MODEL BUILDER

FEBRUARY 1977

volume 7, number 62

$1.50

It's getting to be a habit with these two.

RHETT MILLER III

MRC-WEBRA SCHNEURLE SPEED .61TV (1024)

COMPETITION UPDATE
LAS VEGAS, NEVADA
NOVEMBER, 1976
CIRCUS CIRCUS
TOURNAMENT OF CHAMPIONS
Webra Speed .61 (1024 RC)
Places 1st, 2nd, 3rd, 4th.

WINNERS OF 1975 AND NOW 1976 NATIONALS

For the second successive year the controllable power and high performance characteristics of the MRC-Webra Speed .61TV and the talents of Rhett Miller III have joined forces to win the Nationals Pattern Championships.

No mean feat, two consecutive National Championship wins is proof positive that these two are the best in and on the field.

This year as last, when the best fliers and engines are gathered together, it's the Schneurle Speed .61 from MRC-Webra that proves its superiority with flying colors. Solid idle, minimum vibration and consistently reliable performance all add up to a winning habit.

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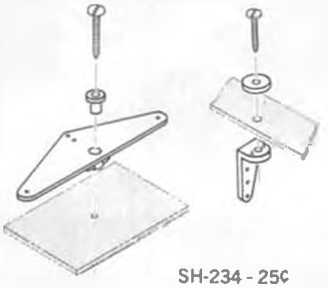

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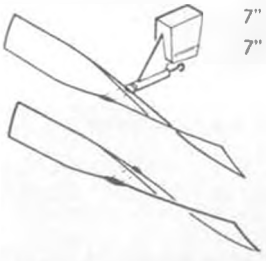

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CATALOG 36

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SIG MANUFACTURING CO., INC

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KRAFT SIGNATURE SERIES

The Signature Series is the world's first and only radio control system developed exclusively for the serious enthusiast. The areas of design, technical innovation, control flexibility, component quality, and limited custom production have been coordinated to produce the ultimate product. Although the Signature Series must be used to be fully appreciated, some of its features will be discussed in the following description.

Transmitter

To achieve the desired goals of programmability, accuracy, and repeatability, it was first necessary to develop an entirely new encoder concept, the multiplexed linear ramp encoder.

Because of this new encoder, it is now possible to switch select the direction of movement of the primary transmitter control functions. Consequently, servo installation is greatly simplified and the direction of servo rotation becomes unimportant eliminating the need for selection and multiple servo spares.

In today's competitve flying, the finest degree of control response is of extreme importance. To enhance controllability, the amount of control movement and, therefore, sensitivity may be switch selected in the Signature Series transmitter for a higher or lower rate. For violent maneuvers, a high control rate is selected and conversely, when maximum smoothness is required, the lower rate is selected. The low rate control movement may be adjusted in the transmitter to be up to 50% less than the high rate control movement. The amount of control movement in the high rate position may be adjusted up to ± 10%. Therefore, the response of the aircraft to control inputs may be fine tuned to perfection even while flying.

Also, as an example of convenience, the need for tedious mechanical adjustment of throttle throw and setting is eliminated as this is now easily accomplished by adjusting the control throw in the transmitter.

To further enhance control predictability, controls may be preprogrammed and adjusted to a push button selected degree of travel. Examples of these controls are slow roll, throttle retard, and spin control buttons.

Even the retractable landing gear channel is adjustable to give the exact amount and direction of throw necessary for mechanical locking.

Because each Signature Series system is custom produced, the purchaser may select the control functions and rate switch and push button locations to his personal preference.

To complement the sophistication of the encoding and control system, a highly efficient plug-in radio frequency module has been developed. This permits instant frequency changing to any legal R/C frequency on any band. This also assures that the transmitters will not be obsoleted by possible government changes in R/C frequency allocation.

To assure that the inherent electronic system accuracy is maintained, expensive instrument quality control potentiometers are incorporated in a special control stick designed for smoothness of feel and perfect centering.

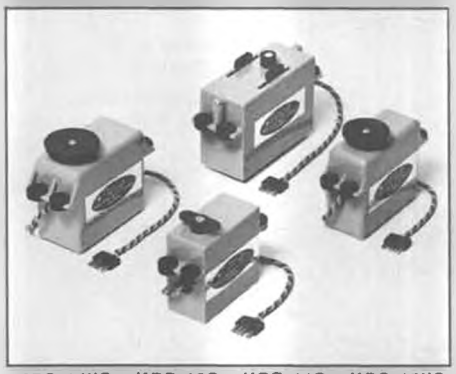
For convenience and safety, the transmitter features a dual meter which normally reads transmitter battery voltage on an electronically expanded scale on the left-hand meter movement, and relative R.F. output on the right-hand meter movement. In addition, a cable is provided which when plugged into the appropriate receptacle on the bottom of the transmitter and receiver charge receptacle, automatically switches to the proper expanded scale for an accurate indication of receiver battery voltage. Both receiver and transmitter battery voltage checks are made under designed-in loads.

KPR-7D KPR-7L KPR-7C

Receivers

Three different receivers are optionally and interchangeably available for use with the Signature Series. Unless otherwise specified, the standard receiver is a highly refined dual conversion unit. The dual conversion design eliminates image frequency responses which are sometimes troublesome in certain areas.

Alternatively, if the plug-in quick change frequency feature is desired, the KPR-7C receiver is available. This is a single conversion receiver featuring two 4-pole ceramic I.F. filters for improved adjacent channel interference rejection and constant bandwidth regardless of signal strength. Note that the frequency change is accomplished by interchanging a complete R.F. section matched and tuned to suit the individual components and not an unreliable plug-in crystal.



KPS-14IIS KPS-12S KPS-11S KPS-15IIS

The third optional receiver is our new ultra-miniature lightweight design (the KPR-7L) with the same circuitry as the KPR-7C but without the plug-in R.F. module feature.

Servos

All servo types feature our exclusive proprietary integrated servo amplifier. These electronics provide instantaneous servo response with full power even at small control movements. Positioning accuracy is ±.25% and they are virtually drift free from 0 to 140°F. The Signature Series servos are specially selected units from general production to a linearity and control movement accuracy of 1%. Thus the contest flier can interchange servos without the necessity of retrimming his aircraft.

Direct Servo Controller

Battery Packs

Any of the broad line of Kraft battery packs may be optionally selected with the Signature Series. Additionally, as an optional accessory, the automotive type charger is available to permit field recharging from an automobile.

Direct Servo Controller

The direct servo controller enables the modeler to operate control functions and make engine adjustments easily and safely without interfering with others or being interfered with.

WRITE FOR FREE CATALOG

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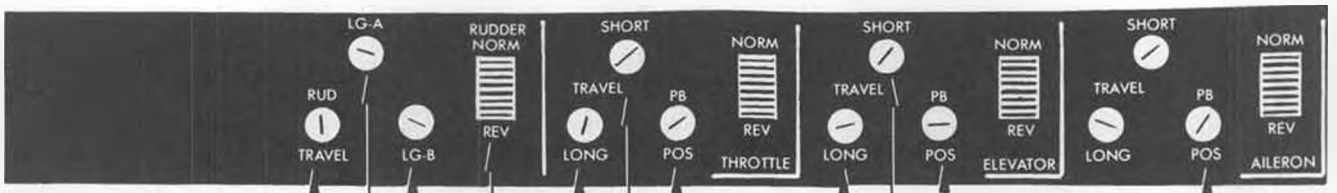


Adjusts travel of rudder servo approximately ± 10%. Dual rate not available on this channel.

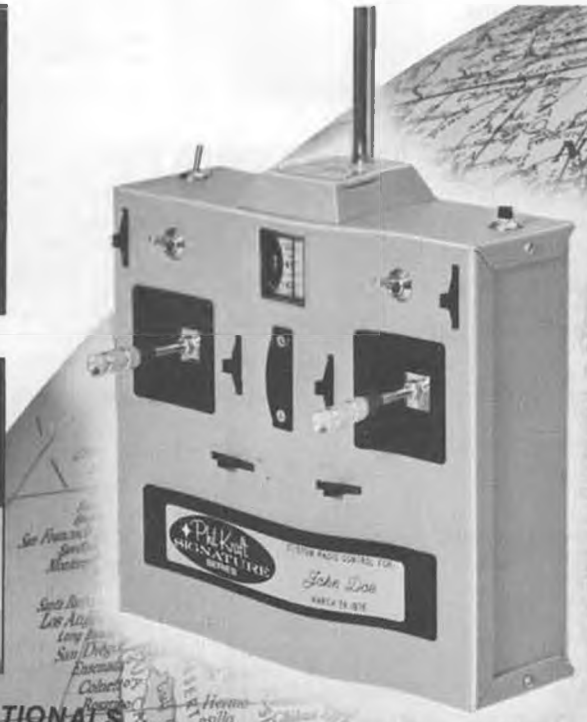
These four switches determine direction of travel for controls specified.

Four turn instrument quality pots provide smooth, precise adjustment.

Adjusts pre-determined control position selected by a push-button control. This could be, for instance, a slow roll switch, a spin button, or low speed throttle button. This control is customer specified. Push-button control selection may be requested as an addition to the dual rate controls. In other words, you may select both control options if desired.

These adjustments control both the direction and amount of travel of the retractable landing gear servo. Since over-all travel can be increased, a special 180° servo is not required to ensure positive locking action.

These adjustments control the amount of servo travel. The "long" or normal position of the dual rate selector switch may be adjusted for a variation of travel of approximately ± 10%. The short travel position of the dual rate selector switch may be adjusted to select a reduction of up to 50% from the long or normal travel. Servo neutral is not affected by these adjustments.



FOUR-TIME CONSECUTIVE NATIONALS CHAMPION — RHETT MILLER

TRULY A REMARKABLE ACHIEVEMENT!

KRAFT SYSTEMS, INC.

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November 1971

Nancy, R/C soarer.
R/C Pattern World Championships.
Peanut Fokker D VI.
LSF Tournament story.
Bi-Prentice, R/C bipe trainer.

Vol. 1, No. 2 $3.00

December 1971

Curtiss-Wright Junior R/C 2" scale.
R/C Twin Trainer 75" span, for .40's.
Peanut Laird LC-DC.
Volksplane 3V-1 3-views.
How to build light "wire" wheels.

Vol. 1, No. 3 $2.00

January 1972

SHOCer F/F by Mel Schmidt.
White Trash, famous R/C soarer.
Peanut Ord-Hume.
Chet Lanzo's famous rubber Puss Moth.
Curtiss Robin 3-views.

Vol. 2, No. 4 $1.00

February 1972

Minnow U/C profile scale racer.
Fokker E-III R/C scale.
Al Vela's E-Z Boy 1/2A
E-Z Boy 1/2A, Al Vela.
Peanut Ford Flivver.
Fiberglassing over balsa, by Le Gray.
Spoiler, FAI Combat.

Vol. 2, No. 5 $3.00

Mar/April 1972

Yankee Gull R/C glider 8' to 12' span.
Miss Cosmic Wind, QM R/C Pylon racer.
Peanut Scale Bucker Jungmann.
Siebel 1/4A F/F scale.
Mr. Mulligan 3-views.
FAI power "Folder."

Vol. 2, No. 6 $1.00

May 1972

Seahorse II, R/C sea-plane. For .19-.35.
D.H. Humming Bird, F/F or R/C pulse.
Peanut Fokker V-23.
Whetstone 1/2A U/C combat.
Ryan ST 3-views.
Tethered Cars, R/C sail.

Vol. 2, No. 7 $2.00

June 1972

Bob White Wakefield.
Mongster QM biplane R/C pylon racer.
Calif. Coaster R/C glider. Sheet wing.
Three profile Peanuts.
Deperdussin 3-views.
Pesco Special 3-views.

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July 1972

Fairchild 51, 1" scale, R/C or F/F.
SAM-5 A/2 Nordic.
1912 Avro G rubber.
Comanche C stand-off R/C scale.
Travelair 2000 2" scale R/C, by Editor.
Chester Jeep 3-views.

Vol. 2, No. 9 $4.00

August 1972

Bonzo stand[illegible] R/C sport pv[illegible] scale.
Counterf[illegible] ailless A/1 [illegible]ic.
Shoes[illegible] R/C QM.
Pear[illegible] aylorcraft on [illegible]ts, also big one.
Fairey Delta 3-views.

SOLD OUT

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Profile F4U Corsair C/L stunt, .40 power.
Beecroft's Satan, Class A free flight.
Indoor Ornithopter.
Peanut Travelair 2000
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Thermal hunting with R/C gliders.

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April 1973

Fabulous PEA POD, R/C sailboat.
Briegleb BG-12, scale R/C soarer.
R/C Spirit of St. Louis, semi-scale, .049-.09.
Peanut Volksplane
Finish painting of rubber scale models.

Vol. 3, No. 17 $3.00

May 1973

Bantee mini-pattern R/C 3channel, .19 power.
Woodwind A/2, all sheet covered wing.
Slope soaring technique.
Teakettle, twin-boom CO_2 pusher.
Peanut Monocoupe 110.
Aerbo, .020 Replica, OT

Vol. 3, No. 18 $1.00

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MODEL BUILDER

FEBRUARY

1977

volume 7, number 62

621 West Nineteenth St., Costa Mesa, California 92627

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Second Class postage paid at Costa Mesa, Calif., and additional offices.

CONTENTS

FEATURES

SCALE VIEWS

CONSTRUCTION

Cover: Perhaps this tranquil scene will help our snow-bound readers through another winter! Charles Chomas, of Burlington, Ontario, Canada, built the 9 foot span J-3 Piper Cub from Sid Morgan plans. The Edo-type floats were designed for the Cub by Mr. Chomas, and these plans are also available from Sid's Vintage Plans service (see page 102).

WOULD YOU BUY A RADIO CONTROL SYSTEM FROM THIS MAN? The picture was taken in 1957 at Sepulveda Basin, outside of Los Angeles (sure looked spacious in those days!), and was published in the October 1957 issue of M.A.N., along with a construction article for the model, called the "Upstart", designed by the gentleman in the photo. It had taken 1st place in 3 out of the last 4 contests entered, at the time of the article. Yup, it's Phil Kraft.

from Bill Northrop's workbench . . .

LOOK OUT, DETROIT!

Aircraft modelers occasionally decide to expand their horizons into full-scale aircraft construction. The knowledge about aircraft gained from building models is surprisingly helpful.

MB's Editor is also embarking on a full scale project, but not of a flying nature. It's called an antique replicar. A company in Buffalo, N.Y. produces kits for four different classic antiques which are designed to be used with a VW "Beetle" chassis. The basic kits include fiberglas bodies in five different gel-coat colors, jigged and welded frames and rails, fenders, headlights, seat and bulkhead plywood parts, and miscellaneous gadgets.

The kits currently available include a 1927 Begatti Type 35, a 1931 Alfa Romeo, a 1934 Frazier Nash, and a Le Mans type Bentley Phaeton. The first three are about scale size, but the Bentley is probably around 2/3 to 3/4 size, as the original was a big automobile.

Our choice is the 1931 Alfa. It'll have cycle fenders all around and probably 19 inch Model 'A' wire spoke wheels (on adapters). We already have a 1967 VW chassis, and will start to disassemble, clean, and paint it very soon.

We'll keep you posted on the progress. Maybe it'll be ready in time for the 1977 Nats, which is only about 60 or 70 miles from home this year . . . for a change.

SPEAKING OF NATS . . .

By the time you read this, you probably already know that final confirmation is in, and the 1977 Nationals will definitely be held at March Air Force Base, near Riverside, California, August 7 through 14. It is the first West Coast and/or California Nats in 10 years, and District X and XI AMA members in particular are really looking forward to it. A whole new generation of West Coast modelers will be entering the variety of events.

Long before final confirmation was received in late December, leading West Coast modelers and contest organizers were making plans, schedules, maps, etc., in preparation for what was 99.99% sure to happen. The final confirmation hardly caused an eyebrow to be raised, among those who are already working hard to make everything run smoothly.

WHAT NOW, FCC?

The pot (no, Nature Boy, not *that* kinda pot!) has really been stirring in Washington, and for once, it comes out smelling tasty to modelers using radio control equipment. To make a long story short, the FCC has suspended any further collection of license fees. You read it right . . . AS OF NOW, YOU CAN OBTAIN OR RENEW YOUR CITIZEN'S BAND RADIO CONTROL FCC LICENSE AT NO CHARGE!

This means one important thing to all modelers and R/C clubs . . . apply for your *individual* radio control licenses now! The FCC is already impressed with how clean the radio control modelers' nose is, now we must show it how many noses we have!

It only takes 13 cents, an envelope, an FCC Form 505, and about 5 minutes (assuming you can spell your name and know where you live!) to get the job done. As obtaining the form could cause you undue strain, Model Builder will attempt to reproduce two copies of Form 505 in the center spread of next month's issue (March). Fear not, faithful Peanutters . . . this will be an easily-removed, 4-page pull-out that will leave our monthly Peanut Scale plan undisturbed and in its full size glory! Remember, we said "attempt", but at this point, it seems very likely that we can do it. The FCC permits this type of reproduction and considers the form to be just as legal as one coming from the government printing office.

Even if we don't succeed in providing you with the form, order some from AMA, or from your local or district FCC office and GET YOUR NOSE COUNTED.

Another bit of news from FCC headquarters in Washington: The Commission has adopted changes in the naming of the Citizen's Band Radio Service, and in the process, given R/C its own name and category. As of January 27, 1977, the overall Citizens Radio Service has been changed to Personal Radio Services; Class A has been changed to General Mobile Radio Service; Class C (us!) has been changed to Radio Control (R/C) Service; and Class D Citizens Radio Service (the Garbage Banders) has been changed to its popular (?) name, Citizens Band (CB) Radio Service. Best part about this is that future rulings applied to CB will not affect every facet of CB as it has in the past, but only the Class for which it is intended . . . another fair shake for the R/Cers!

SIOUX OR NOT SIOUX

Last month we excerpted an item from the November issue of the Palm Beach (Florida) Aeronauts' newsletter, written and edited by Fred Komlosy.

This month we quote his follow-up item in the December newsletter. It is self-explanatory.

"A little research can be a dangerous

Continued from page 102

"...THREE if by AIR"

(Letters to the Editor)

Dear Ed,

The reference to "a most unusual airfoil" by Dr. Larry Fogel on page 26 of the November 1976 issue . . . reminded me of a related clipping in my aeronautical file (pile!). Excavation commenced and the enclosed yellowing parchment was found several feet down several days later (Clipping about the Fogleman-Kline "flat-top" airfoil developed for paper airplanes. wcn)

It appeared in the Morris County Daily Record, April 24, 1974. I note the disparity in the patent number, graphically illustrating their moniker, "The Daily Error." But I digress.

I recall that about this date late one afternoon I witnessed flight attempts of a model having a similar airfoil. It was built by the airplane "expert" ("ex" = has been, "spurt" = drip under pressure) of the now defunct Rich's Hobbytown. The test aeroplane resembled an H-Ray; it had trike gear; the fuselage and empennage appearance suggested prior experience.

John Atwater, field owner, whose R/C experience dates back to escapements, Bruce Russell, field supervisor and mentor to most of the flyers, and I stood discreetly at one end of the pit area while the "expert", Fogleman, and the entourage performed exhaustive preflight checks, duly interspersed with profound bits of unadulterated EBS.

Atwater Field was, on that date, a 300 foot circle of closely cropped natural grasses whose topography included a number of accommodating mounds that bestow flight upon marginally powered craft. On this historic moment the wind was nil, as I recall. Unlike Kitty Hawk, photographers were absent, and benignly so. Ditto for network TV crews.

While I sense a facility with the language (and have been surreptitiously accused of slight degrees of redundancy and pleonasm in my tautological excursions, including ephemeral tendencies to prolixity and periphrasis) I was utterly at a loss for words. Would you accept zero, zip, zilch, nuttin?

The small craft seemingly explored every corner (it was a circular field, remember?) apparently seeking an obliging hole of adequate dimensions to avoid a post-performance press interview. If any proclivity for "slipping the surly bonds of earth" was exhibited, it was due solely to the spring temper of the nose wheel strut.

The three of us retreated to our cars, politely avoiding the display of our misanthropic smiles. Moments later dusk gently dropped an understanding curtain around their decimated pride and crumpled dreams.

Noting the more closely manicured grass, courtesy of a vainly laboring propeller, and recalling the Wright Brothers' historic communique to Dayton, I was tempted to volunteer the transmission, "Don't sell the mower business; home for April Fool's." That cross-section on page 26 might serve as a rotary mower blade, but a wing . . . ?

How would you get any strength in that section, or a flyable strength-weight ratio? The "expert's" maximum depth was about 15-20% of chord; T.E. was about a 1/4 inch thick. I do not recall L.E. configuration. Upper surface was flat; I will not speculate on incidence angle(s). The wing was straight, no taper, no dihedral, no ailerons, no flaps, slots, spoilers, etc., with a constant section.

I recall some talk of wind tunnel testing. Perhaps the patent application reports results that suggest promise for the proposed configuration. Your article sheds no light on its theory or performance. Surely supersonic airfoils do not derive from parlor paper planes. If so, NACA/NASA and the Patent office must be asleep.

Assuming, for the moment, the above stated reservations are surmounted, how can the section contain the necessary mechanisms to alter the airfoil to a workable sub-sonic section for T.O. at a tremendous wing loading, and landing at feasible speeds? Until I hear more details to answer some basic questions, this amateur's tongue is thrust well into a skeptical cheek.

We have noted the lush green grass restricted to an "historic" end of the pits!

Begging you to elucidate for the sake of New Jersey history, and almost-consecrated Atwater Field.

George A. Polk

Just another example of an invention that "only worked on paper."

* * *

Dear Bill: 6:15 AM 12-27-76

Just finished reading your latest "Workbench" article for the second time, because I woke up this morning remembering something.

You quote Fred Komlosy, as saying in his N/L "No Nieuport 17 ever had a Sioux Indian Head painted on its sides." In Air Enthusiast Quarterly No. 2, page 137, heading photo, there is a photo of four Nieuports of the Escadrille Lafayette. Two of them are 17's with Indian Heads painted on the sides. This article is one that was obviously unknown to Fred and to you.

Best apologize to Lou Proctor and maybe even to Guillow and VK.

It just goes to show that almost any definite statement can get you in hot water. And that a little *research, like a* little *knowledge, can be a dangerous thing.*

Best wishes for the new year,

Walter E. Mooney

P.S. I just wish you wouldn't louse up my beauty sleep.

See this month's "Workbench" for Fred Komlosy's retraction/correction, published in his December '76 Palm Beach Aeronauts newsletter. It looks as though you and Fred are still one Nieuport 17 Sioux Indian Head apart. So you shouldn't lose any more sleep, I'm sending you Fred's address so you can work it out between you. For heaven's sake, let us know the outcome, or we'll *all* start losing sleep!

* * *

Dear Bill:

While reading through your December issue I came across another letter telling me I should patronize my local hobby shop. I know you feel very strongly about this but please hear me out.

Here in my area, we have two large hobby shops and at least two in N.Y.C. The two here are hardly what is portrayed as a helpful friend. One could care little less about anything but making a buck. His present staff, as often in the past, knows very little about the details of our hobby. The other is so hyper about shoplifters that he has no time for advice. He is strictly "give me your money and go." Would you shop in a store where you knew you were getting B.S. answers, or the other where you're treated like a thief? I wouldn't mind paying the prices if I could get honest help.

Prices bring another thought to mind. Both of the above mentioned stores discount. When shipping is taken into account, the mail order houses are no cheaper. Yet with them, if I ask a question, in most cases I get the right answer.

I'm afraid that this isn't a local problem either. My business makes possible my visiting of hobby shops across the country. In most cases, the local dealer is only interested in your dollar. As long as these people maintain this attitude, a lot of us will shop through the pages of your competitors.

I can appreciate what you're trying to do by not selling space to the big mailorder houses. It is a very noble idea, but I'm afraid you're on your own Don Quixote crusade. Until the locals come around, a lot of us will keep going to the mail biggies.

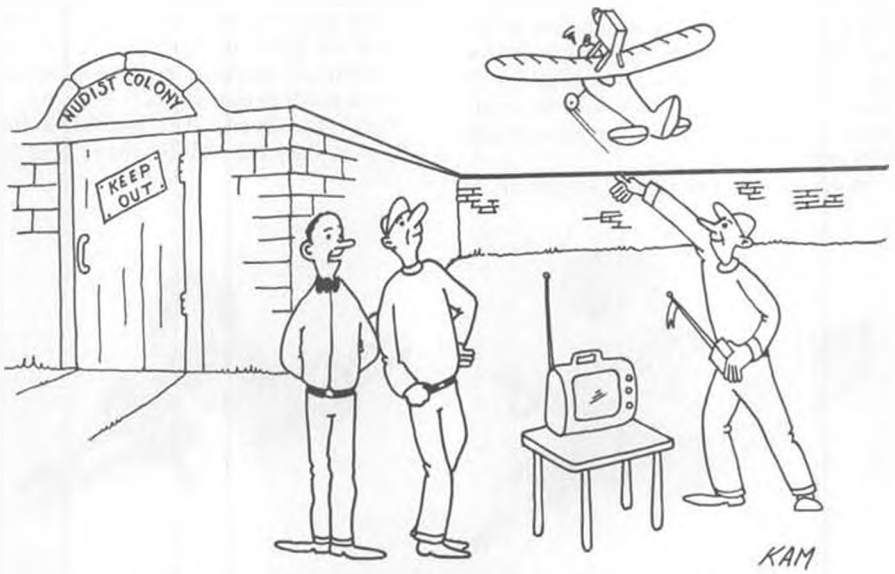
In parting, let me thank you. In 1964 Walt Good and yourself were guests of Howard McEntee's at a NJRCC meeting. At that meeting, you took five to explain the workings of the then new Orbit 3+1 to me. I remember that kindness whenever a newcomer asks me a "dumb" question. May you and your family have a Merry Christmas and a good New Year. And keep that magazine the way it is.

Sincerely,

K. G.

We'd like to receive comments from other readers (both dealers *and* customers) on this

Continued on page 89



LET'S STICK AROUND AND WATCH T.V.!

OVER THE COUNTER

Miniature Expanded Scale Voltmeter, from Ace Radio Control.

• We at MB are always impressed by new products that, regardless of what they are called, can be spelled: "Flying Safety". And we feel very strongly that any of these items more than pay for themselves the first time they save you an instant re-kitting.

Such an item is the Ace Flight Pack Mini ESV (Expanded Scale Voltmeter). Properly used, this test instrument will stop you from launching your favorite craft with a critically discharged battery, or one with a defective cell.

It is small, merely 1-1/2 x 1-1/2 x 3/4 inches, and the meter face is color code for easy reading. In use, the meter is plugged into the charging jack for your flight battery, and any indication in the red means that your battery is below 4.6 volts, and needs a charge or is otherwise defective. This test is made under a simulated operating load of 200 milliamps.

Because of the wide variation in charging plugs in use, none is furnished, and one has to be provided to match your particular system.

Priced at only $8.95, a cheap price to pay for flight insurance. From Ace R/C, Box 511 Higginsville, MO 64037.

* * *

If you are a boat or seaplane enthusiast, you can stay friends with your favorite radio manufacturer only if you keep your radio dry. Which means you need a waterproof radio box . . . which means you need K&B's new Push Rod Seal.

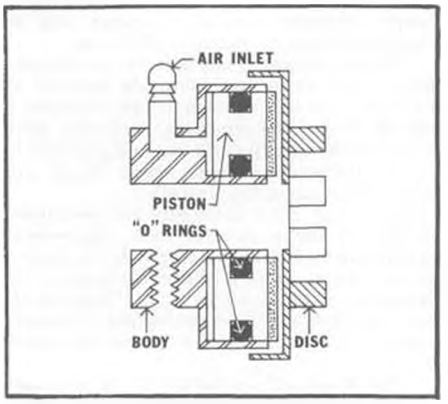
Simple, but 100% effective, these corrosion resistant brass seals are available in two sizes, for 1/16 and 1/8 pushrods. The seal itself is an internal 'O' ring, securely held within the fitting. A drop of light oil is recommended at the point of pushrod entry for better seal and no-drag operation.

For 1/16, specify Part No. 8588; for 1/8, it is Part No. 8589; either is only $1.25.

Push Rod Seals for water-proof R/C installations, by K&B.

New "Family Size" bottle of Hot Stuff, by Satellite City, on left.

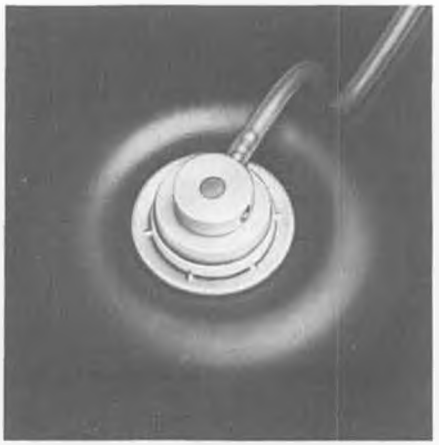
Your favorite dealer should have these in stock by this time. If not, send your inquiry direct to Bobby Tom, Customer Service, K&B Manufacturing Co., 12152 Woodruff Ave., Downey, CA 90241.



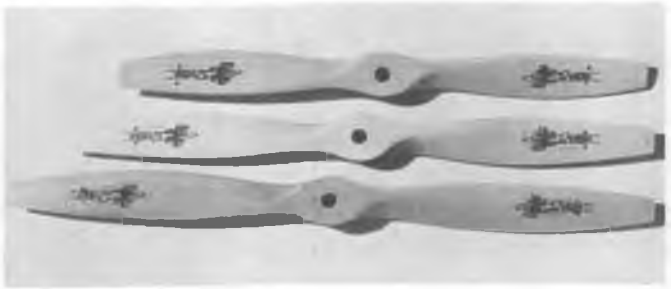
Section through pneumatic wheel brake by Sonic Tronics.

New series of mufflers by Tatone.

New Cox .049 muffler by Tatone.



Pneumatic wheel brake by Sonic Tronics is called "Taxi-Master".

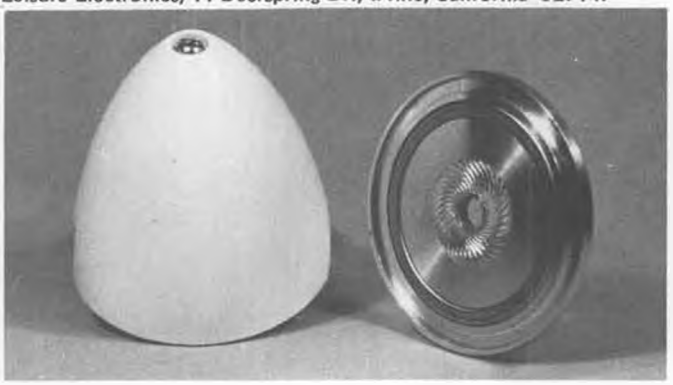


"Zinger" 'True Pitch' props by J&Z Products.

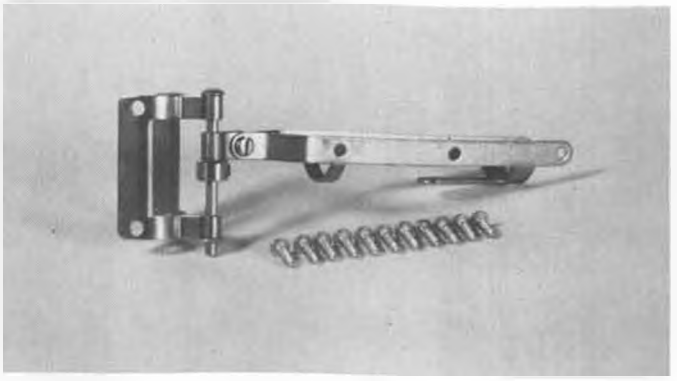
"Formula V", a 39 inch deep vee boat for .40 engines, by Wardcraft.

Spare parts items for 1/8 scale electric race cars are available from Leisure Electronics, 11 Deerspring Dr., Irvine, California 92714.

Sport Scale R/C "Hiperbipe" for .40 to .45 engines, by Master-Kit.



"Dynamic Balancing Spinner" by VPB Corp.



Stainless steel adjustable gooseneck by Probar Design.

* * *

HOT STUFF, now in giant economy family size bottles!

This popular cyanoacrylate adhesive is now available in a four ounce package, actually two 2 ounce (113.4 grams) bottles; claimed to contain over eight thousand controlled applications when applied with the new small diameter teflon tubing furnished. Twelve inches of this tubing is packed with each package.

According to Satellite City, marketers of 'Hot Stuff', the shelf life of this product can be extended indefinitely by keeping it in the freezer. Prior to use, it must be removed from the freezer, allowed to return to room temperature, and the condensed moisture wiped dry.

The four ounce unit costs $24.00, and is the equivalent of 8 packs of the smaller, better known 14 gram containers. A savings of $8.00 is realized through the purchase of this large package.

Available at your favorite hobby supplier or from Satellite City, PO Box 1935 Arleta, CA 91331.

* * *

Sail-boater's will welcome the latest additions to Probar Design's already extensive line of stainless steel hardware, developed under the supervision of well known model sailer Don Prough.

These fittings should fill all the requirements for the scratchbuilder, as well as those requiring replacements for the not-so-durable type of fittings.

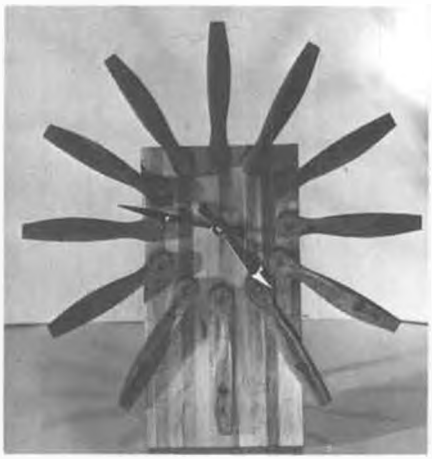
New items available are the H-13, 1/2 inch Standard Gooseneck, at $5.50; and the H-14 Adjustable Gooseneck, at $6.00. A 1/2 inch Boom Vang Pivot, designed as model H-15, is priced at $3.50.

For more information on these, and the complete line of model sailboat 'goodies', drop a line to Probar Design, PO Box 639, Escondido, CA 92025.

* * *

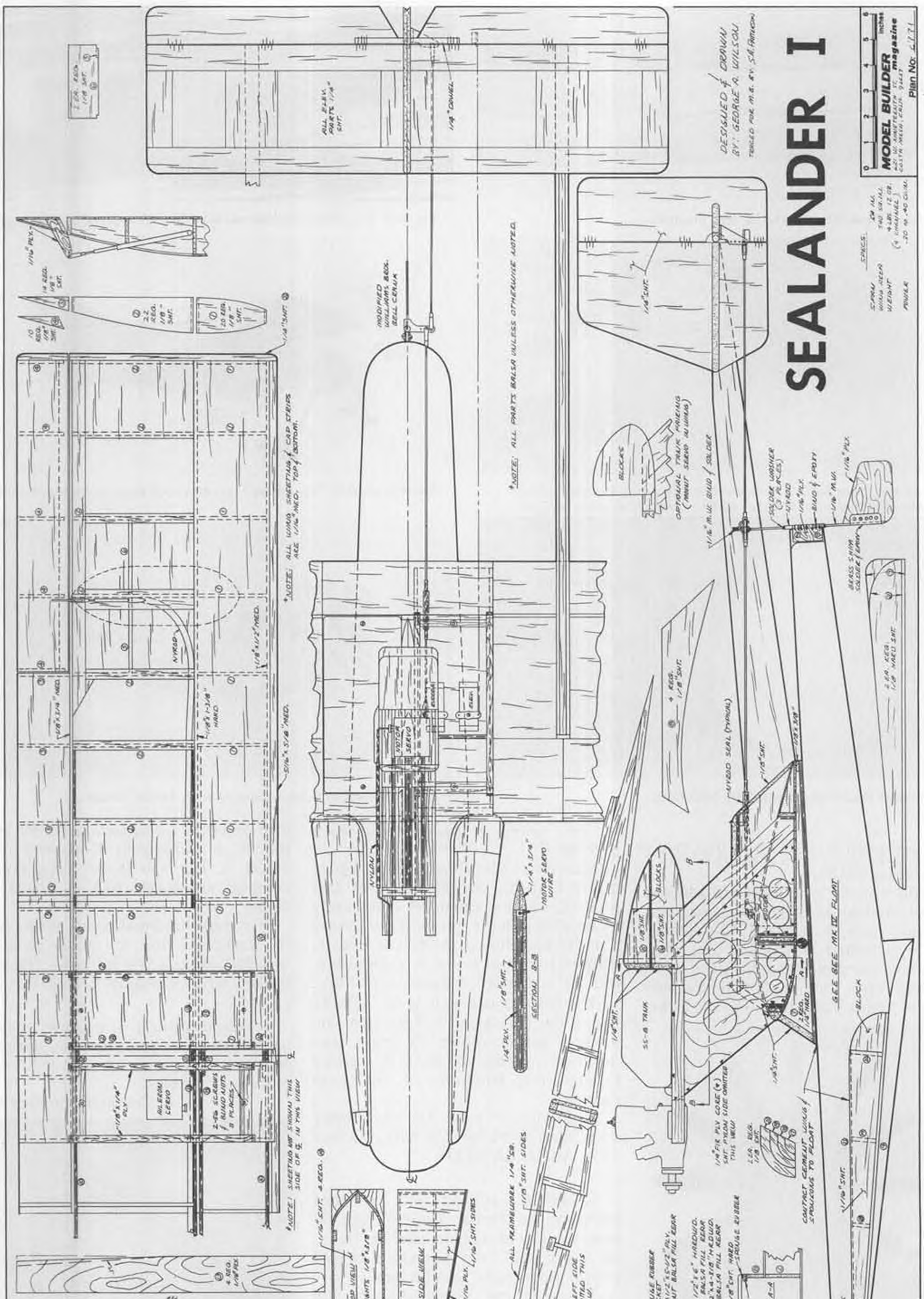
It would appear that whatever engine happens to be your favorite, George Aldrich has a glow plug that will let it operate at its best.

