbench to contest!

NEW ZEALAND - UPPER HUTT

Most of the indoor sessions have been plagued by drift lately - but competition is still rugged. The Wellington MAC Memorial Award, normally won on the basis of outdoor performance, was decided this year by indoor competition after a real close outdoor season. John Malkin won it over Brian Roots, making flights with both an Easy B and his .028 oz. Finch B.



INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

AUGUST 1963

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****THE INDOOR NATIONALS****

July 28, 1963

<u>Indoor Stick</u>		<u>Paper Stick</u>		<u>Indoor Cabin</u>		<u>Indoor HLG</u>	
<u>Junior</u>		<u>Junior</u>		<u>Junior</u>		<u>Junior</u>	
1. Bob Deshields	17:58.4	1. James Hassad	12:14.0	1. Bob Deshields	12:30.8	1. Bob Deshields	1:10.0
2. David Bristol	11:29.8	2. B. Wisniewski	11:22.2	2. Tom Smyly	8:55.2	2. W. Vanderbeek	1:02.2
3. Chris Bristol	10:36.3	3. Bob Deshields	11:15.1	3. David Bristol	8:35.6	3. Joe Salatany	:59.0
4. B. Wisniewski	8:25.9	4. Chris Bristol	10:15.4			4. Tom Smyly	:56.2
5. Tom Smyly	7:13.0	5. Tom Smyly	10:14.8			5. Larry Simpson	:53.8
<u>Senior</u>		<u>Senior</u>		<u>Senior</u>		<u>Senior</u>	
1. Steve Houlihan	25:03.0	1. Shaye Diebolt	12:39.2	1. David Erbach	13:45.0	1. Robert Deecroft	1:11.5
2. S. Asklund	20:46.8	2. David Erbach	11:38.6	2. Steve Houlihan	12:40.4	2. Bill Blanchard	1:07.0
3. Ronnie Young	20:13.6	3. Larry Loucka	9:42.4	3. Shaye Diebolt	10:23.0	3. Ronnie Young	1:05.5
4. Chris Peterson	19:24.8	4. Steve Houlihan	8:57.2			4. S. Asklund	1:05.2
5. Shaye Diebolt	17:42.0	5. Blaine Miller	7:39.8			5. Larry Loucka	1:02.0
<u>Open</u>		<u>Open</u>		<u>Open</u>		<u>Open</u>	
1. Dick Kowalski	40:10.6	1. Bill Atwood	23:22.0	1. Frank Cummings	27:43.5	1. Lee Hines	1:17.6
2. Bud Romak	39:40.0	2. Ed Stoll	23:16.0	2. Joe Bilgri	25:26.2	2. Curt Stevens	1:13.0
3. Lew Gitlow	37:28.2	3. Charlie Sotich	19:12.2	3. Lew Gitlow	25:16.0	3. Reid Simpson	1:08.9
4. Carl Redlin	35:02.9	4. Hal Cover	18:40.8	4. Bill Atwood	23:22.0	4. Charlie Primbs	1:08.3
5. Charlie Sotich	33:00.0	5. Bob Champine	17:12.0	5. Warren Williams	17:44.1	5. A. Zimmerman	1:08.1
6. Manny Andrade	31:39.1	6. Bud Tenny	16:27.4	6. Charlie Sotich	16:25.0	6. Vic Cunningham	1:06.0
7. Don Kintzele	31:32.0	7. Lou Young	16:19.7	7. Bob Champine	15:47.0	7. Nat Antonioli	1:05.2
8. Bob Champine	30:44.0	8. Jody Tenny	15:53.8	8. Hal Cover	15:12.5	8. Sherwin Moslowe	1:02.6
9. Jim Kagawa	29:27.0	9. Bill Bigge	14:38.0	9. John Diebolt	15:05.0	9. Gary Phillips	1:02.6
10. Bill Atwood	29:14.8	10. Jim Kagawa	14:03.2	10. Bill Bigge	12:36.0	10. Wilbur Perkins	1:02.1

FAI INDOOR SEMI-FLYOFF

	Aug. 2, 1963			Aug. 3, 1963			Total
	1	2	3	4	5	6	
1. Bill Atwood	35:40	41:26	<u>43:17</u>	00:06	34:24	<u>42:36</u>	85:23*
2. Bob Champine	9:53	31:02	34:40	<u>41:23</u>	37:37	21:11	79:00
3. Stan Chilton	<u>0:15</u>	<u>30:50</u>	0:04				31:05
4. Frank Cummings	35:27	36:25	<u>37:56</u>	33:50	<u>43:28</u>	35:51	81:24*
5. Tom Finch	17:12	<u>38:08</u>	<u>37:51</u>	11:04	10:13	7:21	75:59
6. Joe Hindes	<u>31:55</u>	15:45	<u>29:29</u>	14:33	9:01		61:24
7. Ernie Kopecky	<u>43:42</u>	31:13	9:19	<u>34:08</u>	32:05	32:57	77:50
8. Dick Kowalski	<u>36:24</u>	15:32	<u>17:17</u>	16:48	21:19	8:01	53:41
9. Ed Stoll	35:59	38:54	<u>41:11</u>	38:24	<u>41:21</u>		82:32*
10. John Triolo	23:57	14:49	32:24	<u>34:44</u>	<u>35:01</u>	31:05	69:45

NATS COMMENTARY

To those indoor fliers who are limited to low ceiling sites, and the attendant problems of bouncing off the top and hanging up, a blimp hangar is a tremendous place. When they first walk in, the top is a long way away. By the time they have spent all day trying to get the models somewhere near the top, they know it is a long way up.

When we entered the Nats this year, our hope was to do as well as possible in Stick, and to place in the top ten in Paper Stick. Both Jody and I got the second part, and with the help of Larry Renger we turned in decent times with our mike ships. Larry took us under his wing and proved all over again how important it is to have an interested and dependable helper. Thanks again, Larry!

We didn't really see much of the Indoor Nats (too many East Coast and West Coast fliers take the hangars for granted, but most other fliers get a crack at the big places only every other year) because we took full advantage of the flying opportunity. However, several things

FAI COMMENTARY

Beyond any doubt, the FAI Semi-Flyoff was the most outstanding indoor event ever held in this country - and maybe it was the all-time greatest. In fact, an eighty minute total would have only been fourth place! None of the fliers or timers paid the slightest attention to the 30 minute mark when it came up - the former "standard of performance" has become passe!

Bill Atwood broke the ice with the first official flight around noon on Friday. A free and easy air of "wait and see" had prevailed all morning - but by 4 PM it looked as if it would take more than two 40 minute flights to place. Ernie Kopecky had set a new national record of 43:42 and Bill Atwood was through with his flights, clearly in first place with 84:43. The good air held until after 7 PM, causing Frank Cummings to say, "This is the best I've ever seen it in here." At the end of round one, Bill Atwood still led, followed by Ed Stoll with 80:05 and Tom Finch with 75:59.

"NATS" (cont.)

we did see: Bill Atwood won Paper Stick using a 15 year old carved prop - - Dave Erbach's 'copter was the first indoor model we saw in the air - - All the FAI qualifiers took it easy when flying their FAI's in the Nats - - "Willie" Williams had a real wild Cabin ship - two props, two fuselages and one tail on the left fuselage, with it all held together by the wing and special bracing - - Bruce Paton's geared Cabin - two motors in an oval stick; the motors wound separately outside the fuselage and then installed in the fuselage with the aid of two long wires, three people and a quiet but urgent prayer.

Speaking of Cabin, this event developed into a real see-saw event between the top contenders. Finally, Frank Cummings put a stop to all the nonsense with an all-out flight - a new record for a beautiful model.

All in all, the Indoor Nats were a very well run contest, thanks to the efforts of Andy Faykun, John Werts, and Herb Shields. There were very few collisions, spectators were well under control, and the gliders and paper stick models were separated into definite flying areas. Thanks also to the Navy for their help with timing and mounds of paperwork - in addition to their regular work. The long day ended quite suitably with a party - movies courtesy of Dick Everett and refreshments courtesy of Irwin and Joan Rodemsky. A real fine way to unwind!

"FAI FLYOFF" (cont.)

Everyone waited until 2:30 on Saturday before making any official flights - the drift in the top was variable and each flight had to count. Bob Champine, bleary eyed and groggy after an all-night repairing session, saw his efforts start to pay off when his fourth flight of 41:23 put him in the running for a team slot. By 4:30, only 8 flights were in and the tension built higher.

Just before 5 PM, Frank Cummings and Ed Stoll were on top - and in trouble. Each had bounced off the beams several times and were drifting into the side. Suddenly the two models drifted together and hung for an agonizing 4 or 5 seconds. At the last possible instant they broke free and settled into safe, well centered patterns! This was Frank's 43:28 flight that put him in second for a while; Ed launched again soon and got 41:21 to move back into second and an almost sure team slot.

At 5:30, Bill Atwood had finished his flights and was in first with 85:23, well out of the reach of anyone but Frank Cummings. Things were getting tight - only 1½ hours to go and there were seventeen flights yet to be made. Six fliers had two attempts left, and Kowalski had three. Dick and Tom Finch found themselves needing well over 40 minutes in order to place - their all-out efforts placed them in the rafters on each attempt. Tom's models hung on 4 out of 6 attempts; Dick scored 5 out of 6.

In the closing hour of the contest, it was still not sure who the team would be. Bill Atwood was in the clear, but neither Frank nor Ed had such a big lead that a last minute effort by Kowalski or Finch could be ruled out. Meanwhile, Bob Champine's fifth flight had put him in fourth and his sixth flight was high and clear, looking like a repeat of his 41:23 flight earlier in the day.

Tom Finch's last two hung, as did Kowalski's fourth. Now Dick's model picked up a side drift just above the catwalk and he had to balloon it. It had 21 minutes, and a successful steering job could put him in the running - but he missed. Then Bob Champine's model hit the drift and headed for the catwalk. One balloon touch, one torn wing tip, and the contest was decided. Kowalski's last flight had to be 45 minutes or better, and once again it hung. The United States FAI Indoor Team was chosen, and the big contest was over.

Even during the tensest moments of the meet, humor cropped up. Someone was teasing Frank Cummings right after the collision, and he retorted, "I was up there first!". Off to the side, Walt Erbach was selling some supplies and Larry Renger paid for his purchase with some coins and a 5¢ stamp. David Erbach, kidding about the stamp, suggested that Larry also owed some green stamps. So Larry promptly laid out 5 green stamps and carried off his merchandise! And, in the relieved moments after the contest, Carl Redlin rushed over to Joe Bilgri, "Joe! Joe! Here's the rubber we needed!" He was waving the remains of a broken retrieving balloon!

After the contest, it was a big relief to sit down to a steak dinner in Tustin - arranged for all the FAI

folk by Bruce Paton. The meal and fellowship was a fitting end to a fine contest, and a wonderfully relaxed way to get better acquainted with everyone. One small footnote - If you attended the dinner, did you pay your tab? Bruce is out the price of four dinners and can't be sure who forgot to pay.

A big vote of thanks is due to the Marines at M.C.A.R. Santa Ana for their excellent cooperation in loaning the hangar and helping with spectator control. To all the local fliers and interested people who helped with timing and dozens of other details, thanks again. Finally, if it had not been for Bruce Paton's untiring efforts, the entire West Coast FAI program could have bogged down. Bruce CD'd the Santa Ana elims and the Semi-Flyoff, set up transportation for the Eastern and Central Zone fliers, and even had stand-by lodging for them in case it was needed. Bruce, your efforts in the last six months leave us all in your debt - we thank you.

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

Four new members joined NIMAS in July:

JOE HINDES, R.D. #2, Lowellville, Ohio
GEORGE HONDA, 2905 Wellington Rd., Los Angeles 16, Calif.
GLENN JACKSON, 8294 Wyatt Rd., Brecksville, Ohio
CARL REDLIN, 3726 Canfield Ave., Los Angeles 34, Calif.

NIMAS Meeting?

This year at the Nats there were an unusual number of meetings, in addition to the Nats Executive Council meeting which carried over several days. It was decided that there just wasn't a night to hold a NIMAS meeting, since there were so many conflicts with other meetings, but some unofficial discussions went on.

A NIMAS project for early consideration, suggested by at least two members and approved by the charter members, is an award system for excellence of performance. This would take the form of certificates to be awarded to our membership for flights over 20, 30, and 40 minutes. For example, 20 minutes hasn't been done in Cat. I, and no official flights over 30 have been done in Cat. II. We would welcome comments and suggestions for suggested milestones worthy of award for each ceiling Category. Maybe glider awards, too??? Tell us how you feel!

NIMAS Indoor Rules Committee

Free Flight Contest Board Chairman Phil Klintworth, with the blessings of John Worth and the AMA Executive Committee, has appointed a committee to review and update the entire indoor rules structure. The committee members are Ray Harlan, Bruce Paton, Ed Stoll and Charlie Sotich, with Bud Tenny as Chairman.

The committee objective is "To review all Indoor AMA Rules and to propose any changes which may be necessary to modernize them to meet present day competitive standards and requirements." (Quotes from Phil's proposal sheet) The committee's scope of action includes a review of existing events to eliminate any which have little or no participation, and to eliminate or combine those where needless overlap or duplication is present. Also under consideration is the development of rules for Easy B and possible adoption of a maximum wing span rule rather than the present area limitations for all classes. At present, it is in order for NIMAS members to make suggestions for the enlightenment of the committee - later each of you will have a chance for further comment via NIMAS Ballot.

Contest Board Action

Since only three members of the Contest Board were at the Nats, there was no meeting held during the Nats. As of August 1, not enough Board members had reported on either of the outstanding rules proposals to have any decision at this time.

A DIFFERENT VIEWPOINT!

Jim Kelly's July Record Trials was a real eye-opener to the people at Edwards AFB, as shown by the following article from the DESERT WINGS, a base newspaper:

The Knothole Kid has stumbled across the sport to top off his "Anthology of Unbelievable Sports." It's a non-table top activity that makes croquet and bird watching seem strenuous by comparison. It's the only sport in the world in which an enthusiast could have a

THE PICTURE STORY

mild heart attack at high noon and win the championship before suppertime on the same day. As a matter of fact, this particular sport is like watching grass grow through melting ice cubes.

It's the grand old sport of flying the gossamer, nearly invisible model aircraft lovingly called "mikes" --- short for microfilm --- by the followers.

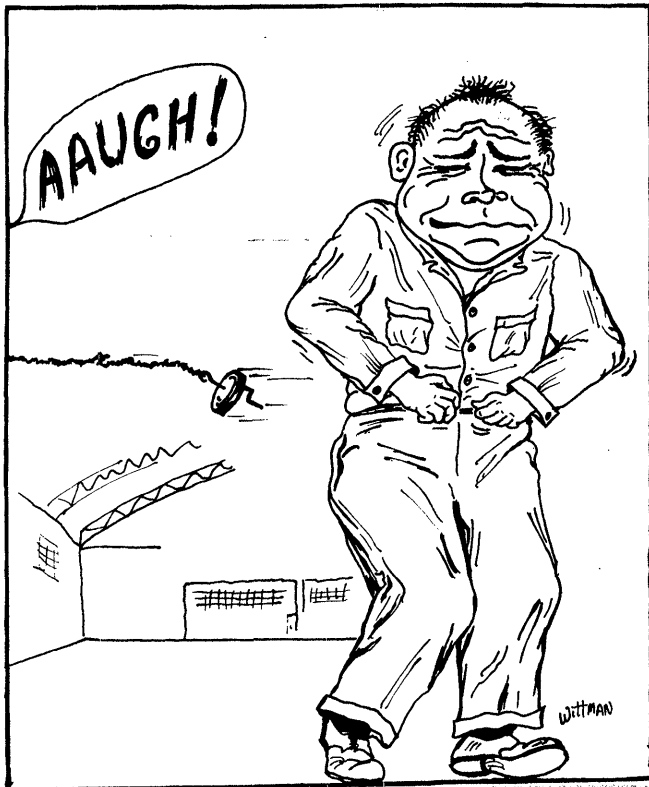
But, boy, do they fly. Ten or twenty minutes is normal. Their owners launch them and then unconcernedly wander outside for a cup of coffee while the Transparent Wonders swim through solid silence up among the rafters.

Last Saturday, the Kid paid a visit to the huge Weight and Balance Hangar down on Contractor's Row where a handful of dedicated hobbyists were setting new records in slow motion.

Squinting around in the gloom upon entering, the Kid finally gave up and whispered "Where's the action." I'm not sure, but I think it ruined a couple of record flights. Somebody pointed up, and there they were, large and wispy, floating around with their props reluctantly beating the air at 50-60 rpm.

The Kid discovered one thing about the sport, though. You need another hobby to fill in the slack periods while the "mike" is airborne.

"THE PERILS OF CHARLIE"



Besides all her other titles, Jody has assumed that of Staff Photographer - at least for a while. On page 4 and 5 we have pictures from the FAI Flyoff and the Indoor Nats. Here is the story:

Page 4

1. Upper left - Ernie Kopecky and the new Class D Cat. III record holder. An outstanding flight - 43:42.
2. Upper right - "Mr. Indoor" Bill Atwood and his winning geared FAI ship right after his 43:17 flight. Bill's model was easily the most consistent model at the Flyoff, and was never fully wound.
3. Center left - Bruce Paton (rear) and the United States FAI Indoor Team - (left to right) Bill Atwood, Frank Cummings and Ed Stoll.
4. Center right - Ed Stoll and the second place model.
5. Lower left - Frank Cummings prepares to launch his third place model.
6. Lower right - Bill Bigge winds for Bob Champine. Bob placed fourth, and will serve as alternate if one of the other team members is unable to go.