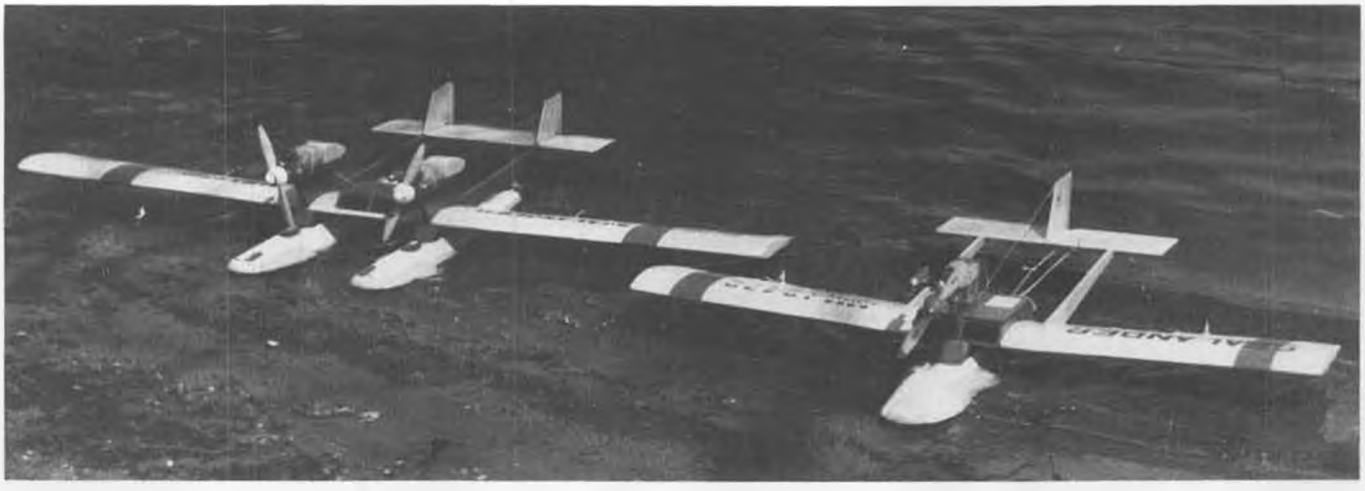
Continued on page 99



Wall or desk "Prop Clock" by J&Z Products.

Tom Hutchinson's "Ultimate Dragmaster" A/2 by RM Enterprises.


SEALANDER I
DESIGNED & DRAWN BY: GEORGE A. WILSON
MODEL BUILDER magazine
NOTE: ALL PARTS BALSA UNLESS OTHERWISE NOTED.
SECTION B-B
SECTION A-A
TOP VIEW
SIDE VIEW
FLOATS
BOOMS
MOTOR SERVO
AILERON SERVO
BLOCKS
GEE BEE MK IV FLOAT



PHOTOS BY THE AUTHOR

SEALANDER I & II

By GEORGE A. WILSON, JR. . . . In a two-for-one article, we present two very functional seaplanes by a modeler who specializes in water-based R/C aircraft. Both ships employ the molded Gee Bee Mk. IV float.

• The "Sealander" designs are outgrowths of the author's "Seasquare GT" and Don Foster's "Islander". Both of the parent designs are highly successful in their own fields. Seasquare GT is fully aerobatic and Islander is a stable sport plane. The Sealander design, with its semi-symmetrical wing (Bill Northrop's SSS-302 airfoil, modified for 15% thickness) and low profile can be a stable sport plane when built for three channels as "Sealander I" or a full bore stunt plane when built with four channels either as the "Sealander I" or the "Sealander II", with twin motors. In any case, Sealander is a design that includes *no* frills. It would appear to be the simplest configuration that can be devised that has all the features that go into a good seaplane: low profile for best water landing, full water-proof RC installation, good performance in the air, and minimum building time.

Although land gear can be added to these designs, it is the author's opinion that a good seaplane belongs on the water. If you must, add land gear. We'll bet you get more "dings per flying season" by a factor of ten when land flying. Water is softer than the ground no matter at what speed you hit it! We learned to fly off water. It is a great way to learn if you have proper waterproofing and a good (inherently stable) trainer.

Both the I and II designs are quite similar. Except for special details, the construction information that follows is applicable to either. No attempt has been made to reduce the construction information that follows to the novice level.

Both versions of Sealander have been built and test flown and we have tried to incorporate the products of experience gained during the process. Sealander I was built by Charlie Pitts and the author. Sealander II was built by the author. John Ross and Ed McCarty were the test pilots.

Sealander II was built and flown first. Its test phase was not an easy exercise. It took off and flew well with two O.S. 20 engines . . . this certainly bears out the theory that two engines are better (more powerful) than one engine of equivalent displacement. On the other hand, if you really want to stunt this model, a pair of 30's would not be unreasonable.

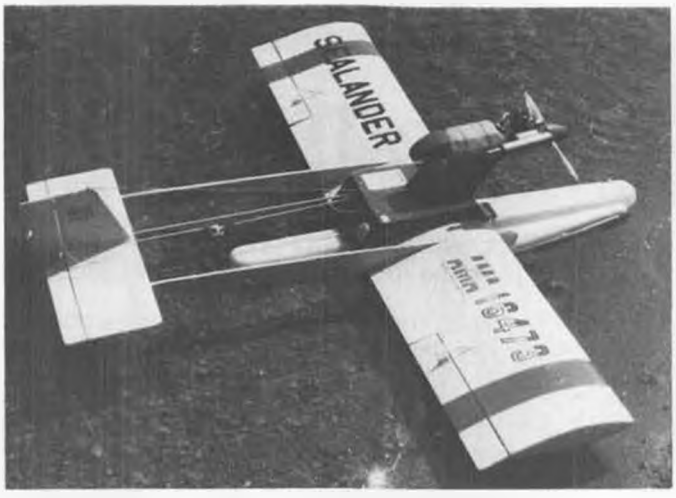
Once in the air, the expected set of "gentle" maneuvers including loops and rolls were performed easily at full throttle. The problem came when John cut the power back and eased the stick forward. At this point, the model wanted to glide like a brick. Landings were hard and frequently preceeded by a snap roll. We added wing area . . . ten inches to each side to give a span of 74 inches (740 square inches of area), changed the angular difference between the wing and stabilizer, and added vertical fin area. All these changes did effectively nothing.

We were about to write the design off when John was giving a demonstration flight and tried a shallow dive which followed its normal course but even more violently: as the model approached the water at about 20 degrees the author suggested that John quit showing off, to which he replied, "I'm holding full up, what else should I do?"

Sealanders I and II sitting at the water's edge. Note lead weights on front tips of Sealander II's floats. Like all models, Sealnders "groove" better with a forward C.G.

Telephoto shot of Sealander I in flight. Float is 33 inch Gee Bee molded from tough plastic.

There's nothing like the sound of a twin, as the synched engines drone by overhead.



No radio gear in the floats, it's all in the center section and pod. Control linkage in the open and not tricky.

Both Sealanders have sponsons added to the floats. Lowers waterline and also deflects water spray away from props.

The model pulled up in the nick of time and subsequent examination turned up an elevator servo that would produce down elevator easily but was sluggish in returning to neutral; sometimes sticking in the full down position.

This explained the problem. Even the snap rolls before landing were explained: full up control at the last minute to prevent diving into the water resulted in a delayed full up elevator, a stall and a snap in the direction of the torque. With a new servo installed, flights have been routine with no bad habits. Single engine operation has not been attempted but should be no problem. The use of counter-rotating propellors was decided against for reasons of cost, convenience in starting, and safety.

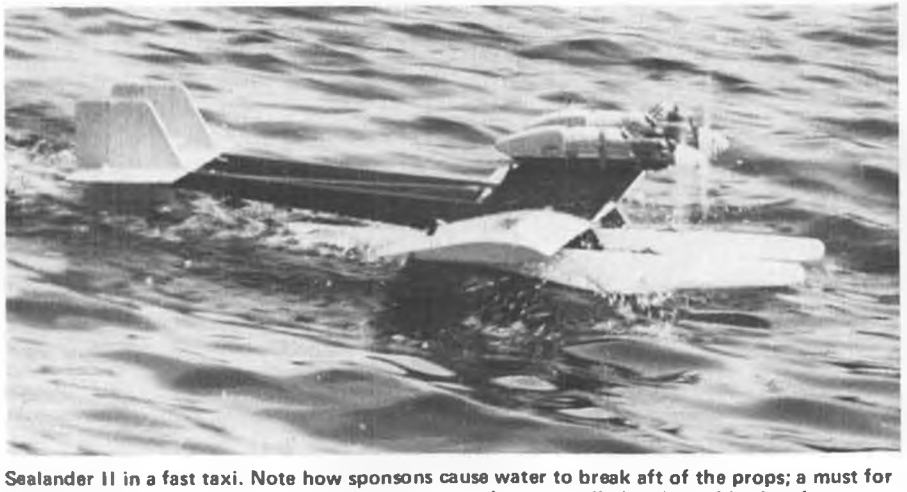
The final plan shows Sealander II with a 68 inch wingspan. This should provide all the area necessary for reasonable wingloading, good takeoffs, and fairly low flying speed. Bear in mind that the original tests were done with a 54 inch span. Takeoffs occurred with no trouble on smooth water with only 540 sq. inches of wing area. For those who like hot flying machines, why not try a 54 inch span Sealander II with a pair of 30 engines?

Unlike the twin, Sealander I "flew right off the drawing board". John and Ed both flew it on the maiden flight and put it through the full set of standard stunt maneuvers. The only changes that were made were 1/16 inch down trim in the elevator and three ounces of lead was added to the front of the float to move the CG a bit farther forward for more "groovy" flight characteristics. Even with no change in the CG, the model was easy to fly and had no bad tendencies.

Again, the amount of power will determine whether either Sealander is a bear or a pussycat. A hot 40 in Sealander I will make it a full-house stunter. A 29 will make it a good transitional trainer for those switching into seaplanes. In either case, build the models as light as practical. It is true that any design flies best with minimum weight.

The large sponsons on Sealander I are strictly functional. At five pounds, the model requires the extra displacement to float properly. The extra width keeps water out of the propeller, and gets the model up on the step quickly.

Both models handle very well on the water. Steering is good and three or four inch waves are no problem for them. Their "low profiles" make them very stable on the water under windy conditions.



Sealander II in a fast taxi. Note how sponsons cause water to break aft of the props; a must for good seaplane design. Water in props robs power and can actually break or chip them!

WATERPROOFING

Structurally, Sealander has two built-in waterproofing features. First, the RC gear is all mounted in a waterproof

cabin, or in a waterproof housing inside the tank fairing. These compartments are sealed with 1/8 x 1/8 strips of closed-pore neoprene sponge rubber. (Some scuba diving shops stock this material for repairing wet suits.)

Second, the control rods pass in and out of the sealed compartments through nylon tubing (Nyrod) seals. A 1/16 music wire rod is used and, where it passes into the compartment, it has a piece of 1/16 I.D. nylon tube over it and fastened to it. If desired, 2-56 threaded rod ends can be screwed into each end of this piece of tubing. The piece of tubing just described slides in a mating piece of tubing which is epoxied to the compartment wall where it passes through. To eliminate binding, the outer tube should not be epoxied in place until the linkage from the servo to the control horn is installed and working freely. Enlarge the hole in the compartment wall as necessary to allow the rod to work freely. Then, fill any gap that exists with balsa and apply the epoxy.

We recommend Titebond or equivalent as a general cement. Its ideal working time for wood, its fuel proof nature, and its non-brittle characteristics make up for any possibility of it dissolving in water. We have successfully repaired several water-soaked seaplanes built with it. In any case, if you get water inside the model, get it out as soon as possible and make sure the inside is dry before you seal the structure again - better still, fly *over* the lake and stay out of the trees!

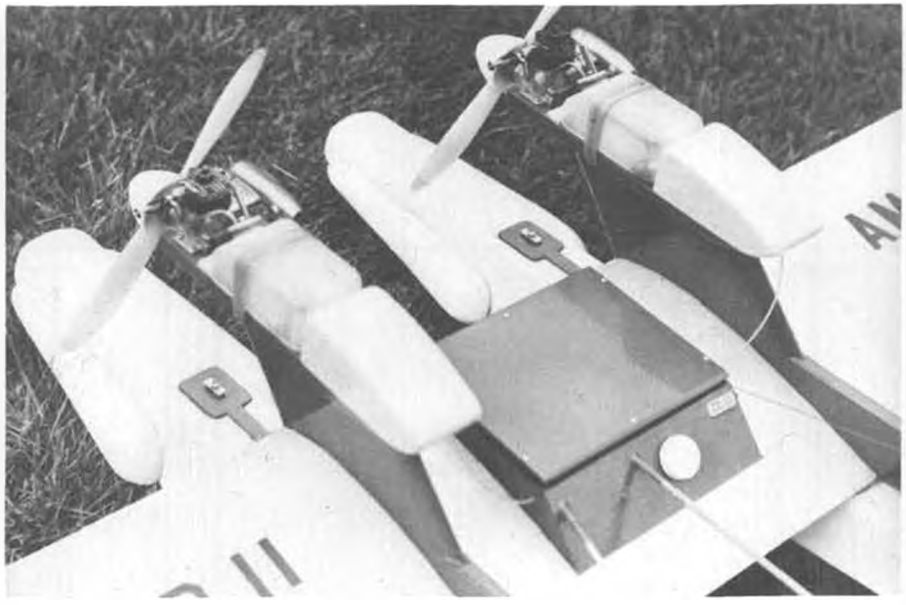
The insides of open structures (e.g., the wing) should be doped or epoxied before they are covered. This includes the parts of the wing that are balsa covered. Before the top sheeting is added, the inside of the wing and the bottom of the top covering should be doped (thin slightly to make the dope flow easily) or epoxied (dilute Hobby-Poxy Formula II 1:1 with thinner or 90% pure isopropyl alcohol).

If you use heat-shrink material for covering, make absolutely sure all the seams are tight. Polyeurethane varnish has been recommended as a sealant.

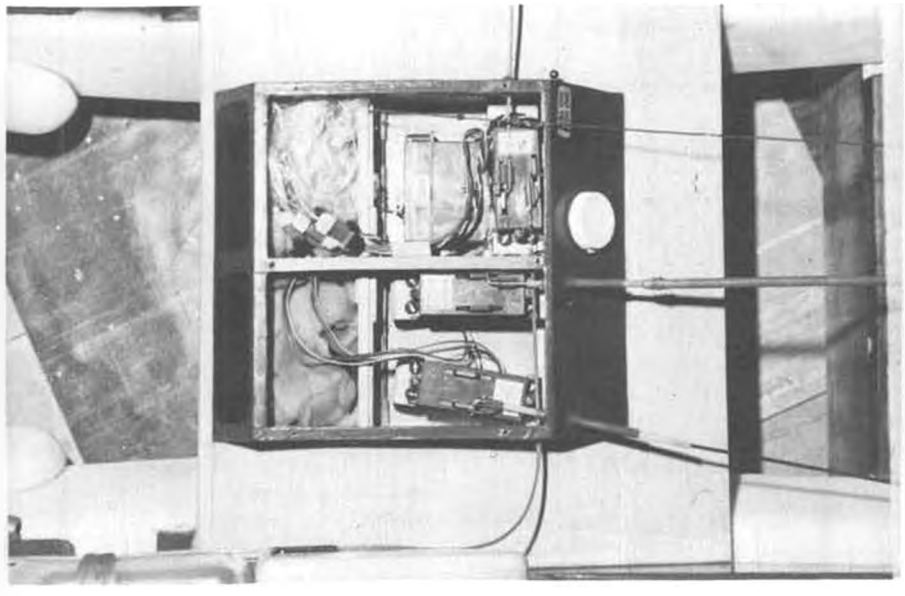
Half the fun of water-plane flying is being able to be at the lake all day without worrying about your RC equipment getting wet or the CG shifting because you have water slushing around in the model. Do a good waterproofing job! It doesn't take much time as you build, and it's almost impossible to do a good retrofit job.

CONTROL LINKAGES

The control linkages shown on the plan will have to be varied to mate with your particular brand of RC equipment. Before you start putting things together, you should try your system to see if your servo rotations are like those used in the original model and to modify the plan accordingly. Typically, for proper aileron motion, you may have to run

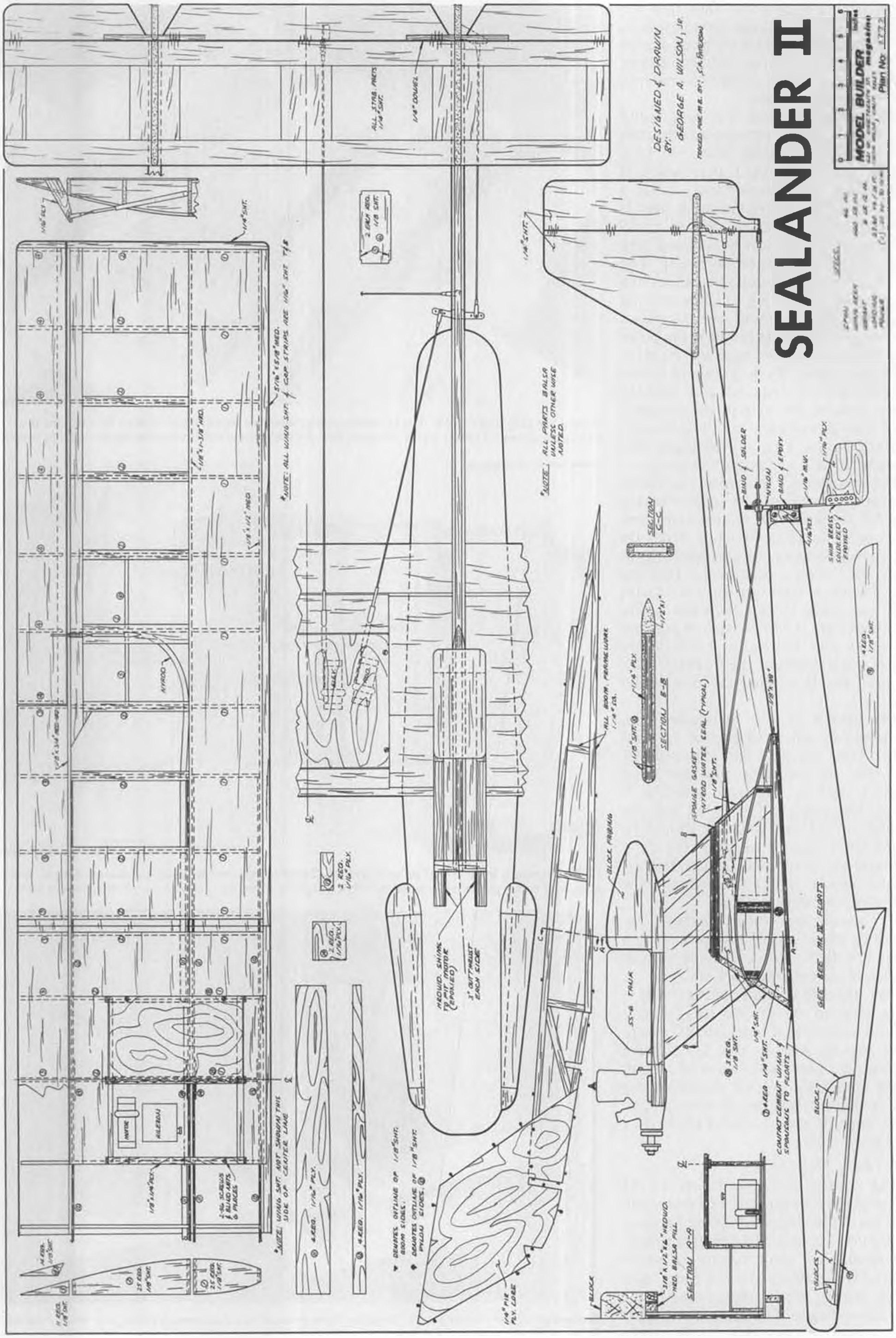


Ready for test flight. Two .19s are adequate power; use more if you like to tear up the sky. Plywood plates on floats cover previous attachment holes. Pill bottle top covers charge socket.



R/C equipment installation in Sealander II. Cover is gasketed to keep out water. Servos, linkages, and other gear easily accessible. Pill bottle top idea by Lenny Poor. Really works well.

Sealander II and author's wife, Eleanor. Stretched wings, explained in text, are clearly visible. Original flights with 54 inch span, then 74, but 68 inch span is recommended. Again, see text.


SEALANDER II
DESIGNED & DRAWN BY: GEORGE A. WILSON, Jr.
MODEL BUILDER magazine
SECTION A-A
SECTION B-B
SECTION C-C

the aileron nyrod farther from the bottom of the wing to pick up the top of the servo arm rather than the bottom as shown.

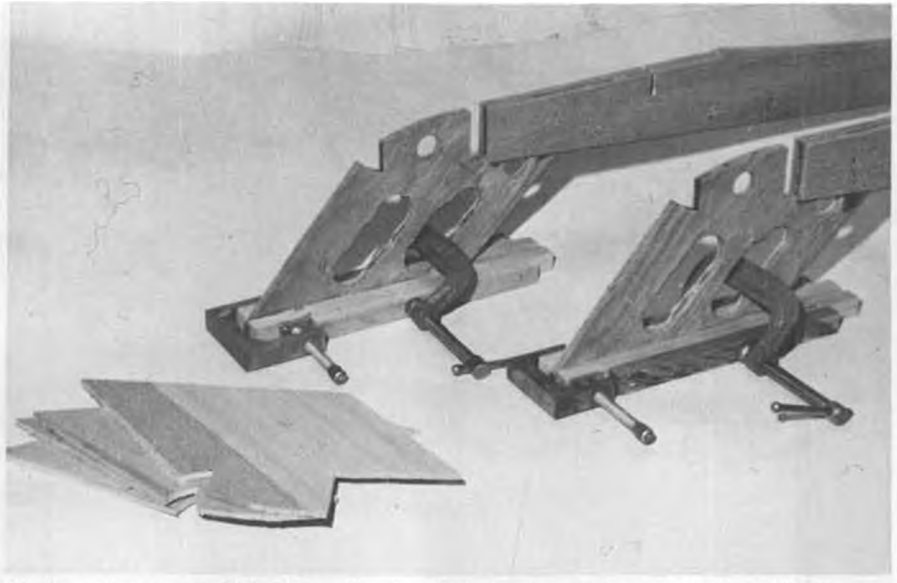
Sealander I may use a throttle linkage similar to that shown for Sealander II, where the throttle servo is mounted in the cabin. In this case, all the RC equipment is mounted in the cabin; the servo extension cord and the waterproof housing atop the pylon are not necessary.

Less "exposed" linkages were considered but simplicity, minimum binding, and minimum weight won out. Nyrod can be snaked throughout the wings and booms for the rudder and elevator linkages if you prefer a less visible linkage system. *(We'd prefer a system that eliminates the long, unsupported wire pushrods, especially since "up elevator" is a compression motion rather than a pulling motion. wcn)*

With the exception of the "coordinated" rudder system required in Sealander II, the linkages can be standard installations. The coordinated rudders work as follows: the left-hand air and water rudders are linked using a standard horn/clevis/rod system on the left (outer) side of the rudders. The right-hand side is similar with the linkage on the right (outer) side. The two water rudders are linked together with a horn/clevis/rod link that runs at right angles to the model's centerline. The foregoing linkages make all the rudders wiggle in unison. The servo is linked from the cabin to the left water rudder and drives the other rudders through the linkages previously described.

NOTE: A simplification in the rudder system for Sealander II has been suggested such that the water rudders are mounted directly below the air rudders on wire extensions. This system has worked very well on other seaplanes and has the added advantage of providing added rudder moment.

Check any long unsupported linkage runs (with the engine(s) running) to find any vibration resonances or bending that may occur under load. It may be necessary to stiffen the offending rod by doubling it with a piece of wood or by substituting a conventional wooden rod with metal fittings at each end. *(Unfortunately, air loads can only be tested under flight conditions. Again, we'd caution against compression loads on unsupported 1/16 wire pushrods. wcn)*



No, it's not two over-built high thrustline free flight fuselages! These are the Sealander II pylon/booms during construction. The 1/4 inch ply pylon centers have been lightened somewhat.

CONSTRUCTION ORDER

Sealander I should be built in this order: 1) build wing center section; 2) build engine pylon; 3) combine center section and pylon; 4) add cabin; 5) build stab, vertical fin and booms; 6) mount vertical fin on stab; 7) mount booms on wing center section with stab pinned in place for alignment purposes; 8) build and install wing tips (omit top sheeting and tip blocks); 9) install stab/vertical fin assembly (add elevator and rudder after covering); 10) build and install float mount and spray deflectors; 11) build tip floats; 12) install main and tip floats; 13) install control linkages and check out RC installation; 14) add wing top sheeting and tip blocks and, 15) cover, finish, add engine/tank and find a lake to fly from!

Sealander II should be built in this order: 1) build wing center section and cabin; 2) build engine pylon / boom assemblies; 3) build stab/vertical fin assembly; 4) install pylon/boom assemblies in wing center section with stab/vertical fin assembly pinned in place for alignment purposes; 5) install stab/vertical fin assembly (add elevator and rudders after covering); 6) build and install wing tips (omit top sheet until aileron controls are checked out); 7) build and install float mounts and spray deflectors; 8) install floats; 9) install engines 10) install control linkages and check out RC installation, and 11) cover, finish, and find a lake to fly from!

WING

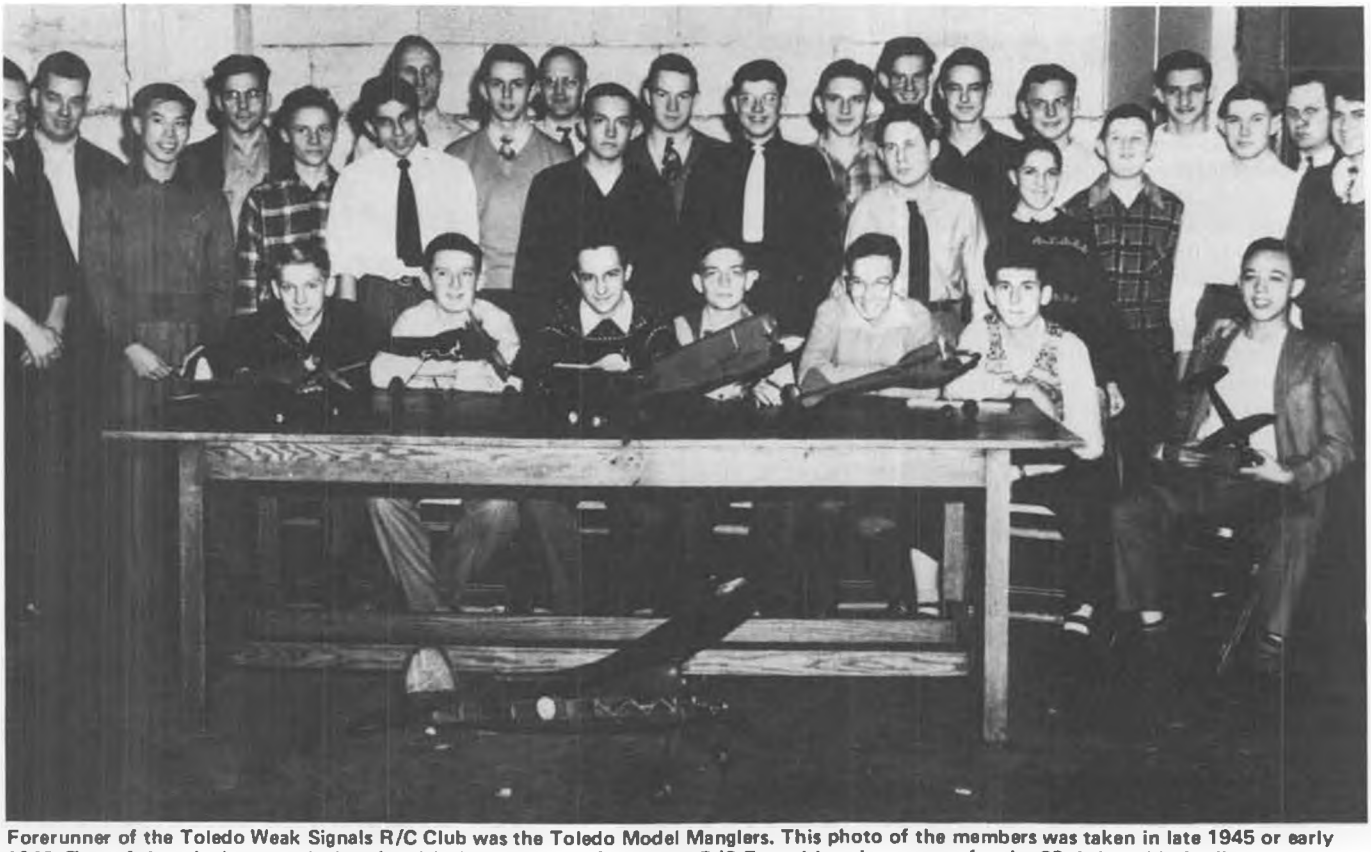
The center section of the wing is built first, with the dihedral braces installed and protruding ready to slip into the tip sections. Note that the plans show 1.5° dihedral for four-channel operation. If you plan to use three-channel control, modify the dihedral braces for 3° dihedral (each side) *before* they are installed.

The wing uses two full-depth spars to provide good bending strength and "D" tube construction both at the

Continued on page 96

John Ross illustrates how to sand curvature on bottom of float mount. Put sandpaper face up on wing, move mount spanwise.

Sealander II center section during construction. Note aileron control tubing in place. Wing is semi-symmetrical but built on flat surface.



Forerunner of the Toledo Weak Signals R/C Club was the Toledo Model Manglers. This photo of the members was taken in late 1945 or early 1946. Two of them had a great deal to do with the beginning of the great R/C Exposition that repeats for the 23rd time this April.

'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

The first round of voting on R/C rules proposals for the 1978-79 period has been completed. Of the 57 proposals, all or part of 43 were accepted for further consideration. Those which did not pass the initial voting are completely dead, and will not be reviewed again, unless re-proposed for the 1980-81 period.

In Sailplanes, the Board, following the recommendation of the National Soaring Society, turned down proposals to eliminate the different aircraft classes (except Scale) and to provide two or more contestant skill classes. It accepted a proposal to add a new "2 meter" class. A proposal to add another new class of electric powered sailplanes, which would compete with non-powered sailplanes, was turned down.

A proposal to nationalize rules on 1/2A Pylon was accepted, although there are numerous objections to some portions of the proposed rules. Our own concern, as editorialized in the December issue, is that this excellent local and fun racing event would then become highly specialized, as has happened with Formula I and Quarter Midget.

The proposed helicopter event, complete with specifications and flight rules, was prepared by the Helicopter Advisory Committee under chairmanship of Walt Schoonard, and was accepted as a formality.

In accordance with IMAC wishes, monoplanes will be allowed to compete with the bipes in sport pattern, but they must be Sport Scale models of aerobatic prototypes. Along with the latter, a proposal to give bonus points to Sport Scale biplanes was accepted. It was also

Sterling Models' latest is this molded plastic "Puddle Jumper" for water or land operation. For 2-channel radio, the .049 powered amphibian can be run inponds or on parking lots.

agreed that Sport Pattern field procedures should be made more compatible with Precision Pattern, in order to stimulate more interest, and encourage more events for Sport Pattern.

Precision Pattern had 18 proposals, and only two were turned down. Another, with 3 proposals lumped into one, had to be broken down into 3 parts, and one, to change 3 rolls to 2 in Novice, was rejected.

Among those accepted in Pattern, was a proposal to allow the total displacement to be increased to .80 for twin-engined ships only. More specifically, the proposal is to allow twin 40-powered pattern ships. However, the board, accustomed to loop-holers, has figured that someone would try to build a tandem twin with a .79 and an .01, so has specified that neither engine on the twin may exceed .61 cu. in. displacement. A mad rush to the drawing board and workbench is not expected. The proposer, Dean Hawks, of Southern California, has his already to go!

Others that passed are:

Replace 2-point roll with 4-point roll in Advanced Class.

Redefine 2-point roll (in Novice) to straight inverted flight.

Change Advanced Figure M to a Double Stall Turn.

Use FAI Pattern for Expert and Masters.

Allow dropping back in skill class by submitting endorsed application.

Score cards to be flashed by judges, but decision to do so remains with contest host (The USPJA, which ought to know what it's talking about, definitely states that judges should *not* operate flash cards, but should write down their own scores, and helpers may flash cards if so desired by contest hosts or sponsors.)

Masters Class win to be based on 2 flights if only 3 are flown.

All engine starting times to be the same (FAI is 3 minutes, AMA is 2).

Define a flight attempt.

Make frequency pins mandatory at all R/C contests.

Require time for checking radio before an official flight.

Redefine and clarify 2-point roll.

List all reasons for mandatory zeros, in rule book.

Redefine and clarify zero for flying behind spectator line.

Specify zero for not calling completion of maneuver.

Eliminate requirement for calling completion of Straight Flight Out and Procedure Turn.

Items specifically turned down included:

Change 3 rolls to 2 in Novice

Allow choice of flying Expert or Masters Class at will.

Allow two planes to be used, interchangeably in Pattern, at fliers discretion. (Sorry about that, Joe).

Without checking your old copies of M.A.N., can you recall what year Phil Kraft had his original designed "Gimlet" published? Citizen-Ship radio yet! Great little ship. We built and flew one.

George Dickenson, Somerville, N.J., built this sport-scale 1916 Bristol Scout (Bullet) from a Strato kit. Covered with Super Coverite, it is Sig doped in Diana Cream.

George Dickenson's Bristol Scout from another angle. The Supertigre 60 powered model is controlled by a Kraft KP7CS radio. George is now building an AMA scale version.

In September, 1965, just after setting a new world altitude record of 16, 610 feet (after recalculations), MB's Editor poses with "Foo Too" at Dahlgren Naval Weapons Lab, Virginia.

Quarter Midget had the most proposals of all. Including some which had to be broken down into separate parts, there were 38 items in all, so we'll discuss them in general, rather than in detail.

The most controversial item of all was the proposal to specify a list price that manufacturers and importers could place on their .15 R/C racing engines. The Board, apparently better able to foresee the legal and moral complications of such a subjective proposal, was unanimous in turning it down . . . Twice, in fact, as two different proposals included this item.

Along the same line, however, it was agreed that a new engine would not become legal until 60 days after becoming available.

Except for the price fixing item, all proposals put forth by George Zink, acting in behalf of the Quarter Midget division of NMPRA, were passed. One exception was the propeller definition, in which case George recommended a proposal by Barney Polzin as being better than the one set forth by NMPRA. It simply states "Only wooden, fixed-pitch, two-blade props shall be permitted." Three other proposals by Polzin, however, met with almost unanimous rejection, as they would have taken practically all restrictions off of Q-M engines!

Between now and the end of February, cross-proposals and clarifications of accepted proposals will be reviewed, after which an Interim Vote will be taken on April 1.

If you have comments on the wording of passed proposals, or cross-proposals, get them to your district Board members so they can be stirred into the pot prior to the Interim Vote. This is the time to say something . . . not after the proposals have become rules.