Page 5

1. Upper left - John Triolo hooks up for an official.
2. Upper right - Dick Everett watches Bob Champine and John Triolo during a tense moment at the Nats.
3. Center left - Ed Stoll winds Dick Kowalski's taut film model.
4. Center right - Joe Hindes assembles a model for test flying. Note the wing mounting jigs in the box - each wing is supported in sockets for maximum protection.
5. Lower left - Frank Cummings winds Tom Finch.
6. Lower right - Stan Chilton hooks up after a wind from Pete Asjes.

Many thanks also to our good friend, Bill Wheat, for helping assemble this picture story - he hand-tailored the printing on about half these pictures.

RECORDS? MAYBE!

NATIONAL MODEL AIRPLANE CHAMPIONSHIPS - July 28, 1963
Santa Ana, Cat. III, 180' ceiling.
Junior Cabin - 12:30.8, Bob Deshields
Open Cabin - 27:43.5

FAI SEMI-FLYOFF - August 2, 1963
Santa Ana, Cat. III, 180' ceiling
Open D Stick - 43:42, Ernie Kopecky

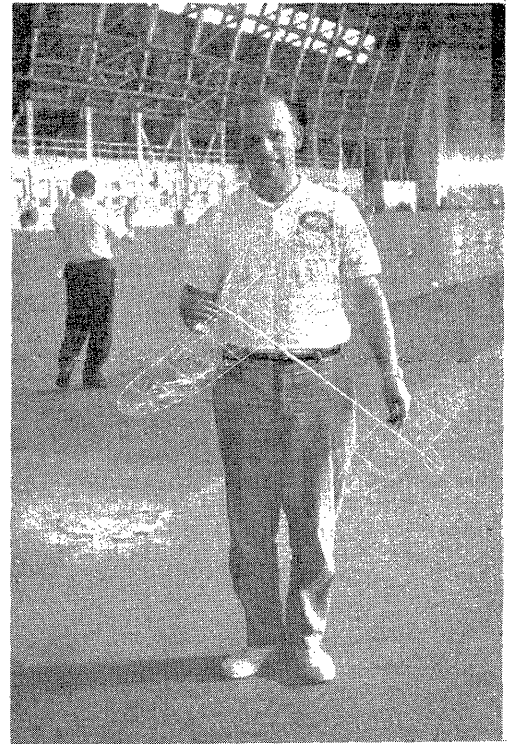
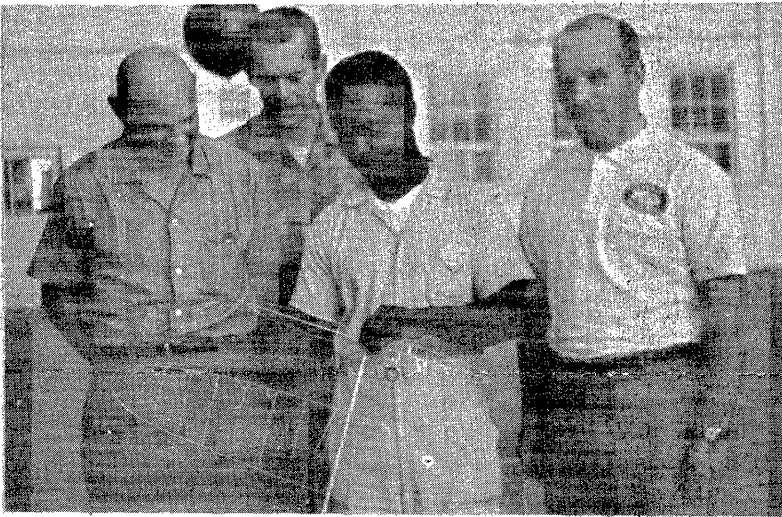
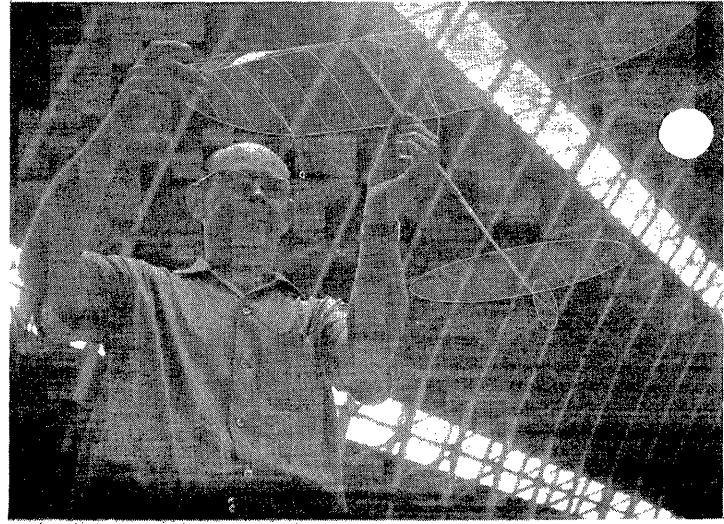
NEWS BRIEFS!

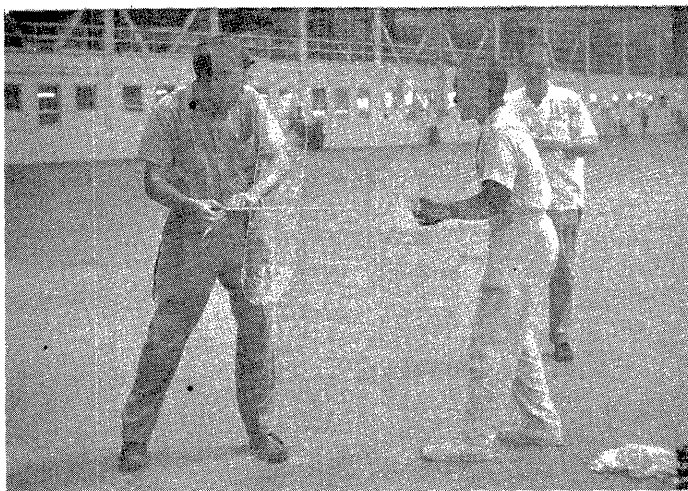
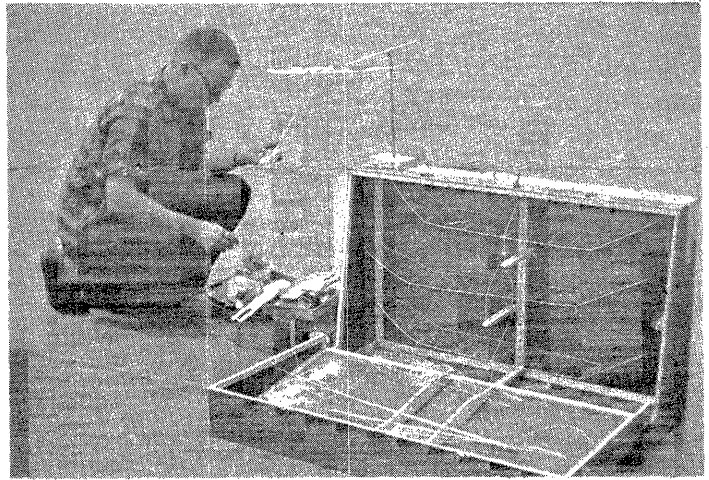
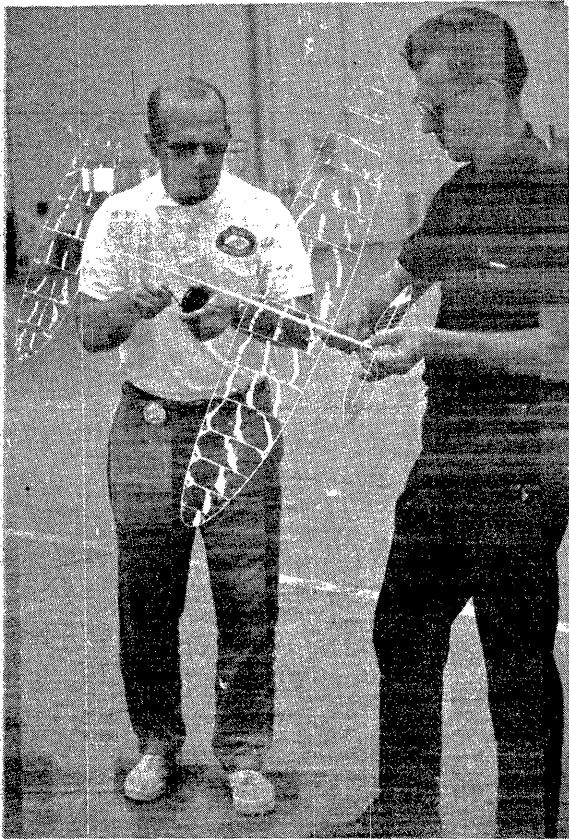
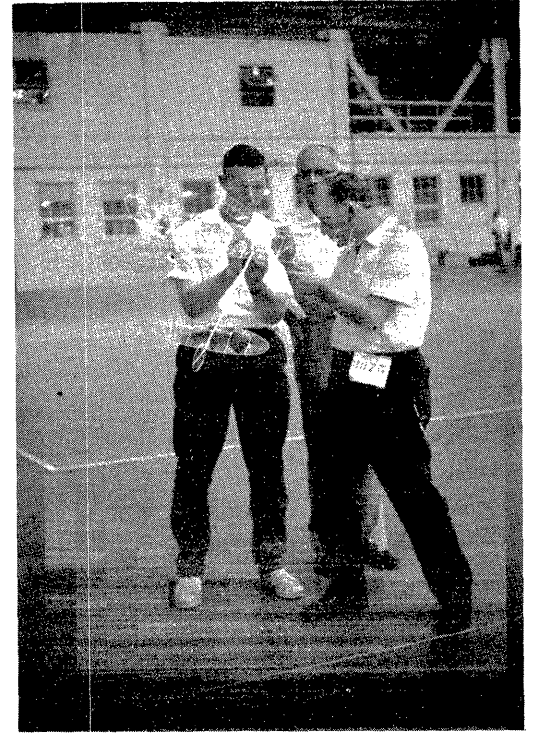
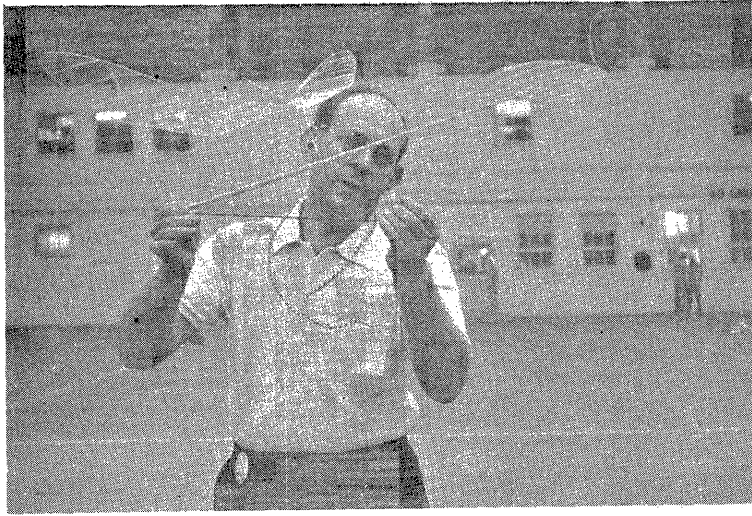
NEW JERSEY - LAKEHURST

Record Trials are scheduled for the following dates in Lakehurst: Aug. 11, Aug. 25, Sept. 8, Oct. 6. Contact C. V. Russo, 143 Willow Way, Clark, New Jersey for info.

CALIFORNIA - LANCASTER

Jim Kelly is planning another Cat. II record trials in the 98' Weight and Balance Hangar at Edwards AFB sometime in September. Contact Jim at 44246 North Cedar, Lancaster, California for info.





INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

SEPTEMBER 1963

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

The latest NIMAS members are as follows:

STEVE HOULIHAN, 2226 Date Avenue, Alhambra, California
JIM KELLY, 44246 North Cedar, Lancaster, California
NEIL SHIPLEY, 189 Benedict Avenue, Norwalk, Ohio
MARK VALERIUS, 461 Choctaw Trail, Shreveport, Louisiana

NIMAS Rules Committee

There have been a few comments on the proposed indoor rules review, some of which indicate that we should add Easy B and FAI Indoor (FAI Indoor is in the process of being added at this time) to the list of indoor record categories, and not drop any events. Late in 1960 we added, by the creation of Cat. I and Cat. II, 24 new record events for each of three age classes. This was an increase of 200%, and was greatly responsible for the increase of indoor activity we have enjoyed.

Now, pick up your July, 1963 issue of Model Aviation and turn to page five. A simple count of record events shows 36 indoor events and only 28 events for all the other types of models combined! Certainly, indoor flying accounts for less than half of all the total AMA model activity, yet we are asking for a total of 42 events (add FAI and Easy B), which is 50% more events than all other model types combined. Also, none of the outdoor records are more ancient than 1958 and 20% of the outdoor marks were set in 1963. Since all of the Cat. I and Cat. II events didn't exist before 1960, a check of the Cat. III marks shows that 47% of the records were set before 1958 and some have not been bettered in 23 years in spite of better materials and techniques.

It is still very much in order for all NIMAS members to express themselves on this matter - It is apparent to your editor that we need to eliminate or combine some of these events but we of the committee need suggestions and comments on the matter - regardless of where you stand.

NIMAS Awards

One of the two members who suggested awards for 20, 30, and 40 minute flights amplifies his idea with these comments:

1. If the idea has any merit it should be taken simply as milestones of 20 minutes, 30 minutes and 40 minutes without regard to ceiling heights.
2. The young modeler breaking 20 minutes has made a significant plateau in indoor flying. It is the same deal for an older modeler just starting indoor - the same good feeling of accomplishment with 30 minutes as the next goal.
3. The award should be implemented with a fancy certificate and decals and be listed in MODEL AVIATION along with listings of current records, but NIMAS should co-sponsor the award.
4. The system can be expanded to glider flying, perhaps with awards for one minute and one and one-half minutes.

In editorial defense of using ceiling heights as part of the award program, we can say that (for example) a 20 minute flight in any ceiling less than 45' is a tremendous accomplishment, as is 30 minutes in any currently active Cat. II site. Let us hear your comments, please!

Back Issues?

Have you recently joined NIMAS? Do you wish you had back issues of INDOOR NEWS? We have on hand some copies of each issue dating from September 1962 thru the present issue. NIMAS members can receive one each of the back issues for the nominal exorbitant fee of 25¢ in stamps - for non-members the price is 10¢ per copy. We make this offer on a first come - first served basis, so get your order in early.

Sites!

Thanks to the efforts of several people we have a list of hangars that were built during the time of the dirigibles. How many of these buildings are still in use, and can any of them be used for indoor? Also, the three other sites listed are new buildings that were recently completed or are still under construction. Is anyone looking into the possibility of using these sites for indoor? Admittedly the Canaveral Apollo hangar will probably be out of reach from now on, but we can dream, can't we? How many other stadiums, domes, coliseums and fieldhouses have we overlooked - especially in the Central Zone where we have no active Cat. III sites and no active Cat. II sites with more than 65' of clear flying space.

Site	Length	Width	Height
Akron, Ohio - Goodyear "Zeppelin"	1175	200	325
Lakehurst #5	980	170	258
Lakehurst #1	807	200	262
Scott Field, Belleville, Ill.	800	123	150
Langley Field, Virginia	450	125	125
Cape May, New Jersey - U. S. Navy	708	109	106
Akron, Ohio - Wingfoot Lake	400	95	100
Chatham, Mass. - U. S. Navy	250	66	100
Pensacola, Florida - U. S. Navy	250	66	82
Aberdeen, Maryland - U. S. Army	220	70	70
England - Cardington	812	156	181
Karachi, India (British)	850	170	200
Germany (Friedrichaffen)	775	158	181
Germany (Berlin/Staachen)	587	115	138
France (Orly)	984	178	298
France (Toulon)	770	150	197

University of Chicago - Urbana campus, indoor stadium seating 18,000 with no interior posts or supports.

Houston, Texas - Outdoor sports dome with 202' ceiling, now under construction.

Cape Canaveral - Project Apollo hangar, 524' tall with 674' x 513' floor area. (To be built in 1965)

Some time ago it was decided that NIMAS should act as a clearing house for information on active sites with the idea of compiling a Site Directory. The information to be compiled might include ceiling height, site records and general flying conditions in the site. If the name and address of the club officers and other "contacts" are included, visiting NIMAS members can more easily find the sites and get acquainted with other fliers.

HEY! Looky Here!

Earlier in the year we mentioned that Lew Gitlow was working on a new SKETCHBOOK - and it is about ready. Those of you who saw the first issue will agree that it was well worth the price. Sez Lew:

"The book, Fundamentals of Indoor Models, will be ready by the end of September. It will do a lot to help the Indoor Modeler introduce his hobby to other people without giving up hours of his scarce free time. The emphasis is on sketches, photos, and how to BUILD indoor. Full size plans are included, and it has about 52 pages. The price is \$1.50 P.P. anywhere in the world."

FAI INDOOR REPORT

FAI Indoor Rules Change Proposal

On August 30, FAI Indoor Committee Chairman Dick Kowalski learned of the possibility that Great Britain, through the S.M.A.E., may propose that the maximum wing span for FAI Indoor models be reduced to 25.6", or 65 centimeters. It is assumed that this proposal will be on the agenda for the next C.I.A.M. meeting which will be held in October or November.

According to established A.M.A. procedure, the Committee must submit all recommendations to HQ by September 1 of each year. Since he did not have time to consult with the Committee, Kowalski made the recommendation that the proposal be shelved until after the 1964 World Indoor Championships so that there would be time to have study and discussion of the matter prior to establishing the U. S. voting position. This recommendation was made with the provision that any Committee member could veto this stand by direct contact with A.M.A. HQ.

Although there has not been time for further word on this matter, it can be a great help to Frank Ehling to have a consensus of opinions from as many fliers as possible at the time he attends the C.I.A.M. meeting. If all readers of this newsletter will forward comments on the proposal to Dick Kowalski, 20203 Moenart, Detroit 34, Michigan, no later than September 28, it will be a help in establishing a U.S. stand on this issue in case the proposal is acted upon at this meeting.

To the best of our knowledge, Boyd Felstead of Australia first suggested such a change, and it was first published in the December 1962 issue of INDOOR NEWS. That item is reproduced verbatim here:

Change FAI Models?

Boyd Felstead, our member from Australia, injects these comments for our consideration:

"What I feel now, as regards FAI specifications, that the wing span should be reduced to 2/3 the present limit. I am suggesting that the 35.4" projected span be reduced to approximately 24" for several reasons:

1. The smaller size ship would circle tighter with less chance of drift or hangups.
2. The smaller ship is easier to transport, which is important when travel to other countries is involved.
3. With 40 to 45 minute flights, it takes a long time to complete a contest - the Class B (approximately) size should reduce duration to about 30 to 35 minutes.
4. The smaller wing area would present a bigger challenge than we now have.

What do the other NIMAS members think?"

****HAPPY BIRTHDAY!****

The month of September marks the fourth anniversary of the Wilmington Indoor Model Airplane Club. WIMAC is the first and only club devoted exclusively to Indoor - and WIMAC furnished the example which proved that Cat. I and Cat. II flying was a necessary and desirable part of the national model picture. WIMAC has held monthly flying sessions continuously for the four years since it was organized, and each session was a sanctioned Record Trials. Finally, the club supports WIMAC NEWS, the first club newsletter devoted to indoor flying. Dave Copple has served as editor of this fine newsletter since the first, and has worked untiringly to advance the cause of Indoor, not only at Wilmington, but all over the world.

Dave did not stop with the effort of cheering others on, but went on to write the proposal which created Cat. I and Cat. II and hand carried the proposal to Washington to speed its adoption. From this beginning, present day indoor has grown to the presently large and active thing it is today.

It is safe to say that without Dave Copple's encouragement and example INDOOR NEWS would never have been started. It was a proud moment in your editor's life when he received Honorary Membership in WIMAC, and an equally proud moment when he was invited to be a Charter Member of NIMAS when Dave was setting up the organization. Many congratulations and best wishes to Dave and WIMAC - where it all started!

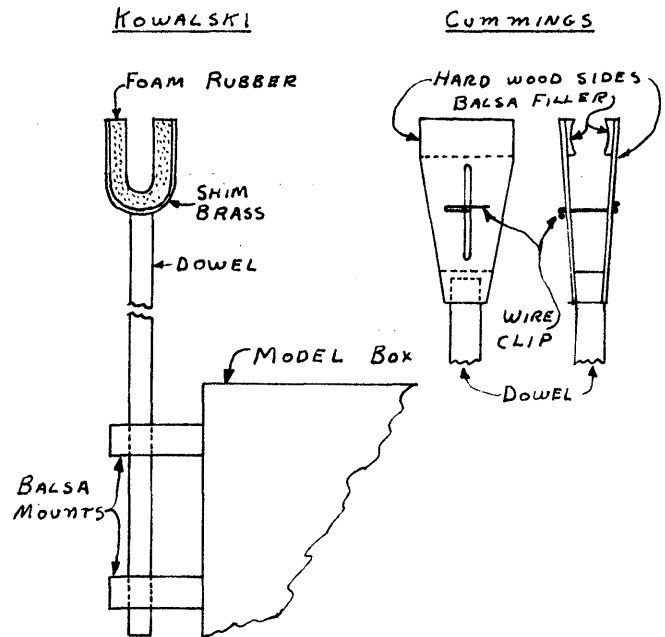
HINTS AND KINKS

Run-Down Stands

A run-down stand is one of those nice little "extras" that most of us never get around to building. However, when you have one, it is a big relief to be able to "hang up" your model while the last few turns run down. Also, the stand is handy to hold the model between flights and while you make minor repairs.

During the recent FAI Flyoff we had opportunity to observe two different run-down stands. Each is adjustable to fit different size motor sticks and neither takes long to make. In the sketch below, Dick Kowalski's stand is shown on the left. The model "gripper" consists of a "U" shaped bracket fastened on top of a dowel and lined with foam rubber. The bracket can be squeezed together until it fits the motor stick snugly enough to hold the model in place. At the other end, any convenient method of mounting to the box or a heavy base is fine.

On the right, Frank Cummings' stand is constructed so that it opens wider than necessary and is closed by means of a wire clip which is slid up to tighten the clamp "just right" on the fuselage.



RECORDS? MAYBE!

CHICAGO AERONUTS RECORD TRIALS - MADISON STREET ARMORY
 August 24, 1963, Category II - 75' ceiling
 Senior B Cabin - 11:31.8, Dave Erbach
 Senior C Cabin - 12:15.6, Dave Erbach

LAKEHURST RECORD TRIALS, Lakehurst, N. J. - 170' ceiling
 August 11, 1963
 Cat. III Senior Helicopter - 6:14.0, Edmund Smith
 August 25, 1963
 Cat. III Senior Autogyro - 5:22.9, Edmund Smith

PROP FORUM

The July prop discussion raised a few questions and comments - and it also reminded us that the things many of us take for granted aren't always common knowledge or fully understood. The major question which arose was on prop blocks - their design and use. The standard block, used for construction of mono-spar props, is designed with the following formula:

$$1. \text{ PITCH} = \frac{3.14 \times \text{DIAMETER} \times \text{THICKNESS}}{\text{WIDTH}}$$

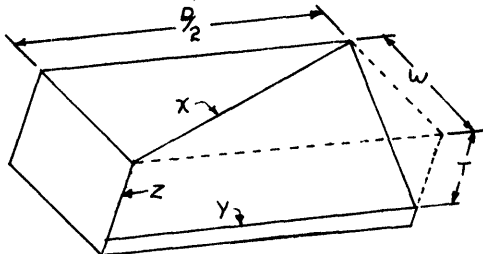
Refer to the sketch of the block below. The dimensions as marked on the block are fairly self-explanatory, but we shall make a sample calculation "for example." A typical Class B prop would be 14" diameter and 26" pitch. Careful planning at this stage can eliminate some extra work in the future. Is there a possibility that you will want a 16" x 26" some time in the future? The same block can be used for all sizes of props from 12" x 26" through 17" x 26", but the 12" and the 17" props are not likely to be needed in a 26" pitch.

The next consideration (also planning ahead) will be the basic block size. A block 2" x 2" x 8" will make a fairly good size, except that it will be crowded if you plan a blade width much more than 1.1". A better choice would be a 3" x 2" x 8" - this will allow plenty of room for blade shape experimenting.

With this choice in mind, let's design the 26" block. For practical reasons let's use the full width of wood available. Formula 1 can be re-arranged thus:

$$2. \text{ THICKNESS} = \frac{\text{DESIRED PITCH} \times \text{WIDTH}}{3.14 \times \text{DIAMETER}}$$

Put in 3" for width and 16" for diameter and solve for thickness. This comes out to 1.55" - so mark these dimensions on the block and draw lines "x" and "y" to use as guide lines while carving the block. Take your time make the building surface as smooth and flat as you can - use a straight edge between lines "x" and "y" to check on your progress. Be careful to preserve the edge of the block (edge "z") so you can line up the prop shaft with it during construction. Draw a blade outline on the block, and you're in business.



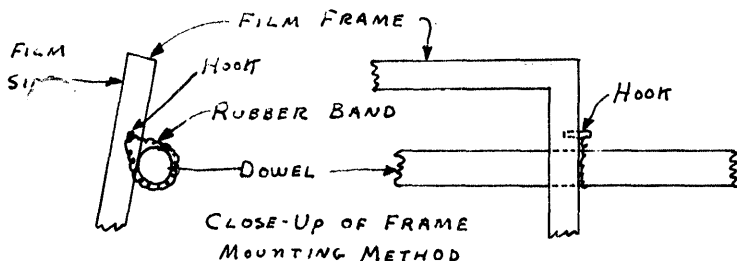
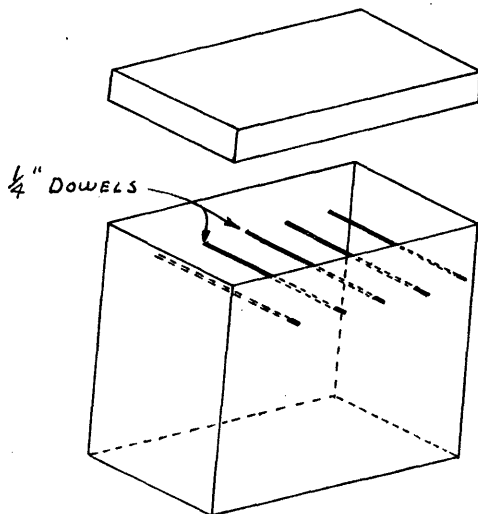
QUESTIONS AND ANSWERS

27. How can microfilm be stored and transported?

Those fortunate enough to have a spare closet to hang their spare hoops of film are rather scarce, and another way to store film is needed. We solved our problem with a large box such as is sketched below. The first thing needed is a tight-fitting lid which serves two purposes. Of course, the lid keeps dust and bugs out (provided the rest of the box is also air-tight), but it also makes the box more rigid - an important factor in moving the box without damaging the film.

After creating a strong and air-tight box, install a row of dowels across the box and glue them in with Elmer's Glue or a similar glue. Each film frame will need two hooks near the top, located so that a rubber band around the dowel and through the hook will pull the hoop against the dowel and also exert a downward pressure on the hoop. This pressure holds the bottom of the hoop in place on the bottom of the box and prevents the hoop from flopping around when the box is moved.

Since it requires at least one hand in the box and between hoops to manipulate the rubber bands, the dowels must be spaced about 6" apart to leave room. If the box is wide enough to leave handling room on both sides of each hoop, the dowels can be spaced a little closer together.



NEWS FROM AROUND THE WORLD

CALIFORNIA - MOFFET

Record trials have been scheduled for Hangar #1 at Moffet on September 15. Once again, this one may be the last, since Lockheed is expected to take over the hangar in the near future.

CALIFORNIA - WILMINGTON

September 13 marks the date for the Easy B Annual and the regular bi-monthly indoor scale meet, all to be held by the Wilmington Indoor Model Airplane Club. A unique feature of the Easy B contest is that you can enter as many models as you like in both the Tissue event and the regular Easy B event, and make as many flights as you can find timers for! Trophies through third place and a special high time Tissue trophy are at stake.

ILLINOIS - CHICAGO

The Chicago Aeronuts held indoor Record Trials on August 24, and a minimum of 10 fliers showed up - four from out of town! It appears that the out-of-towners appreciate the Armory more than the Aeronuts. Too bad some of the people down South don't have a site to neglect! Maybe the attendance will be better at the RT's scheduled for October, November and December. Contact Pete Sotich, 3851 W. 62nd. St., Chicago for details.

INDIANA - KOKOMO

Chuck Borneman reports that they hope to start their indoor season in October this year and run through April, pending arrangements with Bunker Hill AFB. This is their fourth consecutive year, and the activity is about as good as anyplace in the Central Zone. Contact Chuck at 1401 West Taylor, Kokomo, Indiana.

NEW JERSEY - LAKEHURST

In addition to making all the arrangements for use of the hangars at Lakehurst, C. V. Russo has been keeping everyone informed with a one-page news sheet. Manny Radoff is emerging as one of the most consistent fliers of those nearby. However, high time for recent sessions has been made by Bob Champine, who faces a 600 mile round trip each time. Bob is working on those important small details to improve the models - and a new prop gave him 36:12 with less than full winds the last time out.

NEW YORK - ELMIRA

The Elmira Indoor Model Airplane Club is one of the most active indoor clubs we've heard of. During the summer months they often managed three flying sessions a week, with activity concentrating on Easy B and HLG. To get in on a good deal, contact Jim Mayes, 413 Sharr Avenue, Elmira, New York.

NEW ZEALAND

Jack Eriksen reported on one of the wildest indoor sessions we've heard of to date. The session was staged in Hamilton, New Zealand as a part of an agriculture show. The flying site was the display hall, during the main part of the display. Jack managed high time of 3:50 with 16" tissue model, in spite of the turbulence caused by about 2000 people milling around the floor! The Hamilton Club has ulterior motives in staging this display - they get the hall free and all to themselves one other time during the year.

OHIO - CLEVELAND

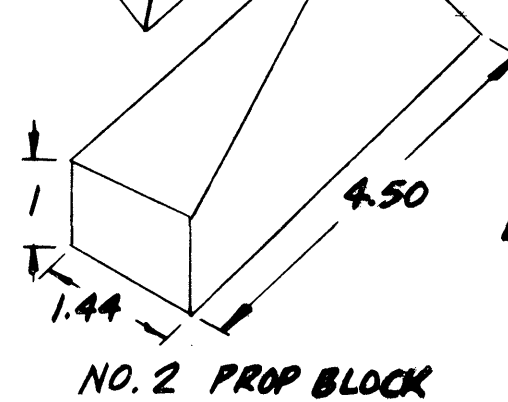
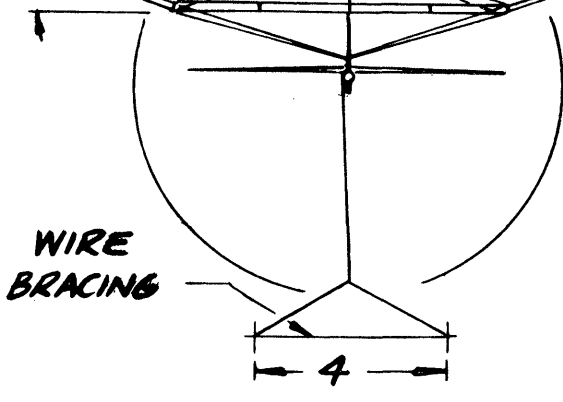
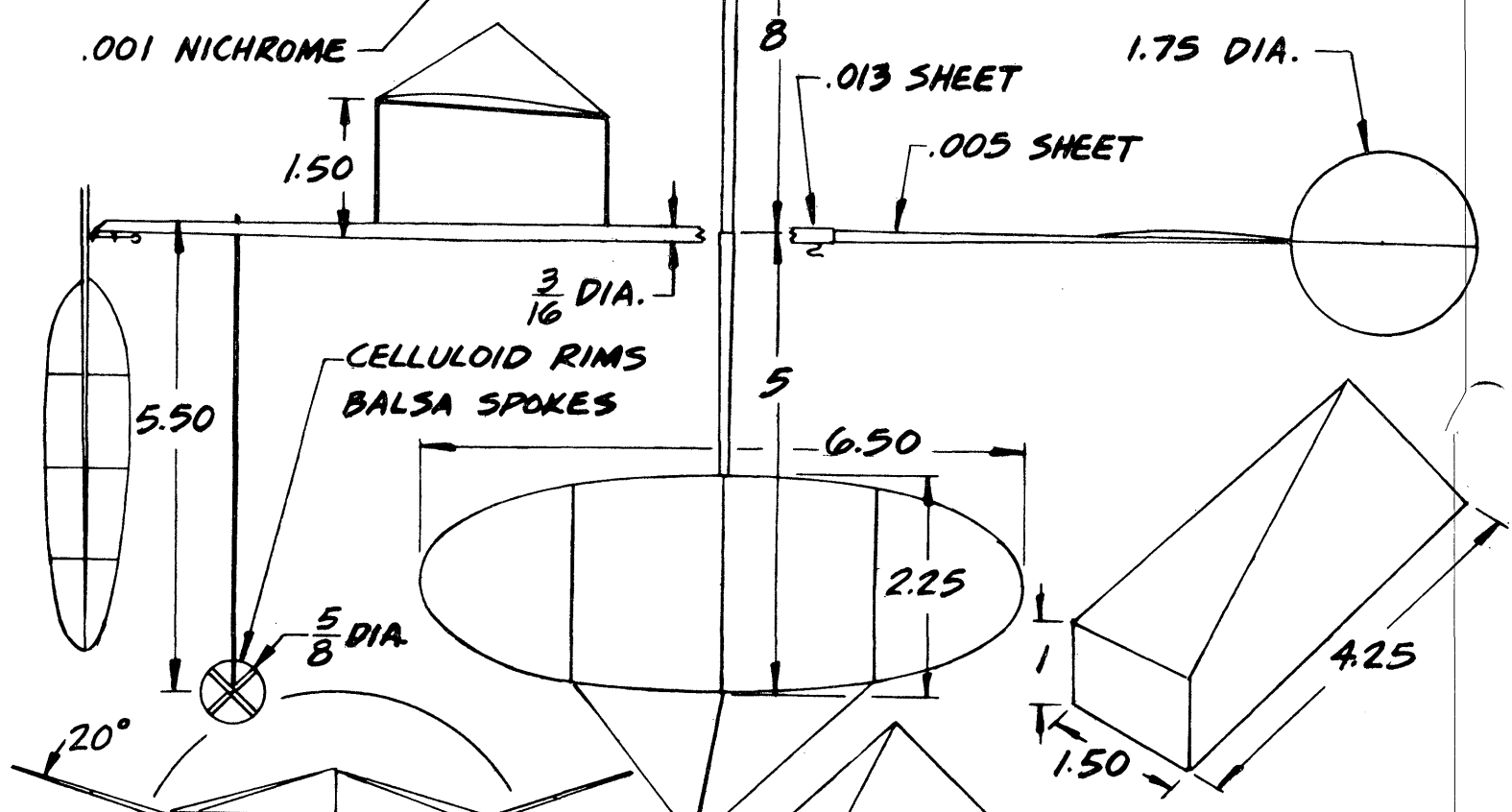
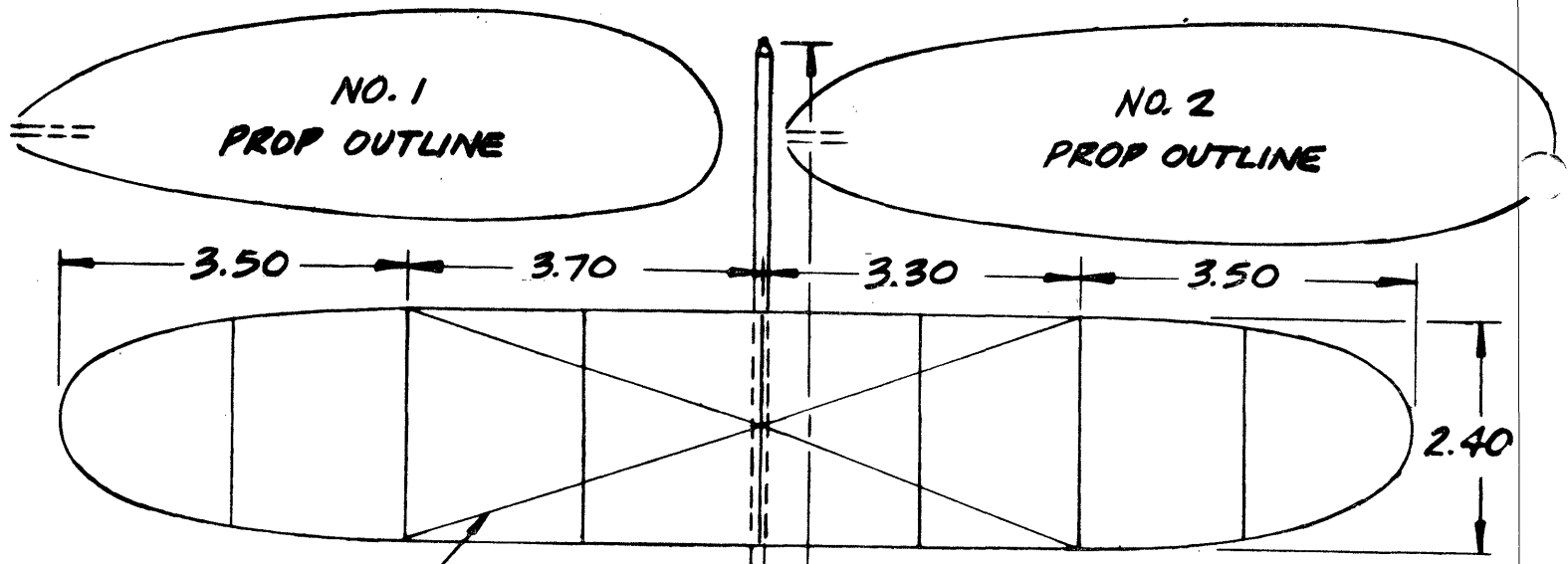
Chuck Tracy reports that the Baldwin-Wallace College field house will be the site which replaces the Armory they lost in the summer of 1962. The ceiling is not as high, but it is still a pretty good site according to Chuck. Advance planning for the Great Lakes Indoor Air meet indicates the date will probably be Dec. 29 or Jan. 5, and the site will be the Public Auditorium as usual.