ATTA BABY!

We don't know who's individually responsible, but we want to congratulate the Toledo, Ohio, Weak Signals R/C Club for taking a firm stand on a matter that we have had strong feelings about for quite some time. As most every R/Cer knows, the Weak Signals put on the world's greatest radio control show (their words, and we agree with them), and one outstanding feature is the huge and prestigious static model display competition, in which scale plays the leading role. The brochure for this year's show contains this following advisory to modelers entering the static competition:

"Stand-off scale means no dummy engines or raised rivet detail, or model will be judged in the scale class."

WHERE IT ALL BEGAN

A show such as the Toledo Exposition doesn't just all-of-a-sudden happen. Don Belote, one of the key Weak Signal members involved in the show, sent us some early background information that will be of interest to long-time R/Cers. Included was a photo that we have reproduced. Don says:

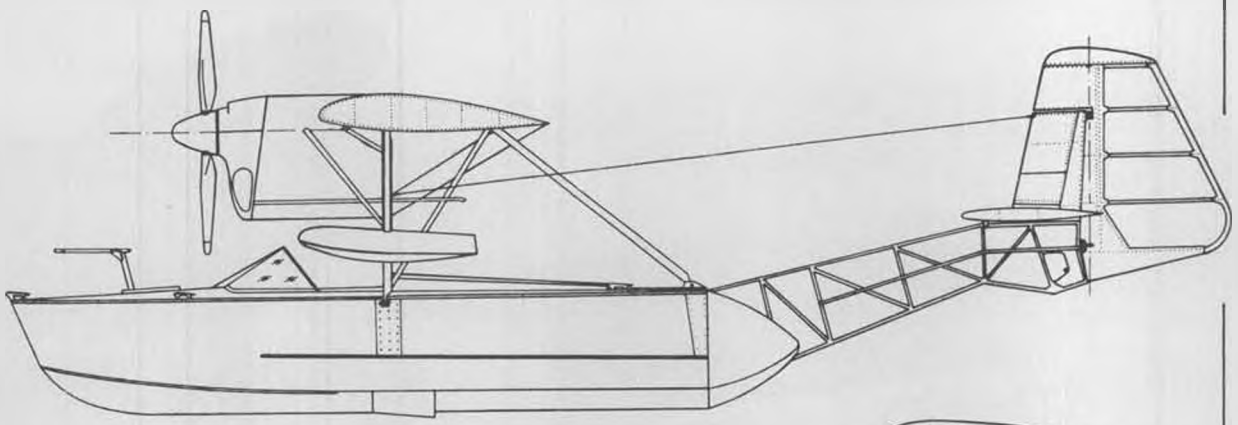
"This is actually a picture of the forerunner of the Weak Signals. At that time, the name was the Toledo Model Manglers, and the club was originally formed sometime before the war, about '38 or '39, I believe. As far as we can figure this picture was taken in late 1945 or very early 1946 (I joined in the spring of '46 and am not in the picture). It was taken in the handicrafts room in the basement of the downtown YMCA. The building and room are still there, and it is not too far from the Commodore Perry.

"Actually, anyone who was around at that time could pretty well date the picture from the models. I believe the job at the extreme left is a Tiger of Super-V Shark, the rest of the speed jobs are originals. The free flight on the floor is an American Ace and it looks like it has an Ohlsson in it, probably a 23. The fellow sitting down, holding the small speed job, on the far right, is Joe David (He designed the J-Bipe which J&J, and later Ralvin, kitted) *Joe is the person who started the Weak Signals in 1952.*

"The Model Manglers gradually de-

Continued on page 100

"BUT DEAR, I BOUGHT A RADIO WITH THE SAME FREQUENCY AS YOURS, SO WE COULD FLY TOGETHER!"



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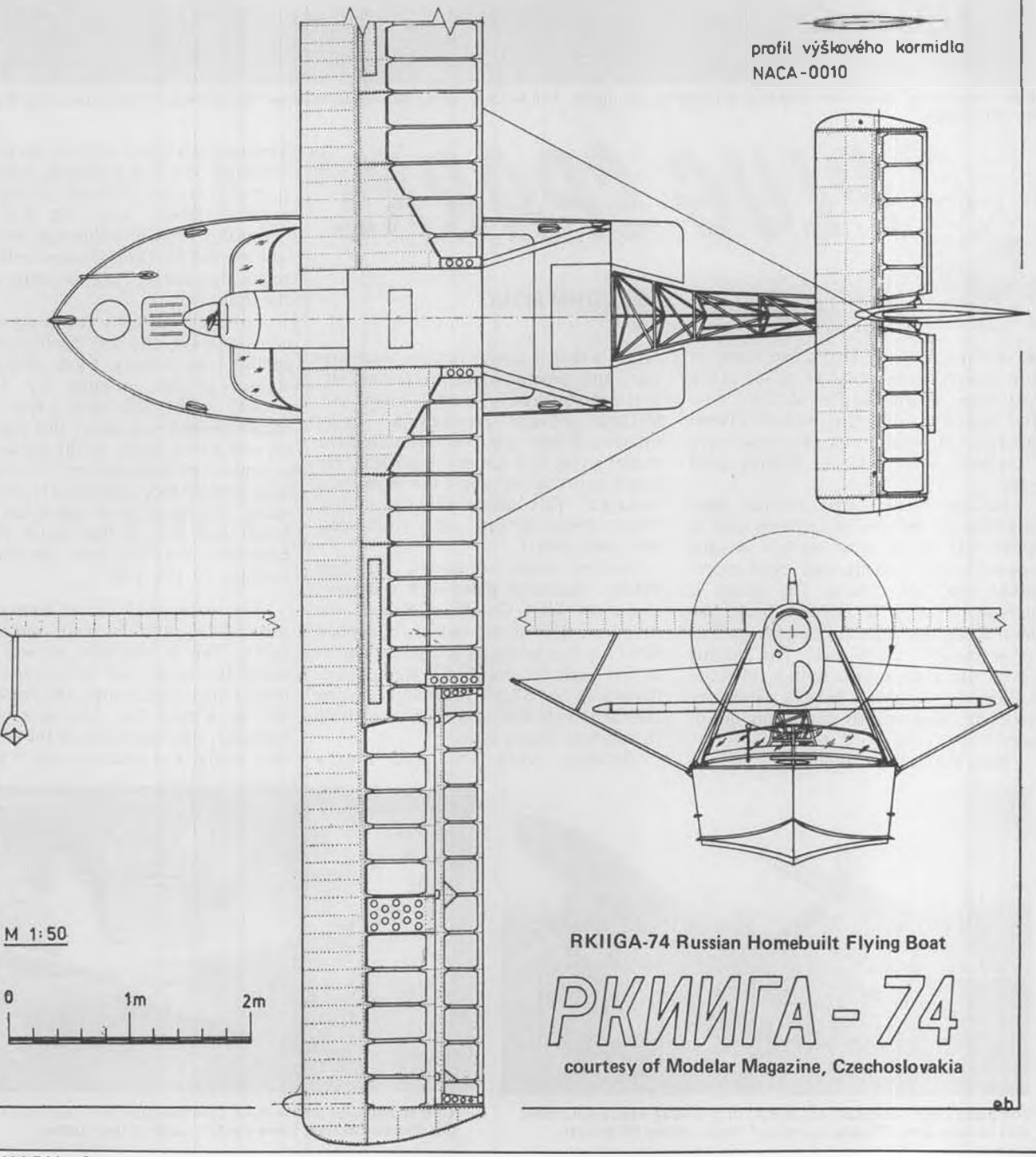

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RKIIGA-74 Russian Homebuilt Flying Boat

РКИИГА - 74

courtesy of Modelar Magazine, Czechoslovakia

eh

Real "fancied-up" Shereshaw Cumulus is guided by its builder, Phil McCary, of the SCIFS. Note wheel "streamliners". Would be a nice design for radio assist.

PLUG SPARKS

By JOHN POND

• Antique Finish: That's the name of this month's subject, as promised in the last issue. Thanks to Phil McCary, who has been experimenting with this novel method of finish, you can now truly "antique" your antique! Whatta great idea!

McCary reports that he has been working on the idea of applying gold or silver leaf to old time models. Results appear to be fantastic, and most appropriate for old timers. The finish is unique in that it doesn't look like Monokote, nor does it resemble gold or silver metallic paint jobs. The antique finish has a satin look with a reflective factor you wouldn't believe. Great for spotting those models practically out of sight!

Best part of all about this antique finish is that it covers repairs, wear and tear, and general nicks, abrasions, etc. that a model receives from constant use. McCary actually repaired a badly smashed Zipper and then refinished the model using this antique gold leaf. No where can you see where the model was damaged! Talk about the old saying, "Paint covers all sins", this stuff does, and looks great!

Getting down to basics, Standard Brands (discount paint and wallpaper chain on West Coast) is one of the suppliers. The sizing (which is applied first) is a thin white glue. The leaf comes in five inch squares which are approximately 25 for $1.50. Price on the sizing (Quick Size) is .89¢, and it is one of those five-minute drying types.

Actually, when you walk into a hardware store, you will find all kinds of antiquing kits and methods, some with as many as five different sizings, preparation glazes, etc., but that isn't necessary! The white glue size, with gold leaf applied to it and finished with three to six thin coats of nitrate dope, will do the trick.

To save yourself a lot of agony and consternation, the best application procedure is as follows: First, prepare the surface to be antiqued by sanding smooth with 320 grit paper. It is recommended you don't put the sizing on raw wood, paper, or silk surface. Use a sanded, painted surface. The sizing is now applied very sparingly. If you don't spray (like most of us slobs) use a soft brush and only a *few* brush strokes. Extensive brushing only develops air bubbles in the glue.

The sizing will almost immediately start to dry, turn colorless, and become tacky. This is the point at which you apply the metal leaf. If you have built indoor microfilm models, the application will be a cinch for you. However, the beginner, although he finds the leaf tears very easily, also discovers that it patches

The purists can't complain about R/C in this 1937 Lanzo R/C Stick, with builder John "Daddy Warbucks" Pond. Merco 49 ignition.

Tom Mahon won 2nd in Pond Commemorative Texaco event with this Maxwell Bassett "Miss Philly". Look at that rudder!

just as easily.

To keep the leaf from sticking to your hands, McCary recommends you cover your hands with a thin coat of talcum powder. This will help eliminate the annoying habit the leaf has of sticking to anything it touches. Once the leaf hits the sizing, forget it! So pre-plan your moves.

The leaf, fortunately, will stretch over compound curves very nicely. Just takes time! Incidentally, to slide the leaf off the paper backing, line up all work carefully with the leaf. The transfer of material to the desired spot is then simplified. After application, Phil recommends using a soft brush to work the leaf down. If tears appear in the work, don't worry about it and brush off the excess leaf. Save these pieces for patches!

To apply over the cracks, tears, etc., simply apply sizing to the uncovered area and apply leaf as before. When everything has dried, brush the excess leaf off. Don't use a soft cloth, as lint will catch and stick to the finish. There goes the old ball game!

Continue to brush the leaf until you are satisfied that all excess leaf has been removed. Now apply your nitrate dope. You can do your sanding after three or four coats have been applied. Use 600 grit sandpaper for this. Remember the gold leaf is just like microfilm, incredibly thin! If you are worried about brushing through the finish, spray the leaf with clear dope.

Masking off portions is done the same way as painting, employing masking tape. The trick here is to size and dope the edge of the masking tape. Pull off the tape before you start with any coats of nitrate dope.

Now for some do's and dont's. (1) Don't put your fingers on the leaf that is already in place. This will leave permanent finger marks. (2) The material is so thin it will register any impact. Be careful until you have doped it. (3) Be neat! Otherwise, you will be picking film out of your hair (if you are lucky enough), the rug, your workbench, your other models, and just about any darn thing the stuff can float off to.

In final retrospect, the finish is worth the work. Besides being unique on the field, you will have a heckava lot less trouble seeing the airplane at distances. You will enjoy the compliments you get on your satin antique finish. Try it!

ENGINE OF THE MONTH

The Anderson Spitfire, this month's engine, was the culmination of a long series of designs by Mel Anderson. Mel, who was well known to Southern California modelers, first came to the attention of engine fans when he first worked for C.C. Moseley, of Baby Cyclone Industries (known more commonly as Aircraft Industries, Inc., Glendale, CA).

In those early days, Bill Atwood received most of the publicity, as his

SCIFS R/C Texaco winners at Taft (l to r): Bob Von Konsky 1st, Otto Bernhardt (C.D.), Bill Northrop 3rd (listing to port because of super-painful back), and Woody Peterson 2nd.

Baby Cyclone powered Champion won the highly coveted California State Fair Gas Event in 1935. It was in Atwood's shadow, that most modelers were unaware of Anderson's contributions to the engine designs emanating from Glendale.

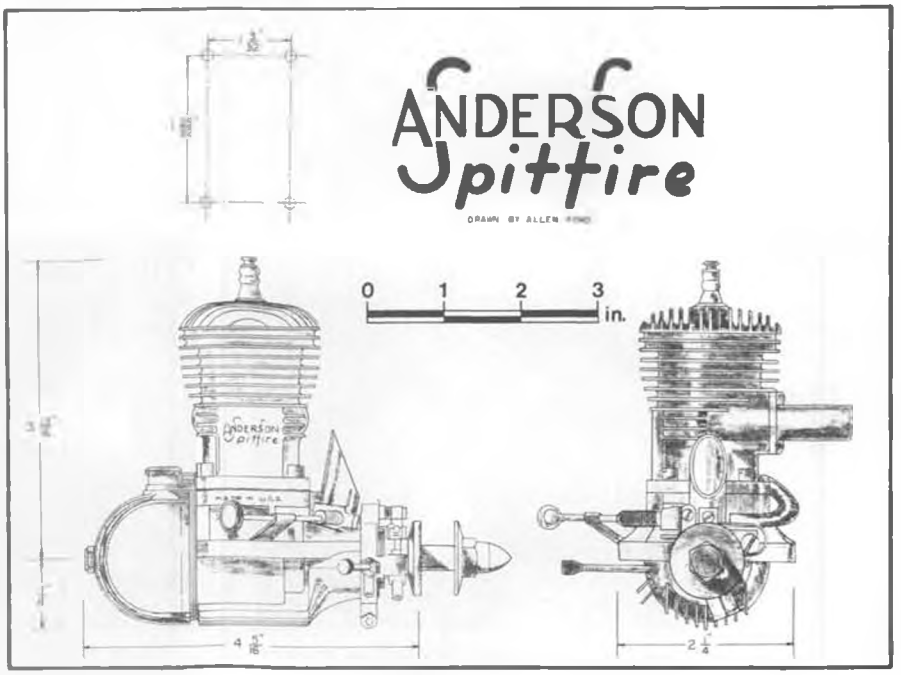
During World War II, all engine manufacturing came to a stop. As a tool maker, Anderson became associated with Ray Poquette, an owner of a Brown & Sharpe equipped automatic screw machine shop. It was during this period that Mel developed the Spitfire in his spare time.

When the Spitfire first made its appearance, it contained all the features that Anderson had designed into the Super Cyclone and prior to that, the Baby Cyclone. It may be of interest to the reader that one of Anderson's outstanding contributions to the model engine world was the development of the rotary crankshaft valve. Introduced in 1935 in the Baby Cyclone, this form of fuel induction gained wide acceptance among all engine designers.

Having a successful engine design, Anderson formed a corporation comprised of three associates, Ray Poquette, Anderson, and Ace Boultinghouse, a real whiz at complex tooling setups. Known as the Mel Anderson Mfg. Co., business was intially set up at 1819 Third Avenue, Los Angeles.

The earliest advertisement appeared in the February 1948 issue of Model Airplane News, with the slogan, "The Engine Experience Built." And it was true! The engine first appeared to be an improved Super Cyclone, but on close inspection, here was an entirely new engine with features and power that would invite imitation.

Anderson Spitfires enjoyed quite a modicum of success. For radio control in the early days, equipped with a two speed timer, they proved to be unbeatable in the hands of an expert like Alex Schneider, who still holds the distinction of winning the radio control



Wakefield Elims winners, 1939. Ralph Baker (hand only), Jim Bohash, and Jack Thames. Goodyear Air Base, Bendix, New Jersey.

Seems like just yesterday when Sal Taibi displayed this unfinished scoresheet during the First Annual SCAMPS Texaco Contest. The late John Keller was eventual winner.

event every time he entered the Nationals.

Spitfire engines have led a rather checkered career. After ignition engine sales fell off to the point that it was no longer practical to manufacture them, Anderson sold off all parts, dies, and castings to Bob McCord, of Redwood City. About this time, the old timer movement was starting to sweep the country. McCord, recognizing the trend, built up a following of engine collectors and flyers who wanted Spitfires.

Unfortunately, there seems to be a curse on Spitfires, as McCord also suffered marital troubles and had to sell out to Quentin Clark. Quentin immediately embarked on an ambitious advertising program and promptly found himself swamped with orders for engines.

This was totally unexpected, as Clark was a one-man operation and was unable to fill the orders, much to the chagrin of the buyers. Finally, to straighten out the mess, the entire lot was sold to Ralph Mrock (later going by the name of REMCO), of Denver, and engines were again produced in fair quantity.

Some of the dies suffered damage during all the transfers, and Mrock found he was unable to produce complete Spitfire engines after exhausting all parts. The dies and balance of parts were then sold to Karl Carlson of San Jose. Back in California once again, Carlson has adopted a cautious attitude regarding the production of engines, as the dies for the crankcases must be restored. At present, only a small selection of parts are available. For those interested in Spitfire parts, you might try Karl Carlson, at 14600 Ramstead Dr., San Jose, CA 95127.

For the technically minded, the Spitfire engine featured a bore of 15/16, stroke of 7/8, with a compression ratio of 6 to 1. Displacement was .64 or .604, depending on the particular version you have; the fitted piston being the smaller bore, while the ring job is rated at .64 cu. in. displacement. Crankshaft was machined from SAE 3140 steel stock. Interestingly enough, the shafts were not centerless ground. All engine castings, cylinder head, cylinder, exhaust manifold, crankcase, rear cover plate, and timer plate were made of aluminum. Engine weight was 12 ounces. Recommended propeller size was either 13-6 or 13-8.

SAM CHAMPIONSHIPS

The columnist announced that the 1977 SAM Championships would be held at Las Vegas on June 28, 29, and 30. Most all the dope was given at that time, however, the events were not finalized at that time. If you haven't received your copy of "SAM Speaks" (official SAM Newsletter) because you let your membership dues lapse, here's what you can expect over the three days:

Tuesday, June 28
- Free Flight:
  - Class C Cabin
  - Class A Pylon
  - 30 Second Antique
  - Cabin Rubber
- R/C Assist
  - Class C (Glow)
  - Class A (Glow)
  - Class C (Ignition)

Wednesday, June 29
- Free Flight:
  - Class A Cabin
  - Class B Pylon
  - Stick Rubber
  - .020 Replica

John Brodbeck, K&B Mfg. Co. (center), with Dick McCoy, admires Bill Tucker's excellent display of K&B Torpedo engines.

Winner at the Fall Region II MECA Collectogether was Christine Morris, shown here with just a small part of her engine display.

Raoul G. "Brick" Brickner, while CDing at a SCIF-SCAMP Hydro Bash at Lake Elsinore, California.

"Brick" Brickner, complete with airplane shirt and Jasco Floater, at his favorite flying site, Taft, Calif. Brick "Maxed Out" on Dec. 26.

R/C Assist:
Antique (Ign and Glow Comb.)
Class B (Glow)
Class A-B (Ignition)
Thursday, June 30
Free Flight:
Class B Cabin
Class C Pylon
Fuel Allotment Antique Scale
R/C Assist
Texaco (Ignition & Glow)
.020 Replica

The following auxiliary rules should be noted for free flight and R/C assist.

(1) All SAM Rules apply in the Standard Events.

(2) All models will be processed and weighed for conformity to rules.

(3) Two-hundred-foot-from-the-cars-rule will be enforced.

(4) No motorcycle "hot dogging" will be allowed. Crash helmets will be required.

(5) Texaco R/C Event will have a fuel allotment of 1/8 ounce per pound of model weight up to seven pounds.

(6) Motor runs in the R/C Antique Event will be 5 second for glow and 10 for ignition per pound of model up to seven pounds.

(7) The new .020 Replica Event will feature a fuel allotment of 1-1/2 cc of fuel provided by the Contest Director. All models must R.O.G., and five minute flights are the order of the day, with a 50 point bonus for landing in marked 50 ft. circle.

Now don't say you didn't know how much activity goes on at the SAM Champs. This one promises to be bigger than ever!!

Continued on page 81

BERLINER JOYCE

OLD TIMER Model of the Month

Designed by: Donald Evans

Drawn by: Al Patterson

Text by: Bill Northrop

• "Tiny Gasoline Motor Powers This Flying Model Plane." This was the title of a construction article, beginning in the August 1935 issue of *Modern Mechanics and Inventions Magazine.* Donald Evans was the author/designer.

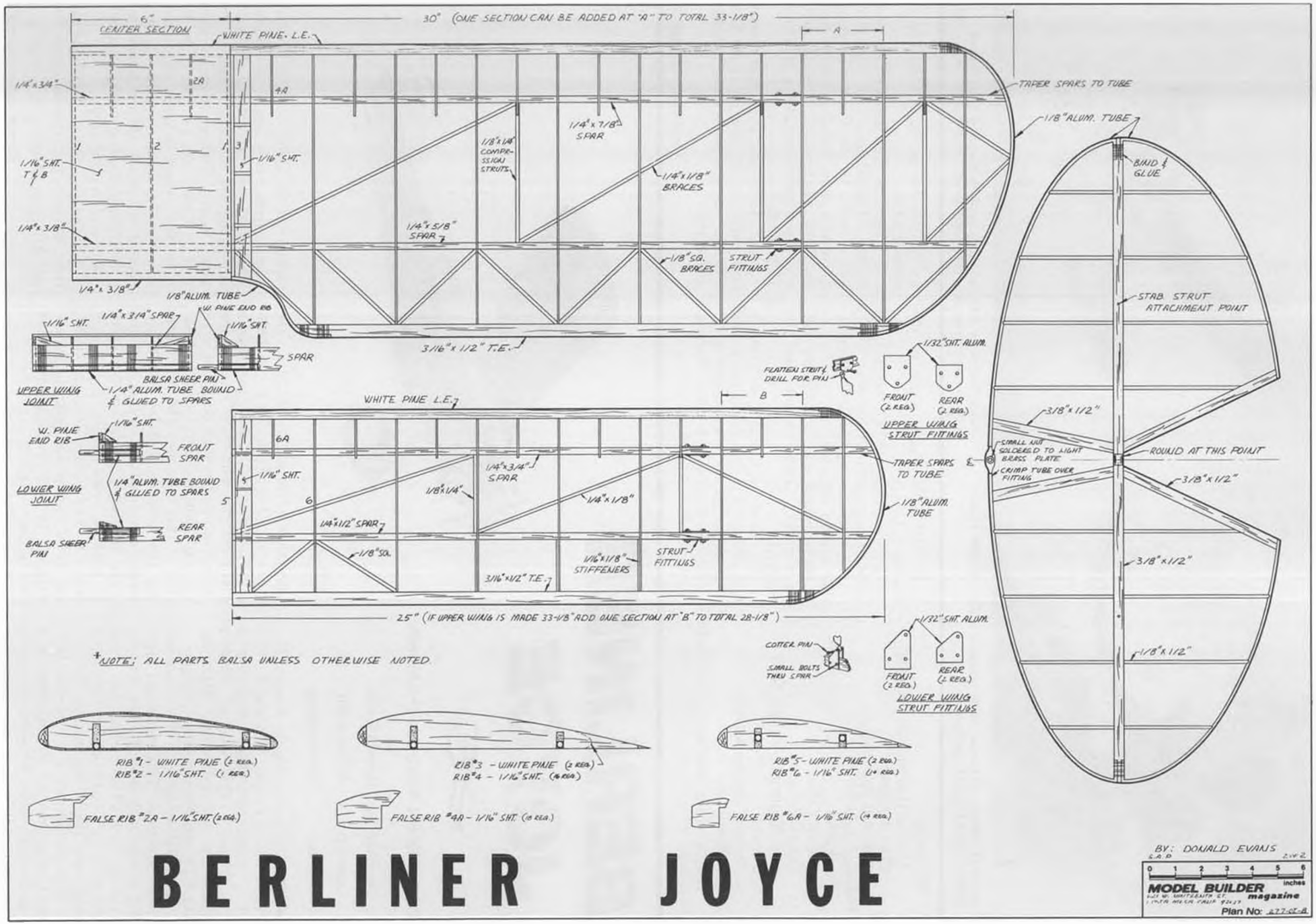
The first sentence in the article was rather startling. "This model gas plane will appeal to all model builders and the aviation enthusiasts who have been grounded by Department of Commerce regulations against light planes." (!)

This very advanced-for-the-time O.T. gas model came to our attention in a round-about way. We were discussing the interesting history of control line with famous Half-A ukie and Mono-line specialist, Dale Kirn. Dale has been gathering historical data, particularly about the man who really invented the technique that has since become known as control line, U-Control, or what-have-you. This man, one Oba St. Claire, was developing and flying model airplanes controlled by wires from the center of a circle, as far back as 1936, at least 4 years before Jim Walker brought it to the attention of the modeling public through his fantastic demonstrations. In fact, St. Claire introduced control line to Walker!

Among Dale's collection of information on St. Claire, was 10 Xeroxed pages from two issues of *Modern Mechanics and Inventions Magazine* containing the article for building this smart looking Berliner Joyce. It seems that St. Claire built a model of the B/J from this article in order to conduct some of his early experiments with control line flying. (**Model Builder** will publish this interesting history on control line when it is completed).

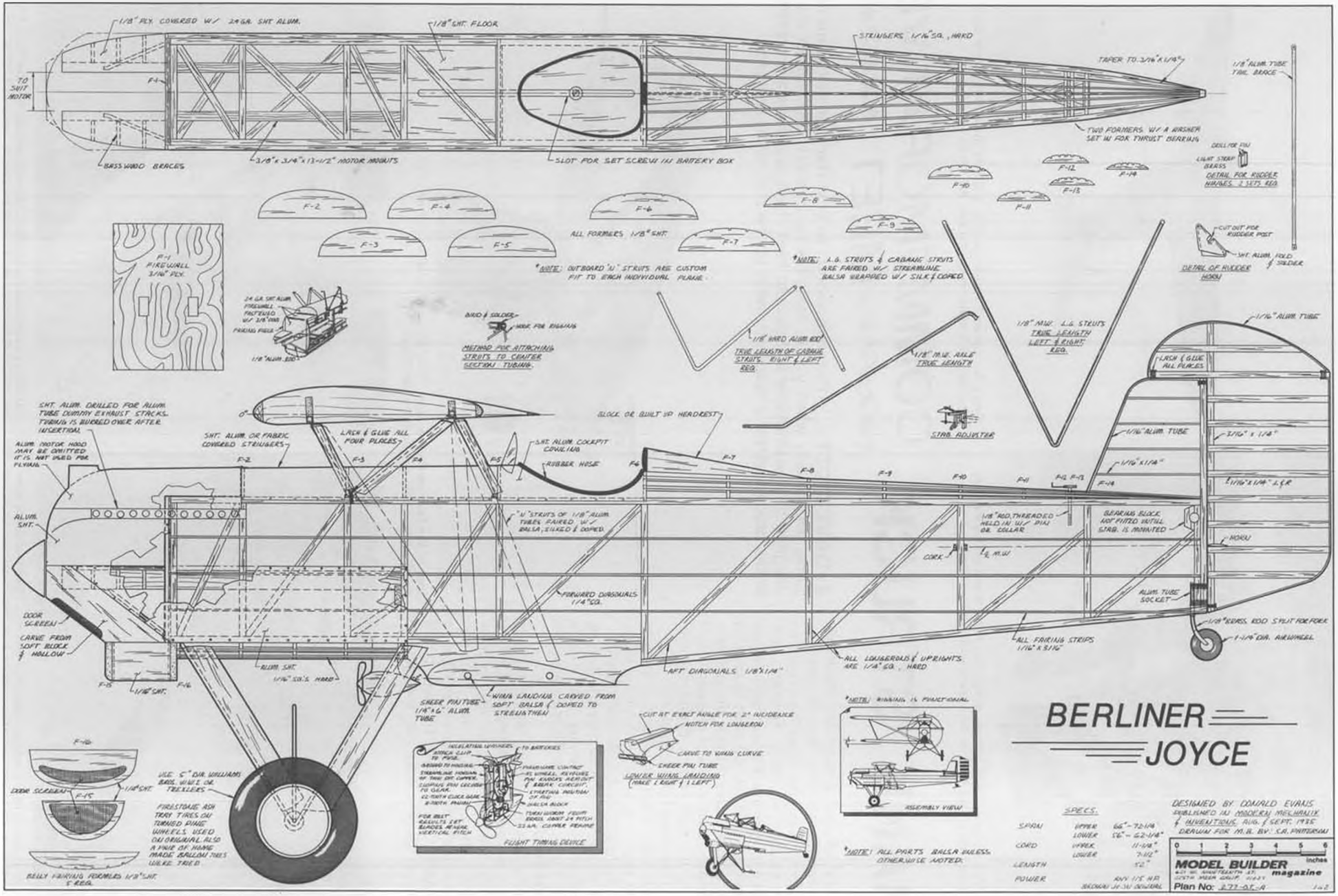
Incidentally, one of the photo captions discloses that Donald Evans flew the B/J from Metropolitan Airport, in

Continued on page 81



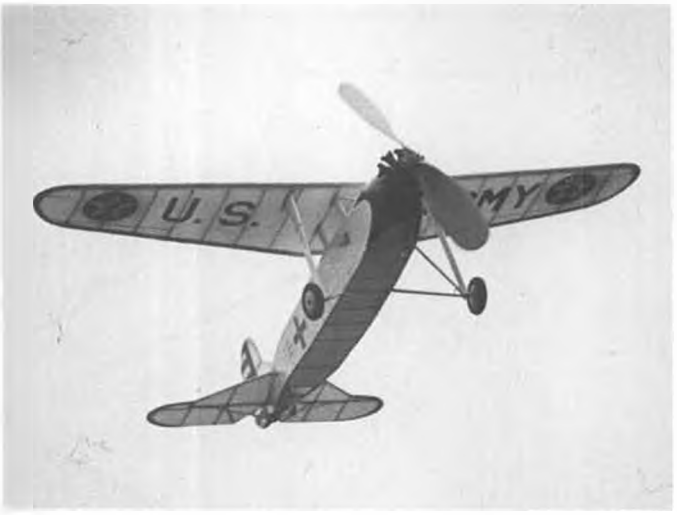
BERLINER JOYCE

FULL SIZE PLANS AVAILABLE — SEE PAGE 104



PHOTOS BY DICK BENJAMIN

The Man himself, Hank Struck, puts a few hand winds on his Rodney Riser on floats. He's hard to beat, even without a winder!



Army Air Corps Ambulance ship, built by the author, Dave Stott, from Struck's plans in April 1938 Air Trails.

HANK STRUCK COMMEMORATIVE MEET

By DAVE STOTT . . . It's tough enough to beat Hank Struck at his own game, particularly when you're using his equipment! This contest was designed to give everyone a chance to beat Hank, and have a great time in the process. After it was over, we'd say he still reigns supreme!

• Any of you present-day modeleers old enough to have been a bamboo-bender back in your Kiwi days, needs no introduction to Hank Struck's aero-modeling wizardry. For our foam shapers of to-day's Zap set, we want to say that over eighty Henry Struck designs have been published in model magazines, and kitted by well known companies over the span of the last forty years.

Ah yas! 'Twas way back in June of 1936 that a new and short-lived magazine called "Model Aircraft Builder" first published one of Hank's designs, a combination rubber/gas job. And in April 1976, his Cabin Ruler appeared in **Model Builder.**

Why, even some of you old timers might be surprised to find that Henry Struck was the designer of the now-defunct Berkeley line of "Banner" rubber jobs, the Banner Sport, Banner Executive, and Banner Transport. And breathes there a scale nut with soul so

Last of the famous Flying Aces "Trail Blazers" series by Struck, this Spirit of St. Louis was built by Bill Wood.

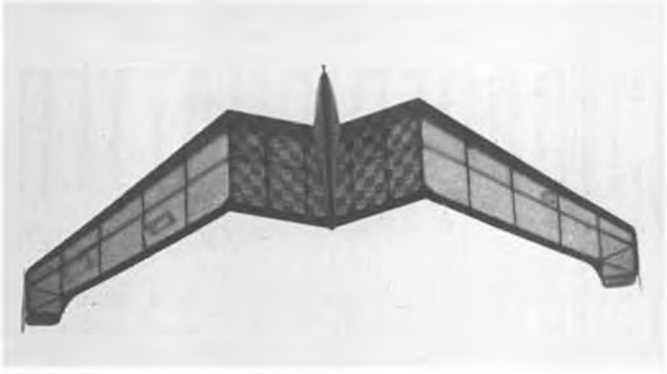
Struck's most famous rubber scale ship was this 1938 Nationals winning 1911 Caudron. Plans in Feb. '39 M.A.N. Ed Novak launches his.

CD George Armstead and his Cyclone-powered Apache from 1941 Air Trails. Note New Ruler style fin of silk covered 1/4" al. tubing.

A whole squadron of Triangle Sportsters was entered; so many of them that a special category was declared. Polish Fighters indeed!

Out of the Trail Blazer series comes this Handley Page 0/400, with 4-blader props churning. Built and flown by Dave Stott.

Another Struck Nationals Scale winner was this Interstate Cadet. This version built by John Stott.



Henry's original Tailess Soarer from September 1939 M.A.N. Struck also flew his original New Ruler on an O.O.S. flight! Got it back OK.

dead who never to himself hath said, "Give me just one, just one of those old Flying Aces mags with a Struck 'Trail Blazer of the Air' in it"! Oh boy, were they inspiring! Starting with the Wright Flyer, Hank took us on a modeling tour of aviation history right up to the time of Lucky Lindy. Many of the Trail Blazer series were not all that simple to design, build, and fly as rubber models. There was the Wright Flyer itself, with two props. The Curtiss NC-4 and Cierva autogiro, to mention a few more toughies. Surely a credit to then young Henry's ability.

The very latest Struck designs are soon to be kitted. Up-to-the-minute as usual, one of the new models is for the new Embryo Endurance class that is rapidly gaining popularity. The other is a Peanut Scale Dayton-Wright racer, featuring a landing gear that can be positioned in either the "up" or "down" configuration.

Now that you stringer benders know just a bit of what Henry Struck has done for our hobby, you will find it no surprise that he has been admitted to the Academy of Model Aeronautics' Hall of Fame. To honor Hank further, the Glastonbury Modelers and Chapter Seven of the Society of Antique Modelers held an unusual contest limited to models of Struck's design only.

How do you set up rules for such a meet where gassies, rubber jobs, and gliders can compete together? Why heck, George Armstead of the Glastonbury Modelers simply got the dope straight from the horse's mouth. He asked Hank for a list of his designs and the times he thought them capable of!

So it was arranged that the contestant coming closest to the time Hank established was the winner. If the time quoted for a certain model was 100 seconds, an entrant scoring 90 seconds was given 90%. A score of 90% was also given for an overshoot of the mark with 110 seconds. Simple enough, wot? Ah, but the rub was that none of the contestants knew any of the target times Henry had set! Consequently, this meet turned out to be about the lowest pressure, most pleasurable, and nostalgia-sprinkled competition imaginable.

The only occurence to mar the day was toward the end of the meet when Hank flew his original New Ruler gassie out of sight on an exhibition flight. Fortunately, later in the week, the Hartford Courant newspaper carried the

Continued on page 94

Chet Bukowski about ready to loose his Struck Flying Cloud Junior on a cloud cuddling flight. This was once kitted by Berkeley.

All Balsa Soarer, an early Struck design, was only model to score a perfect 100% for its builder, Al Vollmer.

Cliff Cottrell, Pacifica, California, built this fiberglas Hughes 500 body to fit the Heli-Baby and Revolution type helicopters.

Cliff also designed and built this "Baby" Jet Ranger fuselage so that it would fit the Heli-Baby and Revolution. Not scale, but cute!

CHOPPER CHATTER

By JOHN TUCKER

• No, I didn't give you up in the last issue . . . the truth of the matter is, I was so busy on my airline job, I didn't have time to do the column on helicopters. Now that I'm back at my workbench, let's start the new year with a couple of hints and kinks you might find handy around the shop.