STATE OF THE ART

A little over a year ago Larry Renger built "Bazz Fazz II" and set the Cat. I Sr. ROG record at the August 1962 WIMAC Record Trials. When Larry went back for his senior year at M. I. T., Bazz Fazz went along. When the Tech Model Aircrafters held their November Record Trials, Bazz Fazz did it again - this time in Cat. II. For some time, both records stood thus:

Cat. I Sr. A ROG - 8:16.9, Aug. 14, 1962
 Cat. II Sr. A ROG - 8:46.8, Nov. 17, 1962

At this time the Cat. I record still stands, but Dave Erbach upped the Cat. II A ROG record to 9:01.2 on March 30, 1963.



NO. 1 PROP BLOCK

PART	WT. (GM.)
WING	.105
BODY-TAIL	.190
PROP	.070
L.G.	.040
TOTAL	.405

"BAZZ FAZZ II"
 DESIGNED BY LARRY RENSER

Printed by
 The Cleveland Press

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

OCTOBER 1963

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

Contest Board Action

In a memo dated September 10, 1963, Free Flight CB Chairman Phil Klintworth reported on the recent ballot covering the Detroit-Chicago-Wilmington IHLG proposal. The vote was seven "for," one "against," and three members failed to vote. This vote qualifies the proposal to be printed in Model Aviation, which will start the three-month study period. A final vote will be taken early in 1964.

NIMAS Rules Committee

At this time the Committee has not completed their initial study of the rules, so there are no recommendations from the Committee. However, we have received several letters suggesting that events be combined or eliminated. The most drastic suggestion went like this: "One stick microfilm event and it should be FAI rules, one cabin event limited by wingspan, one simpler event such as "Easy B" with tissue covering, Baby ROG, and one HL glider (all balsa) event. Helicopter and autogyro should be retained for the real experimenter."

Several people have suggested that classes be designated in terms of maximum span rather than maximum area, and at least one person suggested that flight scoring be changed to the best two of six attempts (same as FAI scoring). Two people have suggested that indoor scale be added as an event, but no one who regularly flies this event has seconded the request. Just for the record, the proper method to request an event is to make the request through the Contest Board member for your AMA district. However, since the Rules Committee exists, it is OK to send a copy of the request to the Committee Chairman.

We thank those who have taken the time to make these suggestions, but it is very easy to assume that most of you care very little about what happens! If you do care, drop us a line at Box 545, Richardson, Texas and make yourself heard. One area in particular where the committee can use some help is with rules for an Easy B event. Each area where these models are flown uses a different set of rules - and the final result is the same each place. Everyone flies Easy B and has fun regardless of the rules. The simplest rules specify an all-balsa prop, maximum span 18" and maximum chord 3"; the most elaborate rules specify that all outlines must be straight lines, all components solid, no bracing of any kind anywhere, prop blades to be sheet balsa (no carved props), covering optional, 18" maximum span, 3" maximum chord, 54 square inches maximum wing area, maximum stab area 27 square inches or 50% of the wing area. To date, we simply haven't heard any good reasons for more than the simplest of rules for Easy B. The floor is open to anyone who would be good enough to defend the Wilmington Easy B rules - if you really think them necessary!

DRAFTSMEN WANTED!!

Several times in the past we have made this plea - and everyone has enjoyed the plans turned out by our several volunteers. However, it is time that we add a few more draftsmen to our staff - it is hardly fair to have the same people do all the work! In some cases all that will be required is to make a tracing from an existing plan; in some cases a whole plate will have to be organized from a sketch. So, step right up, folks! The line forms to the right!

OOPS!!

Last month we announced that Lew Gitlow's fine new book "Fundamentals of Indoor Models" would be ready by the last of September. We failed to give Lew's address, never dreaming the books would be ordered from us! Order your copy from: Lew Gitlow, P. O. Box 65774, Los Angeles 65, California. The price is \$1.50 postage paid anywhere in the world.

FAI INDOOR REPORT

Since we just finished selecting the 1964 FAI team, it would seem out of place to open a discussion of future team selection programs. Not so! We have probably selected the strongest possible team, considering the number of fliers we started with. Unless time (and the World Championship) proves us wrong, we had an excellent plan for team selection this year. The main thing that was lacking was that we failed to develop many new fliers. A recent letter outlined an interesting program that we can think about. We continue to improve the performance of the models - but let's not forget the team selection.

The program proposal is this:

1. A series of four sessions starting in March and ending in June. (Why not a longer time spread? Anyone who has just gone through the recent series of three elims will know why! Ed.)
2. Any qualified entrant can enter any or all sessions, in any zone.
3. The top three two-flight totals from any session are the target for the next elim, and the top three winners from the fourth session are zone reps at a Nats flyoff.

The letter went on to outline some thoughts for and against this proposal. For:

1. Losers can continue to develop their models and skill at successive sessions rather than be shut out early in the game.
2. The top times will be boosted at each session as the experience of individual fliers grows. Previous winners will have to keep improving to stay on top, but a team slot will still be available until the fourth session.
3. Less experienced fliers have the opportunity to try their increasing skill against the winners over several sessions, and the top fliers can practice sportsmanship by helping the neophytes improve their skill. The two groups will mix more and get better acquainted.
4. Increased activity will increase revenue and interest in the event.

Points against the proposal:

1. More sessions with increased participation will make administration and site availability difficult.
2. Some fliers may wait for the last session at their own risk. Since consistent performance is needed for a strong team, it might be well to require entry in at least one elim before the zone final.
3. Fliers who live far from a site will have an extra burden of cost and time. However, sites could alternate or rotate within the zone.

Comments, anyone???

65 Cm. FAI Span?

Dick Kowalski reports that the FAI Indoor Committee is split on the issue, with two in favor of the 65 cm. and three favoring no change. Dick's mail has been 3-1 in favor of 90 cm., while the mail at INAV has been 3-1 in favor of 65 cm. and local comments have been 6-0 in favor of 65 cm. Meanwhile, in England their Indoor Committee is split over the issue, as are the less experienced fliers. In a more official vein, Frank Ehling has asked the pertinent sub-committee to shelve the issue until next year, and present indications are that this will be done. Time will tell what the outcome will be, but it appears that no change will be made until after the World Championships next summer.

Cardington Closed?

In the past few months it has been rumored that the R.A.F. was giving up the base at Cardington, which left the future status of the hangar in doubt. Although the R.A.F. is leaving, it appears that the hangar will still be available for use. It is also considered likely that Great Britain will host the Championships again, so the site will most likely be Cardington.

Team Manager Nominations

At the present time three people have been nominated for the post of Team Manager to our FAI Indoor Team: Joe Bilgri, Bruce Paton and Dick Kowalski. So far, it seems that a lot of serious thought and consideration is going into the selection of a manager, which is as it should be. This post is far too important to be filled with the winner of a popularity contest (it hasn't happened, but it could) and the man chosen should be the best we can find.

Off-Season Elims

INDOOR NEWS has been asked to try to find out how much interest there is in having a round of FAI Elims in the years when the elims aren't "for real". If you are interested in having a round of elims in 1964, please let Dick Kowalski know how you feel. One advantage to such a scheme would be to try out new team selection methods; another would be the additional development in models and technique which would result from extra competition. Dick's address: 20203 Moenart, Detroit 34, Michigan.

GLIDE TESTING

In recent months there has been additional emphasis on achieving the minimum rate of sink for indoor rubber models. A thorough glide testing program performed both "before" and "after" is one of the most accurate methods of evaluating changes in trim and changes in aerodynamic configuration of your model. Dick Kowalski recommends this method:

1. Carefully balance your model, substituting a weight for the prop and the motor.
2. Carefully check and record incidence settings, C. G. location and any other data which may be helpful.
3. Establish an altitude marker at least 2' high of such a nature that you can easily determine if the model has passed the marker at the right altitude.
4. Glide the model from at least 6' behind the altitude marker so the model will have time to achieve normal glide speed.
5. The model should pass within a couple of inches of the altitude marker. Do not count any glides that exceed this distance from the marker.
6. Time the duration of the glide from the instant the model passes the marker until you can see and hear the model strike the floor.
7. Divide the average duration into the marker height to get sinking speed in ft./sec. Use a minimum of 10 glides for each setting for best accuracy.

LOW CEILING FORUM

Some time ago this column was initiated at the request of a low ceiling flier who asked for suggestions on how to improve model performance in the sites with the lower ceilings. To date, only Lee Hines has passed on any tips for low ceiling fliers - and that was glider information.

The major problem faced by low ceiling fliers is a combination of drift and of hanging up. Quite often, if the site has a smooth ceiling, the drift pushes the model across the ceiling until it strikes a wall or some other obstruction and the timing ends with a hung model. On the other hand, quite a few sites have a lattice-work of rafters and "junk" in the top which effectively prevents ceiling scrubbing and often just plain snags the model. In this type of ceiling one must avoid the beams for two reasons: 1. The model will almost always hang up, and this is more likely if the model is still climbing fast when it reaches the beams. 2. "Ricochet drift" (drift caused by collisions with obstacles) can soon force the model against the wall or into a corner.

The conventional way to fly models under these conditions is to use rubber at least equal in weight to that of the model, with a moderately large diameter prop which

flares a considerable amount in order to absorb the power burst and slow the climb. To further slow the rate of climb, the motor is wound to some number of turns less than maximum (as determined by experiment), then all or most of the peak power is "backed off" (again the number of turns backed off is determined by experiment) so that the model operates on the flat portion of the torque curve.

Recently, it occurred to me that a more efficient use of the rubber could be made. Why carry enough rubber to reach the top of a blimp hangar (with prop to match), and then wind it up part way and back off a few? Might it be possible to find a combination of rubber and prop that would permit the entire torque curve to be used? After two months of experimenting, it seems likely that such a combination can be worked out. Until it has been worked out, with special models designed to increase the possible advantages of this approach, we can only guess at the final results.

One early approximation used an 11" all-balsa prop and a 14" loop of .045" pirelli on a paper stick model. With 90% of maximum turns the model had a very rapid climb to the ceiling (28 seconds to reach 20' from a launch 6" off the floor). When it reached the ceiling both wing tips started dragging heavily on the ceiling, which nullified the turn - and the model headed for the wall. It was relaunched without adding more turns and it climbed to 18' in 2½ minutes, landing deadstick at 7:05. The same prop and rubber combination on a FAI model gave similar results, which lead to the conclusion that the prop could be larger.

Later, with a 14" prop and a 13" loop of .045 pirelli (no slack) wound to 1050 turns, the same FAI ship turned 7:40 and landed with 50 turns. The flight took just over 2½ minutes to peak out just under the ceiling and it landed without touching either the ceiling or the walls. Now, 7:40 isn't exactly startling time, even for a 20' site, but neither the model nor the prop were as efficient as they might be. There was fairly strong drift near the ceiling, which had less effect on the model than normal, since it spent very little time next to the top.

This mode of operation is simpler to understand if the prop and motor are considered to be a specific energy input, such as for outdoor FF when the engine develops a certain horsepower for a given period of time. The FF model is adjusted to handle this power input and its performance is evaluated in terms of this input. In a similar fashion, the rubber motor wound to a given number of turns represents a given energy input. The height of the peak torque will govern how high the model can climb and the remaining energy will determine how long the cruise will last, if the model will land deadstick or nearly so.

If this approach will work, it will result in the development of models keyed specifically to a given ceiling height, just as hand launch gliders have been developed for the ceiling under which they are flown. For example, Lee Hines' Sweepette 16 Mk. III, which flew for 37 seconds in Cat. I, would not benefit greatly from an additional 10' of ceiling height - it just isn't strong enough to be thrown higher!

My best guess about the design of these Cat. I models, based on the experiments described above, is as follows: Since the models will not be called upon to bang around on the ceiling, the wings can be about as light as you can handle. The models will have to be designed for minimum rate of sink during the cruise, which will probably include a long tail moment arm and center of gravity as far back as possible and still retain adequate stability.

The motor stick will probably come in for the biggest change. The motor will still be fairly large in cross-section to maintain cruise power, which means a shorter than normal loop. In order to have some slack, the stick will need to be somewhat shorter. The shorter stick can be smaller in diameter, so the weight saving in the stick will be substantial. Such a model, if it proves to be practical, will be capable of pushing Cat. I times up to 20 minutes or more, while 30 minutes in Cat. II could become fairly commonplace. However, the "ultimate" Cat. I model just won't turn some fabulous time in Cat. II because the motor stick wouldn't hold the higher energy motor required to take full advantage of the higher ceiling.

The foregoing prediction is really extrapolation from performance that is largely speculative. If this article causes anyone to speculate about a different way of doing things, to make some effort to turn the peculiar limitations of Cat. I into some sort of asset, or in any way to increase the efficiency and performance of our models, then it will have been worth while. On the other hand, if you disagree with what has been said, the floor is yours! Have your say, and we all may learn something!