SHOCK MOUNTS

Some while back, I read that one modeller had tried Hot-Stuff and Zap to repair his landing strut shock mounts and was very pleased with the results. Seems like every hard landing (and we all have them, don't we?) separates the metal screw/disc from the rubber cylinder portion of the shock mount, and they are too expensive to throw away . . . so a fix is in order.

First, the pieces must be thoroughly cleaned in acetone or alcohol to remove all traces of oil and dirt. Then you should trim away the little chips of rubber which might prevent good surface contact while cementing the pieces together. Experiment a little until they match up, and mark both pieces so that you can visually fit them together . . . you won't be able to shift them around with the Hot-Stuff applied!

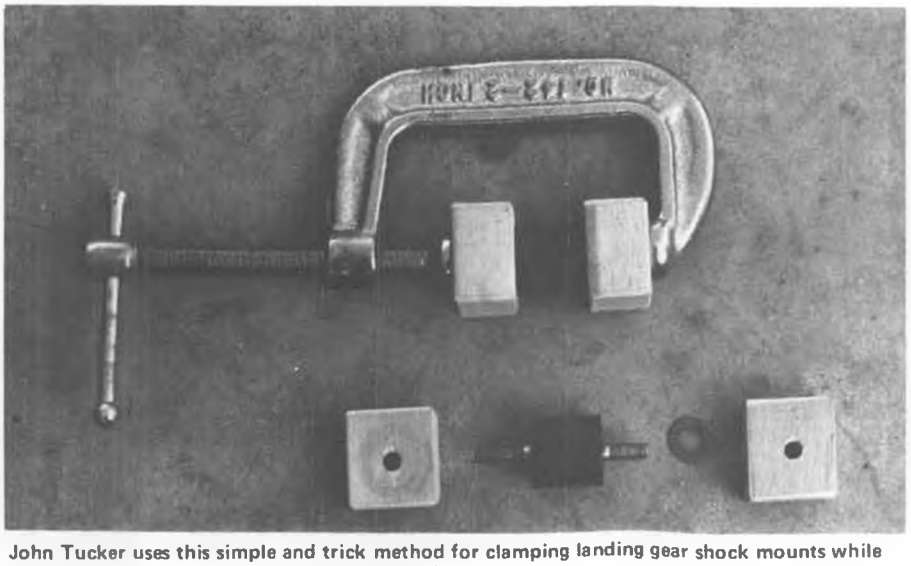
Rather than applying Hot-Stuff sparingly, I personally prefer to saturate both mating surfaces, then quickly clamp the pieces together in such a fashion that the excess cement is pressed out the sides. This has proven to be very effective, and assures maximum strength. And while we're on the subject of strength, be sure to let the assembly set up overnight, otherwise, it'll probably come apart again on the next hard landing.

An easy way to hold the unit while curing is to cut small blocks of wood from a scrap of lumber and drill a hole through the middle of each one, large enough to accept the screws. It is probably a good idea to add a small washer between the wood and the shock mount in order to prevent cementing the wood to the mount. Compress the assembly in a small "C" clamp or vise, and the job is finished. The photos should help, in case you couldn't follow the above description.

PAINTING JIG

One of the most difficult areas of helicopter building, for me, is coming up with a method of holding those long bodies while spray-painting. I have tried every conceivable system of suspending the body with wires from the ceiling, stretching it across chair backs, etc., but it still has to be rotated and turned in order to expose all of it to the spray paint. After watching a buddy of mine twist his back while spray-painting left-handed, I decided to build a jig that would permit easy rotation, accommodate a large number of different body types, and eliminate the "upside-down" spraying requirement.

What I ended up with was a simple wood base about 8 inches wide and 5 to 6 feet long, to hold the Jet Ranger. Triangular wood supports were glued and nailed to the ends of the base, at a height sufficient to permit fuselage rotation. Small "V" notches are cut in these supports to accept a shaft (nail) on each end of the fuselage. One of these triangular supports should be movable, up and down the length of the base board, so as to adjust for different fuselage lengths. I'll leave the method of clamping this support to your own ingenuity . . . perhaps a slot-and-bolt arrangement would work well for you.



John Tucker uses this simple and trick method for clamping landing gear shock mounts while Hot Stuffing rubber cylinder to metal end-disk.

Quite a problem, snubbing the long-style Jet Ranger fuselage down to fit the Heli-Baby innards, but Cliff Cottrell managed.

The Hughes 500 is more suited to the Heli-Baby mechanics, Scale landing gear was later substituted by skid risers.

The hard part is the method of attaching the body to the support, and each model would have to have its own adapter. For the Jet Ranger, I cut a 1 inch thick wooden plug, to go into the end of the tail boom, and inserted a length of 1/8 inch music wire into the plug (as a rotating axle). Standard wheel collars are set on the axle to keep the model from sliding back and forth while it was being painted. For the front support, I made up a plywood plate adapter which is held onto the cabin top opening with machine screws. To this plate, I glued a long wood post to hold the front axle.

In use, I found it convenient to mount a large "C" clamp to the front post in order to counterbalance the weight of the rather deep fuselage . . . it also makes a good handle for rotating the shell as you paint it! Again, the photos with this article should help you to make your own set-up. The best feature of this jig is that you always spray horizontally and never need to change working positions. It also provides a means of moving the freshly painted body so as to protect it from dust, etc.

BASS AIR BRUSH

I'm not all too sure that MB's Editor, Bill Northrop, knows it yet, but he gave me a new spray gun for Xmas. The one I'm talking about is the new "Bass Air Brush" which is sold by Model Builder Products (and which is in good quantity in the storeroom, ha!) at the very reasonable price of $36.00. This little unit comes complete with spray-head, detachable jar, flexible hose, and a can of compressed air for power. The hose-to-can adapter has its own built-in valve, so that the unit may be disassembled and stored without losing the remaining can pressure.

As to performance, it just can't be beat, even by the more expensive Binks Air Brush, which I have owned and used for several years. Co-incidentally, with the acquisition of the Bass Air Brush, I had just finished my latest chopper, up to the point of applying the K&B epoxy finish, and determined this would be as good a time as any to try it out.

The prime coat was first applied with the head adjusted for the maximum spray pattern of about 2 inches wide. Since the fiberglas shell had quite a few pin-holes, I elected to use the primer without thinner, in order to fill the holes faster. This is about the hardest test for any of the air brushes, and most of them will not handle the heavy material . . . not so with the Bass . . . it sprayed clean and full. This was followed by much sanding and a base coat of white gloss finish. Again, the Bass sprayed very smoothly and left a high-gloss finish without ripples, orange-peels, or runs.

Oh yes, I forgot to mention . . . the gun has a fully adjustable spray pattern which is variable from 1/16 inch to 2 inches wide (just like the Binks). This feature was put to good use in shading the orange stripes down the side of the fuselage. I'll be the first to admit that I'm no expert, but the blending of the colors turned out to be pretty striking in appearance. Perhaps next month, I'll have some pictures to show you what it will do. In the meantime, if you need a good quality air brush, give it a try . . . it's easy to clean, has a fingertip air-valve and you won't even realize the light-weight hose is attached to the gun. Look for the advertisement in this issue of MB.

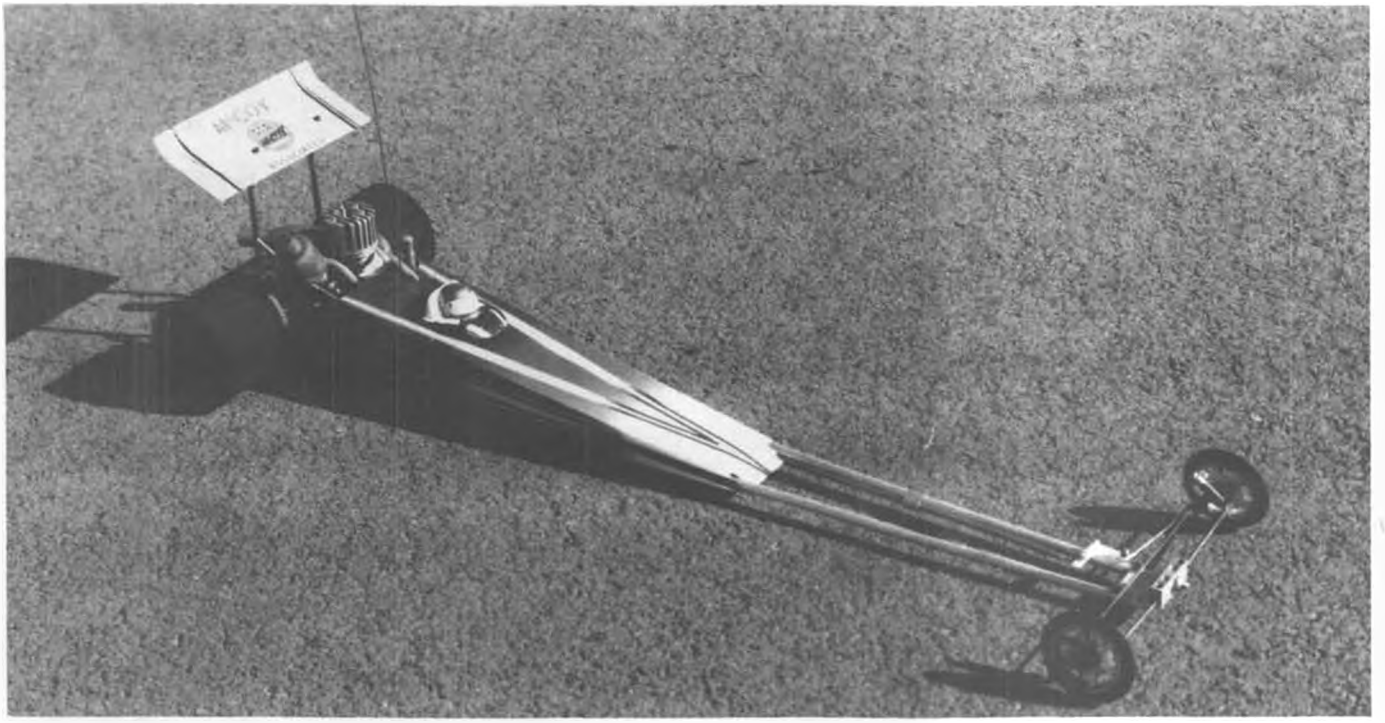
Cliff offers proof that a Hughes 500 body on a Heli-Baby chassis is still a helicopter.

NEW FUSELAGES

Cliff Cottrell, 619 Farallon Ave., Pacifica, Calif. 94044 has been working overtime the past few months in the development of a fiberglas fuselage for the Hughes 500 and an additional shell for the Bell Jet Ranger. This last summer, he displayed a fantastic Bell 222 at the MAC Show, but in his latest letter, he says it is too much work with the wheels

Continued on page 64

John Tucker's "fuselage holder", created for the purpose of handling a fiberglas fuselage while spray painting. Making one end support adjustable would make the jig more versatile.



Harold McCoy's rail car is the fastest in the country. It turned 2.70 seconds (165 foot strip) at Pomona, and won the 1976 Nationals.

R/C AUTO NEWS

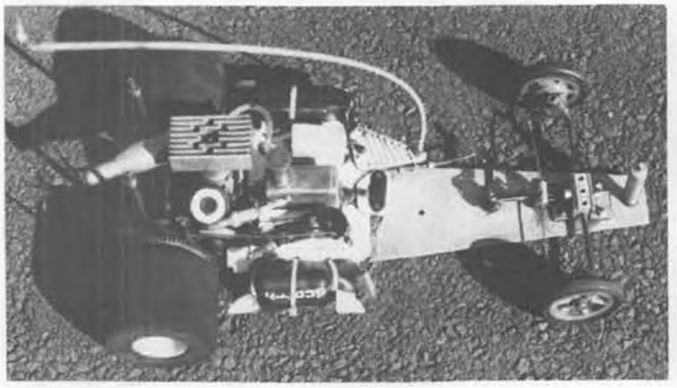
By CHUCK HALLUM

• I don't know whether you realize it or not, but our 1/8 scale R/C drag cars are turning in some fantastic performances. Everyone knows that full scale drag racers average well over 1 g (in fact, the average is over 2 g's) going down the drag strip to get the elapsed times and speeds that they attain. I thought it would be interesting to check out (calculate) some numbers for our 1/8 scale cars. I was really amazed. Because of these calculations, I decided it was time for an article on drag cars. I'm sorry that it has taken me so long to get to drag cars . . . it's just that I have never really had the time or become interested in drag cars (I've never had the super engine required for this event, either).

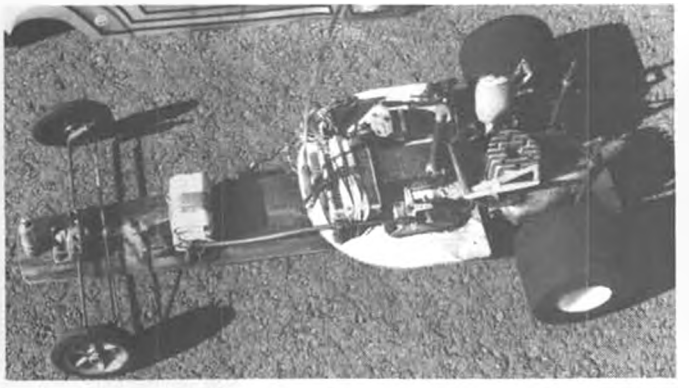
Usually I have only watched the drag cars at the ROAR Nationals . . . if it doesn't interfere with my schedule. So on December 12, 1976, I went to a drag race at Thorp Raceway in Pomona, California, primarily to get some good pictures of Harold McCoy's drag cars and Bill Jianas' funny car. These cars were the fastest and winning drag cars at the 1976 ROAR 1/8 scale Nationals. At Pomona, McCoy's rail cars (his and his backup rail) were in a class by themselves. But in the funny car class, there were several on this one day in Pomona that were faster than Jianas', so I've got pictures of a couple of others. In Pomona, Bill Newlin easily had the fastest funny car, but Jeff Thompson was top eliminator. Umpteen guys had fast times, 3.00 sec. to 3.05 sec., but Dan Citro was second fast qualifier.

Here are some of the times turned in at the Pomona race. In Rails: Harold

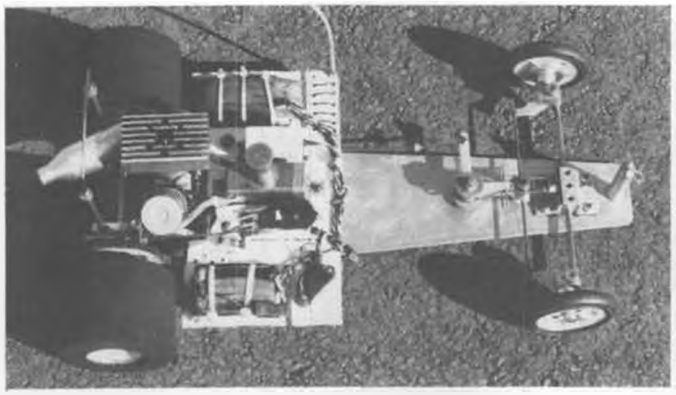
Curt Schneider, age 13, Irvine, California, the First World Champion in 1/12 scale electric race cars, with his trophies, and stable of Leisure Electronic racing equipment.



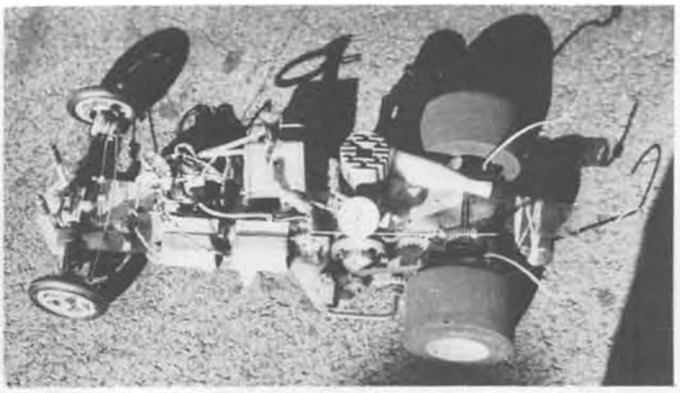
Bill Jianas' 1976 Nats-winning "Funny Car". Has "floppy" front axle and about 70% of the weight on rear tires.



Harold McCoy's Funny Car placed second at '76 Nats. There is a lead weight at rear axle to bring car weight to limit.



At Pomona, Bill Newlin had fast time of 2.90 seconds. Car looks neat, has "floppy" front, and was very controllable.



Dan Citro had second fastest time at Pomona, 2.95 seconds. Belt drive, and quite a bit of weight up front.

McCoy, 2.70, 2.70; Bill Newlin, 2.76, 2.80 (using McCoy's backup rail). In Funny Cars: Bill Newlin, 2.90, 2.92; Jeff Thompson, 2.97, 3.05; and Dan Citro, 2.95, 3.10. As you can see, these times are pretty super when considering that 3.04 sec. was the fastest rail time at the '76 Nats, and 3.17 sec. was the top funny car time. Most of the reason for the better times was the good traction of the Thorp Raceway drag strip, but also, the staging space was probably a little longer than at the Nats. At Pomona, the staging space may have been 8 inches long (just painted lines), and at the Nats the staging space was about 2 inches (by lights) long. This may not seem like much, but just wait a few minutes and I'll get back to this.

To get an idea of how well our R/C drag cars are doing, let us calculate the elapsed times for 165 feet, assuming that the cars have a constant acceleration over the length of the strip. The equation relating distance, acceleration and time is

$$s = 1/2\ a\ t^2$$

And converting we get

$$t = \sqrt{2s/a}$$

where 't' is the time in seconds, 's' the distance in feet, and 'a' the acceleration in feet per second per second. The acceleration can be converted to "g's" by dividing by 32.17 ft/sec^2, which is the earth's gravitational constant. A table presents the elapsed times for various average g's down the strip for both 1/8 scale and full scale cars.

ELAPSED TIME IN SECONDS

g's	1/8 Scale 165 feet	Full Scale 1320 feet
1.0	3.20	9.06
1.1	3.05	8.64
1.2	2.92	8.27
1.3	2.81	7.95
1.4	2.71	7.66
1.5	2.615	7.40
2.0	2.265	6.40
2.3	2.11	5.97
2.5	2.03	5.73

As you can see, our 1/8 scale drag cars, funnies and rails, are averaging between 1.1g and 1.4g down the full length of the 165 foot strip! To me this is amazing, considering the scale of track roughness and our tire compounds. The full scale cars are averaging about 2.3g down the 1/4 mile strip . . . FANTASTIC. Maximum g's are higher than the average, and since the cars are peaking out toward the end of the strip I would guess max g's occur around the half-way point or earlier. So on our model cars, the max g's are at least 1.5 and possibly as high as 2.0. In full size drag cars max g's may be over 3 . . . WOW, imagine riding in something like that! Don't you agree that our 1/8 scale accelerations are amazing?

Now let's get back to that start line problem, the staging distance before the start light. In elimination rounds, this makes no difference if both drivers do the same thing . . . but it does make a difference on the recorded elapsed time. At the start line, the 2 inch stage distance is covered in 0.1 sec. (between 1g and 1.5g), while the 8 inch stage length is covered in 0.2 sec. At the finish, the 6 inch difference is covered in 0.005 sec., assuming 65 mph. So you can see, the 6 inch difference in staging length would give a decrease in elapsed time of about 0.095 sec. Consequently, I feel the times at Pomona should be decreased by about 0.1 sec. to compare them to the '76 Nats times.

The foregoing also shows that there should be some standardized staging length for official record runs. By

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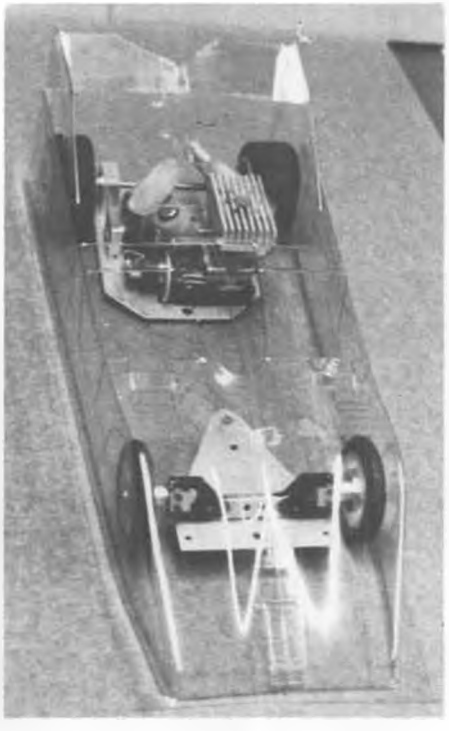
Funny Car final at Pomona. Jeff Thompson (2.97 seconds) in lane to left, got the start on Bill Newlin.



The writer's land speed record car in early stages. Std. body narrowed down middle, glued.

"Zzzzzzzz . . . uh . . Fred . . let's skip the next heat . . we blew that last one anyhow . . ." "Zzzzzzzz . . . yeah, Ken . . . . S'pose those sailplane guys got the right idea? They can do this, and fly at the same time." Fred Najor (left) and Ken Neatlie at Weak Signals 3rd Annual, August 22.

PYLON

"GO FAST AND *Turn Left!*"

By JIM GAGER

• It's a beautiful fall day; the temperature's in the low eighties, 10-12 mph winds and a bright, sun-shiny day. A perfect setting for one of the last races of the season. Perhaps because of its being one of the final meets for the particular area or possibly due to the growing numbers of Q-M racers, this proved to be the largest turnout of competitors to ever race in this area.

Meanwhile, the non-sleepers were doing their thing (l to r): Gary Dabich 5th, Bill Hager 4th, Gary De Witt 3rd, Pete Waters 2nd, and Wayne Yeager 1st. Q-M Silver Cup Races.

Everyone was in a festive and bright mood and as competition wore on, a great time was being had by all. Quarter Midget racing was hotly contested, and after four rounds, first place was still up for grabs. The highlight of Q-M racing was near. Only one flier, we'll call him Jim, had won his first four heats and had not lost any points on idle check while landing. He was closely followed by one flier who had five firsts but had lost 1/2 point when his engine had died on landing. The fastest time of the day so far had been set by a flier (we'll call him Dave) who was no longer in contention due to receiving a zero earlier in the day. This all set the stage for the showdown race as Jim was matched against Dave in one of the final races. Dave, being the competitor he is, was all set to play the role of spoiler.

It was a three-plane heat, but after the first lap it was strictly between Jim and Dave. Dave appeared to have the faster plane down the straights, but Jim was able to regain the lead on Turn One, then lose it down the straight and regain it on pylons 2 and 3. Everyone was up and watching, pulling for their favorite flier. The fierce battle went on for seven laps, Jim knowing he couldn't beat Dave except by flying even closer and tighter than he had been. He dropped down to an altitude of five feet in order to be able to judge the pylons better. He pulled in even closer

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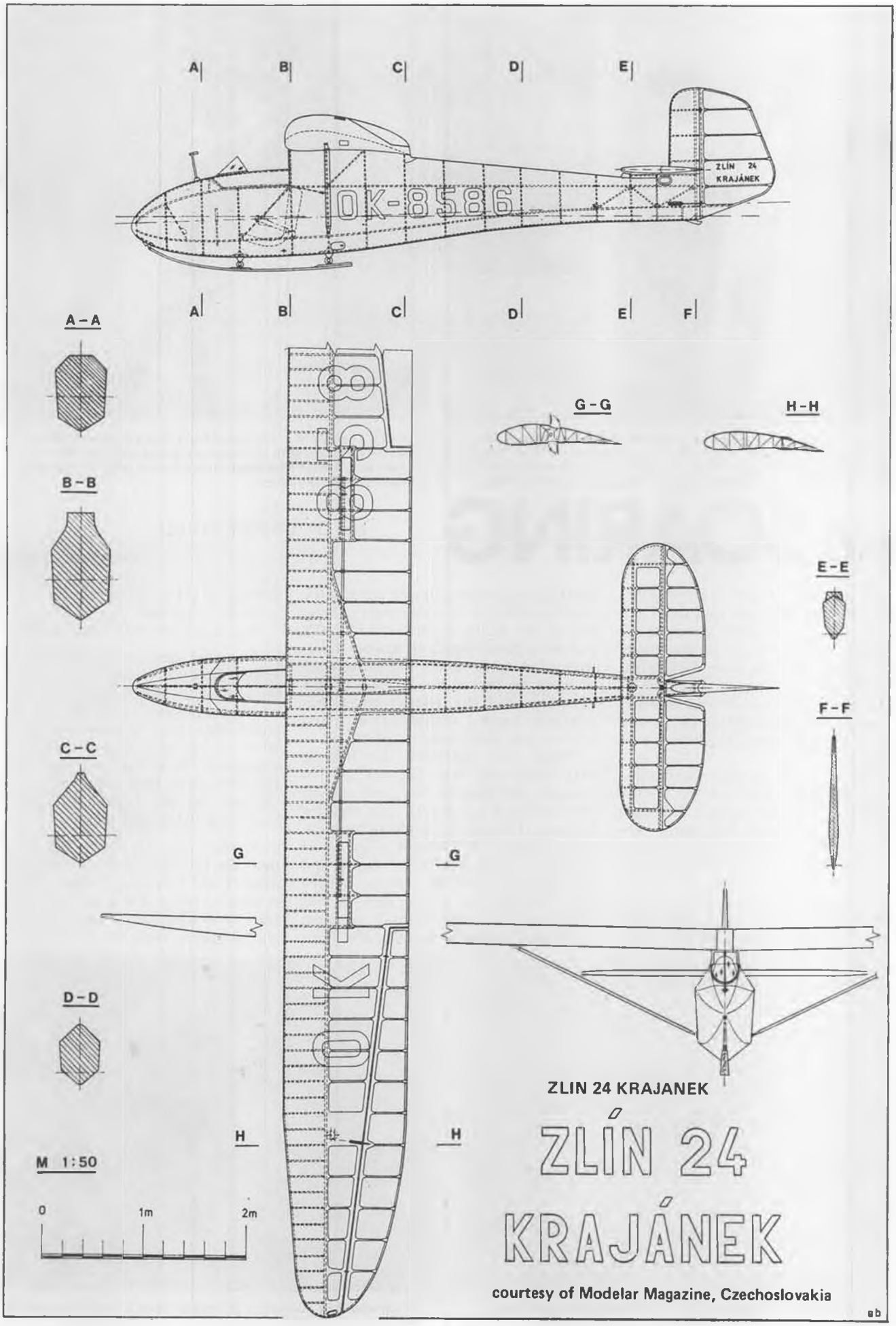
A
B
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A
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C-C
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H-H
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ZLIN 24 KRAJANEK
ZLÍN 24
KRAJÁNEK
courtesy of Modelar Magazine, Czechoslovakia
ab

Photos across the top of these two pages depict the first piggy-back launching of Bob Simon's Mini-Windward from Don Edberg's Olympic II, which, in turn, was winch-launched in normal fashion. (l to r): Don Edberg holds his Olympic, with Mini-Windward attached; Bob Simon, with transmitter for the Mini, launches the duo as Don controls his Olympic; on the next page we see four stages in the launch, with the last one showing the planes just after separation. Actuating the Mini's rudder causes release from the Olympic.

R/C SOARING

by Dr. LARRY FOGEL.

PHOTOS BY AUTHOR

• Bob Simon, of the Torrey Pines Gulls, is inventive, to say the least. During one of his more conventional moments, he put together the three-foot wingspan Mustang from the Sterling U-Control kit, placing the flat pack in the nose and the receiver and servos in the wings. All-up weight is 15 ounces, yet it really zips along. It seems there's nothing it can't do.

With this much success in only three feet of wingspan, why not try a Mini-Windward, the result being a half-scale version of the original Windward. Sure it's a little tight for two servos side-by-side, but everything looks just as it ought to.

But wait . . . having such a small plane opens the door to a new mode of launch. Why not mount this mini-plane on a standard sailplane and use the existing winch or Hi-start? Don Edberg, also of the Gulls, volunteered his 100-inch wingspan Olympic II. Rubber bands were used to hold the Mini-Windward in place on top of the fuselage of the Olympic until the Mini's rudder was actuated, causing withdrawal of a pin holding the rubber bands in place.

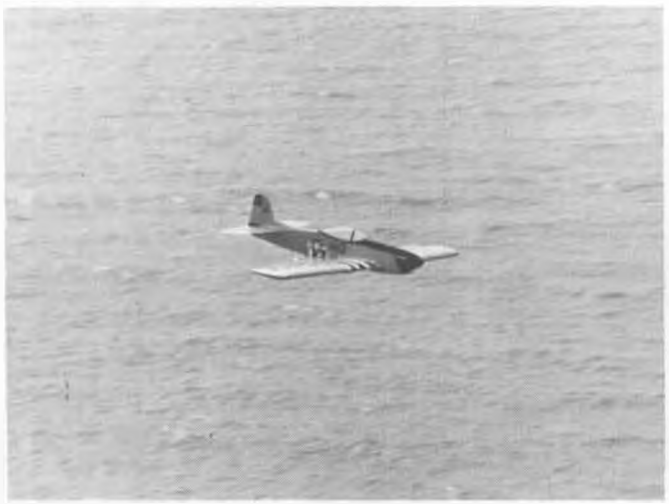
Those who witnessed this historic first flight saw Bob Simon's arm in motion with Don at the controls. All went well and the release from the tow hook was followed by a release from the small plane. This brought a round of applause from the other flyers and spectators at our Mira Mesa soaring site. Things were going well in this launch mode until a small problem developed. Somehow the Mini-Windward slipped off the longitudinal axis.

Would it release?

Would the aircraft become tangled?

Moments later the release took place as if this extra acrobatic maneuver had been planned. Adjustments had to be made to prevent recurrence of what could have been a serious difficulty. When things got back to normal, I suggested, "Now that you can launch two in tandem, how about securing the Olympic to my Legionair 140." My suggestion fell on deaf ears.

Flushed with his success, Bob came back the following weekend with a new aircraft, the Pipsqueak. Viewed aloft, it is hard to tell that this craft has only a three-foot wingspan, a five inch chord, and weighs a total of *9.4* ounces (in-



Bob Simon built this "Gliding Scale" P-51 from a Sterling control line kit. Flat pack is in the nose, receiver and servos in wing.

All-up weight of Mustang is 15 ounces. Span is three feet, and the model is very aerobatic. A great idea, huh, Ed Manulkin?




cluding the radio). The wing is undercambered and strengthened with shear webs. The wing loading is 7.4 ounces per square foot. Only the size of the antenna wire provides a clue to the plane's size.

This pod-and-boom sailplane is a pleasure to hold. It feels more like free flight than radio control. The servos are in tandem so the fuse is only about an inch wide. The flying rudder and conventional stabilizer/elevator are the only moveable surfaces. The wing tips warp upward, but Bob agrees with me that this is more for style than efficiency. In brief (no pun intended), the Pipsqueak can stay up in ultra-light lift, yet performs aerobatics usually reserved for aircraft designed for that purpose. Why not try your hand at scaling down a fully controlled sailplane? How long before we go from mini to micro?

To top this, I was standing in the pit area with a number of other pilots as Don Edberg brought his Olympic in over our heads. We were startled to hear a deep laugh eminating from the plane. You know the kind . . . Not a giggle, but the kind that comes from the Jolly Green Giant when he's really tickled. Turns out that Don strapped one of those "laughing boxes" under his wing . . . the kind you can buy in a novelty or magic devices store. A servo could turn it on and off remotely. He was trying for the last laugh. Later he told me that these boxes also come with bird calls. I could imagine various possibilities, but refrained from suggesting any of these for fear that our ingenious friends should attempt to replicate reality beyond the limits of good taste.

* * *

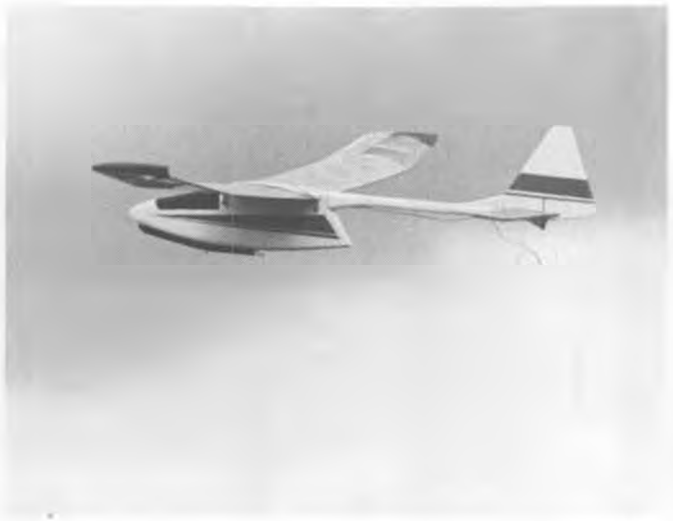
Here's a tip from Ken Banks. Don't use your transformer type soldering gun too close to your servos. The electromagnetic field of the gun can cause a demagnetization of the servo motor magnets. He went on to reassure me that this effect is not there if you use the pen-type soldering irons. A word to the wise is sufficient.

* * *

Have you heard about the 1977 National Soaring Society Soaring Excellence Award Program? NSS members can enter six contests in this seasonal championship event. The scores of each contest are normalized so as to take into account differences in soaring site, altitude, weather, competence of the other pilots, and so forth. I understand that the League of Silent Flight will use this same scoring technique for their 1977 two-day tournament which will be held simultaneously at various sites. You can get further details by reading the December issue of SAILPLANE, the Journal of the National Soaring Society. Why not become a member and get in on the fun? ●

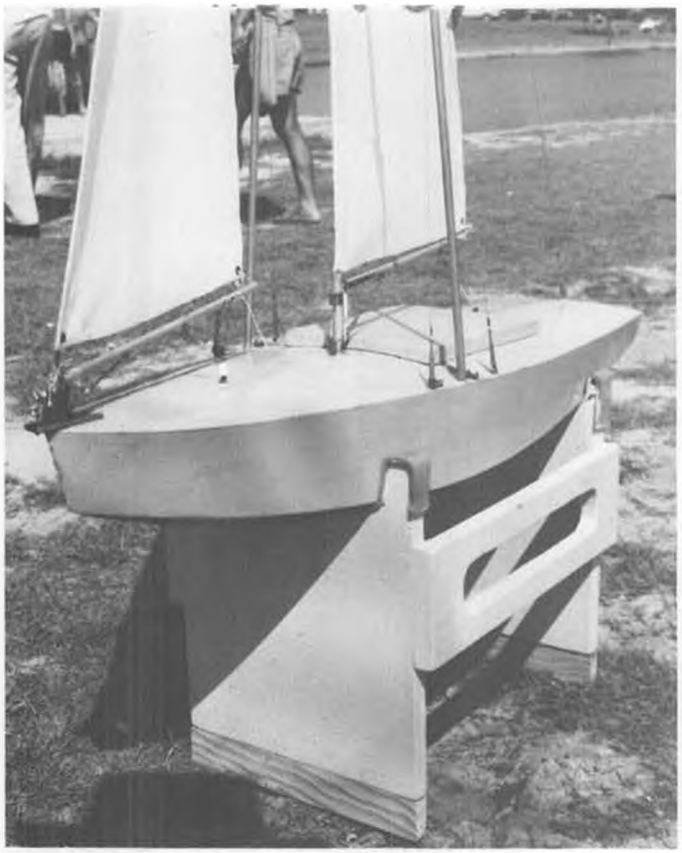
Bob Simon catches his Mini-Windward at the end of a piggy-back-launched flight.

Snug radio installation in Bob Simon's Mini-Windward. Ship is half-scale.



Hard to tell this is only a three-foot span model, except for the antenna wire size. It's Bob Simon again. Servos are in tandem.

Just in case you don't believe the photo at left, here's Bob with his little "Pipsqueak". Total weight is 9.4 ounces, wing loading is 7.4 oz.



STRICTLY SAIL

By ROD CARR

• No sooner had our last column been put in the mail to the Editor, than along came the heading pictures and letter from Jim Gale. Seems lots of people were intrigued by the bi-pod arrangement and Jim applied it to his Starlet 36/600. He says it has been variously referred to as a bi-pole, mastless, or derrick rig. The overall rig height is 52 inches, and the masts are of 5/16 aluminum tubing. The 34 inch Starlet displaces 11 pounds, which gives some hint of the kind of air in which the California skippers are used to sailing. Back here on the East Coast, we have seen only one 36/600 over 9 pounds and it was being used as a paperweight!!! Jim had not yet had time to tune the boat and get it into local races for comparison purposes, but I'm sure we'll hear about the outcome if it turns into a Scampi-eater.

I'm pleased to report that the first Sonic Boom II completed from **Model Builder** plans is sailing. The builder sent me a color photo of his powder blue creation and I mailed it on to the designer, Adrian Brewer. There is a distinct possibility that the hull will be available in fiberglas in the near future. I will give full details as soon as they are available.

As R/C model yachting has grown and matured, the role of regatta and series scoring seems to have become more important. Scoring of model yachting contests is completely analagous to the big boat situation. The best reference on the subject is "Yacht Race Scoring", by F. Gregg Bemis. In Mr. Bemis' introduction, he makes a couple of statements which are worth quoting.

"Any (scoring) system is fair as long as it is applied equally to all contestants and all are fully informed about it in advance of the contest.

"Any natural objective a sport or game may have, becomes subordinated to the objective of obtaining the best score."

Let us examine two cases of importance to the continued growth and development of our sport. In these examinations, I am willing to ignore the single class, single regatta situation, which is apparently handled quite well by our AMYA procedure of awarding 1 point to a heat winner, 2 points to second place, 3 points to third place, and so on; then summing the scores for the event and the winner being the skipper with the lowest point total.

A completely different case is that of a club which has a mixed fleet of boats and wishes to race them all together in the interest of keeping the club growing. One of our clubs has been faced with just this situation, and has come up with a handicap system allowing different boats to race together. Table 1 shows that a fixed score is assigned to the position which one finishes in a heat. Having finished a heat, your score is then adjusted according to the handicap shown at the bottom of a table. For example: if a J-boat wins a heat, its score would be 25-2=23 points; while if the next heat is won by a 36/600, he will be awarded 25+3=28 points. Now one can argue about the handicaps chosen and one can bemoan the spread that has been built into the place scores, but the system does meet Mr. Bemis' first statement, i.e., everybody knows about it and it is applied equally.

At the same time, Mr. Bemis' second statement came into play, and I asked the commodore of the club if it was allowed to switch boats that you sailed from heat to heat. He replied that it was all right, and that points accrued to the skipper, rather than to a specific chunk of fiberglas or wood with sails on it.

So you can see that the application of the handicap scoring system provided the impetus for multi-boat stables as a means of having the right tool for the prevailing wind conditions. I have not heard if any of the skippers went that far . . . or whether they were content to see their best efforts averaged out over the sailing season with a single boat.

One benefit of this system might be that as skippers add new boats to their

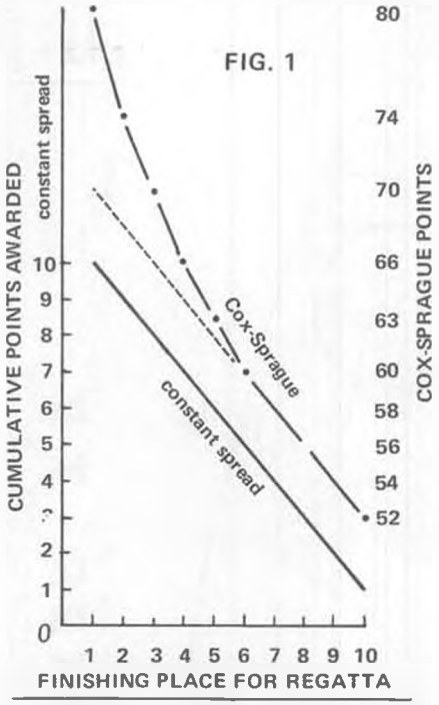
NARAGANSETT MODEL YACHTING ASSOCIATION SCORING 1976 1976 NMYA PROPOSAL																	
POSITION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	DNF	DNS
POINTS	25	23	21	19	17	15	13	11	9	7	6	5	4	3	2	1	0

Based On
6 - 27mc
3 - 72mc
3 - 72mc
2 - 6m
14 Total Possible

Handicap For Positions 1 - 15

"J"	Score -2
A & 10Rater	Score -1
Star	Score +1
50/800	Score+2
36/600	Score+3

TABLE 1



personal fleets, they may be encouraged to do so in a manner which will allow one or two single class fleets to develop. I would suspect that 50/800's and EC/12's might be the most probable candidates.

This scoring system will rank the skippers at the end of the regatta. How the scores are handled for the season I do not know. It obviously makes no difference how many skippers show up for the event, as first place points in each heat are already defined regardless of population. What does become important is the number of heats that are run in a given regatta. More heats will mean higher scores for the winners, and that will lead to nice-weather regattas being proportionally more likely to control the outcomes than heavy-air ones. I do not know how this club decided to handle the series problem, but since they were embarking on an 8-event series, I suspect that we will hear about the outcome in the near future.

The problem of series scoring is our other point of discussion . . . in particular, a "selective" series. This is a series of regattas, 8 for example, in which the final scores from only 6 will be counted to determine the series winner. As previously outlined in this column, my local club has been using a regular spread scoring system for the cumulative scores. This awards cumulative points for each event as follows: one point for racing, plus one point for every boat that you were ranked ahead of at the end of the event. In an 9-boat regatta, the winner would get 1+8=9 points, second place 1+7=8, and so on. The fly in this ointment was that the varying size of regattas often meant that winning a small regatta was useless, since 3rd or 4th in a larger regatta meant more points.

In this constant spread system, there was no bonus for winning small events, nor was there really any bonus for winning large events. On the one hand, a good system would measurably reward the winner of any event no matter what the size, yet would somehow retain a bonus of some sort that would give due credit for winning a bigger regatta. Another evil to be found in the constant spread system was the dastardly habit some skippers had of doing all the required calculations and discovering that they could protect a one-point cumulative lead if they sat out the last event, thus dooming skippers close on their heels the lower points accorded to a smaller regatta. Wasn't Bemis right, about the scoring system taking over as the goal rather than sailing, as was the original idea of the sport???

Well, naturally a better system does exist, and we are just now appreciating the benefits to be found in it. It is called the Cox-Sprague System, and seems to make a good stab at curing all the evils we have just listed. It is a variable or increasing spread system. At the end of a regatta, the cumulative total score that you get is larger, as the regatta population increases; and simultaneously, you get more points the nearer the front of the fleet you get. The plot in Figure 1 compares the constant spread cumulative score for a 10 boat regatta, with the Cox-Sprague system. A vertical square is worth one point, though the actual point amounts are different as seen on the left hand scales. Below 6th place, the Cox-Sprague and Constant Spread systems are acting alike. But above 6th, the Cox-Sprague gets proportionally larger as one nears first place. This reflects in the score the increasing amount of effort it requires to move up one place in the standings. From 9th to 8th is a comparitively easy step up, but the move from 5th to 4th is harder, and the hurdle from 2nd to first is quite steep.

A complete tabular format of the Cox-Sprague scoring system is presented in Table 2. Note that the winner gets more points for a bigger regatta, but that the 6 point spread between first and second is maintained. If we left it at that, we would have made much improvement . . . for bigger regattas are still the overwhelming control over a good score.

The situation improves if we instead

Continued on page 80

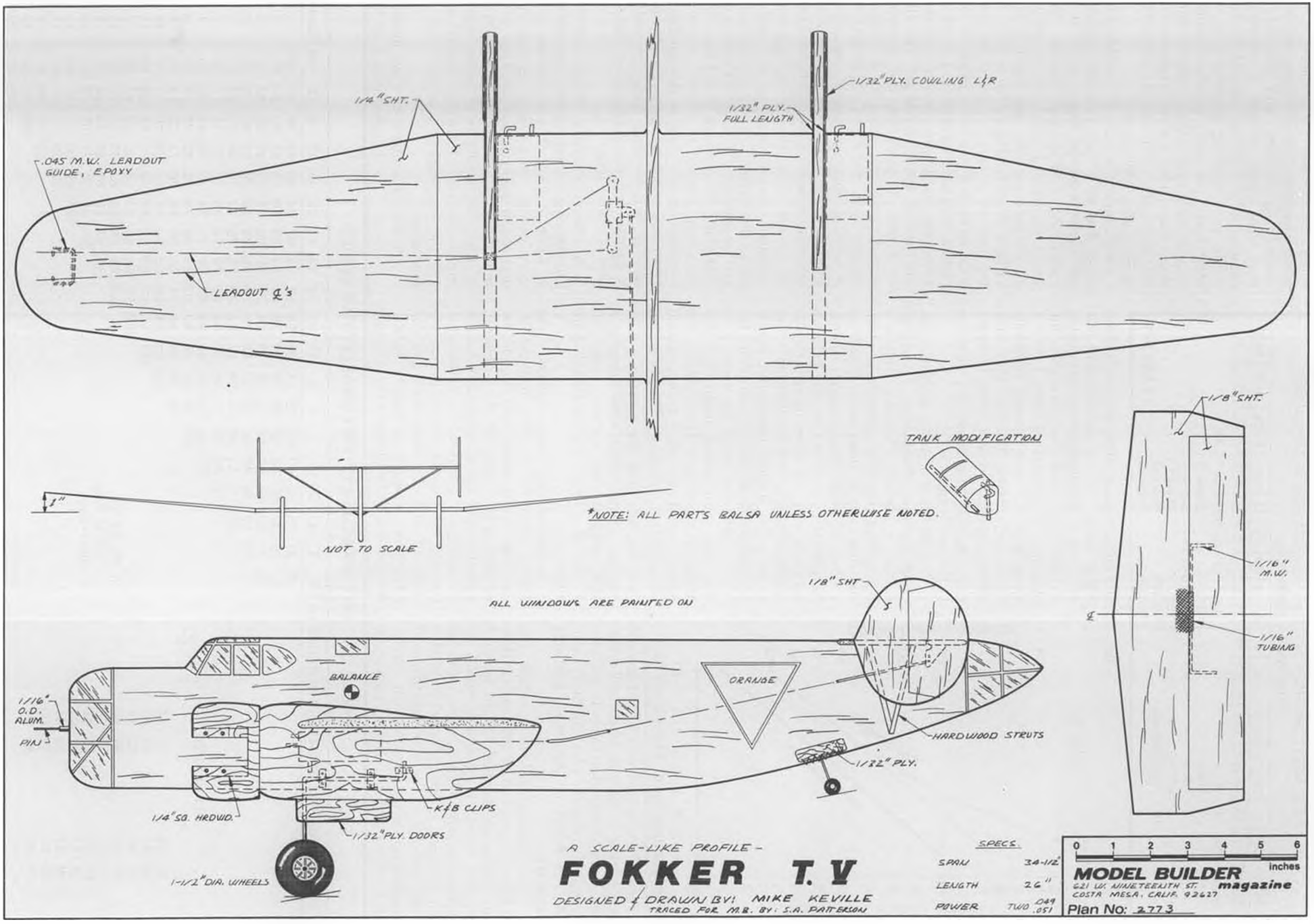
TABLE 2 COX-SPRAGUE SYSTEM FOR SELECTIVE SERIES

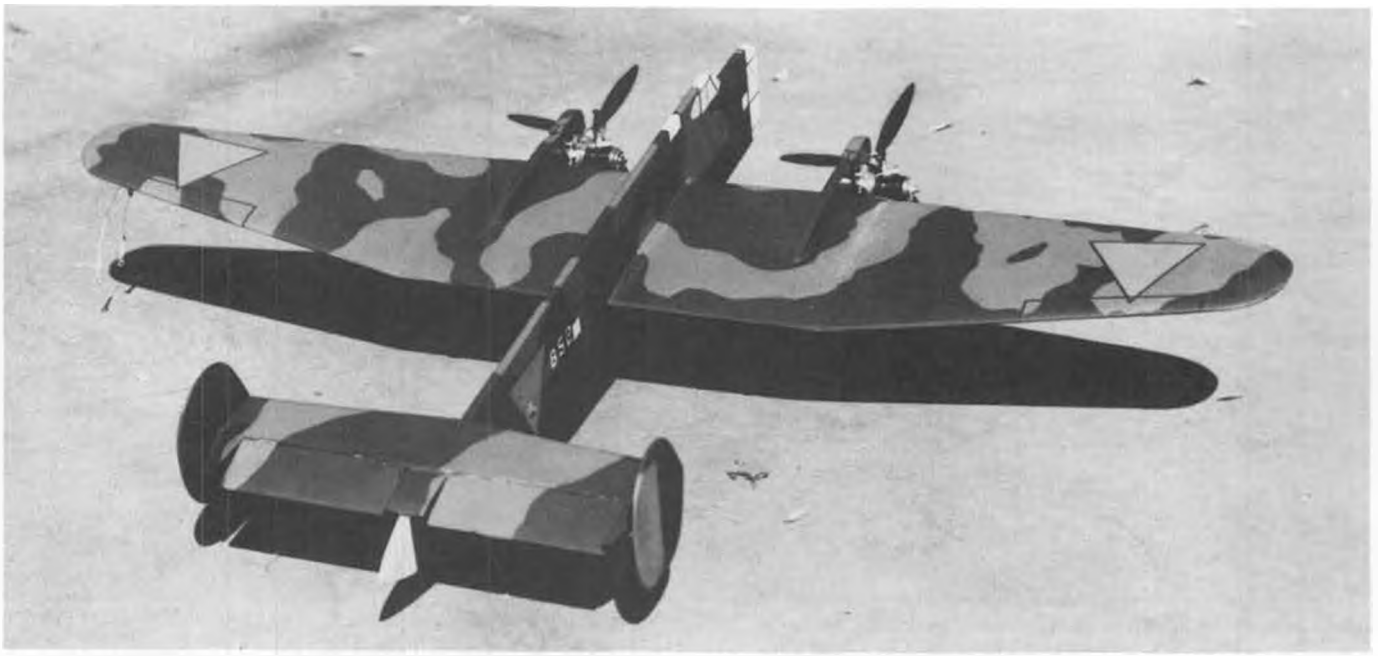
NUMBER OF STARTERS IN REGATTA	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	*20	Place
	10	31	43	52	60	66	72	76	80	84	87	90	92	94	96	97	98	99	100	1
	4	25	37	46	54	60	66	70	74	78	81	84	86	88	90	91	92	93	94	2
	(0)	21	33	42	50	56	62	66	70	74	77	80	82	84	86	87	88	89	90	3
		(17)	29	38	46	52	58	62	66	70	73	76	78	80	82	83	84	85	86	4
			(26)	35	43	49	55	59	63	67	70	73	75	77	79	80	81	82	83	5
				(32)	40	46	72	56	60	64	67	70	72	74	76	77	78	79	80	6
					(38)	44	50	54	58	62	65	68	70	72	74	75	76	77	78	7
						(42)	48	52	56	60	63	66	68	70	72	73	74	75	76	8
							(46)	50	54	58	61	64	66	68	70	71	72	73	74	9
								(48)	52	56	59	62	64	66	68	69	70	71	72	10
									(50)	54	57	60	62	64	66	67	68	69	70	11
										(52)	55	58	60	62	64	65	66	67	68	12
											(53)	56	58	60	62	63	64	65	66	13
												(55)	57	59	61	62	63	64	65	14
													(56)	58	60	61	62	63	64	15
														(57)	59	60	61	62	63	16
															(58)	59	60	61	62	17
																(58)	59	60	61	18
																	(58)	59	60	19
																		(58)	59	20

PLACE - PTS.

21 - 58	31 - 48
22 - 57	32 - 47
23 - 56	33 - 46
24 - 55	34 - 45
25 - 54	35 - 44
26 - 53	36 - 43
27 - 52	37 - 42
28 - 51	38 - 41
29 - 50	39 - 40
30 - 49	40 - 39

( ) Pts. are for DNF or Disq.
* 20 or more


1/4" SHT.
1/32" PLY. COWLING L&R
1/32" PLY. FULL LENGTH
.045 M.W. LEADOUT GUIDE, EPOXY
LEADOUT ℄'s
1"
NOT TO SCALE
TANK MODIFICATION
*NOTE: ALL PARTS BALSA UNLESS OTHERWISE NOTED.
1/8" SHT.
1/16" M.W.
1/16" TUBING
1/8" SHT
ALL WINDOWS ARE PAINTED ON
BALANCE
ORANGE
1/16" O.D. ALUM. PIN
HARDWOOD STRUTS
1/32" PLY.
1/4" SQ. HRDWD.
K&B CLIPS
1/32" PLY. DOORS
1-1/2" DIA. WHEELS
A SCALE-LIKE PROFILE -
FOKKER T. V
DESIGNED & DRAWN BY: MIKE KEVILLE
TRACED FOR M.B. BY: S.A. PATTERSON
SPECS
SPAN 34-1/2"
LENGTH 26"
POWER TWO .049 .051
0 1 2 3 4 5 6 inches
MODEL BUILDER magazine
621 W. NINETEENTH ST.
COSTA MESA, CALIF. 92627
Plan No: 2773



PHOTOS BY PAT RASILE

FOKKER T.V ..in Profile

By MIKE KEVILLE . . . A very uncomplicated profile scale model of a pre-World War II twin-engine bomber. Enjoy the sound of two synchronized engines, and the sight of a model that looks like a real airplane.

• Here is a fun airplane. Even the name is kinda funny, as who ever heard of flying TV? Doghouses and Lawnmowers, yes . . . but flying TV? Actually, that "V" is a Roman numeral 5, and the design was Fokker's attempt at a modern (in 1935) bomber. They built only a dozen or so, including the prototype, and all were destroyed in the opening days of World War II. Several were wrecked on the ground at Amsterdam/Schiphol, but others fought vainly in the air against bummer odds.

The model was built for the Valley Circle Burners' "Fun Scale" contest in September 1976, which featured '1/2A Multi-Engine Profile Scale', and drew 14 entries. To my great surprise, the T.V placed 3rd . . . with help from Rich LeRoy, Frank Kelly, and 5-minute epoxy!

Anybody who's built a couple of profiles should have no trouble with this one, even though several of my fellow clubmembers have suggested that I *still* have trouble with anything. But then, what do they expect from an ex-Free Flighter?

Power for the original was a pair of Tee-Dee's, wrenched from the firewalls of a Satellite and an Orbiteer; .049 outboard and .051 inboard. On Cox 6/3 Grays and 40% fuel, the thing was suitable for Proto Speed. Even on one engine, it was hauling bananas. We've all heard that Scale ships are heavy and underpowered, but *this* remedy was absurd. Suggest you de-tune to a pair of Medallions, or . . . if you have them . . . OK Cubs; or any other beam-mounted engine. Beam mounts allow using full-profile nacelles, whereas a radial-mount engine, such as a Baby Bee, means chopping off the "cowlings" and adding firewall cheek blocks. You'll lose some of the scale flavor with the radial method, but if it's all you've got, by all means use it.

Everything but the tail is 1/4 inch sheet on the original; for better appearance, you might go to 3/8 on the fuselage, but the extra weight really isn't necessary. The wing wasn't airfoiled;

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Mike's 8 year old daughter, Karen, holding the TV. Beam mounted engines offer simpler installation, TeeDee's are really too powerful.

Mike and Karen, with the TV that definitely qualifies for family viewing! Nice project for getting the thrills of twin engine flying.

Judges at SoCal "500" Stunt Club contest (l to r): Bob Whitely, Lucky Pyatt, Stephanie Pyatt (now we know why he's Lucky!), and Rich LeRoy, designer of "Miss Poppy". Mike Keville photo.

(l to r): Gert Frogg (alias Chuck Thomas) and Whipper (alias Phil Shew). Phil wrote "Piloting Technique", in Dec. column. Gert just back from England, with USAF. Charlie Johnson photo.

Control line

By "DIRTY DAN" RUTHERFORD

PHOTOS BY AUTHOR UNLESS NOTED

• Last month's column gave information on the special interest groups that have formed around particular C/L events. If you missed the info, it is important enough to be worth digging up and reviewing. If you did read it, but forgot or put off joining whichever group interests you, go ahead and do it now. Haven't you been missing out on being in-the-know long enough?

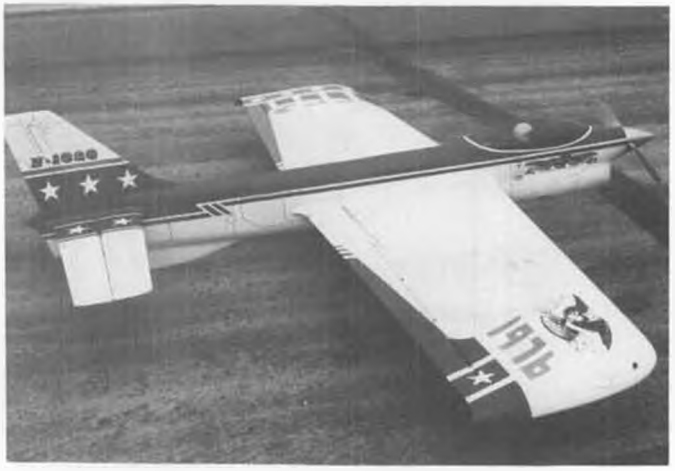
COX 15 . . .

I have the latest version of the Cox 15 now, and *you* had better be checkin' it out if you fly Goodyear, FAI Combat, FAI Speed, A Speed or just want a rip snorting 15 to show-biz the folks with. This particular engine I have is from the latest production run and differs from early versions in that the sub-piston induction has been eliminated. This allows effective use of either the extractor (constant diameter pipe) or racing muffler that Cox has now released as accessory items. The only modification my engine has had is the fitting of an R/C head. The head is part number 28067 and only costs $2.00. I haven't measured the deck clearance with the R/C head, but it has one head gasket installed. Deck clearance must be about right, because the engine sounds just super on 60% fuel.

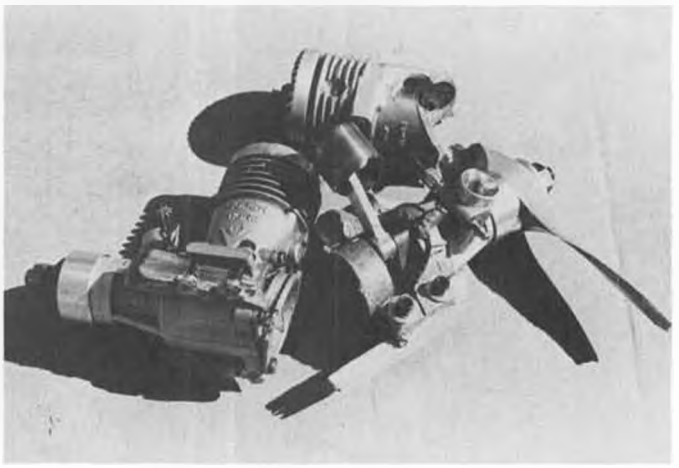
And what exactly does "just super" mean in actual rpm figures? I thought you might want to know, so I did some testing and here are the results. The GMA Rossi used on Project G/Y, which is a very good engine, did 20,900 rpm twisting a 6-11/16 x 6 K&W glass prop on 60% Nitrotane with Aldrich standard long plug, and open-face exhaust (no megaphone or pipe). A quick switch of the Cox 15 for the Rossi (same plug, fuel, prop, etc.) saw the Cox shade the Rossi by 700 rpm, without the pipe, turning a solid 21,600 rpm. With the pipe on the Cox, it did 21,900 rpm, a full 1,000 rpm faster than the GMA Rossi.

If the raw rpm figures aren't enough to impress you, remember that the Cox 15 is out-of-the-box stock (except for the R/C head) and that Aldrich did his magic with the Rossi. Very impressive, right? And good news for everybody who wants a honkin' 15 for Goodyear of FAI Combat, but just can't lay out the long green for a custom-built engine.

In Goodyear (and in FAI Combat, to



"Moby's Little Brother", stunt ship by Ted Fancher. C.S.C. foam wing, OS .35, Sig dope. Ted 17th at '76 Nats. Wynn Paul photo.



Motor rework by Bob Lucas and Joe Kall. Left hand engine center-punched engine to right in head-on . Charlie Johnson photo. Ouch!

Lee Kuhn pull-testing a Panther at SoCal "500" stunt contest. Stunt Grunts wear strange looking aprons! Mad Mike Keville photo.

Tom Zon (left) and Ken Kall relax between matches. Ken's son won Jr. Combat at '75 Nats, 2nd in '76. Ken pits for Joe. Johnson photo.

a certain extent) starts and re-starts are important, and the Cox looks good in this department also. While bench-testing the engine, it started very easily and re-starts were just kind of automatic . . . flip the prop and it was running again . . . nothing to it.

As soon as we get the time, Gary and I will be trying this Cox 15 on the Project G/Y plane. With the GMA Rossi, that plane is in the mid-6's for finals, so the Cox might get us into the low 6's, with nothing more than a change of engine and a little work with props a bit larger in diameter. I'll let ya know what happens.

ALDRICH FUEL AND PLUGS

The UPS guy (they're like mailmen, but a bunch more efficient) dropped off a large, heavy box awhile back, and it contained a sample (if you can call four gallons a sample) of GMA's latest batch of fuel in 15% nitro content. You've no doubt seen the Aldrich Products ads, and several claims are made for the fuel that sound like something you would read in Popular Mechanics. You know, more power, better mileage, less heat and all that. To be perfectly honest, it sounded a little too good to be true, but Aldrich doesn't blow smoke, so I decided to do some testing before yelling "Baloney".

Good thing I waited, 'cause this fuel really is something new and it does give more power, etc. A new Fox Combat Special was used to test the fuel, and it was swinging a prop that is a bit larger than my normal flying prop, so don't judge my engine, or yours, by the following figures.

The Fox, on 15% Nitrotane, did 17,200 rpm, and a 2 oz. load of fuel gave a 103 second engine run, with the engine peaked. Switching to the Aldrich 15% saw the tach hit 17,800 and 2 oz. gave a 117 second engine run. Not bad, huh? An extra 600 rpm right on the top and about a 15% longer engine run. And remember that Nitrotane is very good fuel with which I have had excellent results in the past couple of years.

I don't have the proper equipment for testing engine temperature, so can't verify this claim made for the fuel. But I did find that two out of the three claims were right, so I'll just naturally go along with the third.

Another advantage of this fuel is that it burns very cleanly. Even on a rich setting, there is very little exhaust smoke. A tear-down of the Fox that had eaten a gallon of Aldrich's fuel showed the engine's internals to be very clean, with absolutely no carbon or varnish of any kind. It's really good fuel . . . you ought to try some.

Also sent along from GMA were some of his new plugs, in standard long and wide idle-bar R/C long. The R/C plugs worked super in a Stunt engine (O.S. Max 35 with O.S. muffler on muffler pressure). George says the wide idle-bar plugs are designed specifically for the cross-flow engines, while the narrow idle bar plugs are for the Schneurle ported engines now being produced by many manufacturers.

I believe that Aldrich says the standard longs are to be used with up to 15% nitro while he recommends the racing plugs when using high nitro fuels. However, I tested the standard plugs in Fox Combat Specials that were burning 40% and 50% fuel. Surprisingly, the plugs lasted very well, even on this fuel.

One plug gave 18 runs before signing off, due to the element being very scrambled. The plug was still working

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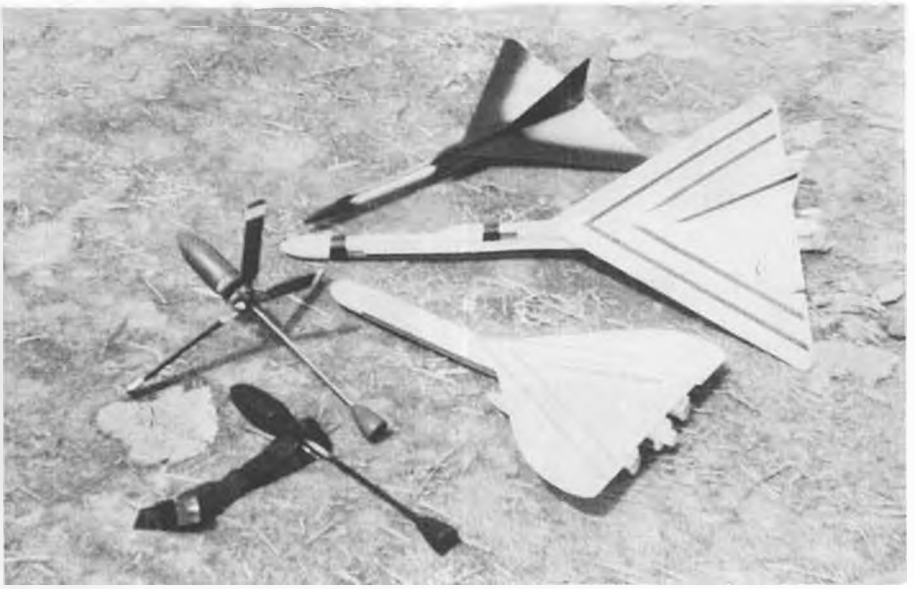
Bob Hunt, winner of Open Stunt at '76 Nats. Own-design Genesis, foam wing, flaps, ST .46, Sig dope, 54 oz. total weight. Wynn Paul pic.

Winner of unannounced Charles Manson look-alike contest, Rich Brasher, Redwood City, Ca. Own Rotation Station combat.



Three Kopter glider kits. Top to bottom; the Moray, the Pterosaur, and the Jet-I-Son. The rotor unit is part of the Jet-I-Son, as is the streamer unit below it.

A LOOK AT *MODEL ROCKETRY*

By DOUGLAS PRATT . . .

• This is a frustrating time of year. Not just because of the fact that the Christmas bills are due, or the fact that I don't live in Florida so I can't fly. I expect all of these things, which doesn't make them any easier, but at least makes them seem a little more friendly. I'm talking about a frustration experienced only by writers for hobby magazines and only when writing an article in late November that will be read in early February.

You see, the HIAA trade show is scheduled for the last few days of January, and it's there that all of the model manufacturers are going to trot out their new goodies. These new goodies are going to be Big News; so much so than anything else I can talk about pales by comparison. This issue of MB is probably being read by Trade Show attendees right now, who will be fresh from the exciting event of the show. They all know so much more than I do right now. I sometimes feel, in my more uneasy moments, that they are laughing up their sleeves at me for this very reason.

Well, this year, I'm fighting back. For starters, I'll be at the Trade Show myself, in all my overweight glory, so if they have anything to say about the column we can have it out then and there. For another thing, I have advance word from my far-flung network of spies, so that I can report right now about the new products that one manufacturer, at least, will be releasing to a breathless public on January 29th.

Centuri Engineering unquestionably has a corner on imagination in the rocket kit industry. We have had occasion to refer to its innovations in these pages; and soon we will be doing a review on two of the Super Kits, as well as passing along information on customizing the Eagle Transporter kit. Centuri is in the habit of introducing new materials and design concepts with each kit, such as fiberboard where balsa might be subject to warping or shattering, and plastics molded in a variety of ways. Recent innovations include the aforementioned Eagle Transporter from "Space: 1999", three plane-like rockets called the Fighter Fleet, and a line of ARTF rockets for beginners and demo purposes.

At the HIAA show, Centuri will be adding several new items to its line. To begin with, the three members of the enthusiastically-received Fighter Fleet are to be joined by two more kits: an F-104 Starfighter, and an F-5J Mirage. These two kits will feature international decals; the Starfighter will have West German markings, and the Mirage will have Israeli insignia (I asked the Centuri design people once if they were planning a MIG; they replied, typically, that market research indicated that Russian kits don't sell!). They will also feature the stiff fiberboard wings that we commented on in our review of the first three Fighters. A new science-fiction Super Kit will also be released: the SSV Scorpion. The other Super Kits are each based around a sci-fi premise; for example, the USS America is a Presidential command post similar to Air Force One, but with orbital capability, and the ESS Raven is a high-altitude air-sampling craft. The Scorpion is designed to retrieve damaged satellites from orbit, and effect on-board repairs or return them to Earth (similar to capabilities of the real-live Space Shuttle). Bob Del Principe, Centuri design man, was imparting all of this information to me via phone, and I asked for a little more detailed description of the bird. After a moment of silence, he said, "Well, there are things on this kit that I've never seen on a model rocket before." Hmmm . . .

Most notable in the new Centuri products is an item that will fill an

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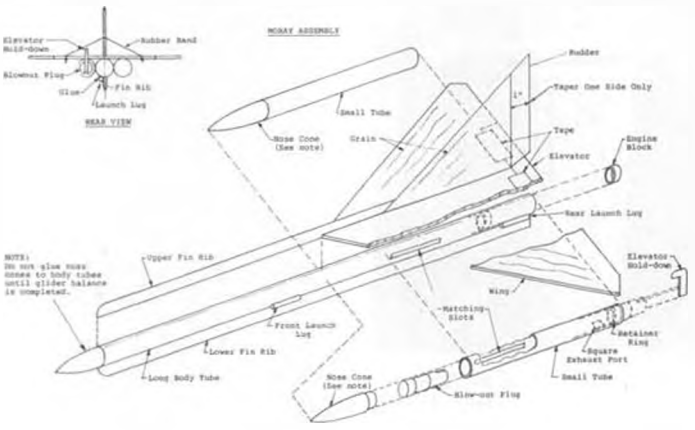

Whatta place to run out of gas! Even the big unlimiteds need winning pit strategy.

R/C POWER BOATS

By BOB PREUSSE

• During the past ten years, R/C model powerboating has grown in leaps and bounds. Its popularity has demanded more manufacturers to get into the market. The result has been a wide range of boat products; engines, kits, radios, hardware, etc. Correspondingly, our hobby has attracted more beginners because this wealth of products is easily accessible to the public. Thus, this growth keeps snow-balling as the law of supply and demand takes effect.

With more participants in our hobby, it only stands to reason that there are potentially more top competitors, or in this case, top boaters. I think it is true that the competition is much more balanced now than it was five or ten years ago. In most classes, there are several boaters who have a very good chance of winning . . . instead of the same ones winning time after time. At any given race in the IMPBA, there are probably 12 boaters in D-hydro that have a good chance of winning. The abundance of good products and equipment has been a great equalizer. In some cases, beginners have become instant competitors with fool-proof kits and hot new engines.

So why all the "hull-a-baloo" about winning and competition? I think it's time someone wrote an article to help *all* beginners become competitive in R/C boating . . . to help them win. Not that winning is the most important part of our hobby, or any sport for that matter, however, it is nice to receive recognition now and then, and that's what winning is. Thus, I wish to point out what the beginner should know and do before and during the race so that he or she may eliminate as many mistakes as possible.

WINNING PIT STRATEGY

Let's try to analyze what makes your chances of success higher. There are probably three important areas: 1) exper-

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The author's portable pit box. Note the ammeters for two starting batteries. Two 6-volt packs in recessed top for electric starter.

Foam padded storage area for transmitters (it'll hold three) and radio boxes. Tools laid out on handy work surface.

Magnet model is launched by well-known A/2 Nordic flier, Herbert Schmidt, of Germany, during the 1974 European Championships.

HILL SOARING with MAGNET STEERING

By HANS GREMMER . . . A revealing look into the science of hill (it doesn't have to be a steep slope) soaring with a glider that is guided by a permanent and free source of directional steering . . . the earth's magnetism!

• Utilization of natural energy-resources gathers momentum. Therefore, in aeromodelling, the upcurrents of a hillside will be used more and more. One way is to hold a model into the wind by the so-called "Magnet-Steering", which allows long duration flights even on small hills, with little retrieving work. That is why most of the German A-2 fliers also run magnet-models, though in Germany, only poor hills are to be found. The greatest magnet enthusiasts are former RC fliers who converted to magnet-flying. Magnet-gliders are now an international F.A.I. class in which even annual European Championships are carried out and supported regularly by a hundred participants. It is hoped to elevate it to World Championship level because of the significance of this class.

A rear-fin type magnet glider is launched by Feruglio, of Italy, designer of the push-rod system and builder of a beautiful egg-crate style wing. Seems strange not to see a transmitter in his hand!

HOW THE STEERING WORKS

Basically, the steering operates on a simple magnet bar, which acts as a compass and governs a model in a predetermined direction. It is commonly known that a compass aligns itself in a N-S position. When the model tends to deviate from its predetermined course, the rudder gets a deflection which forces the model back to its set course. By turning the rudder blade round the axis, any direction whatsoever may be chosen before the start. However, when airborne the direction cannot be influenced anymore . . . then the pilot is the North Pole itself!

Since the directional forces even of a strong magnet-bar are obviously limited, efficiency must be achieved by the structure of fin and rudder.