CLIMB CONTROL VIA TORQUE TRIM TAB

by Richard Miller

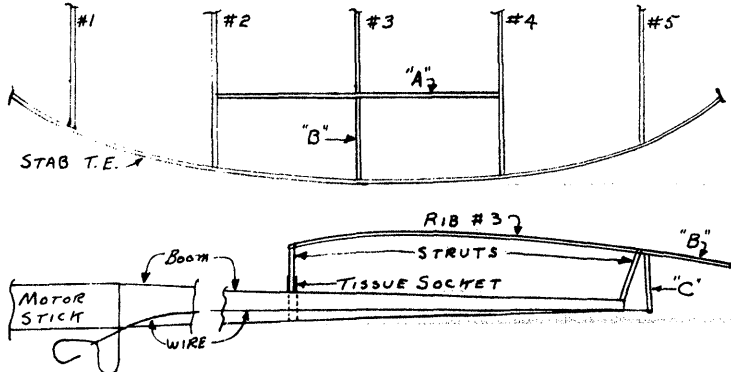
There is scarcely an indoor model that will not out-climb the ceiling under which it's flown - no matter how high the roof; and the lower the ceiling the more onerous the problem. Even with flare props under the highest ceiling it is usually necessary to sacrifice valuable winds in order not to get hung up. This is illustrated by the way in which Carl Redlin let winds run off before his official flights at Cardington in 1962.

Perhaps, in time, gears will put a stop to this. In the meantime not everybody has gears (as a matter of fact only a very few people have gears) and the rest of the people are going to have to shift as best they can. Now while they're shifting they might try changing from one incidence setting to another - as a means of getting around the too early meeting of the model and the ceiling. If you have this problem why not try a method of climb control (in addition to a flare prop) designed to keep the model at lower altitudes for a longer period of time and thus increase total duration?

As I watched the low-ceiling set struggling with the too rapid climb my mind went back to the old method of controlling rubber speed models (there was an event!) by bringing the tension of the tightly wound rubber motor, via a small lever, against the rudder post to achieve rudder offset when torque was at its highest. Why not, I thought, adapt the same idea to the fast climbing indoor model? Why not use the tension of the tightly wound motor to control incidence and thus the rate of climb?

Now the first thing everybody's going to say is that it's a gimmick and the second thing everybody's going to say is that the bowed motor stick already does what I have in mind. Well, it may be a gimmick, but gears are a gimmick too - and you may have to beg, borrow, or steal a set to stay in the running in a year or so. As for the bowed motor stick, this is a sometimes phenomenon and very difficult to control because of the very small bits of deflection necessary to make it effective. A much greater degree of control can be had by using a smaller area and a wider range of movement. Like a trim tab.

The device (untested as yet) should be fairly obvious from the drawings, but for those who want to experiment, a word or two might help. If I were doing it I would make a bench set-up and test various hooks with a loop of rubber the size I expected to use on the ship in question. I would vary the drop and diameter of the bends of the rear hook until I had a fair degree of forward and rearward motion - perhaps 1/8" or even more. I would then determine at what percentage of winds the hook returned to a more or less normal position. This action I would transmit to the stabilizer via a length of nichrome or something similar.



To build the stab, put in all the ribs except #3, then add crosspiece "A" and possibly a couple of diagonals. "A" is going to support the rear end of the stab, and the trailing edge between ribs #2 and #4 should be thin enough to have a proper degree of springiness. Rib #3, when added, might profitably be a compression rib.

With the stab finished and covered, add the little V-shaped piece comprised of "B" and "C". "B" is glued to the trailing edge and to the covering but not to the end of rib #3 against which it butts. Now glue the line from the rear hook to the end of "C".

When a fully wound motor is put on the hook it should be quite powerful enough to depress the stab trailing edge (if it's thin enough) and when the hook returns to a normal position the trailing edge should have enough resiliency to resume its original shape. If there is any tendency for the paper to impede action, trim away a little between piece "B" and rib #3. And if it works - but then why shouldn't it?

-30-

NEWS FROM AROUND THE WORLD

CALIFORNIA - MOFFET

The September session didn't have quite as many in attendance as usual, but the times were quite good. Bud Romak topped 39 minutes in stick, Joe Bilgri turned 25:53 in cabin and Manny Andrade turned 21:58 in cabin.

Another record trials has been set up for October 20, and as usual those who plan to attend must notify Bilgri 10 days in advance. Joe's address: 1255 Blackfield Dr., Santa Clara, California.

CALIFORNIA - WILMINGTON

News has been pretty scarce from Wilmington in past months, but we have partial results from the Easy B Annual. Wally Miller, designer of the Easy B, won first place with 9:25; Larry Renger won second place with 8:49. Larry was flying the same Easy B that he used to set the Sr. B Stick record a year ago!

ENGLAND - CARDINGTON

An indoor session at Cardington in September was very well attended, and the fliers were rewarded with low drift and slightly cool conditions. Stan Ward and Ron Draper each topped 29 minutes for the two best flights of the session.

ILLINOIS - CHICAGO

Pete Sotich reports that a Cat. II record trials has been scheduled for Saturday, October 26, in the Madison Street Armory. Since local participation has been poor, it is possible that some contest event may be held to increase attendance. Check with Pete at 3851 W. 62nd Place, Chicago 29, Illinois, for further details.

INDIANA - KOKOMO

Chuck Borkeman reports that final arrangements have been made for use of the Bunker Hill AFB gym on the third Sunday of each month from October through April. The first session falls on October 20 and will feature Easy B and HLG events. Chuck has asked that all fliers make suggestions about any other events that they want to be held. If you need further information or have a suggestion, Chuck's address is 1401 W. Taylor, Kokomo, Indiana. Since this is their fourth year of steadily increasing activity, this ought to be a good season.

MICHIGAN - DETROIT

Although the teen dances have stopped, the Michigan State Fair Coliseum still has the false ceiling and the fancy trim. Late rumor has it that it is coming down soon, and the Balsa Bugs plan a record trials if the building is cleaned up in time before cold weather.

NEW ZEALAND - UPPER HUTT

John Malkin and Brian Root travelled to Palmerston for a Cat. II session last month, and managed to cram a lot of flying into the day. Brian's best time was 9:37.6 with a Bilgri "Ditto", which John managed to top later with 11:06.3 for a club record. In the meantime John had been busy setting some other records:
 Cat. I Helicopter - 0:49.7 (11' ceiling)
 Cat. II Helicopter - 4:02.3
 Microfilm Stick Under 18" HL - 6:47
 Microfilm Stick Under 18" ROG - 5:58.4

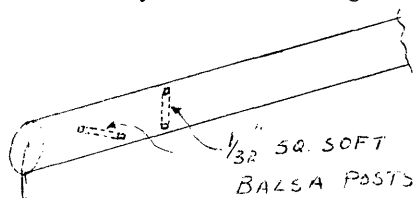
The amazing thing about all of John's record flights except the helicopter flights is that they were all made with the same model - an 18" model with detachable wheels and extra tips which were glued on to increase the span!

NEW YORK - ELMIRA

The Elmira Indoor Model Airplane Club is still growing - now the membership totals 16 members who are quite active in HLG and Easy B. Their top HLG time in their 20' site is 0:23.6 - quite respectable time! If they can locate an adult sponsor for their group, they hope to hold a club contest soon. Volunteers, anyone??

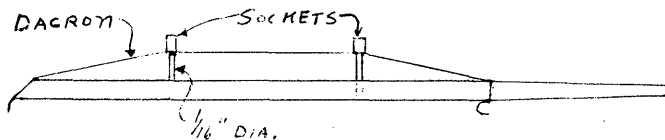
HINTS AND KINKS

The Detroit Balsa Bugs continue to develop model structures, and this development goes along nicely with the monowire fuselage bracing. Sometimes the lighter fuselages have a bad habit of dimpling or oilcanning at points of stress. A soft $1/32$ " strut across the stick as shown below will hold the wood in shape and prevent the failure with very little added weight.



Another monowire bracing scheme is suggested by Bruce Paton and sketched below. Bruce says, "We've been using dacron for the bracing - the type sold by Cox for their ready-to-fly control lines. The line splits into three strands, we use one of these strands for the bracing. We've found that on an FAI job, if we bow the stick up $1/16$ " when installing the dacron, that with full winds we get a slight amount of downthrust.

Incidentally, each of these strands is comprised of about a dozen monofilaments. If you have good eyesight, these monofilaments make very good tail bracing or even wing bracing on an A ROG."



RECORDS? MAYBE!

There were some record trials held in September, but we haven't received reports of any record applications. Does this mean no records were set, or simply that there were no reports?

CHANGE OF PACE

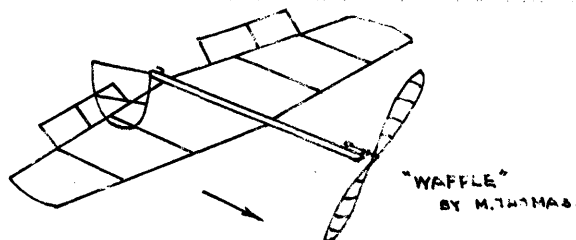
Although we have no classes for flying wings (or tailless models) these strange birds should make interesting fun projects. The author, Reg Parham, needs no introduction to most indoor fliers - he has been well known for years in the field.

INDOOR TAILLESS

by Reg Parham

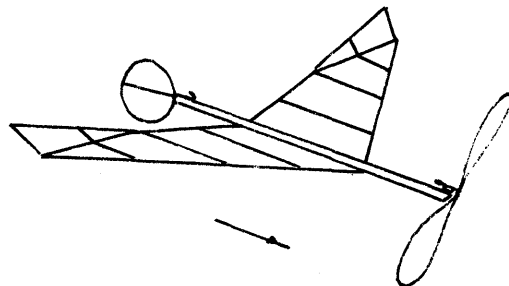
The flying wing type of indoor model is sadly neglected even here in England where there is a record class for it. This is surprising as it is a useful model to fly when a site is cluttered with hanging lights and other impediments. A ship with a swept back wing and a pusher propeller is quite reluctant to hang up.

My interest in tailless started way back in 1950 when I discovered that the British record for the class stood at just over a minute. The model, designed by Mike Thomas, was a curious affair of 18" span similar to that shown in the sketch below:



Mike favored a flat plate section wing, a straight leading edge and a swept forward trailing edge. A tractor propeller was employed and the model was flown in tight right hand circles.

After making a model to this configuration and convincing myself that it was not the answer to the tailless problem I made a small swept back model using a flat plate wing section thus:



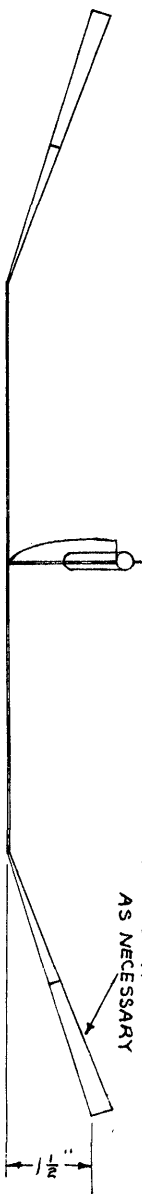
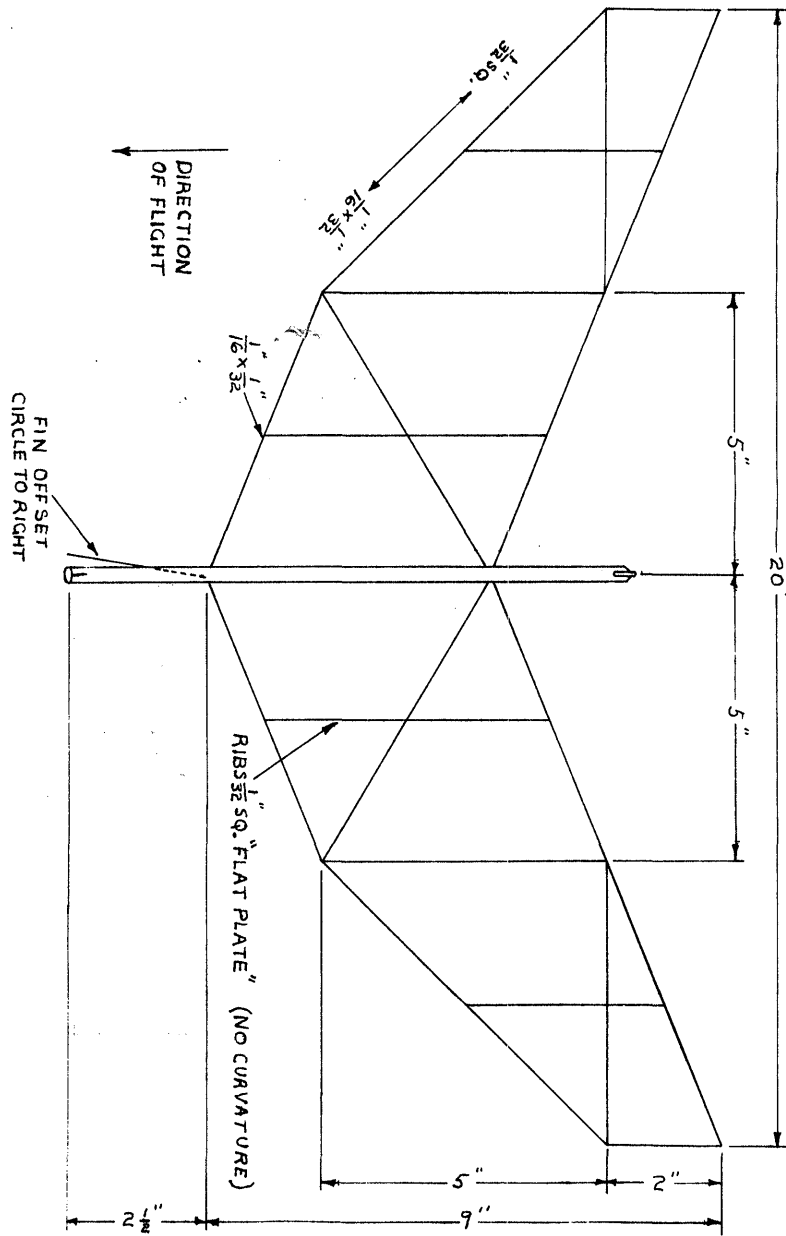
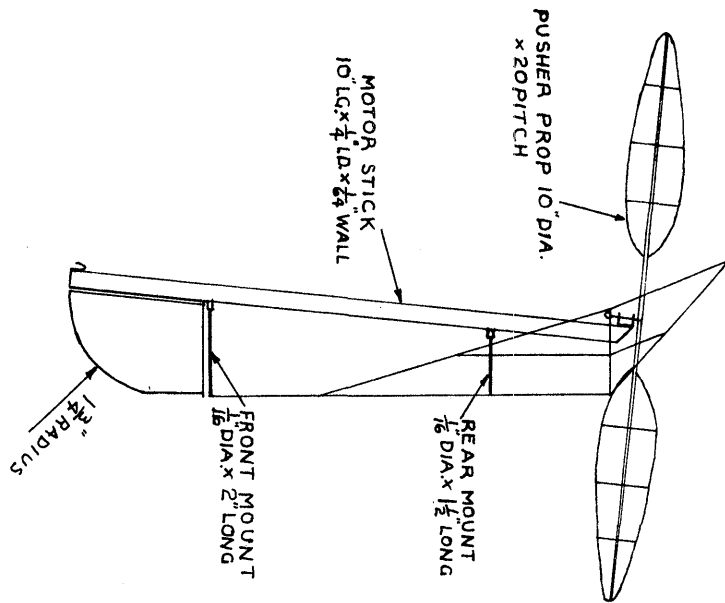
Its cruise was reasonable, but trouble arose in the form of stalling under full power. This was partially overcome by raising the thrust line and mounting the wing well below the motor stick. However, the solution to all the stability troubles came completely by accident. I was experimenting with the model one evening trying to improve its trim and at the same time listening to the big fight on the radio. The fight gained my prior attention and in my excitement I mishandled the model and the wing came adrift from the stick.

With my mind elsewhere I re-cemented the wing in position, but in reverse. Being in a mood to try anything, I wound up in reverse so that the prop had become a pusher and launched the model. To my amazement, it flew perfectly without stall or mush. Needless to say, the prop was quickly reversed on its spindle and "Viola," a stable flying wing. A cambered airfoil was tried later, but its center of pressure movement resulted in instability and so the flat plate airfoil was retained. The forward fin was rather prone to damage and so it was eventually tucked under the motorstick as shown.

For consistent performance it is necessary to build a stiff wing. This is readily apparent from the fact that the elevons produce a twisting moment. Assuming the use of a conventional right hand propeller, a right turn is desirable and the elevons are adjusted for longitudinal trim and bank as necessary.

My plan shows the latest version of the series which was made several years ago. The current British record of 5:14 is held by "Mac" Grimmet with a model of similar configuration, but I see no reason why this time should not be raised to 10 minutes plus in the near future.

INDOOR TAILLESS
 BY REG PARHAM
 MALVERN, ENGLAND



NOTE THE WING MUST BE
 TORSIONALLY RIGID
 BRACE, IF NECESSARY.

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

NOVEMBER 1963

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

The following members joined NIMAS in October:

GEORGE BATIUK, 3066 South Osceola, Denver 19, Colorado
DAVID LINSTRUM, V-3 Jardine Terrace, Manhattan, Kansas

Sponsored Junior Memberships

In February, 1963, the Sponsored Junior Membership fund was announced - and in short order the fund built up to 14 memberships. To date we have only two Sponsored Juniors - largely due to a lack of nominations. Recently it came to light that some clubs had nominees, but the clubs did not meet the original requirement which said the club must be an AMA Chapter or Chartered Club. This restriction has been lifted, and deserving juniors from any club are welcome. In addition, any NIMAS member can nominate a deserving junior - in fact, both our present members were so nominated. In each case, the nominee was an active model builder who got started in indoor more or less by himself and was nominated after being observed in action.

This is the way the business works: Send the name of the nominee to: Bud Tenny, Box 545, Richardson, Texas along with biographical information of the nominee. The nominee pays \$1 and the rest of the membership fee comes from the fund. Each club is limited to one membership per year unless they wish to make a donation to the fund. The membership is good for one year, and the junior may renew as a regular member.

Zippy Code

We wonder just what this Zip Code is all about, since the mail seems to get delivered without it! However, it may come to pass that it will be a necessity - if you happen to remember, send it along. By the way, the Zip Code for Box 545, Richardson, Texas is 75081.

NIMAS Awards

So far, the only people to comment on the proposed NIMAS achievement awards have been those who thought of them in the first place. It seems a shame that no one appears to be interested - since there just isn't any kind of recognition available for those who devote extra effort toward improving their models and technique. Some will say that our system of national records does just that - and in a sense they are correct. However, many of the records have been pushed to the point where it takes a happy combination of a good model, excellent conditions and luck to exceed them. This is especially true in Category I, where all the stick records are beginning to creak from old age. It's a pretty fair accomplishment to have a model miss hanging up and miss collisions for 12 minutes, let alone 14 or 15 it would take for a new national record. In fact, Cat. I flights over 11 minutes are pretty rare, and anyone who manages it has done well.

We offer this possibility as food for thought: Set up three awards called (for example) Silver, Gold and Diamond. The Diamond award could be won by a 15 minute flight in Cat. I, 30 minutes in Cat. II or 42 minutes in Cat. III. On the other end of the scale, the Silver award could stand for 11 minutes in Cat. I, 20 minutes in Cat. II, and 30 minutes in Cat. III. A similar award for HLG could be based on time/ceiling height, or rate of sink. Let's have your comments, please!

Financial Report

This issue marks the second anniversary of INDOOR NEWS AND VIEWS under the subscription system. Income for this year from subscriptions and memberships totals \$435, with an additional \$24 in the Sponsored Junior Membership fund. The expenses for twelve issues are as follows:

Printing costs	\$292.72
Postage (newsletter only)	123.88
	\$416.50

In addition to the costs above, postage for correspondence totalled \$45.07, and office supplies came to more than \$25. The postal rates increase alone accounts for over \$20 of the newsletter postage!

Incoming mail this year amounted to 700 letters, and your editor sent out over 720 pieces of mail. All in all this has been a most successful year for INDOOR NEWS, and very pleasing to the staff.

This report would not be complete without a word of thanks for all those who helped with a myriad of details during the year. The masthead says "Voice of NIMAS," and this is truly a group publication - thanks to all of you!

Indoor Rules Committee

It is interesting to note how the mail comments are shaping up on the subject of indoor rubber events. These events are leading the list in number of times they are mentioned as desirable: A ROG, B Paper Stick, Helicopter, and Autogyro. All comments have favored adding FAI to the list, with a split between those favoring FAI as the only stick event and those who wish to retain at least one other stick event. Everyone except one has favored adding Easy B, and about half have favored retaining Ornithopter. Several people have favored changing from area to wingspan to determine model class.

As chairman of the committee and as a CD, it is in order to express my rules philosophy - what a set of rules ought to be. I believe that rules which define a class or type of model airplane ought to contain no more prohibitions or restrictions than is necessary to maintain the essential character of the event. All such prohibitions must be stated simply and without ambiguity, so that both builders and CD's will interpret the rules alike. Finally, the essential contest equipment should be held to a minimum, and should be of such nature as to be readily available or easily constructed. Thus, I feel that any restriction which requires many words to define would be better left out - even if this resulted in not having the event. As an example, let us consider part of the Solid Stick proposal which was defeated recently by the FF Contest Board:

"All components must be solid. No tubes, I-beams, H-beams, L-beams, or similar, or built-up, built-up hollow, or hollow construction of components is permitted in any form."

Thus, if "component" is taken to mean any individual piece of the model, wing sockets as we know them are specifically prohibited. In a strict interpretation, it is doubtful that the normal thrust bearing and rear hook could be allowed, since the fuselage is no longer a solid piece, but has been built up from balsa and metal! If "component" is taken to mean sub-assemblies such as wing and stab, the model would have to resemble the A-J Hornet except that the fuselage could not be slotted to receive the tail surfaces!

Admittedly, I have taken an extreme viewpoint to show my meaning - but that same proposal had a basic fallacy in concept. It was proposed with the intent of creating a "beginner" or "novice" event. In the first place, it is impossible to create an event which novices or beginners will win, unless more experienced builders are kept from entering the event. Conversely, if a "novice" wins such an event against "experts", he is, by practical definition, an "expert" regardless of his experience level.

Thus, since the Committee has been asked to investigate the addition of a new event - a "beginner" event, the only possible meaning is to create an event that beginners will be encouraged to enter. After all, a "full house" FAI is a quite formidable looking machine, especially to the uninitiated - and the average paper covered Easy B looks easy enough that few will admit they couldn't build one, especially if you have a rugged "loaner" for them to fly a few times to get them hooked!

FAI INDOOR REPORT

Last month another scheme for FAI elims was aired in this column. The main feature of the proposal was that all fliers could enter each elim until the Semi-Final, and thus could build up their skill or overcome a bad early showing. Lew Gitlow has made these comments on the proposal:

"Let's face it, many things can come up to make it impossible to make one of the flyoffs and a guy can be left with a real hurt. The new plan would prevent this. I feel all the advantages were well put - but I think the last flyoff should allow greater participation. This could be worked out in many ways. For example, average out the sums of the two highest times for each of three or four sessions, say six or eight flights. Then, take the top 40% or some arbitrary percentage depending upon participation and allow these guys to fly in the last round. I would think that consistency should be paramount. In this way, conditions and other variables would average out and the flyoffs could be held through the entire year, from Fall to Spring with time between sessions for experimentation. The luck element and Point 2 against the presented proposal would be largely eliminated."

65 Cm. Span FAI?

Here are some more comments for and against any possible change in the FAI indoor formula. Bill Bigge has always opposed the change, and offers these comments:

"If the span is reduced, the ultimate models will be harder to build, harder to handle, more subject to ground turbulence, harder to balloon safely (or at all), and harder to see and identify. They will fly about 90% as long, or more, depending upon Reynolds Number effects. As Boyd Felstead says, it would be more of a challenge. Easier transport is the greatest advantage as far as I am concerned. One advantage in the small size that I have not seen mentioned elsewhere is that collisions should be less frequent, by a factor of two. This is not of great importance in most cases in the sense that not many flights are lost by collision, but if you consider that the fear of collisions is an important factor in how many are willing to fly at once, it should make a better contest."

More comments against: The class is established, so why change? The season is complete, and records have been established. Much theory and development has been invested in this size and the resulting Reynolds numbers. The idea that these smaller proposed models will take less airspace is nonsense; we will fly to any ceiling height regardless what size the airplane is. The smaller

span will hang as well as any other size, perhaps more readily. It has smaller size and will nestle among truss bracing and other architectural details where the larger span may not be able to go.

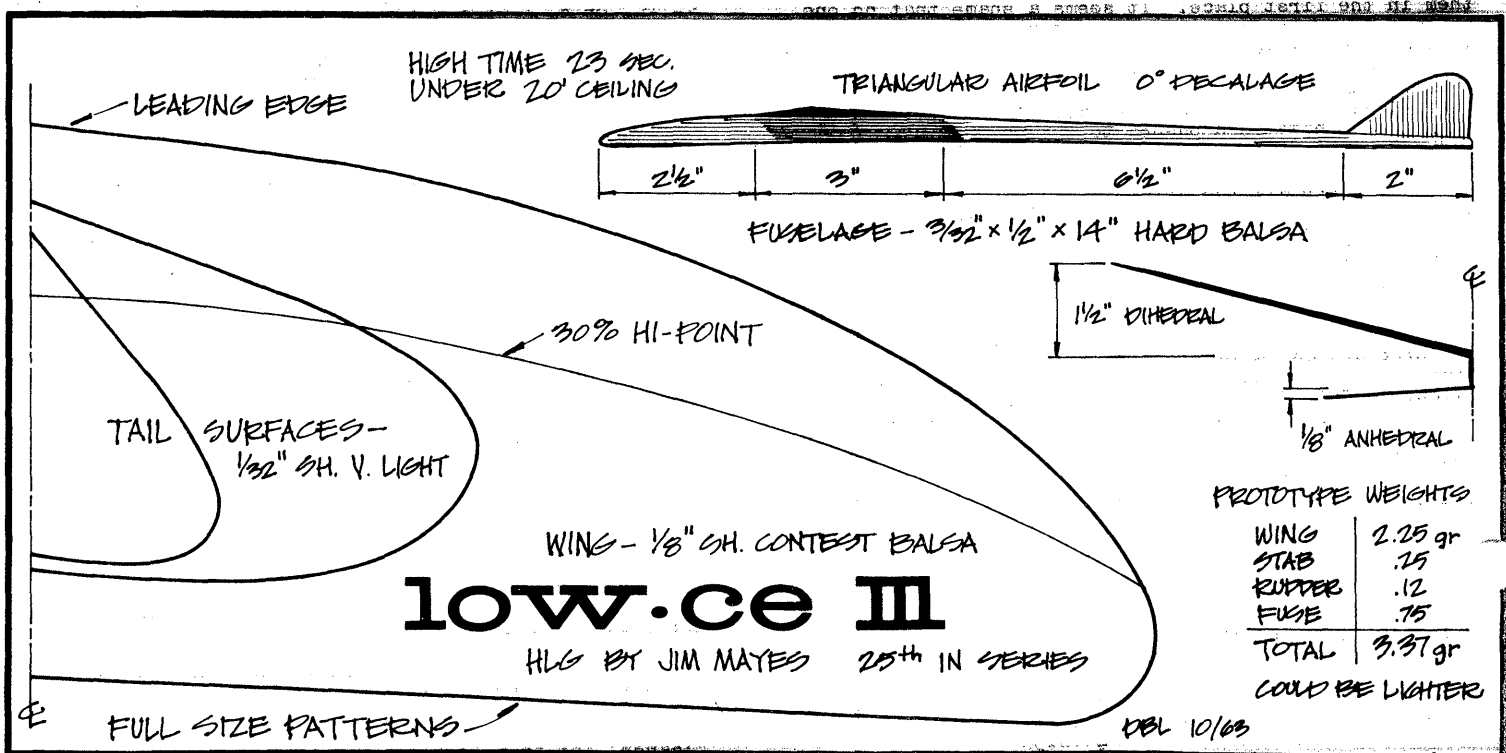
IT'S BALLOT TIME

By the time you read this, it will be almost too late for you to return your AMA ballot. By now, you should have carefully read the brief bibliographies of the nominees from your district (pages 7,8 & 9 in the October 1963 Model Aviation), discussed the merits of each candidate with your fellow AMA members (unless you live outside an active area) and returned your ballot. If you fail to return your ballot, as many do, you have nothing to gripe about if the officers you didn't elect aren't to your liking. Remember, the deadline is November 15!

As usual, there is a space provided on the mailer to renew your license for 1964. If you don't have the cash, mail the ballot anyway. It is not mandatory that you renew before January 1, 1964 - this just helps you to avoid the rush which always occurs early in January. Contest Directors almost have to renew early, especially if they plan a January contest - the first thing that is checked on a sanction application is to see if the CD has a valid license.

Some members who haven't read Model Aviation closely in recent months may be in for a shock when they note the new license rates in effect for 1964. Do not be dismayed at the increase - it is long overdue and more nearly a realistic figure for the services provided by AMA. If you doubt that statement, check the rates for membership in any other professional, sporting or recreation organization which provides any service to the membership at all. It costs several times that amount just to belong to the YMCA!

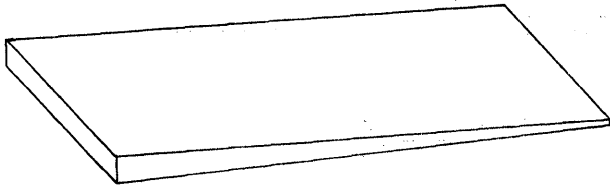
Something new has been added also - something we have advocated for some time and wholeheartedly approve. This "something new" is the FAI Sporting Stamp which must be affixed to your AMA license in order for you to participate in FAI activities. It will cost you \$1 at the time you buy your 1964 license, or \$1.25 if you buy it later. This is not a tax as such, but a means for everyone to support FAI with more than their mouth. Prior to this time, only the fliers who actually qualified for a team position had to buy them. That is about as silly as paying your entry fee to the Indianapolis 500 during the last ten laps! So, buy your stamp early and declare your intent - it would be a bargain at twice the price. This last, incidentally, is not a paid political announcement but a statement of personal opinion.



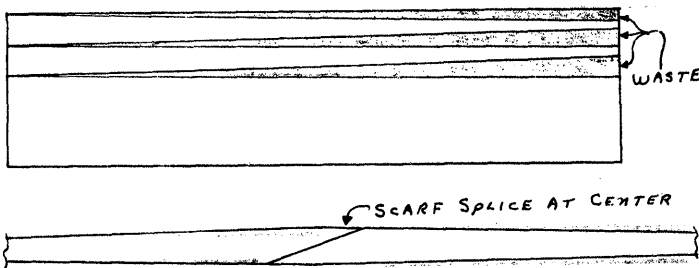
HINTS AND KINKS

Prop Spars Revisited

Some time ago we suggested a quick method for tapering prop spars before they are rounded. Tom Finch and Eric Greenwell have pointed out that the traditional way to taper spars is with a knife and straightedge as shown below. First, the stock is tapered the desired amount:



Now, the stock is tapered with a cut like the first shaded portion shown below; then one tapered half-spar is cut. The process is repeated as often as necessary until you have enough pieces to build your props. Each pair of half-spars is joined carefully with a scarf splice and permitted to dry. Finally, each spar is finished off as usual and the prop completed.



Ceiling And Visibility Unlimited

Well, not quite! However, we sometimes find such tasks as assembly of small parts and the trauma of wing bracing is hampered by lack of visibility. John Triolo suggests that the difficulty can be lessened by proper choice of background color. For example, bracing or assembly of white balsa pieces can be tiring against a white background - and almost a snap with a dark background. It is likely that a careful application of this principle can improve your workmanship also.

THE LAB

In the February 1963 issue of INDOOR NEWS we brought out the desirability of standard tests to determine the quality of our building materials, and suggested tests for microfilm. Bill Bigge developed equipment to measure thickness of microfilm as an aid to uniformity for his own models, and developed a color scale as a guide to help identify film thickness.

The color scale is based on superposition and on angle measurements and the thickness indicated is for light reflected at right angles to the film. The angle at which the color changes to the next thinner color can be rather accurately determined. Assigning a ratio of thickness to this angle requires a value of the index of refraction, μ .

$$1. \frac{\text{APPARENT THICKNESS AT } \alpha^\circ}{\text{APPARENT THICKNESS AT } 0^\circ} = \sqrt{1 - \frac{\sin^2 \alpha}{\mu^2}}$$

where α = the angle between the line of sight (where the color changes) and the perpendicular to the film surface.

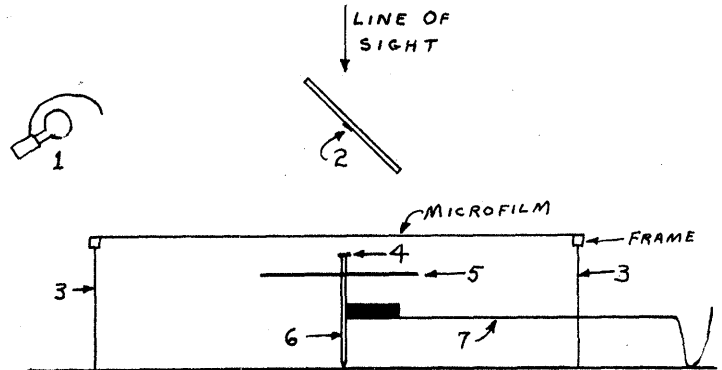
Bill has the following to say about the measurement technique: "The index of refraction is determined by plotting a curve of apparent optical thickness versus angle, and comparing with a set of theoretical curves, which are plotted for particular values of index of refraction.

By superposition comparison I mean the following: A pair of films is poured. Each has a reasonably uniform taper in thickness, so that it shows nice bands covering all of the range of thickness of interest. Each film, on its frame, is mapped in thickness by drawing the boundaries of the colors as they appear at right angles to the surface. The two films are placed together (perhaps with a little distilled water between them) and allowed to adhere. The combined film is then mapped. The color

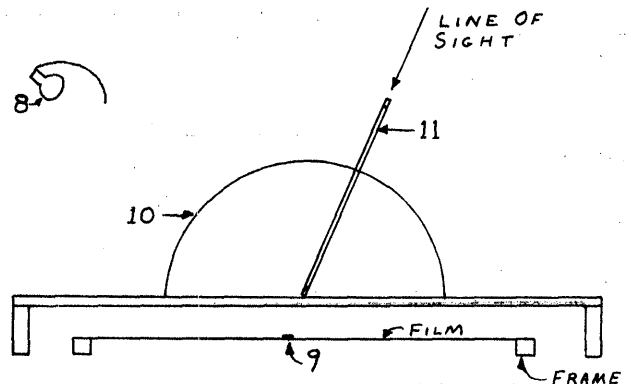
bands should be more or less at right angles in the two films in order to get the most information out of the measurements. Marks on the maps indicate the position of the frames. The three maps are combined, lined up as indicated by the marks. This usually means tracing one or two of them. One can then make up an addition table for colors. It was on the basis of such a table that I concluded, at the end of my first investigation, that Reds (only) are additive."