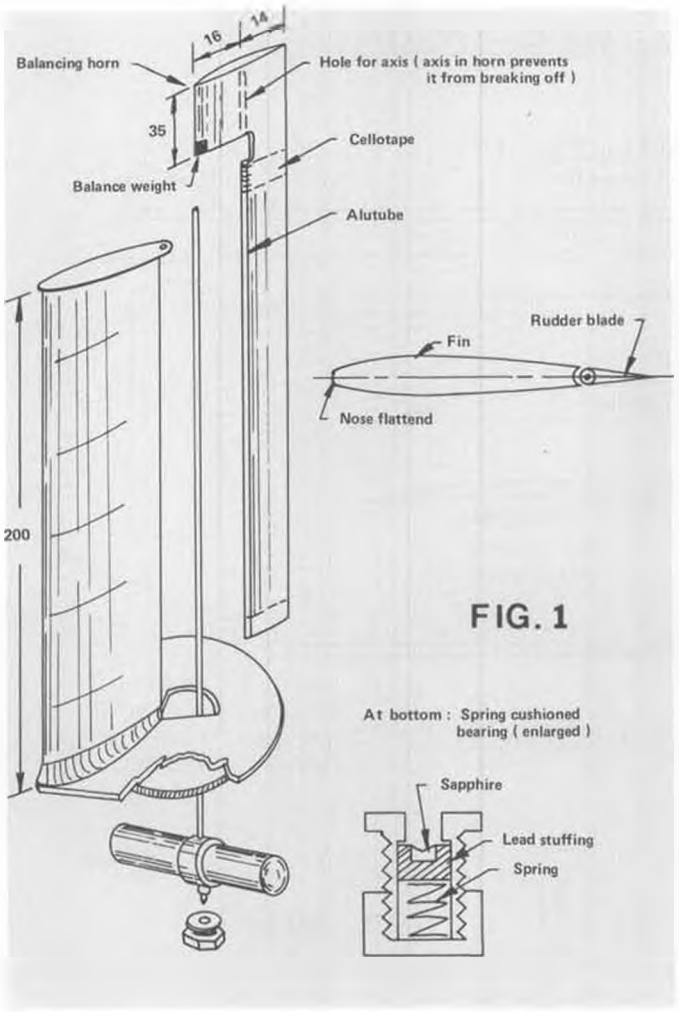


FIG. 1

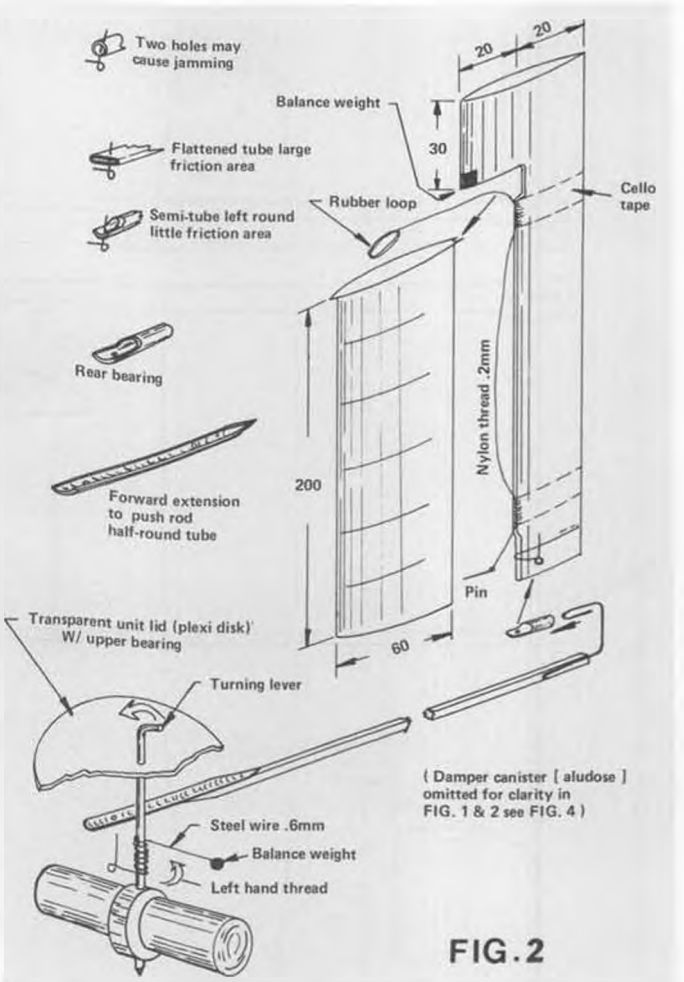


FIG. 2

A very high fin of small chord and a narrow, aerodynamically well-balanced rudder is employed, so that the aerodynamic forces attacking the rudder near the axis can be overcome by the directional forces (Fig. 1). The directional forces can also be transmitted to the rear-fin by means of a pushing rod (Fig. 2). These two types of steering; head and rear steering, proved to be superior to those with servo-mechanism, i.e., electro-magnet steering gears with rudder machines and the like. The permanent availability of the directional forces and the little weight, just good for nose ballast, allow a new technique of slope riding, unknown so far in aeromodelling.

HOW IT FLIES: First low, then slow and high!

Magnet models are the only type drawing benefit from a unique characteristic of models, that is the peculiarity of the average windspeed corresponding to the average airspeed of models; and it was the original idea to match both. The result of it is a hovering flight, where the model becomes almost motionless, a flight pattern even fascinating to RC fliers.

Low hills are preferred for exerting the hovering flight, because long duration can be achieved with very little retrieving work. One has only to look out for the right sort of slope. A discovery of the last years showed that this hovering flight is mainly brought about on hills with escarpments in the first part of the terrain. The airflow will be bent over this part, which means that the wing is met by a greater angle of attack than the lagging tail plane. For example, when a stretch of 25m has a change of the gradient of 25°, it means that at a distance of 1m (that would be the distance between wing and stab), a difference of 1° would occur, which causes the model to stop its progressing flight and to gain height and duration, sometimes more than five minutes on small slopes.

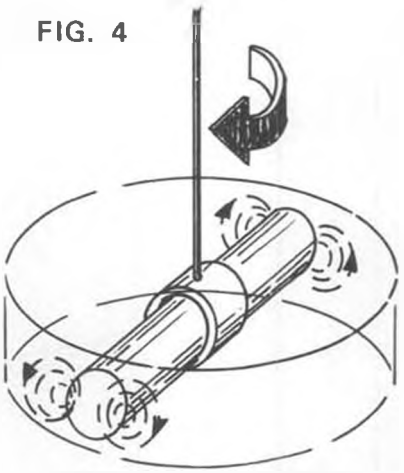
THE TWO-MODEL SYSTEM BRIDGES THE GAP

Of course, the gap between weak to strong wind cannot be bridged by one model only. Therefore, in a later stage, two models are useful; the first for medium to strong wind, and the second for weak wind. The forward fin-type is preferred for medium to strong wind, because the forward fin gives an inherent directional stability in gusty wind and the device is fool-proof. (Fig. 3)

The rear fin type is preferably employed for weak wind flying, for rear fin models may be built with very little weight because of the shortness of the fuselage, which in addition has less moment of inertia than the long forward fin type, and it can be trimmed near stall. The light fuselage goes together with a super light-weight structure of the wing, aiming at a wing load of about 6g/dm2.

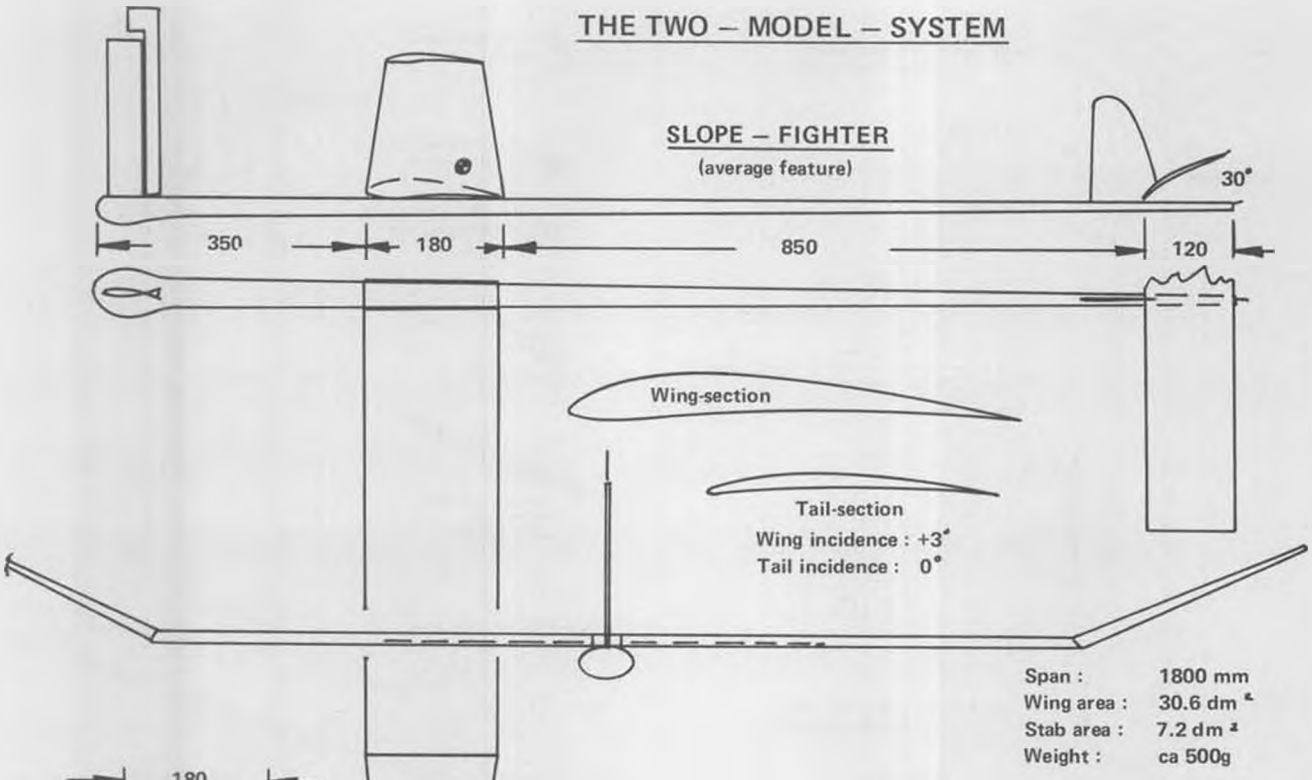
The common "sense-organ" for both types is the magnet unit, which may be had at the cost-price from a manufacturing modeller. Write to: Anton Frieser,

FIG. 4



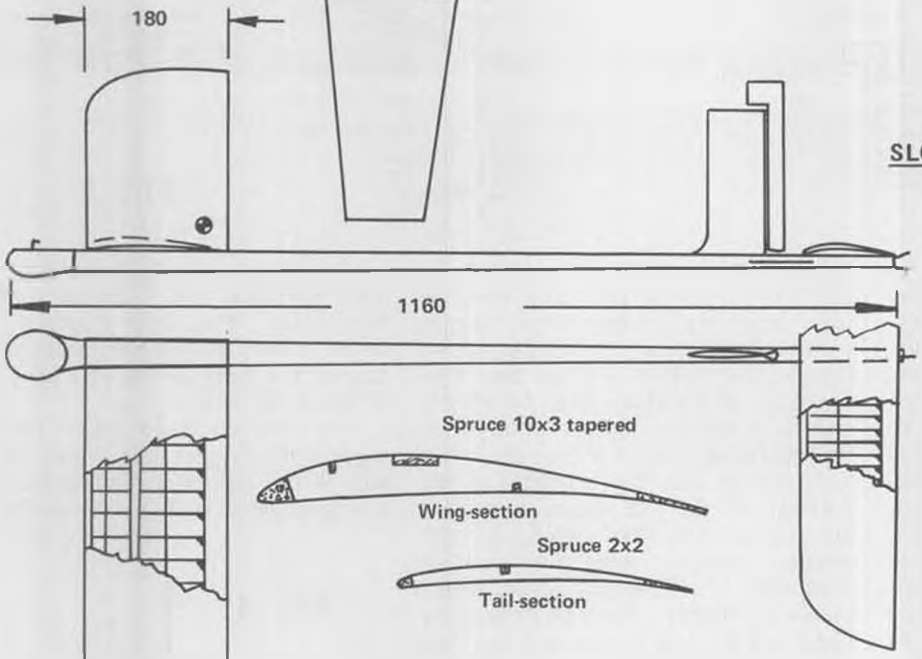
Sketch shows magnet in aludose, (drawn transparent), whichs acts as a damper whirl current cannister. (Whirl currents are dotted)

THE TWO – MODEL – SYSTEM



Span : 1800 mm
Wing area : 30.6 dm²
Stab area : 7.2 dm²
Weight : ca 500g

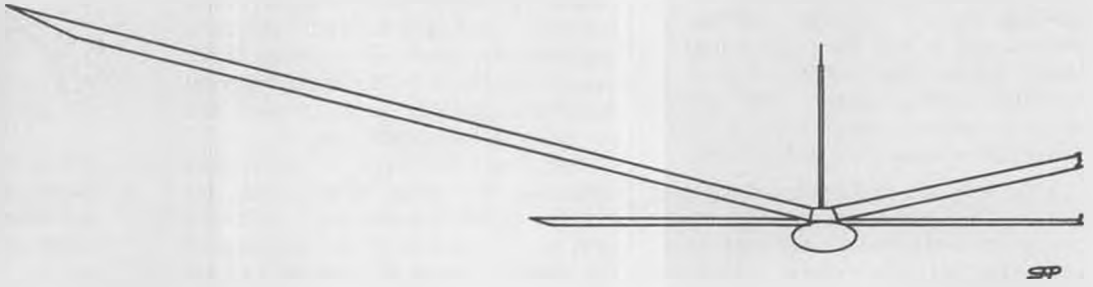
FIG. 3



Length : 1160 mm
Span : 2160 mm
Wingarea : ca 38 dm²
Tailplane: 9.5 dm²
Total area : 47.5 dm²
Weight : 290 g
Wing load : ca 6 g/dm²

Detailed weight :

Fuselage tube :	30 g
Magnet housing :	20 g
Steering :	72 g
Fin :	6 g
Shiftable wing mount :	60 g
Wing :	100 g
Stab :	18 g



Well-known European free flight expert, John O'Donnell, shown here with his magnet steering model that has been well loaded down with lead strips on the C.G. It's obviously blowing hard.

Schlesische Strasse 2, D 8832 Weissenburg, West Germany. The price of 9.00 dollars is for postage and the whole unit, with magnet 50 x 12 mm, ringframe, spring mounted sapphire bearing, and an aluminum canister (Fig. 4) serving as housing, and also damping magnet oscillations by creating whirl currents. Send a certified bank check with your order.

Fin and rudder are built easily, but some rules should be observed: The nose of the fin should be blunt in order to cause turbulence. On the other hand, the end of the trailing edge should be sharp to render a smooth departure of the airflow. The gap between fin and rudder has to be kept as narrow as possible. A broad gap promotes leakage, causing the air to slip through the gap, and the airflow to tear off prematurely.

For the wing of the forward-fin type, an all-round profile is recommended. The Eppler profiles, E 387 and 392, warrant a large latitude of good performance over the range of angles, due to a greater nose radius. Wings with such thick airfoils should be covered with Monokote or Solarfilm, because they retain the wing-incidence in all-weather conditions.

The tailplane should be undercambered and a little larger than usual, because the inertia moment of the forward fin type has a detrimental effect on longitudinal stability and safe D/T-descent.

A shiftable wing mount is useful for both types to ease C.G. changes and quick trimming.

HOW TO KEEP FRICTION DOWN ON THE REAR FIN STEERING

The transmission of the direction force to the rear fin is not the province of the novice, but the know-how on reducing the friction is learnt soon:

1. The worst friction would come about when the rod tips sidewards and jams the bearings as a result of it. A rod always tips sidewards when bent sidewards a little, because the c.g. tends to take up the lowest possible position. You should utilize this tendency by suspending the rod at the rear bearing so that it hangs from it.

2. The next source of friction would come from the weight. Therefore the rod should be a very light balsa strip. A section of 2 x 3 mm will do it.

3. Greatest care is taken to the bearing application: Tubes with double holes will jam. But by flattening the tube, the friction area is increased. Thus the best way is to use a half-tube of brass. First we inserted beads. However, friction is less when the half-tube rests on the thin wire arm directly, so we discarded the beads. Fig. 2 shows the bearing application.

The rear rudder is simply suspended on a nylon thread to save hinges. There is no friction at all, only a negligible torsional resistance. The whole system moves very easily.

HOW TO KEEP WEIGHT DOWN

For a light-weight structure, a tubular fuselage made of two diagonally glued layers of balsa is good. A stump magnet housing saves weight. The stabilizer should be very large and light, which enables you to push the wing forward to the maximum.

Most weight is saved on the wing structure when using a very light metallized foil of 17g/m2. The principle of the metallized foil has been proven a thousandfold in space flight. The foil, a silver foil, reflects 99.1% of heat and is very tough. You may have it from the author when not available in sports-stores. The price for 3 m2 is 3 dollars. As there is not an adhesive side, like with Monokote, etc., it must be glued by a diluted contact cement. It may be ironed like Monokote, etc. As this material does not distort the structure . . . it rather retains than distorts it . . . ribs of 1mm balsa and thin longerons may be applied. There is only one drawback; the airfoil must not be too thin, otherwise the wing would flex

Continued on page 79

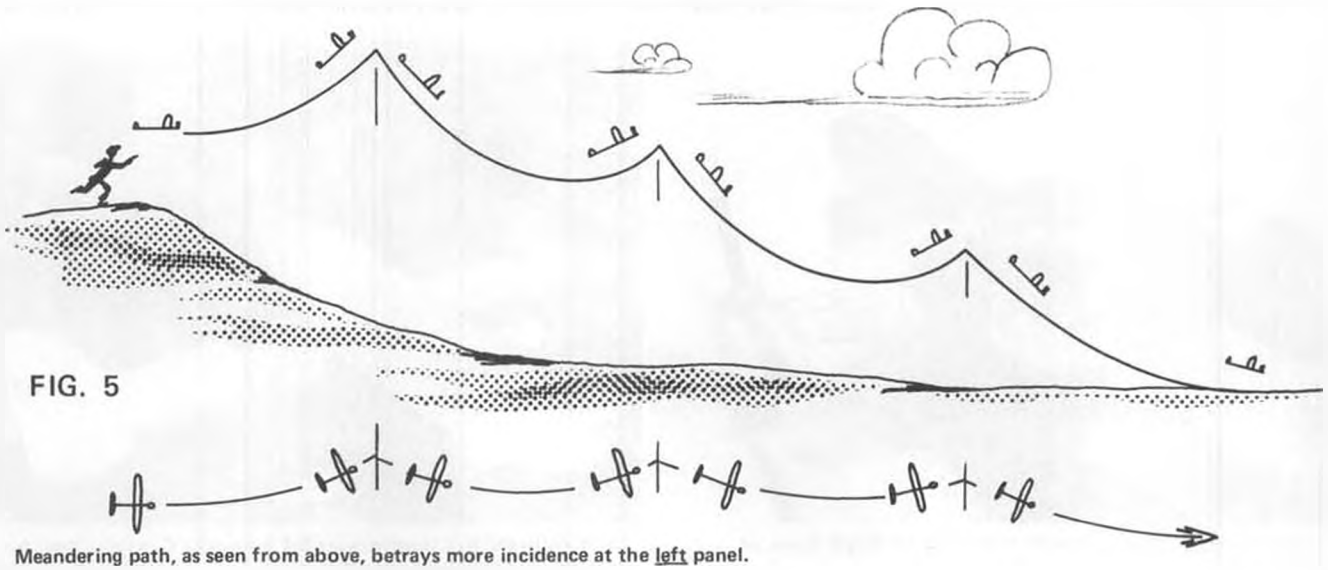
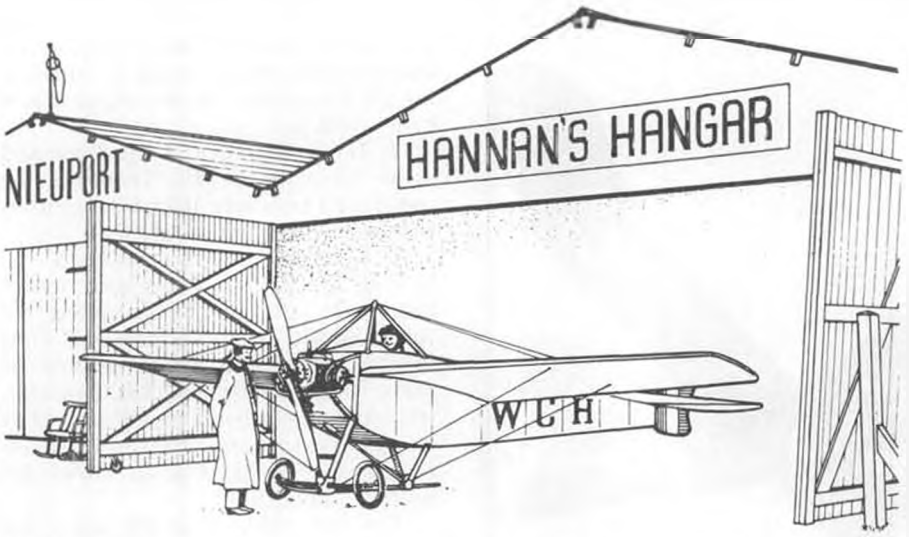


FIG. 5

Meandering path, as seen from above, betrays more incidence at the left panel.



"It is a fundamental law of aviation that nothing ever works out quite as planned."

• Our lead-in line has the personal endorsement of Flightmaster Jack McCracken!

CONGRATULATIONS, DON!

Californian Don Taylor has successfully circled the globe in his homebuilt Thorp T-18. Odly, this fantastic achievement has received surprisingly little publicity. Perhaps in this age of moon-walking and television from Mars, the public has been jaded to heroic undertakings? Still, it is reassuring to know that good old-fashioned dedication to an idea can triumph over the adversities of weather, fatigue, red-tape and bureaucratic stupidity. We had the pleasure of a brief chat with Don Taylor shortly before his departure, and were most impressed by his quiet self-assurance.

THE JOY STICK

In a previous "Hangar" we mentioned the Robert Esnault-Pelterie (R.E.P.) claim to invention of the aircraft control stick. Reader Georges Chaulet, of France, had this reaction: "Here, the control column is known as "manche a balai" (stick of broom). I have read a book about Henry Farman, who had one day broken his control wheel, and asked his mechanic Herbster, to bring him a 'piece of wood'. Herbster returned with a section of broom stick, and this was the birth of manche a balai, or more simply, 'le manch' (the stick). I am sure there will be an eternal discussion as to the first of the pioneers to use this gadget. In my idea, (they) may have used the thing at the very same time, because a handsome and practical stick around 1908 could only be a broom stick! Right?"

THOUGHT FOR THE DAY:

"There is simply no substitute for thorough-going, ardent, and sincere muddle-fumble." J.D. Gillies

Photo by Warren Shipp

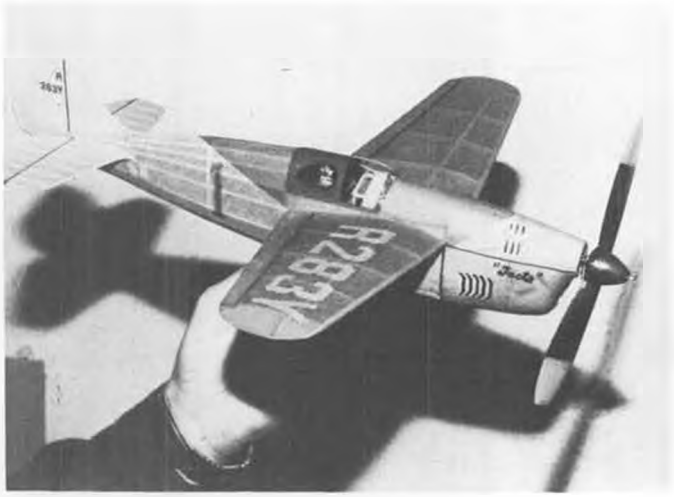
Don Taylor (left) prior to successful round-the-world flight in his homebuilt Thorp T-18, with Frank Courtney. Ship not yet painted.

LINDBERGH TROPHY PROGRESS AND COMMENTS

The AMA Executive Council has tentatively approved the Zaic inspired Lindbergh Award, but ideas and support are urgently needed to make this award a reality. Suggestions have been advanced

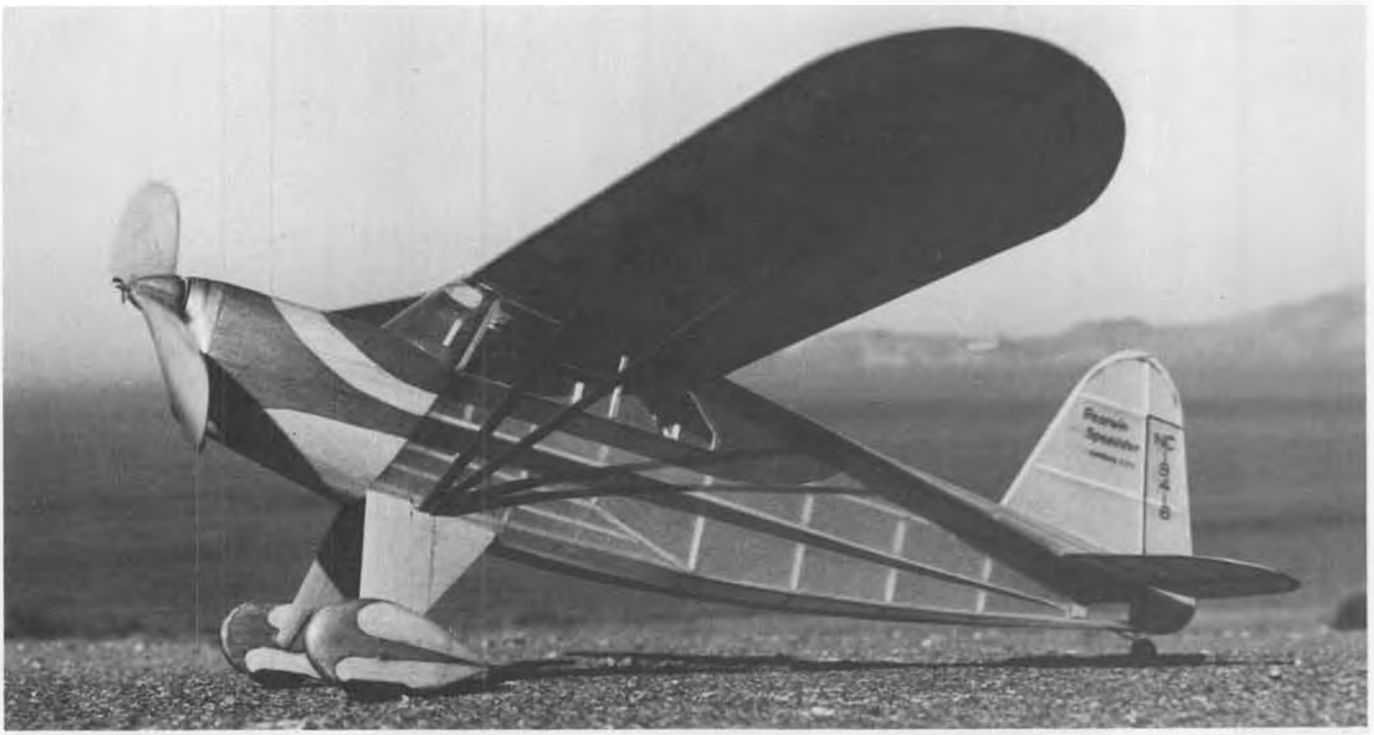
Continued on page 87

General Aristocrat Peanut, weighs 3/10 of an ounce. Finished in black and orange colors of the General "Sky Fleet". Has made flights of up to 80 seconds. Model and photo by Bob Clemens.



Folkerts "Toots" rubber-powered scale racer by Roger Aime, of Salon, France.

Larry Williams' R/C Supermarine S-4 Schneider Cup racer gets close scrutiny by a couple of potential model builders. Real pretty machine.



Tom Moore, whose prop building technique is described in the text, constructed this Rearwin Speedster from famous scale designer Earl Stahl's plans. Weight 2 ounces, and power is 10 to 12 strands of 1/8 rubber. Flyline Models is now kitting this and other famous Stahl designs.

FREE FLIGHT SCALE

By FERNANDO RAMOS

• With **Model Builder's** Peanut Proxy Postal Contest just around the corner, I thought that it would be a good idea to review some of the "do's" and "don'ts" about peanuts, for this annual event.

First and foremost, have an adequate scale presentation, which includes a good set of three-views, proof-of-color scheme, and photos, if available. There are at least six or seven scale judges, each doing a separate unit, such as wing; stabilizer, fin, and rudder; fuselage; landing gear; struts and rigging; engine, cowl, and accessories; and lastly . . . finish, workmanship, marking, and coloring. All these categories represent 100 points, and there is no way that you can get enough scale points unless you have documentation to prove that your model is built to look like the real machine.

Let's take an example, using the wing. The judge who is doing wings will look first to see whether the wing is double surfaced. If it is, you get 15 points right off! Next he looks to see if the wing has scale rib spacing, spars, and ailerons, which is equal to a maximum of 5 more points. If the model has scale dihedral you get 5 additional points, otherwise, if the dihedral is way off, 0 to 2 points. So with the wing alone, you can get 25 points rather easily, if your model is built to scale.

The other units are done similarly. I think it would be a good idea to take each unit separately and see how it compares to your model. If you can add extra detail without fear of gaining unwanted weight, do so. Each point you can garner, the better your chances of winning.

Please don't send your construction plans, even if they are commercial plans instead of a 3-view, because if you do, you will not receive any points for scale. Zero points in scale just about puts you down at the bottom of the list. Documentation is definitely an important part of this postal contest.

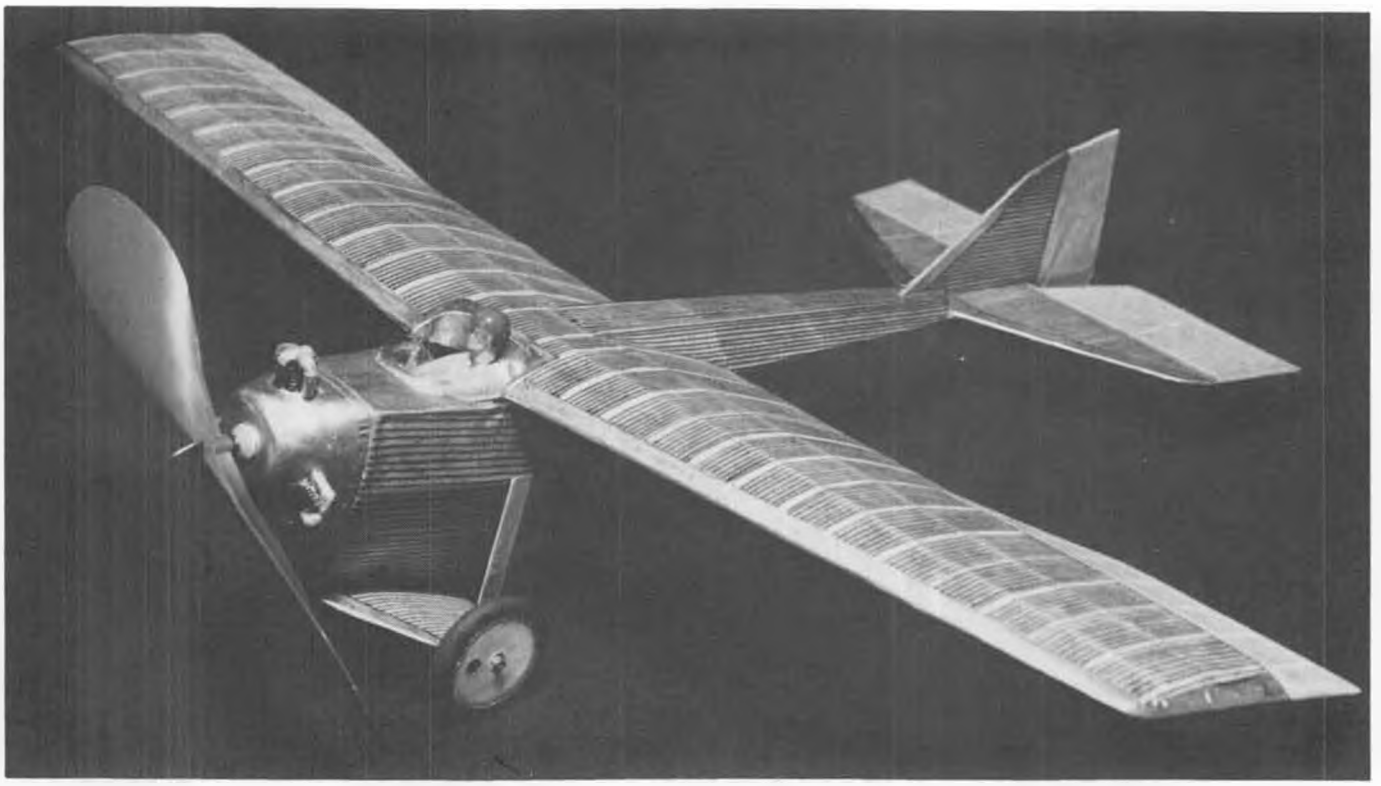
One other area in the judging that often gets overlooked is proof of markings and color. So often a model is finished to the hilt, but there is no proof the model should be finished that way. There should either be some kind of written description of the color, finish, and markings (from a text, magazine, or the 3-view), or a color photograph, the latter being preferred.

In the past two postal contests, I have seen 3-views submitted for one type aircraft where the model entered was a totally different version. Beware! Don't do this, or your model will not receive any scale points.

Now that documentation is accounted for, check for some of the following mistakes and see if they apply to your model. One of the biggest no-no's that

Continued on page 85

Tom Moore also built this Fokker DR-1 from Joe Wherry plans in 1946 M.A.N. Span is 19 inches, weight 2.5 ounces, and power is 8 strands of 1/8 rubber.



PHOTOS BY FUDO TAKAGI

TUPOLEV ANT-2 A RUSSIAN PEANUT

By WALT MOONEY . . . Our Pioneer Peanutter takes us on another adventure into the history of aviation. Like many real modelers, Walt enjoys rare designs and the challenge of simulating unusual details.

• This design is one of the first by the great Soviet aircraft designer, Andrei Tupolev, and first flew early in 1924. It is a very good configuration for Peanut Scale, and although it may not compete with the Fike or the Laceys under the present rules, it did fly straight off the drawing board. Its best official flight to date is 35 seconds, at the last Flightmasters' Peanut/Jumbo contest.

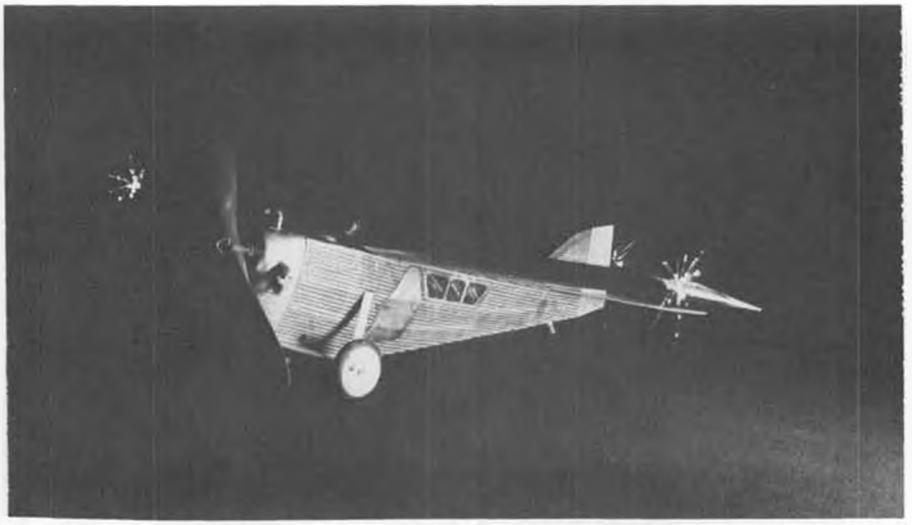
The one thing that put me off for quite a while with respect to this model is the fact that the real airplane was built using corrugated metal technology. Simulating such surface contours looked like quite a chore . . . I recognize that. Fulton Hungerford can do it, but I wasn't ready to make his kind of effort. I finally decided to try drawing the corrugations on the tissue paper before covering the model and this system seems to do a relatively good job . . . You can judge for yourself from the photos.

Only three items during construction of this model are anything but standard techniques, so we'll cover them in detail and assume that the rest can take care of itself.