Bill also made the following clarification about the technique of superposition: "If, by superposition, it is found that $a + b = c$ where $a + a = b$, and a, b, c are thicknesses at certain contours, then a measurement of the angle where c looks like b is a measurement of index of refraction."

Bill's measurement apparatus is also quite interesting, especially since it is simple enough to be easily duplicated.



In the sketch above, #1 is a regular tungsten lamp. #2 is a transparent reflector (window glass) with a small triangle of aluminum for a sighting point. This sighting point is lined up with its reflection in the film (which is firmly supported by base #3) and with another aluminum foil marker #4. #5 is a disc of carbon paper, black side up, which provides a black background. A cut-down ball point pen (#6) forms one of three points of support for weighted slide #7. The pen is moved along the color boundaries and presses through carbon paper (not shown) to draw the contours. The fact that the line is not visible while it is being drawn is an advantage. It is practical and helpful to draw each line at least twice, since the two independent traces give an idea of the reliability of the method.



The angle apparatus shown above completes the gear needed for these measurements. #8 is again a tungsten lamp which illuminates the sighting point #9 on a film undergoing angular measurement. A protractor (#10) with the base parallel to the film surface, carries pointer #11. This pointer has a sight (two pins) and is attached so that it will stay put until moved. The best accuracy is attained when there are at least two colors, preferably more, in the field of view. If it is desired to get a figure for index of refraction, the sighting point should be applied at a boundary between colors as seen at right angles.

RECORDS? MAYBE!

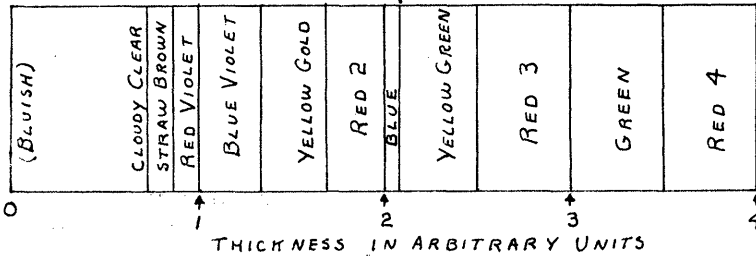
The only reported record flight during the past month was made by Edmund Smith at the October Lakehurst session. He upped his Sr. Helicopter record, but circumstances kept us from obtaining the flight time.

QUESTIONS AND ANSWERS

One year ago a question arose about the thickness of microfilm. At first glance, this seemed like a simple question. However, the more we looked into it, the more complex it became. The optical thickness of any thin film is equal to the actual thickness times the index of refraction of the film material. We work at a laboratory loaded with exotic research equipment and staffed with a great variety of PHD's. Thin films are very much under study and development, but no one knew (offhand, anyway) how to measure the index of refraction of such a fragile substance as microfilm.

It remained up to Bill Bigge to develop a purely optical method of measuring the index of refraction of microfilm with an estimated accuracy of 2%. With the results of numerous tests and measurements, he devised the scale shown below:

THIS BOUNDARY IS NOT SHARP



With the methods discussed elsewhere (see THE LAB) Bill determined that the index of refraction of microfilm is 1.5. The optical thickness of microfilm (per unit as shown on the color scale) is 12×10^{-6} /unit. This makes the actual thickness 8×10^{-6} /unit, or 32 micro-inches for the upper end of Red 4. Incidentally, the weight of MicroDyne film one unit thick is approximately 6 micro-ounces/sq. in.

INDOOR FLYING SCALE

In California, the art of indoor flying scale is now growing by leaps and bounds - thanks to the efforts of the N.A.A. Flightmasters. This hard-driving group, under the leadership of Kingsley Kau, has given scale a shot in the arm. In spite of the fact that the event is being treated as an unwanted orphan by many group, competition is fierce for the very few trophies which are offered. At the recent Easy B Annual, eighteen entries were made in two classes which had only a first place trophy in each class.

An offshoot of this growth is the excellent newsletter edited by Bill Warner. It is called FLYING SCALE NEWS & VIEWS, and can be had by sending \$2 to Russ Barrera, 1200 the Strand, Manhattan Beach, California.

NEWS FROM AROUND THE WORLD

CALIFORNIA - MOFFET

The October 20 Record Trials was plagued by cloudy weather which prevented the hangar air from warming up. As a consequence the ships took heavier rubber and the added handling problems caused trouble. Joe Bilgri put up his Cabin for 26:26 and then damaged it during the next try. Bud Romak turned in top time in stick with 35:24, only to run afoul of the girders.

CANADA - ONTARIO

John Easton reports that Canadian indoor records are under study. The rules were simplified a few years ago and quite a few classes were combined. With the advent of FAI, consideration is being given to creating a new class conforming to FAI rules.

COLORADO - DENVER

The Martin Model Masters are starting their indoor flying season with a Cat. II contest on November 17. The site is the fieldhouse of the Colorado School of Mines in Golden, Colorado. The fieldhouse has a 40' high ceiling with a shallow peak and a minimum of obstructions. The floor area is 120' x 300', which gives adequate area for holding HLG and rubber events simultaneously. The events scheduled are stick, paper stick and HLG, with a junior event in HLG. For further details contact CD Bob Lynch, 1064 Monroe, Denver 6, Colorado.

ENGLAND - COVENTRY

Another session was held in Cardington on October 12 and 13. Bert Spurr managed his first 30 minute flight that weekend, and Arthur Barr established a new Class B

(65 cm. maximum span) record of 25:36. Arthur's flight made it the hard way - on Sunday when the drift was high due to the doors having been open.

The British Indoor Committee recently submitted a new set of rules to the SMAE (rules surveys must be catching) for ratification. Three sizes of models are featured with maximum spans of 35 cm., 65 cm. and 90 cm. with a mike and paper classes in each size. HLG has been set at 50 cm. maximum span and .25 oz. minimum weight. The rest of the rules are similar to FAI indoor rules, and sites are classified into two ceiling heights with the break point at 35 ft. measured to the "lowest major structural member above the center of the floor area."

ILLINOIS - CHICAGO

Very poor attendance and only fair conditions were a feature of the Chicago Aeromats record trials on October 25. In spite of the few models present, they managed to have one midair collision! Hopefully, there will be more fliers in attendance on November 30 and December 28, the dates of the next two Record Trials.

INDIANA - KOKOMO

Fourteen contestants turned out for the first Kokomo Aero Team indoor session at Bunker Hill AFB, slightly fewer than usual. Ed Hughy won Easy B with 9:16.3, very good time for a 45' ceiling and paper covered models! HLG times were a bit low, however - the site record is 0:42.0, and first place was 0:38.5.

The November session is scheduled for Nov. 17 and the events will be HLG and paper stick.

MASSACHUSETTS - M.I.T.

The Tech Model Aircrafters of MIT have set up seven Cat. II sessions during the coming school year. The site in the MIT Armory at the corner of Massachusetts Ave. and Vassar St., which has a 42' ceiling. The time of the sessions is from 4:30 PM until 8:30 PM, and outsiders are welcome. It would be advisable to contact Eric Greenwell if you plan to attend a session, in case of last minute changes. The next session is November 16, and Eric's address is Box 5031, 362 Memorial Dr., Cambridge 39, Mass.

NEW JERSEY - LAKEHURST

John Triolo was high man at the October 6 Lakehurst session with 32 minutes. This was the final session of the 1963 season, one of the most active seasons in the history of the site. C. V. Russo is responsible for the large number of sessions, along with Lt. Thibodeau of the U. S. Navy. All the East Coast fliers owe these men a vote of thanks for handling the details of these meets. "Russ" is holding a meeting at his house to plan the 1964 season and discuss pertinent questions about FAI indoor models. Russ lives at 143 Willow Way, Clark, New Jersey, which is near Exit 135 of the Garden State Parkway. Meeting time is 2 PM on November 17, 1963, and everyone interested in FAI models and a good talk-fest is invited to attend.

NEW ZEALAND - AUCKLAND

Jack Eriksen reports that he set two New Zealand records at a recent Cat. I session - 10:20.4 in the 18" span class and 4:53.8 in the flying wing class. In November there will be a session in the 40' hall in Hamilton. They expect that fliers from Wellington will attend - a trip of only 400 miles!

OHIO - CLEVELAND

Chuck Tracy reports the following events in the area near Cleveland: A Cat. I Record Trials for all divisions to be held at the St. Edward High School Gym in Lakewood, Ohio on Dec. 1, 1963 from 9 AM to 4 PM; a meet in Painesville, Ohio on Nov. 24, 1963; the 13th Annual Great Lakes Indoor Air Meet in the Cleveland Public Hall on Jan. 5, 1964. Contact Chuck Tracy, c/o CLEVELAND PRESS, Cleveland 14, Ohio for further details.

TEXAS - DALLAS-FT. WORTH

Things are looking up for indoor fliers in this area since the Cliff Model Club reorganized. They have set up monthly Cat. I sessions in the newly built Arlington Recreation building. The ceiling height is about 25' and the floor area is roughly 100' square. The building is built around a shallow arch which leaves the ceiling very clean. To all appearances this is the best Cat. I site ever located in this area. The sessions are planned for the third Tuesday of each month from 7 PM to 10 PM, and the first one will be November 19.

STATE OF THE ART

The offering for this month may seem a bit late since the record was set almost a year ago. However, Sweepette 16 Mk. III is still the top Cat. I glider - and a good, consistent design for those who wish to duplicate it.

INDOOR NEWS AND VIEWS

BUD TENNY

"Voice of N.I.M.A.S."

DECEMBER 1963

INDOOR NEWS AND VIEWS (Subscription only) \$2/year
N.I.M.A.S. Membership (Including INAV) \$3/year

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

The month of November turned up the following new members:

CLIFFORD K. McBAINE, 2430 W. Cajon Dr., La Habra, Calif.
EDMUND SMITH, Oak Bend, Llewellyn Park, West Orange, N.J.

NIMAS Awards

Recent discussion about the proposed NIMAS achievement awards have pretty well centered upon the following times for these awards:

Award	Cat. I	Cat. II	Cat. III
Silver	10:00	20:00	
Gold	12:30	25:00	
Diamond	15:00	30:00	42:00

Two different times have been suggested for both the Silver and Gold awards. For the Silver award both 28:00 and 30:00 have been suggested; for the Gold award both 35:00 and 36:00 have been mentioned.

With the above concrete suggestions to work on, how about some comments and suggestions? Also, what about some awards for glider fliers? This is one of the most exacting phases of indoor flying, and the glider fliers certainly have come nearer to adapting their art to the particular ceiling height in use than any other group. So, let's hear from some of you glider fliers - if you are neglected it's by your own choice!

Indoor Rules Committee

Much of the rules correspondence lately has been on the Easy B type of model. Perhaps this is just as well, since this represents the thorniest problem in terms of adequate rules, and even in terms of whether the event can be established on a national basis and maintain the same effectiveness it has shown under local administration. The basic difficulty proves to be in the rules - especially if there is any degree of restriction in the rules which are used. The hardest restriction to define is "no bracing" - a concept which is a part of most of the differing sets of rules in use around the country. From the standpoint of national rules, this concept can't be simply defined without using many, many words or else leaving several loopholes. We are open to debate on this point - if you think it can be done, show us!

By the same token, the second common characteristic for Easy B - solid motor sticks and tail booms - is also nearly impossible to define. A third common requirement is to specify that the outlines of the flying surfaces must be composed of straight lines. While this is easy to define and administrate, I feel that this particular requirement, if strictly enforced, would work hardship on many fliers just learning to build. For example, how many readers had the experience of letting a wing or stab slip during covering, so that the spars are crooked? Or, maybe the film (especially beginner's film!) isn't quite "dry" (non-shrinking) so that the surface becomes warped. Two kinds of warps concern the CD who enforces this rule: the "scalloped" wing and curved dihedral. In each case the wing was intended to be straight, and even started out that way. However, by the wording of the rule, the wing is illegal no matter what the intent. Thus, the less experienced builder is penalized by his lack of experience in an event intended to attract him!

Larry Renger (see "Easy Breeze" in the Jan. '63 INAV) made the suggestion that a minimum weight of one gram or .035 oz. be added to the Easy B rules. After overcoming the initial shock, I agreed that a minimum weight rule would have many good points to recommend it. First and foremost, proper choice of weight would eliminate the supposed need for restricting the use of bracing and the requirement for solid components. After all, why save weight with special techniques and then add a hunk of ballast? On the other hand, if the beginner (or expert) builds a wing that is a shade too weak, bracing will save

it for use. I've never seen any point in banishing rolled tubes or bracing from beginner models - both are basic to indoor models and both are quite easy to master. After all, are we trying to get people to build indoor models or outdoor models?

All this leads up to my suggested rules for Easy B. These rules entail (in my opinion) the maximum desirable complexity for indoor rules:

Wing: Maximum span of 18" and maximum chord of 3".
Stab: Maximum span of 8" (Some people feel that a limit of stab area is required)
Prop: The prop blades must be all balsa.
Covering: Optional
Weight: Minimum weight of one gram (approx. .035 oz.)

The floor is open to anyone who wishes to debate all or any part of the above, either in INAV or privately by mail. I'm after the best possible rule, and if no one cares about the rules, they sure don't care about the event!

Contest Board Action

In a memo dated December 3, 1963, Phil Klintworth reported that an insufficient number of votes either "for" or "against" had been cast for the Detroit-Chicago-Wilmington HLG proposal to change IHLG scoring to the best three flights out of nine. After reviewing the comments of Contest Board members, Phil suggested this alternate proposal: Change paragraph 13.9 under section 13 (Indoor Hand Launched Glider) to read as follows:

Scoring of Flights: Scoring time shall be the total elapsed time of the best two of not more than nine official flights. Flight duration shall be scored to the nearest one-fifth second.

Foreign Subscriptions

It has been apparent for some time that the cost for foreign postage plus the cost of production was exceeding the \$2 yearly subscription rate. For that reason, it has become necessary to increase the rate for foreign subs to \$3 per year, effective January 1st.

FAI INDOOR REPORT

Indoor Team Confirms

Early in November all members of the indoor team as chosen at the Semi-Flyoff (Bill Atwood, Ed Stoll and Frank Cummings) confirmed their intent to compete on the U.S. Indoor Team at the World Indoor Championships to be held in 1964. Although the host country has not been chosen, it is believed that Great Britain will again make Cardington available for the Championships.

Team Manager Balloting

Late in November AMA HQ sent out ballots for election of the manager of the U.S. Indoor Team, with a deadline of December 10. The ballot has only two nominees, Dick Kowalski and Joe Bilgri. It was originally announced that Bruce Paton had been nominated, but he was nominated by Bill Atwood. (The pertinent authority, the minutes of the 1962 Executive Council Meeting, says that nominations shall originate from the competition committee - in this case the FAI Indoor Committee)

Accompanying the ballot was a memo from Walt Good, detailing (two pages worth) the duties of the team manager of any FAI team. This is a very interesting document, and I wish there was space to duplicate it here. For anyone who would take this job lightly, I recommend a thorough study of this memo. It's very enlightening!

65 Cm. Span FAI?

The latest word from FAI Indoor Chairman Kowalski is that Great Britain will withdraw the proposal to reduce FAI Indoor Model span to 65 cm. From the standpoint of official action, it appears that there will be none at this time, and there will be no conflict between present

team's models and experience at the time of the World Championships.

On the U. S. scene, Dick Kowalski has received comments which total to be slightly in favor of retaining the present span. Mail comments to INDOOR NEWS is split about 60/40 in favor of 65 cm, and one flier has been quoted as saying the change to 65 cm is "inevitable." So, it appears the matter is far from dead, and the idea has built up quite a few followers. It seems that those who favor the smaller model are those who don't have a blimp hangar nearby - the 90 cm. model simply cannot be flown to advantage in about 60-70% of the active sites around the world.

GLIDER FLIERS BEWARE!!

If everything happens according to schedule, the next issue of MODEL AVIATION (well, anyway, the December one) will have the Detroit-Chicago-Wilmington proposal which is to eliminate "mike" soaring gliders from competition with the conventional IHLG. The text of this proposal was first printed in the November '61 INAV, and since has been printed on two NIMAS ballots. Once again:

Delete all wording under SECTION 13 (INDOOR HAND LAUNCHED GLIDERS), paragraph 13.3, and change to read as follows:

CONSTRUCTION: An indoor glider must employ components of solid wood throughout. No built up structure is permitted. It may be of conventional design, or of the flying wing type.

Beyond any doubt, this will accomplish the purpose of eliminating soaring type gliders with their freakish and unreasonable high times. This fact I noted, and turned my attention elsewhere until recently. Now, I note that the rule has one or two serious drawbacks. First, there is no provision for experimental structures or materials. Also, the phrase "built up structure" may need clarifying to be sure the conventional wing construction consisting of hard balsa LE and very light TE is not called "built up." Also, what about monofilament or thread on the LE? The wing obviously is not solid wood throughout! If you were planning on trying condenser paper covered styro-foam wings or paper covered built up wings or fiberglass fuselage or sheet balsa wings with stiffening ribs, just forget it! By the way, what about lead or clay nose weight? Must we use hardwood slugs? (Say! That's not a bad idea!)

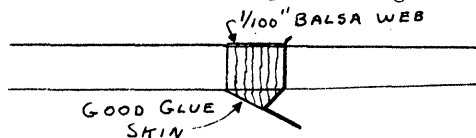
Actually, I may be out of order with the above, since the entire NIMAS membership has had two opportunities to express approval or disapproval of this proposal via the NIMAS ballots. However, many people negated their vote on the HLG part of the ballot by failure to follow the balloting instructions, and about 40% of the membership (many of them HLG fliers) did not return a ballot.