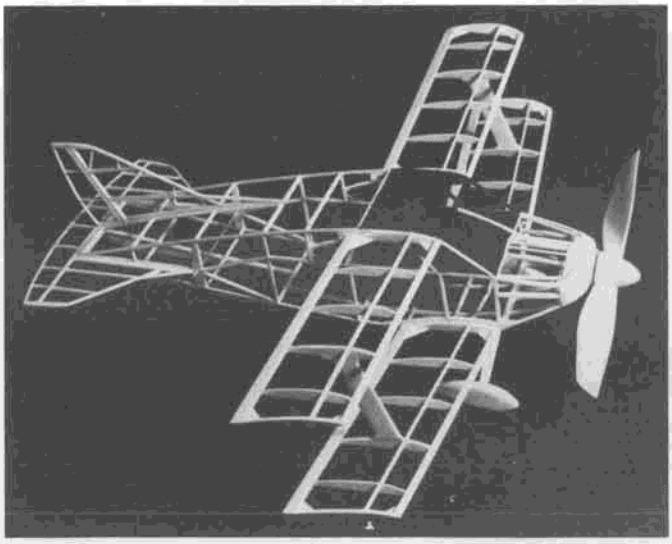
These three are; the wing rib and spar structure, the triangular section fuselage, and the simulation of the sheet metal corrugations.

Let's start with the wing. Rib spacing was selected to match the corrugation pattern, so there are quite a few ribs. Also, the wing taper is irregular. Therefore, there are lots of ribs which are almost the same size. Also, the ribs taper in height in a regular fashion, all of which makes it difficult to draw all the separate ribs and to decide which is which after they are cut out. The following technique is used to make the wing, building it over the plan. Lay down the trailing edge, tips, and leading edge. Then cut two root ribs out of 1/16 balsa, and twenty six intermediate ribs out of 1/32 sheet, to the size of the root ribs. Install all the ribs, cutting the excess length off the trailing edge of the intermediate ribs. When this assembly is dry, make a sanding block about eight inches long and sand all the intermediate ribs to contour. Don't take any wood off the root or tip rib, but just bring the others down to match the thickness shown in the front view of the wing.

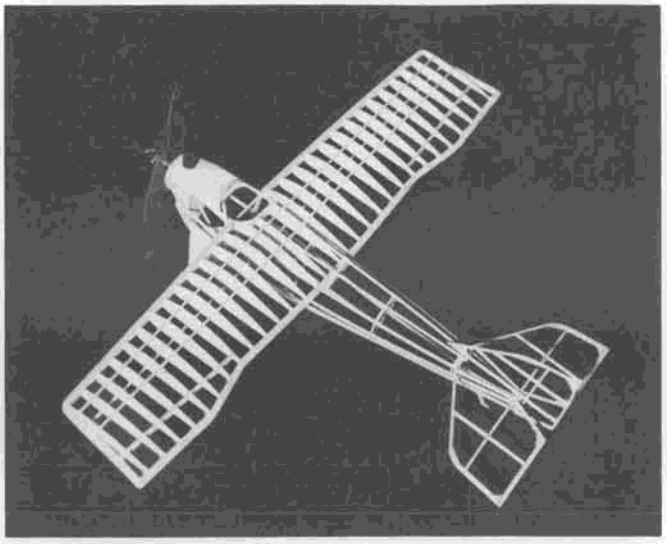
Basswood is used for the two top main spars, one bottom main spar, and the top and bottom aileron sub-spars. Use .012 by 1/16 basswood (Available from Peck



All ready for a night flight! This side lighted photo shows off the simulated corrugated metal skin of the ANT-2. Walt drew ball-point ink lines on covering tissue before applying.



The bones for next month's Peanut, a Hiperbipe, by Press Bruning. Note straight fuselage sides in top view. Photo by Bob Mosher.



Multi-sparred wing almost looks like a Lanzo design. Thin spars are actually glued to outside of ribs, make nice turbulators.

Polymers or a model train store), and there is no need to cut out spar notches. This method gives a turbulent airfoil section without making the ribs stick out, since the ribs are all slightly below the covering.

The fuselage is a triangular cross-section. Therefore, it is built over the top view of the plan by laying down the two top longerons and the cross pieces that are shown hatched in the top view. While this is drying, cut the keel from 1/8 sheet and make the five 'V's over the hatched cross-section drawings shown below the side view. Note that there is a gusset at the bottom of Number 1 and 2, but no gusset is needed for 3, 4, and 5.

When the 'V's are dry, remove them from the plan and cement them in place on the top frame. Then add the keel piece, and the single bottom longeron. Allow this assembly to dry, making sure that the Number 1 'V' is vertical with respect to the work board. Cut the top and side formers to the shapes shown and cement the side formers in place on the 'V' as required. Then remove the fuselage assembly from the work board. Now add the two side stringers and then the top formers. Place the wing in the proper position on the fuselage and cut the two top stringers to fit. Note that, at the front end, they taper to fit on the top of the two center (not root) ribs.

Assuming that you have made the tail surfaces, landing gear fairings, and the nose block, it's time to prepare the covering.

White tissue was used to cover the model in the photo. A black ball point pen was used to make the lines. They are drawn onto the tissue with the use of a striaght edge, or draftsmans triangle to keep them straight and parallel.

Lay the plans over a magazine or section of newspaper to avoid any possibility of hitting the wood grain of your workboard and distorting your lines. Then lay the tissue over the plan of each part and draw in the corrugations and the surface outlines and the leading edge demarcation line. Carefully do one for each side of the fuselage, allowing the lines to extend well behind the bottom longeron (Door is on L.H. side only). Now cut the "hand printed" panels out of the tissue and carefully cover the structure. Cover everything but the top of the fuselage. Then shrink the tissue by spraying with a fine mist of water. It is important not to get the tissue too wet. Although no trouble was encountered with the model in the photos, too much moisture might make the ink run. Assemble the model, and then cover the top of the fuselage with "pre-corrugated" tissue.

Dope the model with thin model airplane dope. I used nitrate clear, thinned with two parts of thinner to one part dope by volume. Two coats on the fuselage and one on the wing and tail.

Black tissue was used to simulate the glass in the windows . . . dope it in place.

Silver paint was used on the nose block, cowl top, surface leading edges, and the landing gear strut. It was also used to fill in the door panel and the window frames.

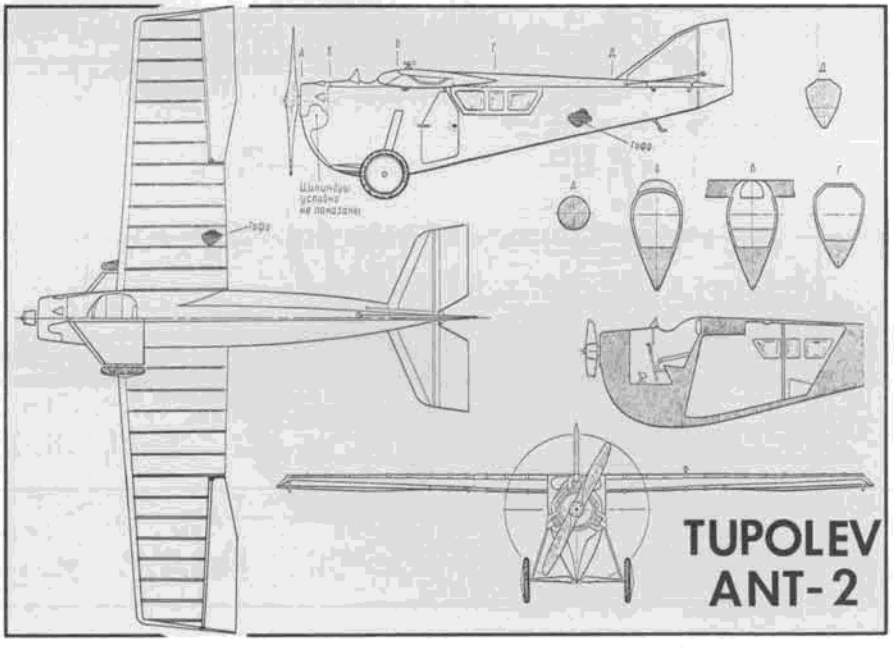
The wheels used on the model are made by Fulton Hungerford. They are spoked wheels and beautiful. It's a shame to cover up the spokes but for scale effect they must be covered with a disk of bond paper. Cut a small circular hole for access to the tire valve stem.

The engine cylinders are available from Williams Brothers and the tubes around them are strange but the way they are drawn shows on photographs and matches my 3-view . . . where the exhaust comes out is a mystery to me.

My model was nose heavy, but not by much. Ballast to the CG indicated. It flys quite well on one loop of "Sig" 1/8 flat contest rubber, 13 inches long.

Have fun Tovarisch!!

•



WING NOTE THE TYPICAL CORRUGATION PATTERN, LEADING EDGE IS SMOOTH

COCKPIT CUTOUT

LEADING EDGE STOCK IS LIGHT WEIGHT 1/8 BY 1/4 BALSA
TIPS ARE 1/16 BY 1/8

WING TOP VIEW

ALL SPARS ARE .012 BY 1/16 BASSWOOD
ALL RIBS EXCEPT ROOT RIBS ARE 1/32 SHEET

1/16 SHEET

TIP RIB

ROOT RIB

TRAILING EDGES ARE 1/16 BY 1/8

NOSE BLOCK IS SOLID BALSA, HOLLOWED TO DOTTED LINE

TOP VIEW

TOP FORMERS 1/32 SHEET BALSA

SCALE TAIL

HORIZONTAL TAIL

TOP COWL IS 1/8 SHEET CARVE TO CONTOUR

LANDING GEAR FAIRING IS 1/8 SHEET (TWO PIECES)
LANDING GEAR STRUT IS 1/32 by 1/4 BASSWOOD
WHEELS BY F. HUNGERFORD, COVER SPOKES WITH PAPER DISK, NOTE VALVE ACCESS HOLE

THE ANT-2 WAS BUILT USING CORRUGATED METAL STRUCTURE. LEADING EDGES, DOOR, AND WINDOW FRAMES WERE SMOOTH METAL. ALL MOVABLE SURFACES WERE ALSO SMOOTH, PROBABLY FABRIC COVERED.
NOTE DIHEDRAL

1 2 3 4 5

WILLIAMS BROTHERS CYLINDERS (3)

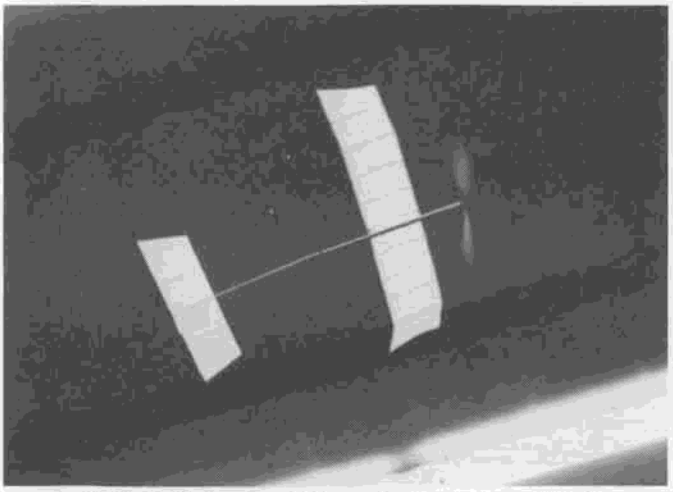
PECK POLYMERS THRUST BUTTON AND PROPELLER

KEEL IS 1/8 SHEET

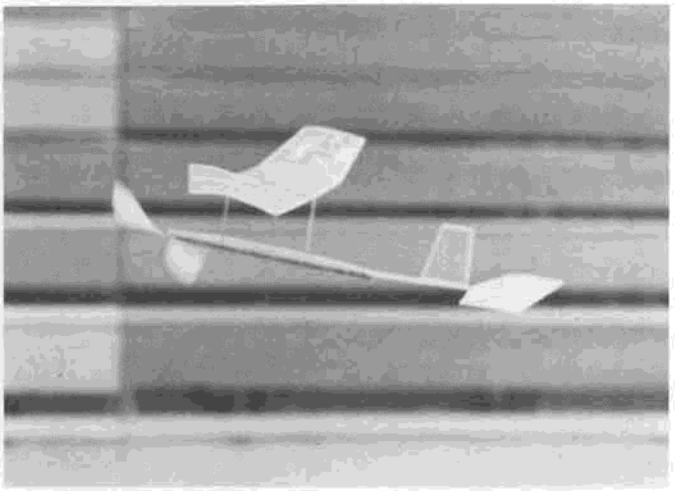
5 4 1 2 3

1/32 DIA. WIRE THROUGH AXLE

A PEANUT SCALE TUPOLEV ANT-2 BY
Walt Mooney



Stan Fink's EZB climbs toward the ceiling. Design is modified from a Bud Tenny plan.



Bill Gaiser's Penny Plane is covered with Microlite. Gymnasium bleachers in the background.

FREE FLIGHT

By BOB STALICK

• For the die-hard indoor duration modeler, there is no indoor season. It lasts 12 months a year. The remainder of us tend to look at indoor as a winter-time activity . . . when it's too cold or windy to fly outside . . . sort of a thing to keep us off the streets during the off-season. From my own limited experience though, the best time to fly indoor is during the warmer weather, since the air inside a flying site is also affected by outside temperatures and weather conditions. In order to present to the readers some information and tips about building and flying indoor models, this entire column is devoted to the indoor scene.

DARNED GOOD AIRFOILS . . .
Indoor 4%, 5%, 6%, Arc Airfoils

Indoor airfoils are different from outdoor airfoils in that they are typically a simple arc. The majority of the arcs used in indoor duration events range between 4% and 6%. From my experience, the differences in the sections are primarily due to the kinds of events the airfoils are being used for, and the amount of power (rubber strip) the contestant plans to use. Thicker arcs will need more power to get to the same ceiling height, but will take a longer time to get there . . . a plus. More power, however, usually means a stronger (and heavier) fuselage to handle the extra rubber tension. My EZB models use the lower value arcs when I fly in our 42 foot site. I would recommend the 4% arc as a good starting point when using a 10 to 11 inch diameter prop and .055 to .060 rubber strip. Don't be afraid to experiment though, since EZB models are fun, and fast, to build.

MYSTERY MODEL FOR FEBRUARY

Keeping with the indoor theme for this month, we present to you a predecessor to the EZB. Built to be flown in the parlor or the living room, the little microfilm covered model was touted as "Great for club training programs." If you know the name of the ship, pass it on to WCN (MB's Editor) by card or letter, and if you do the trick first, considering the post office handicap MB uses, you will find yourself the proud owner of a genuine something from the offices of **Model Builder.**

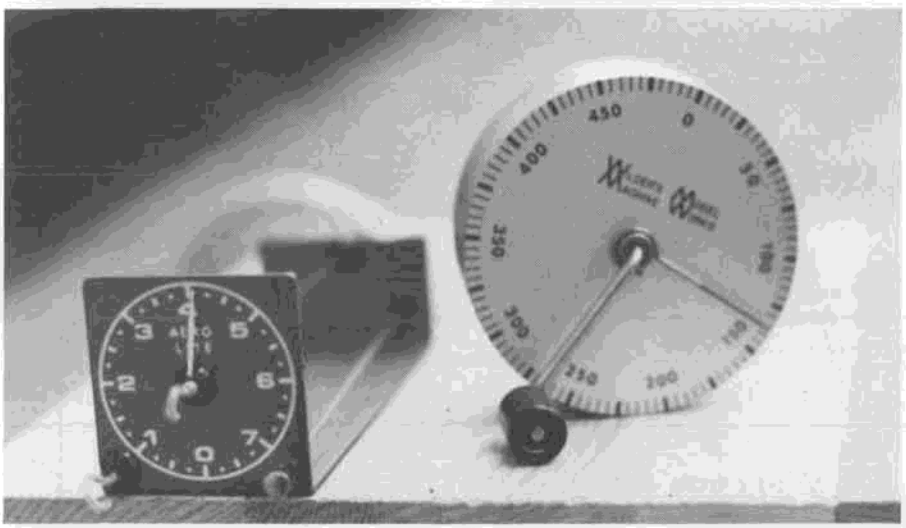
FEBRUARY THREE - VIEWS

As a bonus for being good readers, **Model Builder** Free Flight presents two (count 'em) 3-views for your consideration this month: "Bummer" EZB and Triolo's Skyscraper Manhattan Formula Winner.

The "Bummer" is a good state-of-the-art EZB model for someone who wants to get into the air by next weekend. The ship is straight-forward *(Does that mean it's a tractor? wcn)* and has no unusual or difficult features. This model is a development of Larry Renger's "Easy Breeze", which as a mike-covered EZB, held the AMA Cat. I Senior record for a long time. The plans also feature a dimensioned prop block very similar to the one described later on in this column. Cover the model with either very lightweight tissue (such as Superfine or Ultralite), or with condenser paper.

Skyscraper Manhattan Formula Winner: For the first time in forever, the 1976 Nats had a Manhattan Formula event during the indoor portion of the meet. Triolo's model, proxy flown by Dan Domina, won first place with a time of 8:09.7. In order to get more of a low-down on this "new" event, I wrote a letter to the event's originator, Ed Whitten. Since Ed proposed the event over ten years ago, and it has taken this long for it to catch on, I figured he could give me the latest. He replied:

"You asked what rules we use for Manhattan here in the New York City area. The New York attitude is that, since the MIAMA (Miami Indoor Aircraft Model Assoc.) rules are in effect and producing interest, we should not confuse the issue with a lot of changes and a different Manhattan Event in



Torque meter and 20-to-1 winder with counter are standard equipment for the serious indoor modeler.

N.Y.C., but should coordinate our rules with MIAMA's, expecting the MIAMA rules to stay in effect for another season before any real changes are made. We have, however, reworded the MIAMA rules strictly to smooth out the wording a bit, but not changing the basic ideas. These rules were discussed by phone between Doc Martin and Jim Whelan in Miami, and me. They are in agreement; however, they will be discussing the whole situation with MIAMA members soon. There is a possibility they may reverse their stand and make major changes. Such changes would include an increase in minimum weight and a limitation on prop diameter. From my own point of view, although the MIAMA rules do not coincide exactly with my original or current opinions regarding Manhattan Formula rules, I am quite satisfied to work from them as a basis for further development, and see absolutely no advantage in wholesale revisions, thus destroying the progress the MIAMA club has made.

REVISED MIAMA MANHATTAN FORMULA RULES (11/15/76)

Revision consists only of rewording existing MIAMA rules for clarity and does not change basic ideas.

1. Overall length (OAL), measured from front of prop bearing aft, limited to 20 inches max.
2. Fuselage:
   a. Structure must include or exceed a 2x2-1/2x4 inch box.
   b. No diamond shapes allowed; the 2-1/2 inch measurement must be vertical.
   c. Must have transparent windshield of min. 2 sq. in., plus on each side at least 1 window of min. 1 sq. in., covered with cellophane or similar material.
3. Rubber motor: Single motor only, enclosed in and supported by fuselage. No motor sticks allowed.
4. Prop: All balsa, EZB type, no pitch or diameter changing mechanisms.
5. Landing gear: Rigid and fixed with at least 2 wheels of 1 inch minimum diameter. Must be able to support airplane. All flights 3-point R.O.G.
6. Wing: Monoplane only, unbraced, maximum projected span 20 inches, max. chord 4 inches.
7. Stab: Max. projected span 8 inches, max chord 3-1/2 inches.
8. Covering: Except for windows and windshield, paper covering required. Condenser and tissue O.K., but Microlite not allowed.
9. Weight: Minimum of 4 grams, airframe only."

"In closing, I should mention that the original intent behind Manhattan Formula was to have a scale-like indoor model which was flown to duration. The rules were made relatively specific so that the model simply had to conform to them to guarantee some semblance of scale-ness, then the remainder of the judging could be done with a stopwatch.

"Personally, the use of wing posts as on Triolo's model detracts from the scale qualities of the ship, but as long as the rules allow them, they do provide an advantage of duration type events."

For the indoor modeler interested in following developments in Manhattan Formula as well as other indoor "fun" events, a subscription to the following newsletters will be very helpful as well as informative:

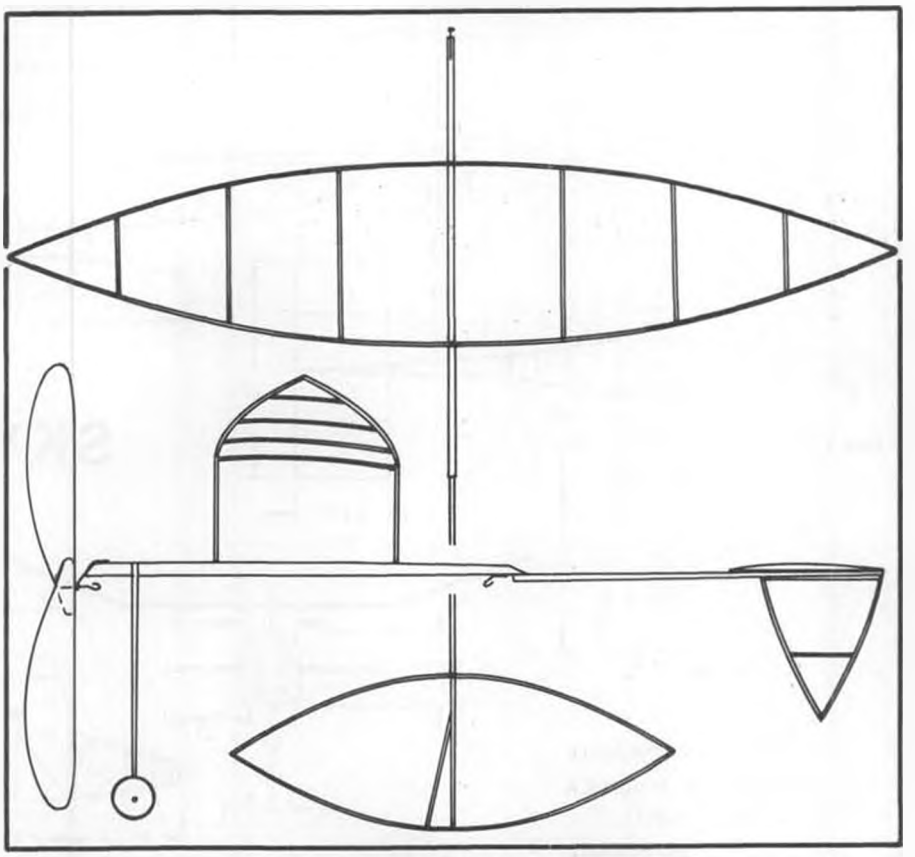
"Starskippers Newsletter," c/o Richard and Ed Whitten, P.O. Box 176, Wall Street Station, New York, N.Y. 10005. ($3.00 for eight issues). Also contains information on NFFS Postals.

The Hangar Pilot, c/o John Martin, 3227 Darwin St., Miami, FL. 33133 (send a check for $2.00).

BUILDING WOOD INDOOR PROPELLORS

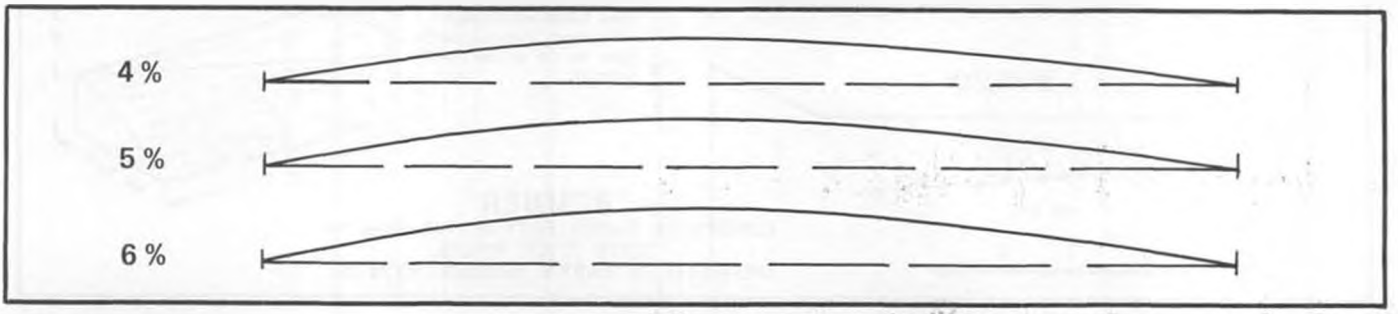
From another excellent source of indoor flying information, Indoor News and Views, Box 545, Richardson, TX 75080. ($3.50/year) comes the following by Ray Harlan. "The biggest bottleneck for a novice indoor builder is constructing a good propeller. This article is written to illustrate some of the techniques and to emphasize the critical factors in making an efficient propeller.

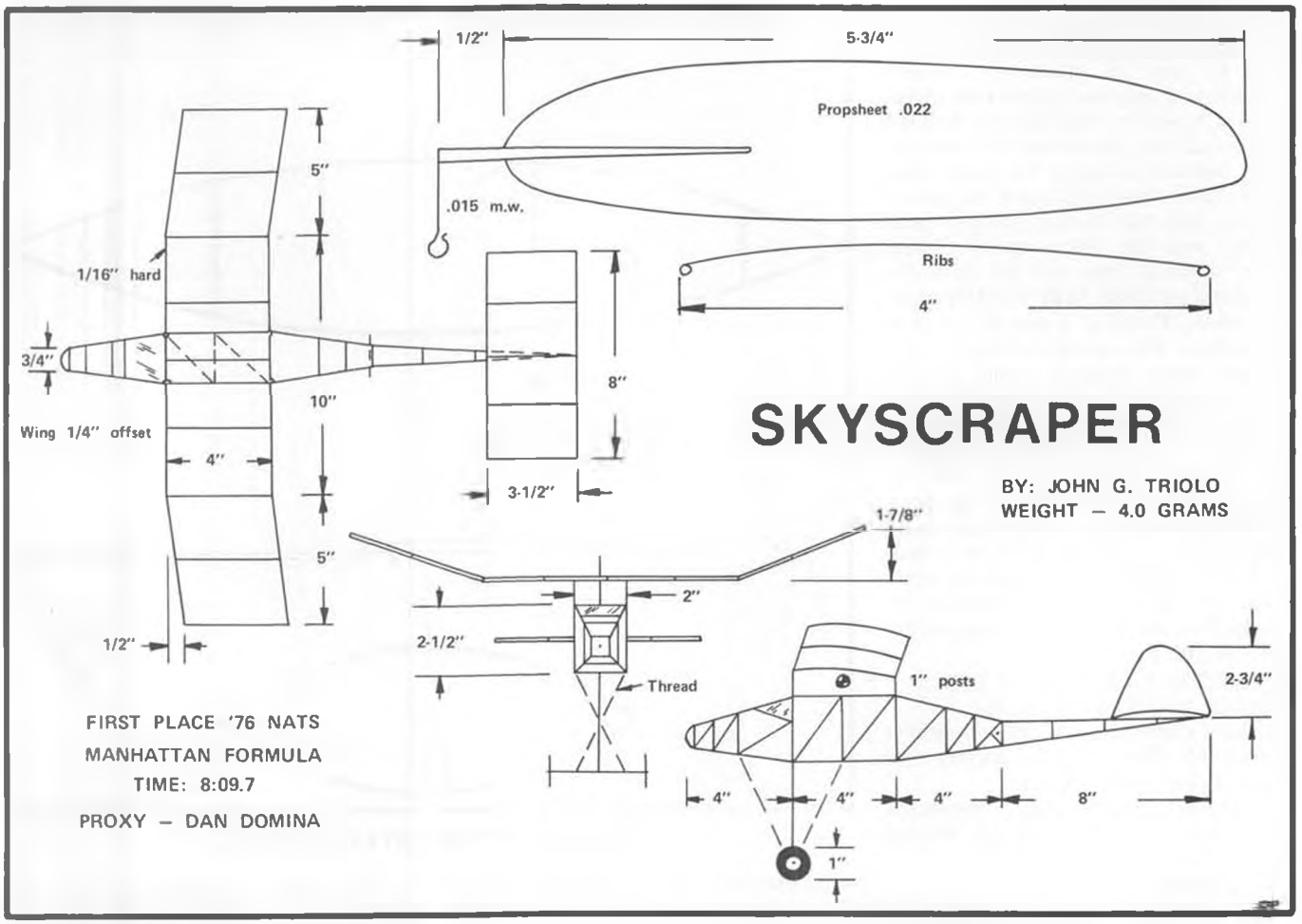
"Theory: Most propellers are intended to have 'true pitch'; that is, excluding any slippage, all blade elements would travel the same distance forward in one turn, so that no portions of the blade fight one another. The geometry

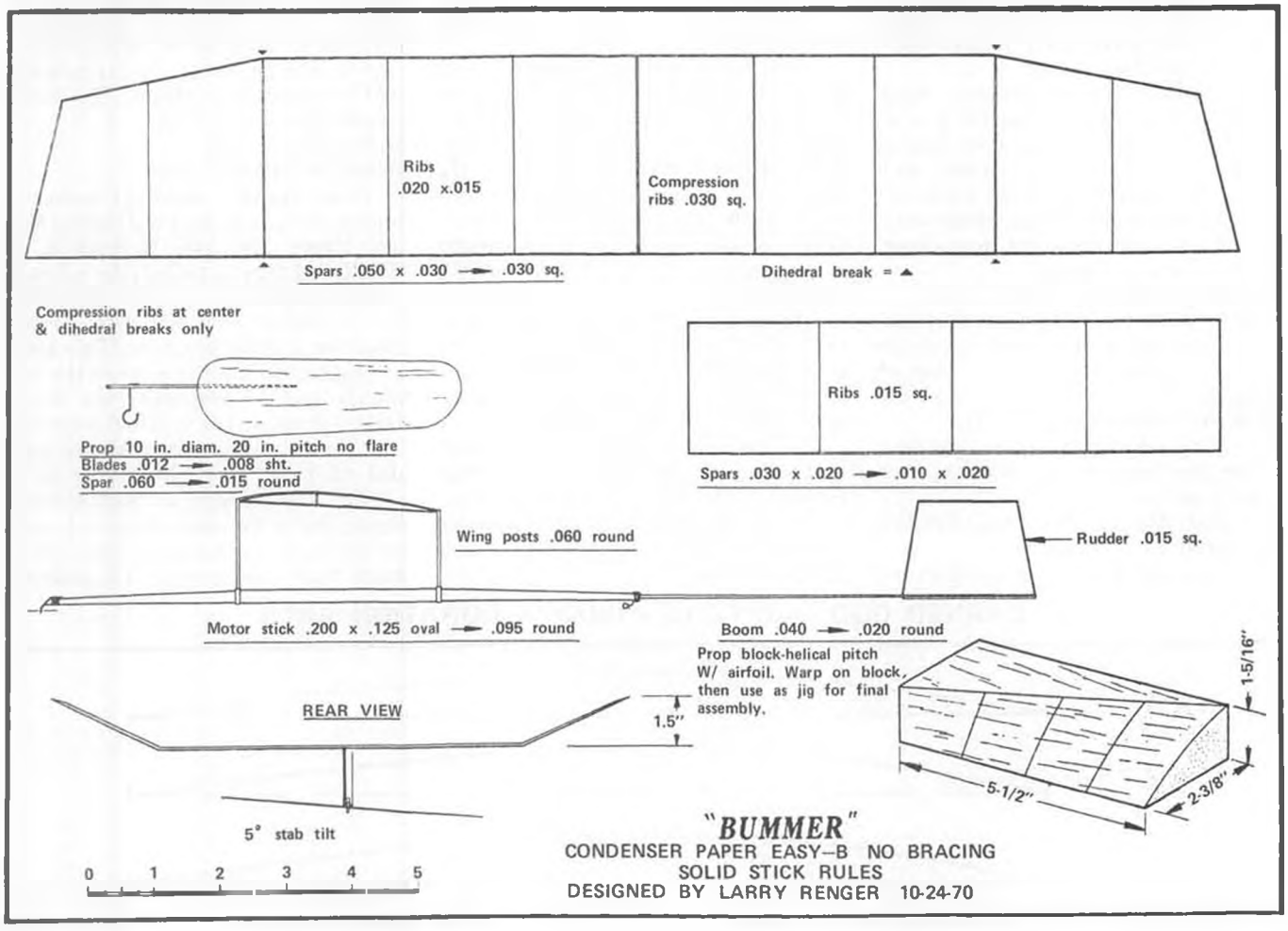


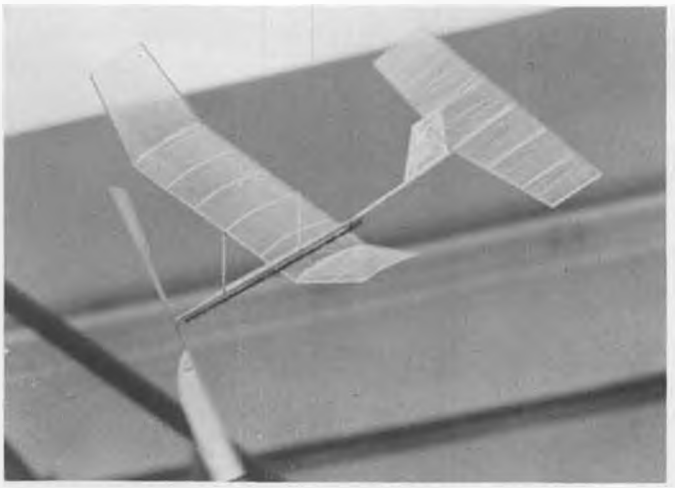
FEBRUARY'S MYSTERY MODEL

DARNED GOOD AIRFOILS – INDOOR DURATION ARCS

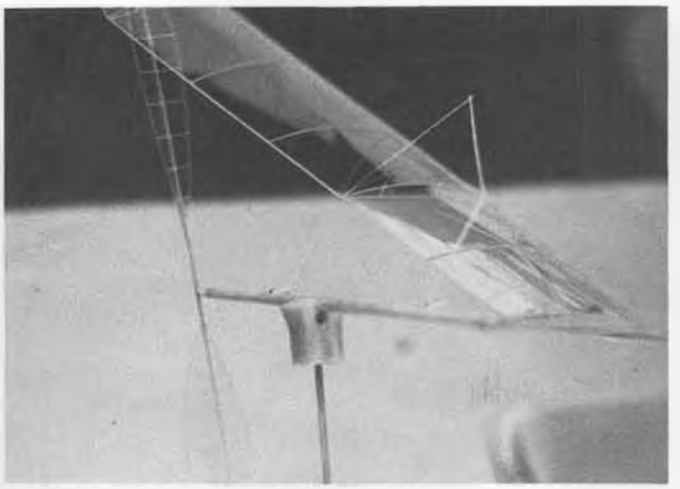



1/2"
5-3/4"
Propsheet .022
.015 m.w.
5"
1/16" hard
Ribs
4"
3/4"
8"
10"
Wing 1/4" offset
4"
3-1/2"
SKYSCRAPER
BY: JOHN G. TRIOLO
WEIGHT – 4.0 GRAMS
1-7/8"
5"
2"
2-1/2"
Thread
1" posts
2-3/4"
1/2"
FIRST PLACE '76 NATS
MANHATTAN FORMULA
TIME: 8:09.7
PROXY – DAN DOMINA
4"
4"
4"
8"
1"


Ribs
.020 x.015
Compression
ribs .030 sq.
Spars .050 x .030 → .030 sq.
Dihedral break = ▲
Compression ribs at center
& dihedral breaks only
Prop 10 in. diam. 20 in. pitch no flare
Blades .012 → .008 sht.
Spar .060 → .015 round
Ribs .015 sq.
Spars .030 x .020 → .010 x .020
Wing posts .060 round
Rudder .015 sq.
Motor stick .200 x .125 oval → .095 round
Boom .040 → .020 round
Prop block-helical pitch
W/ airfoil. Warp on block,
then use as jig for final
assembly.
1-5/16"
REAR VIEW
1.5"
5-1/2"
2-3/8"
5° stab tilt
0 1 2 3 4 5
"BUMMER"
CONDENSER PAPER EASY–B NO BRACING
SOLID STICK RULES
DESIGNED BY LARRY RENGER 10-24-70



Bill Gaiser's Penny Plane about to make contact with a gym basketball frame. Note offset wing to overcome torque of large prop.



Foam rubber "clamp" is the best method of holding an indoor model while it is not in use. Seen at '76 Nats.

of such a blade is very simple. The blade lies on the twisted surface shown in figure No. 1. A form on which to build the propeller can be made from a rectangular block of length 'R', width 'b', and height 'a'. The formula for the pitch is: $P = 2Ra/b$

As an example of using this formula, we can find the ratio b/a for a given pitch to diameter (P/2R) ratio. For a P/D of 2, b/a = 1.57. Indoor propellers usually have P/D ranging between 1.5 and 2.0. If P/D is made too large, the model is easily upset by disturbances in the air.

"Block: Choosing 'a' or 'b' is simply a matter of making it large enough so that the blade fits within the surface shown in Figure No. 1. A simple rule of thumb is to make 'b' at least 4 cm/3, where cm is the maximum blade width.