Consequently, if you consider this proposal to be unnecessarily restrictive or unwise, there is just one thing you can do about it. Write a letter to the Free Flight Contest Board member from your AMA District and ask him to vote against the proposal, giving your reasons why you think the rule is not the answer. If you want to be extra safe, send a carbon copy of the letter to Phil Klintworth (Contest Board Chairman). You can find the appropriate addresses in the back of your rule book.

HINTS AND KINKS

Tail Hook Revisited!

Some time back we sketched a tail hook similar to the one shown below, but with an important difference. We failed to show the balsa web so that the hook and the bottom of the web are a straight line. This is important to the idea of the hook - easy removal of a "loaded" motor. If the web doesn't extend to the bend in the hook as shown, the motor will hang on the bend and fail to come off easily. To remove a motor, even a fully wound one, just grab the knot and pull straight back.



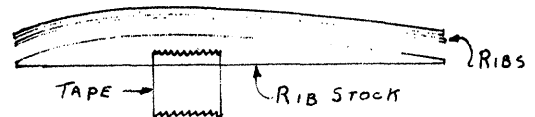
Another Stick Brace

The traditional method of reinforcing motor sticks at the area of the prop bearing and the rear hook has been to install a vertical web inside the tube. Now, it has been suggested that the web be extended through the stick about 1/64" as shown below. This gives additional strength to the joint and provides a "handle" to use handling the stick.



Rib Cutting Hint

One of the most annoying things that can happen when cutting wing or prop ribs is to have the stock slip just as you try to align the template for the next cut. If you use a small piece of cellophane tape to anchor the stock to the board (just a small piece of tape right at the back of the stock), it will be possible to make more accurate cuts. Also, it is possible to cut ribs from the stock until there is only a sliver left - very important if you have Scotch blood!



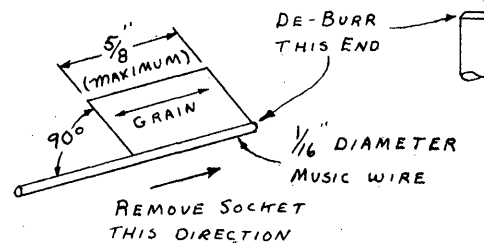
QUESTIONS AND ANSWERS

28. What is the best way to roll tissue tubes for wing sockets?

Rolling tissue sockets is mostly a matter of practice and timing. By timing I mean that once started, you must complete the job quickly and without hesitation. It is possible to increase your yield by careful attention to a few details. The first and most important is the wire form - use 1/16" music wire which has been polished with steel wool or fine wet-or-dry sandpaper. The end should be chamfered and de-burred as shown in the sketch below.

Careful preparation of the tissue will also make your job easier. First, don't make long sockets - 5/8" is as long as is ever needed, and longer sockets are difficult to remove from the form. Second, use jap tissue and be sure the grain is running lengthwise of the finished socket. Cut several pieces of tissue 5/8" wide and 1" to 1 1/4" long (grain running in the direction of the 5/8" dimension), being sure that the edges are square.

Now for the actual rolling operation. Put some thin glue on the form and lay the form on to the edge of one of the tissue pieces with the edges of the tissue perpendicular to the form as shown below. From now on you must waste no time. Check to see that the tissue is stuck to the form, spread a layer of thin glue over the tissue, roll the form forward so at least one layer of tissue rolls up on the form, pick up the form and twirl it between thumb and forefinger so the rest of the tissue rolls up evenly. Continue twirling until the end of the tissue sticks down and the excess glue is squeezed out. Immediately push the socket off the form and let it drop to the table. If you hesitate, the glue at the end of the form will make it stick. If you start with the piece of tissue right at the end of the form, the tendency to stick will also be reduced. That's all there is to it; except be sure to clean the form before rolling the next one. The finished sockets must dry at least an hour over a lamp or overnight before they are cut to length. When you cut them to length, trim one end and then cut the length so both ends will be sharp and square.



RECORDS? MAYBE!

S.H.O.C. SANTA ANA CONTEST - November 10, 1963
CATEGORY III, Santa Ana MCAF Hangar, 180'
Open C Cabin - 29:06.3, Joe Bilgri

LAKEHURST RECORD TRIALS - October 6, 1963
CATEGORY III, Lakehurst #6, 170'
Senior Helicopter - 6:45.6, Edmund Smith

CHICAGO AERONUTS RECORD TRIALS - November 30, 1963
CATEGORY II, Madison Street Armory Drill Hall, 75'
Senior Paper Stick - 13:48.6, Dave Erbach

NEWS FROM AROUND THE WORLD

CALIFORNIA - SANTA ANA

The post-Nats letdown seemed to have let up somewhat and the attendance at the November 10 was larger than the previous two sessions. Bill Atwood and Frank Cummings were testing new FAI ships, but Joe Bilgri stole the show with his record cabin flight. He was assaulting the mark with two models at once, but the reserve model stopped with only 27:31!

ENGLAND - COVENTRY

Arthur Barr reports that a search is on to locate all the airship sheds that were built in England and find if any are still usable for indoor. It appears that there were at least 20 of them, and Tom Chambers has devoted a lot of research on these sheds toward an article for Northern Area News, a very well done model newsletter.

ILLINOIS - CHICAGO

The Madison Street Armory was almost crowded November 30, as about 20 modelers showed up with models ranging from HLG to ornithopter. The air temperature inside the Armory was about 50 degrees all day, which doubtless is one reason only one record (see RECORDS? MAYBE!) was set. Pete Sotich says the next Record Trials is scheduled for December 28, 1963.

INDIANA - KOKOMO

Sixteen contestants turned out for the November 17 contest at Bunker Hill AFB. Five Juniors and eleven Sr.-Open contestants entered Paper Stick and HLG, with top time by Ed Hughey's Paper Stick entry - 12:39.2. Junior Paper Stick was won by Tom Ersted with 6:39, and Dick Robison won Jr. HLG with 0:31.5. Meredith Chamberlin and Bob Larsh tied solid in Open HLG with 0:40.0, while Sr. John Moss was right behind with 0:38.6. Their next contest will be December 15; events HLG and Easy B. CD - Chuck Borneman, 1401 West Taylor, Kokomo.

LOUISIANA - SHREVEPORT

Mark Valerius reports the boys in Natchitoches have an offer of sponsorship and site with a 60' smooth ceiling. Preliminary plans involve a contest in January if at least 15 contestants indicate interest. If you are if this one comes off, it might be the start of inter-city contests in the South, for the first time since before World War II.

MASSACHUSETTS - M.I.T.

The November 12 session in the MIT Armory was well attended, but there weren't any record breaking flights. That is, unless you count the number of times Eric Greenwell's electric model bounced off the walls! Their next session will be on January 18, and those who plan to come would be advised to contact Eric at Box 5031, 362 Memorial Drive, Cambridge 39, Mass. The Armory is on the corner of Massachusetts Ave. and Vassar St., and the time is 4:30 PM to 8:30 PM.

MICHIGAN - DETROIT

Although the teen dances are no longer being held in the Coliseum, some of the associated trappings are still up - enough to discourage any serious flying. Ed Stoll has been trying to get permission to try out Cobo Hall, which is one of the finest convention facilities in the city. If it can be used, it might be the best Cat. II site in the country. Or, it might not. The floor area is 500' in diameter and the usable altitude is 90', but there is some doubt about the air stability because of the air conditioning system.

MISSOURI - ST. LOUIS

Thanks to a lot of effort by Ed Veselsky, the Kirkwood Thermaleers have fairly frequent access to a 20' gym which has a pretty clean ceiling. At the first session, Carl Fries led the bunch with an Easy B flight of 4:47.

Carl says they plan their first contest sometime in January, and Carl will be happy to furnish more details as soon as they are decided. Carl's address: 8798 Sturdy Drive, Crestwood 26, Missouri.

NEW YORK - ORANGEBURG

If Sid Bernstein can arrange a usable schedule, he hopes to set up some Cat. I sessions in the Rockland State Hospital gym. The gym is impressive, with the 33' flat ceiling and 80' x 150' floor area, but they had some drift problems last year. It's still a really fine place to fly, so check with Sid c/o Research Facility, Rockland State Hospital, Orangeburg, New York.

NEW ZEALAND - AVONDALE

Good conditions and excellent flying came together in the 40' hall in Hamilton where a recent flying session was held. John Malkin's new FAI turned 14:38 to upset a 26 year old record of 13:15.2, and Jack Eriksen flew a 110 sq. in. model to second place time of 13:54.4. The New Zealand fliers are getting much better, and this is shown by the top four flights of the session - all of them are over 10 minutes.

TEXAS - DALLAS

The November 24 indoor session in Arlington was postponed by the untimely death of President Kennedy, so the Cliff Model Club plans to try it again on December 15. The site is the new Arlington Recreation Center, just off Abrams Rd. in Arlington. Time from 2 PM until 6 PM.

WASHINGTON, D. C.

The D. C. Maxecutors of Washington, D. C., is a new FF club which is presently concentrating on indoor. The boys flew to a top time of 2:45.4 in their meeting room, which is pretty good for an 8' ceiling! Contact Bill at 5131 Massachusetts Ave., NW, Washington, D.C. 20016 for information about this group.

STATE OF THE ART

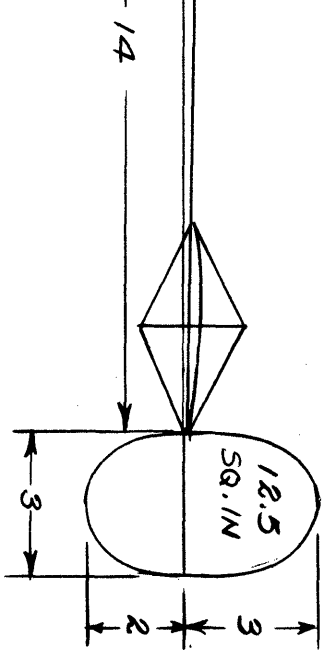
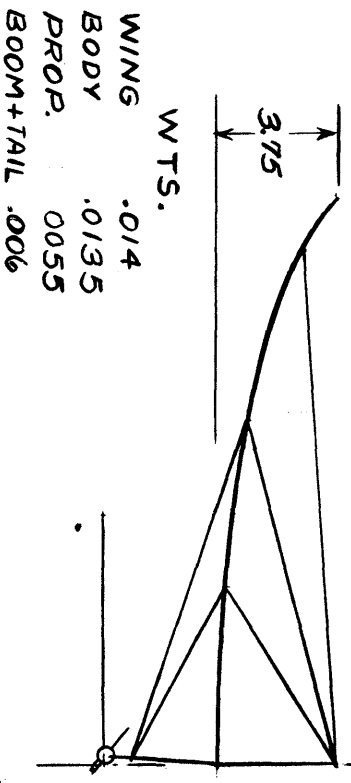
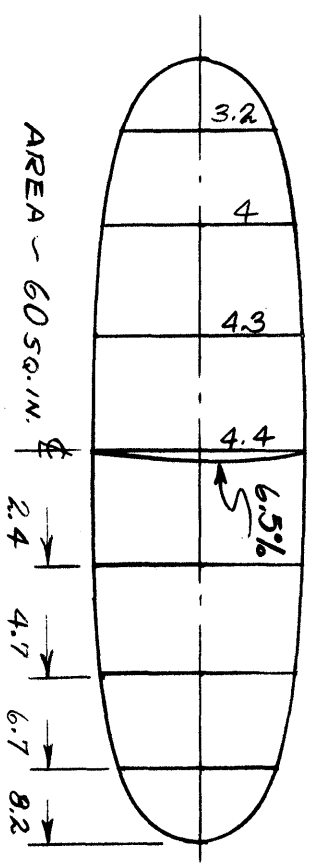
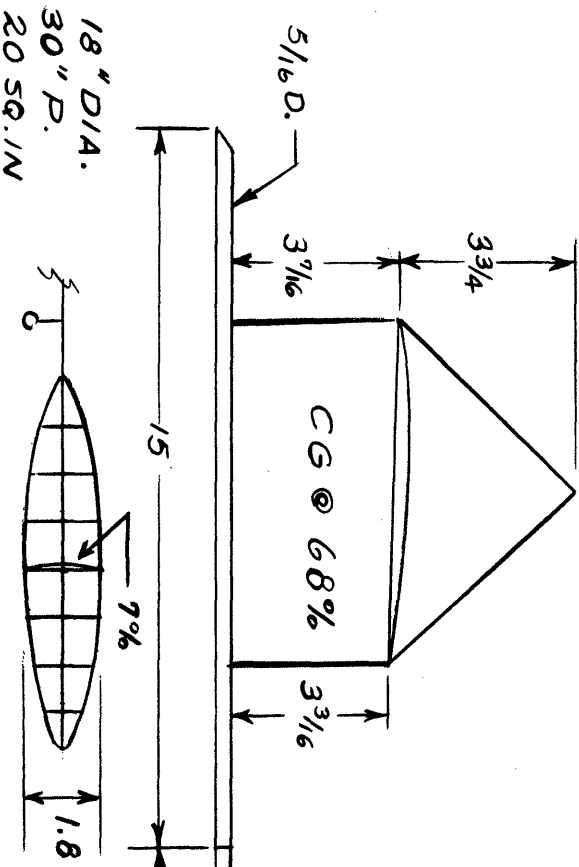
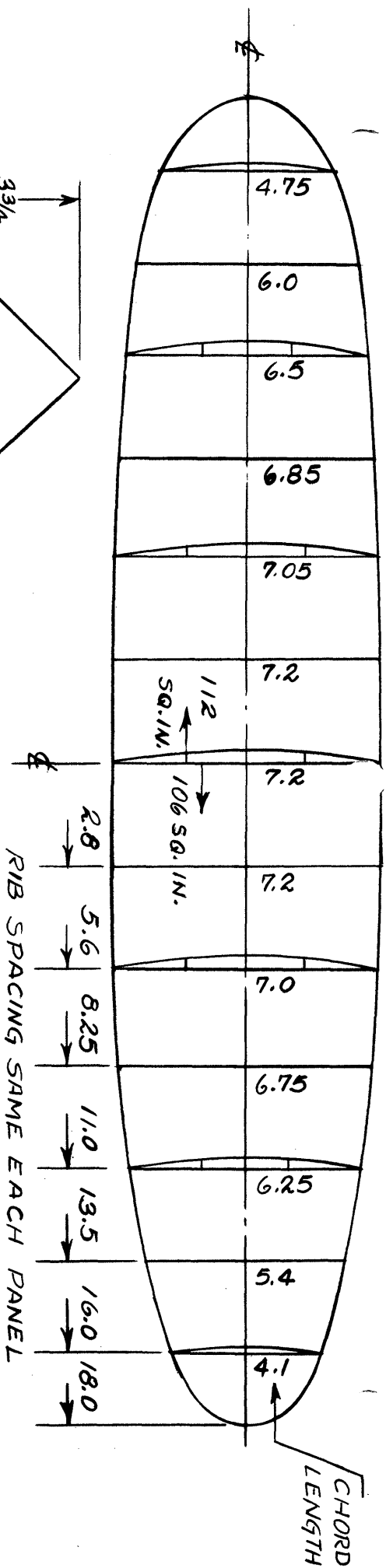
This month the featured model holds the Cat. III D Stick record even though it is only FAI size. Designed and flown by Ernie Kopecky, the model logged the highest single flight time at the FAI Flyoff last August. Ernie gives the following design background information: The left wing chord is wider for torque control in lieu of wing offset or wing wash, in the interests of higher efficiency. Ernie experienced difficulty in handling the power burst in an earlier model, but the problem was solved by using the offset fuselage brace similar to the one used by Reike on his World Championship model. This overcame the earlier tendency to fly straight under the burst, and kept the turn constant throughout the flight.

Contrary to common practice, the winning flight used rubber equal in weight to the model. Ernie compares the flight patterns of 1:1 power/weight ratio models to those with 1.3:1 and 1.5:1 ratios thus: "I noticed the models with 1.3 to 1.5 ratios would go up fast, stay in the danger area longer and take 1/3 the total time coming down, whereas the 1:1 model takes about 2/3 the total time coming down and thereby utilizing the air space more efficiently."

Ernie tells the following story of the flight and his part of the Flyoff:

"At the FAI contest I was both lucky and unlucky. Lucky to complete a flight with the model bouncing off the girders for a record. The second attempt ended when a fully wound motor collapsed the stick and cracked the prop spar. I suspect I nicked the stick with my thumb.

Model #2 was tested and looked to be more promising than the first. That is, for the same power as the first model which used an 18 x 30 prop, the second flew with an 18 x 32 prop. To get a second official time on the record I made a flight with 2/3 winds for 31 minutes, and it gained only about 70 feet of altitude. Full turns were put in for the third and final official of the day. On the basis of the 31 minute flight, I calculated about 47 minutes with about 12 minutes to peak height. The model was launched and to my dismay, in 6 minutes it was on top and finally hung up in 11 minutes. Scratch #2 and flying for the day. That night I repaired the stick and splinted the prop on the record model. During testing and flying the next day the stick held up but I couldn't get the prop to perform well. I couldn't get the model over 80' and the best time I could get was 34:08."



FAI FINALS ~ 1963
 LOS ALAMITOS, CALIF.
 ERNEST KOPECKY

43 min. 42 sec. ON 2600 TURNS "SUPE-A-LUBED"
 .039 + .039 MOTOR (18" DRY) = .078

Leo Baskin