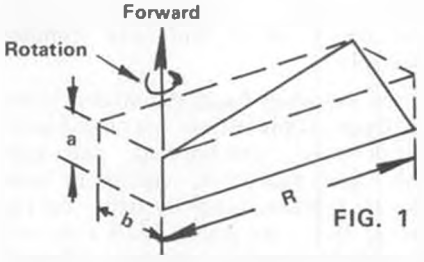


FIG. 1

This can be computed from the formula given above.

"The block should be carved with a little camber in the twisted surface. Five or six percent of the chord is plenty. Keep the percentage constant over the whole blade area. The block should be shaped as shown in Figure No. 2.

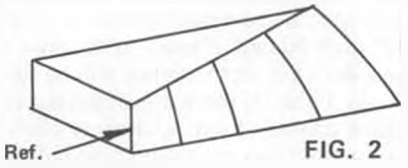


FIG. 2

"The line marked REF is the basic reference line for the propeller. The shaft must be exactly parallel to it in order to build the intended pitch in each blade. Because the spar is thickest at the hub and may not be tapered perfectly straight, it is necessary to cut a groove in the block in which to set the spar, and perhaps even glue a small balsa plate on the face of the block to support the shaft when assembling the propeller. Cut the groove deep enough to completely submerge the spar. The groove and plate would appear as shown in Figure No. 3.

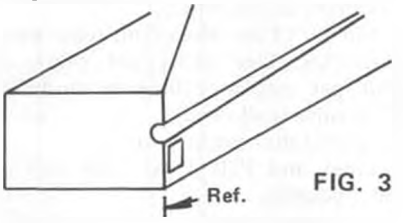


FIG. 3

"Remember, the block is fixed in pitch, but any size propeller, within the limit of the block, can be built on it.

"Blades: The blade thickness depends upon the size and weight of the model. As examples, for EZB's, they can be about .015 thick (1/64); for Pennyplanes, about .025 is more appropriate. Cut them from fully quarter-grained stock of about 5 lb./cu. ft. density.

"The shape depends upon the ceiling height. For low ceilings, some flare is desireable and the leading edge can be well ahead of the spar. For high ceilings, the spar should be near mid-chord. The blades should be widest at about 2/3 of R. Appropriate values for this width are: 1 inch for EZB and 1-1/2 inch for Pennyplane. There should be very little area near the hub, and the blades should terminate at least a 1/2 inch from the hub.

"Soak the blades in hot water for about 10 minutes, place together so they match, and place in the proper position on the form, with the tips at the full radius. Wrap firmly with a 1 to 2 inch width strip of bedsheet, and bake in a 250 degree oven for about 15 minutes. Let it cool, remove the strip and carefully pry the blades from the block and apart from each other with a knife. They will maintain their shape for years.

"Spar: The spar carries the full load on the propeller and must be strong but light. It should be cut from 6 to 7 lb. per sq. ft. density stock and tapered from the hub. For EZB, the size should be about .06 square tapered to .03 square. The spar need not extend the full propeller diameter, however it should be at least 2/3 of the diameter. When tapering, cut the spar oversize in length, as the end always sands away faster than the rest of the wood. Carefully sand straight tapers with 320 grit paper, finishing with 400. Both halves should have equal flexure under load.

"The Shaft: The shaft should be bent from .014 to .016 music wire. The hook should appear as shown in Figure No. 4.

"Sharpen the other end of the shaft and push it through the center of the prop spar. Pull it through up to the hook and bend it 90 degrees 3/4 inch from the hook and in the plane of the hook. Then bend it again 1/16 from the last bend so it appears as in Figure No. 5.

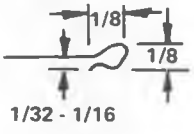


FIG. 4

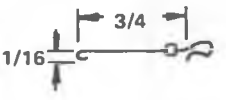
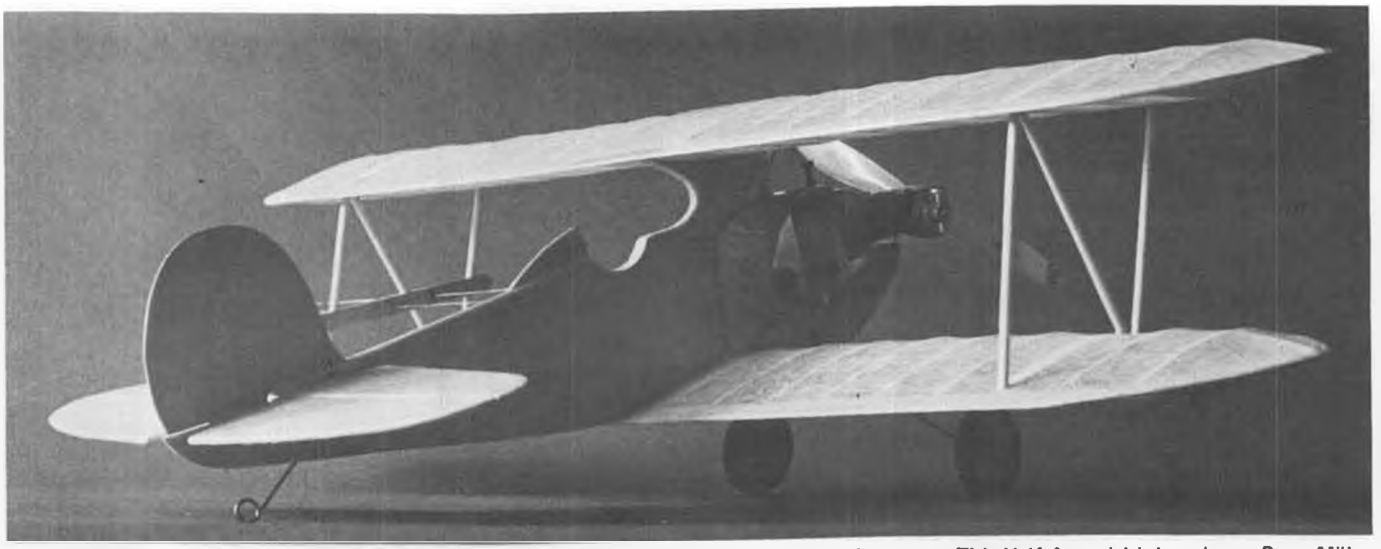


FIG. 5

Cut off all but 1/32 of the turned back end, apply glue to this square 'U', and slide the spar into it. Don't let the end of the 'U' pierce the spar, but rather, twist the hook clockwise lightly (as the motor would try to do) until the free leg of the 'U' rests against the spar. Add a little more glue over the wire and just a bit where the shaft exits the spar. Make sure the shaft is perpendicular to the spar, and let it dry.

"Assembly: Lay the spar in the groove on the block and hold the shaft against the reference line with pins or tape. Spread a thin line of glue along the spar where the blade is to be joined. Place the blade in position, making sure it rests firmly on the block. When dry, remove the propeller, rotate it and repeat the steps to complete the assembly. For indoor models, weight balance of the

Continued on page 76



John Boyd designed this and all models on these two pages, except the last one in lower right corner. This Half-A model is based on a Peter Miller design from July 1974 Aeromodeller. Span is 20-1/2 inches, weight 6 ounces, landings are usually flip-overs.

The 1/2-A SCENE

By LARRY RENGER

• As you know, this column is devoted to the entire field of 1/2A powered models. So far as I can tell, although the main adult enthusiast market is in the R/C field, the biggest kit volume is by far the simple, profile, sheet-wing 1/2A control-liner. I'm happy to say that expert interest in the 1/2A Aerobatic model is growing rapidly, too. This month I'd like to present PAMPA's announcement of 1/2A Control Line Aerobatics for the 1977 Nationals, and a few pertinent comments on what will most likely be flown there.

First, quoting from the official announcement by Keith Trostle, President of PAMPA:

"Cox Hobbies has again agreed to sponsor this event for the 1977 Nats, and PAMPA will run the event. Trophies will be awarded through third place in each age category. The schedule for the 1/2A event will be announced later."

"The following rules will be used:

1/2A PRECISION AEROBATICS

Engine Displacement: .051 cu. in. maximum displacement

Builder of the Model: no requirement

Entries: One entry per pilot, one pilot per airplane (backup model per AMA rules is allowed)

Appearance points: none

Lines and Pull Test: .008 inch dia. and 5 pounds.

Pattern: Per AMA rule book for C.L. Precision Aerobatics.

Identification: Per AMA rule book for C.L. Precision Aerobatics (1/2 inch high numbers are allowed).

What does this mean to you if you plan to compete? Well, with no appearance points, you can compete successfully with anything from a VooDoo (Rich Porter did in 1976, and placed!) to a kit sport model (David Fitsgerald used a Dumas Lil' Tom Tom for a first in Junior). No "builder of the model" rule evens out things for the guy who flys great but builds poorly. You can even fly ready-to-fly models like the Cox Me-109, which, I suspect, is still competitive in Junior and Senior.

Boyd scaled down a Dick Mathis "Excaliber" to 32 inches for this one. Weight is 10.5 ounces. John is from Sioux Falls, South Dakota.

There are a variety of kit models on the market with which you could compete successfully. Sturdi-Built has some foam wing jobs which they rescued from the old Jim Walker line of products. I suspect that some of the newer R/C models, such as House of Balsa's P-51, M3-109, and P-39, could be converted to C/L and fly a clean pattern. Their size and weight is reasonable, the slightly non-symmetrical airfoil is the questionable area. Certainly the venerable Baby Flite Streak by Top Flite, with a QRC will do it all, if built and trimmed carefully.

On the other hand, the models flown in Open competition are hand-built, self-designed, well-finished, and with only one exception, styled to look like an airplane. Little by little, the top expert flyers are giving 1/2A a try and liking it. You can even get stock "Tercel" or custom designed foam wings for your model. Bob Hunt does a superb job cutting and/or covering wings through his company: Control Specialties, Box 268, Middlesex, NJ 08846.

Peering into my smog-filled crystal ball, I think that I can make some reasonable predictions on the future of this event. While it is no revelation, a very specialized model will be developed. I'll even hazard a guess as to what this wonder of modern science will be like.

As I see it, there are three ways the event can go. First, and most obvious, is for the fliers to try for a scaled-down duplicate of current aerobatic performance. This would result in comparitively small models of 150 to 200 sq. in. wing area; engines would run in the classic 4 cycle/2 cycle mode; and relatively short lines of between 35 and 45

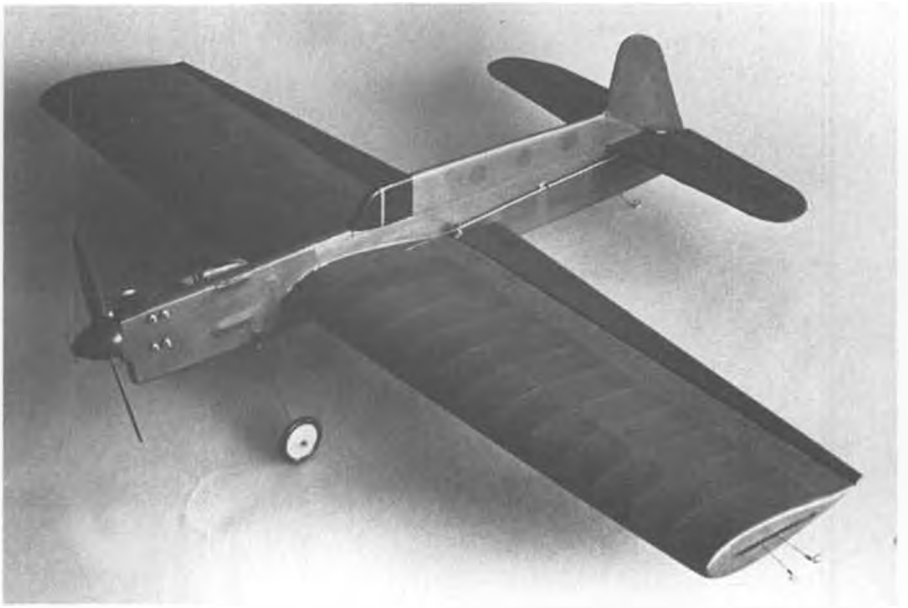
feet in length would be used.

Second possible type of event which could develop would result in evolution of strictly "machine" models. These would fly on very long lines and fly super-tight, accurate patterns. The Voo-Doo flown by Rich Porter is a step in that direction. Wingie Thingies of various types would dominate the event in an attempt to reach the legally required, but never achieved, 5 foot radius corner.

My crystal ball tells me, though, that both the judges and fliers are the same people who fly the "big ones". What will therefore evolve, is not a model which flies like a scale-down of the currently flown pattern, but a ship capable of flying the current pattern just like a full size model! We are looking for a plane which flies 55 to 65 mph on 50 to 60 feet of line, turns smoothly, and delivers firm line tension at all times. The models will look like airplanes because that is what looks good in the air to the judges, and also turns the most smoothly.

People will continue to use the Tee Dee series of engines, but they will run bored out venturis, pressurized fuel tanks, and high nitro, to pull as large a model as they can. Even mufflers may be rarely used in the quest for top power. It seems that the larger models will pull longer lines and handle wind and gusts better.

Airplanes will continue to grow in size for a while. Since it has been shown that a stock Tee Dee can haul at least 16 oz. of model through a pattern, let's say that the average model of the future will have over 250 sq. in. wing area and weigh between 14 and 17 ounces. Control line length will run in the 50 foot range, few as short as 40 feet, most ranging out toward 60 feet. I suspect that the models will continue to look like airplanes. The trade-off of cornering ability against smoothness is currently judged in favor of smoothness and precise maneuver placement, as opposed to emphasis on exact corner size and maneuver size. The ultra sharp maneuvers possible with a lightly-loaded "wingie thingie" are harder to do without a bobble than the more open corners of a more conventional stunter.



Boyd combined the Nobler 15 and Mathis "Excaliber", reduced both, and came up with this "Noblexcal". Span is 32 inches, weight 11.5 ounces, 217.5 sq. in. area, with flaps.

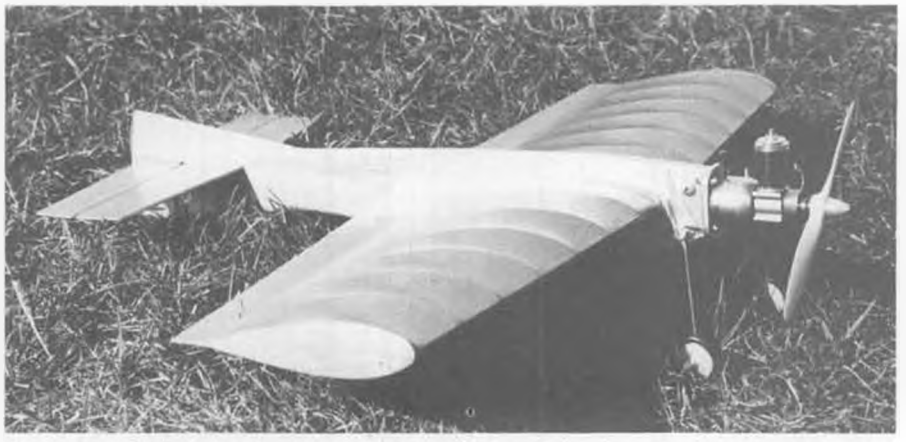
One surprising thing which I think will develop is that coupled flaps will disappear from the 1/2A stunter. With the extremely long lines and relatively high speeds for the size of the model, they add nothing to the model's performance. Flaps are unnecessary on the longer lines now in use, and the very long lines likely in the future.

Just to stick my neck out a bit farther, I think that wing aspect ratio and tail moment will both be higher than the values you would get by scaling down a Genisis or Stiletto.

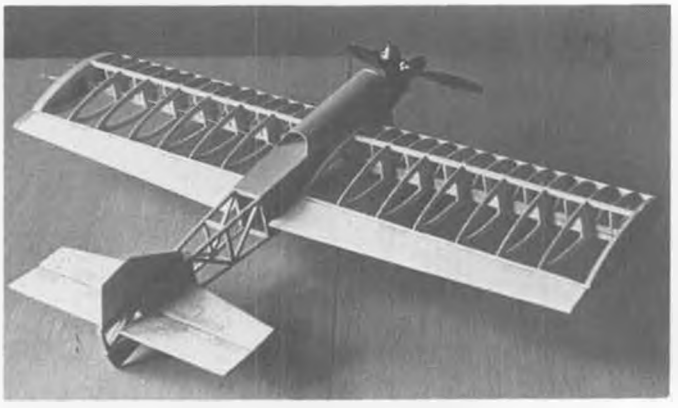
Clambering back onto safer ground, let's look at some actual models for this month. First, a nifty quintet of 1/2A profile stunters from John Boyd of Sioux Falls, South Dakota. Being the lazy sort, let me quote from John's letter:

"Hopefully the enclosed photos will

Continued on page 79



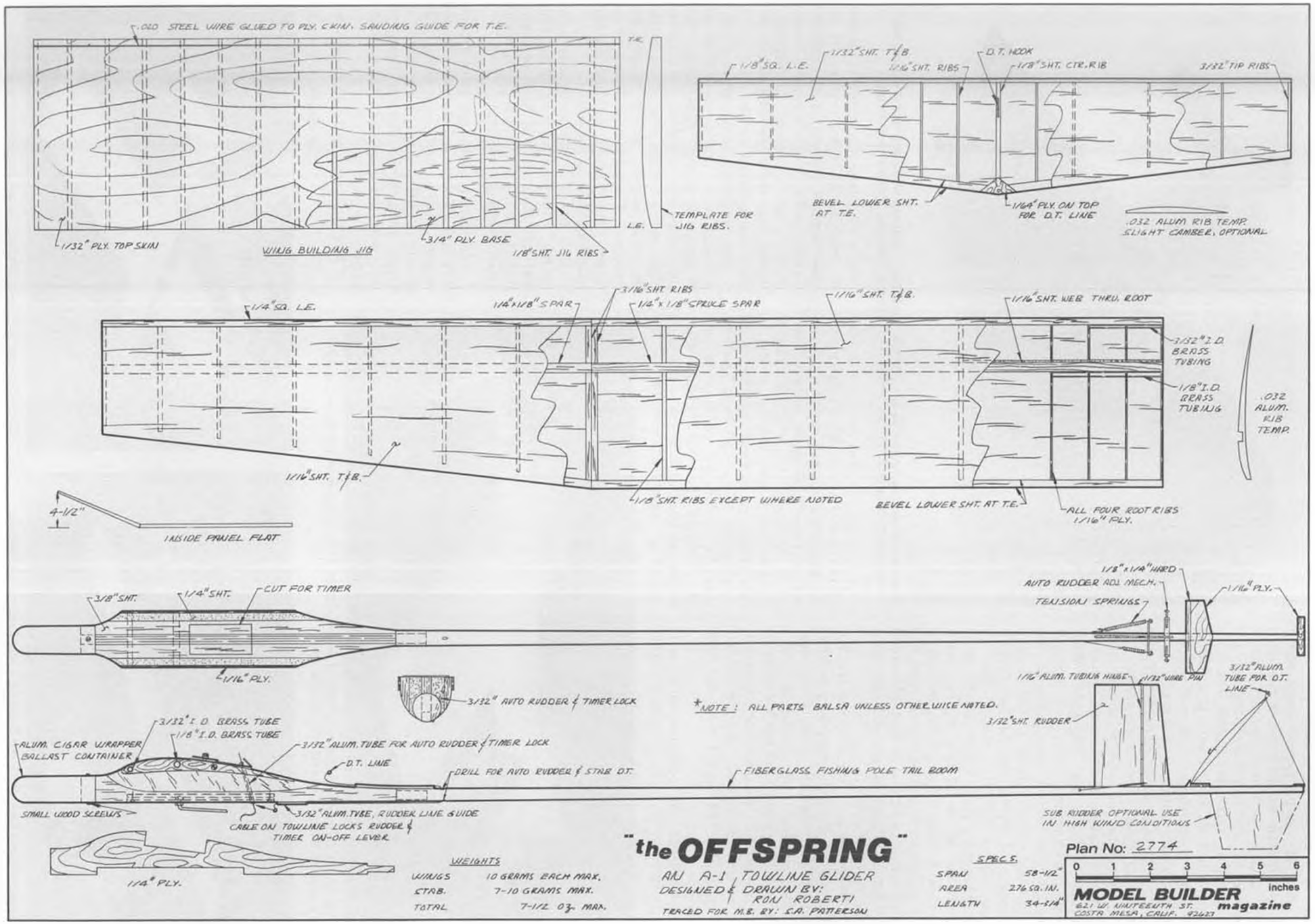
This stunt design by Boyd is an unnamed original. Span 21.5 inches, area 130 sq. in., weight is 6 ounces. Ship is fast and a bit combat-like.



Based on some lines from the Blackburn and Bristol monoplanes, this Bristburn was short-lived, as it was test-flown on a windy day.

Bart Klapinski's "Super Skyfire", based loosely on the author's "Skyfire" design. Built for '76 Nats, but didn't quite make it.

FULL SIZE PLANS AVAILABLE – SEE PAGE 104



PHOTOS BY THE AUTHOR

Three very pretty models belonging to the author; one is named Gail, another is the "Pink Lady", and the third is known as the "Offspring". You should be able to figure which is which. If not, consult the text.

The "OFFSPRING"... A/1 NORDIC

By RON ROBERTI . . . Your best chance of winning is with a clean, functional design, such as this one. Even if you don't decide to build it, the wing construction method is worth close study.

• After seeing the results of my Pink Lady A-2 Nordic, I wondered if a smaller version of the same airplane would work as well. So to the drawing board I went and thus was born the "Offspring." An excellent all sheet covered version of my A-2, although heavier than the minimum weight required, its performance is excellent, especially on the towline where many A-1 gliders have most of their trouble. It's a real good contest airplane, easy to build and fly. Try it, you'll like it!

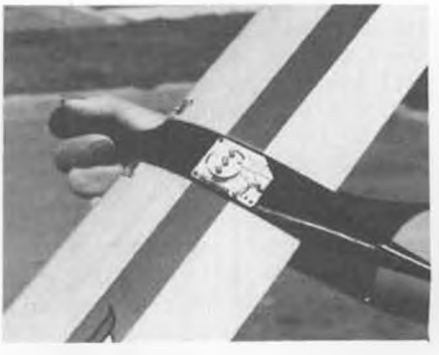
Before you start, read the text carefully. By doing so, you'll save yourself some trouble, as you will see.

Wood selection is most important to keep the weight down as much as possible.

Start the fuselage by cutting the main center piece of 1/4 inch plywood, from the template on the plans. This will be the main strength, timer mount, wing mount, tow hook mount, and mount for the ballast box. Cut out two sides of 3/8 medium hard sheet and glue one on each side of the plywood. Do not cut lower notch on side pieces, as the tow hook will fit in the slot and mount to the plywood center piece. Now cut two sides of 1/4 inch sheet medium hard, eliminating both top and bottom notches. Glue these two pieces, one on each side and let dry. I suggest using Titebond cement for strength. After this is dry, insert the fiberglas fishing rod, making sure that the top is parallel with the center line. Plans show this. This is to make sure that when the stab mounts are put on, you do not build in any incidence setting.

At this time, we can drill the holes for the wing-mount wires. This must be done on a flat surface, using a drill press for accuracy. The main support wire is 1/8 O.D., so you will have to drill a hole to accommodate a piece of 1/8 I.D. brass tubing. The forward wire is 3/32, so you will have to drill a hole to accommodate a piece of 3/32 I.D. brass tubing. Before drilling, mark the holes by using the wing rib template. Lay it flat on the side of the fuselage and set it so you have 3° of positive incidence in the wing. Locate the center of the rib, and mark where the holes are to be drilled. The side view of the

Wire from tow-line releases DT timer when glider is released. Auto-rudder link at right.



Cigar tube nose holds ballast, 1/4 inch ply core in fuselage carries all loads. 'Glass tail-boom.

Auto-rudder and DT stab rigging. Both are very simple and fool-proof.

fuselage plans show this. This is a most important step, so please take care in doing it as it will save problems when you insert the wings.

After the holes are drilled, insert the brass tubing, making sure you leave approximately 3/32 of an inch overlap on each side, as this is where you will mount the 1/16 ply butt ribs. As shown on the plans, you should now have a fuselage with a 1/4 inch slot on the bottom for the adjustable tow hook, and a slot at the top for the D.T. timer. The timer and tow hook I used came from F.A.I. Model Supply, in Phoenix, Arizona.

Now make the stab platforms and epoxy in place, making sure they are aligned properly. Drill the holes for the D.T. and auto-rudder lines, as shown. Using a needle file, file to a bevel so that the lines run smoothly through the holes. The auto-rudder adjusting screw mechanism can be made with a strip of .032 sheet aluminum, 1/8 inch wide and bent to a 'U' shape. Drill and tap, using a 00-80 tap. Install 00-80 screws. The tap and screws are model railroad supplies, not hard to get at a good hobby shop. File a small notch in the tail boom and epoxy mechanism in place. See top view of plans for location.

The rudder is made of light 3/32 sheet, sanded to airfoil shape and tissue covered. Hinges are made of 1/16 O.D. aluminum tubing and glued with epoxy or Hot Stuff. After this is completed, insert .032 wire hinge pin. Make sure the hinge holes are clean and rudder swings free. Make the wire spring holders for the auto-rudder and epoxy to rudder as shown. Paper clips can be used for this. When entire rudder assembly is completed, glue with epoxy to the fuselage, making sure it's straight. The sub-rudder is also 3/32 sheet.

We will now set the fuselage aside to be completed after the wings are made.

The best way to make the wings and make them right is to build a simple jig which also can be used for other models in the future.

The wing jig is made in four parts . . . the base, ribs, top sheet, and music wire. Cut a piece of 3/4 inch thick plywood as shown on the plans, making sure it is not warped. You can buy this as scrap in any lumber yard. Cut out the rib/formers, using the template shown on the plans, and glue in place 1 inch apart. I used Hot Stuff for speed. When all the ribs are secure, coat the top of each rib with two coats of Weldwood contact cement and let dry. Cut a piece of 1/32 sheet plywood the same length and width as the base, and pencil in rib location lines. Put two coats of Weldwood contact cement along each rib location line and let dry. When dry, install the 1/32 plywood sheet on top of the ribs, making sure ribs and plywood make good contact. A soft sponge is good for working the plywood to the ribs. When this is completed and you have a nice, evenly curved surface, install the .020 music wire in place as shown. This will be a sanding guide for the trailing edge of the lower sheet of the wing. It works very well. Now that the jig is built, the wing is simple.

The first step in building the wing is picking the proper sheet stock. The wing sheets should not weigh more than 10 grams each. You need a total of four sheets . . . two for each wing upper and lower surfaces. The sheets must be butt-joined together, using 1/16 by 3 and 1/16 by 2, 4 to 6 pound stock. Good wood with no warps is a must here, so pick it carefully. Joining sheets together is no problem, if you take the time to do a few simple steps.

Using a good straight-edge, cut a small strip of wood off each sheet so that the edges butt together perfectly. Lay down a piece of wax paper on a good flat surface. Now butt both sheets together, and on the outer surface, tape both sheets together with cellophane tape. This will insure a good flat bottom surface. Now turn the sheets over, lay them down flat, and drop a little Hot Stuff at approximately two-inch intervals, just to tack-glue the sheets so they don't move. When this is done, mix a 50-50 mixture of Titebond and water. With a small brush, brush the glue into the seam. When the glue is almost

dry, repeat this gluing step again. When all four wing panels are complete and dry, they can be cut to the size and shape shown on the plans. Make sure when you cut the sheet for the top surface, that you leave about a 1/4 inch overlap to take up the top curve of the airfoil, as the wood used for the upper surface will be slightly wider than the bottom.

When the sheets are cut to size, lay the sheets on the plans and mark the rib locations with a felt pen. When all rib locations are marked on both top and bottom sheets of one complete wing side, set this aside and cut the ribs.

The rib requirements are as follows: Use quarter-grain, medium-light wood for ribs. Cut 24 ribs 1/8 thick, 2 ribs 3/16 thick, and 8 ribs of 1/16 plywood. Make a template as shown on the plans, using .032 aluminum to insure rib accuracy. Plywood ribs will have to be cut with a jigsaw. When plywood ribs are cut, align them with the wing wire holes on the fuselage, making sure you have at least 3° of positive incidence. Mark and drill the holes in the ribs the same as you did with the fuselage. Double-check the ribs and make sure that they are in perfect alignment with the holes in the fuselage. Once the ribs are glued in place and sheeted, if the tubing does not align, it's too late.

Take the bottom sheet for the wing center panel first and, using masking tape, tape it to the wing jig between the rib location markings, and glue the ribs in place. I use Hot Stuff for speed. Acetate or Titebond will do, but will just take longer. Install the 1/8 x 1/4 spruce spar and cement in place. If the spar interferes with the wing wire tubing, cut some of the spar away to fit. This will not affect the strength of the wing, as the plywood ribs will take most of it under windy towing. Epoxy tubing in place.

With the trailing edge of the bottom sheet butted against the wire guide on the jig, sand the trailing edge to a 1/4 inch bevel as shown on the plans and, while maintaining the shape of the rib, sand the trailing edge bevel to the thickness of the wire. Sanding down to the wire will make a good straight uniform edge. Now install the top sheet as follows:

Put two coats of Weldwood contact cement on top of each rib and on the trailing edge. Using the rib location lines we drew previously on the top sheet, put two coats of contact cement along the rib lines and trailing edges and let dry. Now remove the masking tape from the jig.

Start at the leading edge and align the top sheet on both ends. Then press the sheet onto the ribs, making sure that there is good contact on all ribs. Use a soft sponge or rag to do this. Work slowly and evenly, and a good straight wing will result. Make doubly sure you are very careful when cementing the trailing edge to insure that it comes straight. Remove the wing from the jig and trim the trailing edge as needed.

Sand the leading edge with a sanding block until it's good and straight, and add 1/4 sq. leading edge. Trim and sand to airfoil shape. Brush on two or three coats of nitrate dope . . . sand smooth.

The wing outer panels are made on the wing jig the exact same way as the center panels, except cut the ribs to fit the bevel shape shown on the plans and sand to airfoil shape. If this is done carefully, a nice tapered tip will result. *(We'd suggest relocating the trailing edge guide wire to suit the taper. This way, the leading edge remains parallel to the building form, and anti-tip stalling wash-out will be built in. Wire will have to be relocated twice, once for left tip and once for right tip. wcn)* Follow the plan text and use 1/8 x 1/4 balsa spar. When both panels are completed, sand dihedral on both butt ribs so that 4-1/2 inch tip dihedral is obtained, and cement with Titebond. Reinforce dihedral break with silk and tissue cover with your favorite colors. My Baby Doll is covered with pretty pink tissue, just like her mother, and trimmed with white and black. It wasn't necessary to draw both wing panels on the plans, as the wing is built on a jig. Just rotate the rib locations to make the

opposite wing. When both wing panels are complete, we can now finish the fuselage.

Cut two rectangles of 1/16 plywood, slightly larger than the wing airfoil. Using the wing itself as the guide, align and drill the holes for the wing-mount wires through the two pieces of plywood, one for each side. Now insert the 1/8 and 3/32 music wire through the fuselage. Install the two plywood rectangles and then the wings. Trace the airfoil shape of the wings onto the plywood, cut with a saw, and glue the two plywood pieces to the fuselage. Now file the tubing flush.

Shape the fuselage as shown on the plans. The nose is made from an aluminum cigar wrapping tube. Any tobacco shop has them. Cut the nose to the length shown on the plans. Shape the fuselage to conform to the ballast tube up front. When this is completed, brush on two coats of fiberglas resin and sand smooth between coats.

Install all aluminum tubing for auto-rudder, D.T., and timer on-off release. Install timer before drilling on-off release hole. On-off arm of the timer has to line up with the hole in the fuselage. A little care here will be worth the effort. The timer is released by a small piece of control line cable attached to the tow line. This starts the timer and trips the auto-rudder when the model is released from the towline. Make sure the hole is drilled at the angle shown on the plans to insure a smooth release. When this is complete, paint the fuselage and install the adjustable tow hook. Using 50 lb. test braided nylon line, install all D.T. and auto-rudder lines and hardware.

The stabilizer is built just as the wing, except it does not have a spar, and 1/32 sheet is used. Pick your wood carefully, as the completed stab should weigh about 7 to 10 grams and no more, and that's in the fully completed stage.

Put the model together and add lead to the ballast tube until the C.G. is located at the position shown on the plans. Pennies can be used for fine ballast adjustments. Secure the nose plug with two small wood screws. Double-check all operations of D.T., auto-rudder and timer-release. When all is satisfactory, let's take it out to the field and get to flying this thing!

Test glide the model. If it dives, add shims, 1/32 at a time, to the rear stab mount as needed to obtain a good, flat glide. If the model stalls, add the shims to the forward stab mount until a smooth glide is obtained. Set the auto-rudder straight for towing, and a slight right turn on release. Set the tow-hook about 1/2 inch in front of the C.G. Test flying should be done in a slight breeze. Start with about a 75 ft. towline, and about 10 to 15 seconds timer setting, to see how the model acts under tow. The only adjustment I had to make was in the glide turn setting. The model should tow straight up overhead. If it climbs too steeply, move the tow hook forward just a little and try it again. If the model doesn't seem to climb, move the tow hook aft slightly. My model came out to about 7-1/2 oz., which is heavy compared to the minimum weight rule for A-1, but being the maximum size of 276 sq. in., you'll be more than satisfied with its performance. You'll enjoy building and flying the "Offspring". Good luck in the contest season. •

Choppers . . . . *Continued on page 28*

and pods, and has decided against building any more of them. Cliff, as you may know, has been designing and building very excellent R/C choppers for a very long time, but he now thinks that the simpler the machine, the better it is. So, the latest fuselages were designed from the "bottom up" to fit the smaller choppers, such as the Heli-Baby and the Revolution . . . and what beautiful examples of workmanship they are, as you can see from the photos!

The body shell installation is very quick . . . it takes only a minute or so to remove it from the mechanics, and repairs are simple. On the prototype Hughes 500, he used scale landing gear skids, but has changed to skid risers on the later models. Unfortunately, he didn't mention whether or not he was going to sell the Baby Jet Ranger shell, but he did quote a tentative price of $36.50 for the Hughes 500.

Cliff also mentioned that the Jet Ranger presented quite a problem in making the dimensions of a very long chopper fit around a short Heli-Baby. His words are, "It looks a little bit chubby, but good!" After looking over the photos, I personally think it's a real doll! In fact, I am trying to con him out of one for a special project I have in mind, and definitely plan on doing a feature on both of them (with many more details) in a near future issue of MB.

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FINAL APPROACH

In closing, I would like to quote portions of a letter from Mr. G.M. Booth, an ardent fixed-wing model airplane builder living in Blackpool, England. His "first-time" experiences with an R/C chopper should provide a lot of encouragement for those who have been hesitant about trying one in the past.

"After reading the test report on the Kavan Alouette helicopter in Radio Modeller Magazine, I examined the kit at Fleetwood Model Centre and was so impressed with the quality and design that I purchased it on the spot. I would like to point out that although I have been a keen modeller for some 40 years, and am quite proficient with fixed-wing aircraft, I had never built or flown a helicopter. Several members of our club have had-a-go, but have not enjoyed much success. I first read and re-read the most complete instructions, and weighed up the relationship between components and plans. Construction and engine/radio installation took some 20 hours; stripping, painting and re-assembly another 5 hours. At this stage, my helicopter experience was absolutely NIL except for the Alouette. I have had *no* assistance or instruction in either building *or* flying helicopters.

"Sunday was a sunny afternoon, wind about 5-7 knots. I checked the model out as per instructions . . . all OK, started the engine very easily, and having run out of excuses, the moment of truth had arrived. I carried it out to the downwind edge of the field, set her down aimed into the wind and opened the throttle *slowly*. No vibration. I opened the throttle a little more to about 1/2 stick movement and she tucked her nose down, slid about 6 inches foreward, and lifted off to about 10 feet. I notched back the throttle one click and she just hung there . . . perfectly stable and moving into the wind at about 1/2 walking pace. I just followed her about 200 yards, giving small corrections on tail rotor and right and left swash . . . perfectly steady . . . responsive yet not twitching. Having run out of space, I throttled back another notch, let her sink gently to about 2 feet, opened up a bit and touched down like a feather. Big round of applause from the crowd! This went on *all* afternoon. I was able to progressively and quite safely fly rectangles and circles at will. On one flight, I did become a little disoriented and ended up with the model going backwards down-wind at a great rate of speed. The resultant impact caused the whole model to flex (any other would have disintegrated), and the cooling fan chewed the shroud to pieces and spat out the bits in an oily mess. I had several flights after this, until bad light stopped play.

"To sum up: The kit is excellent . . . flying ability of the Alouette II, absolutely first class. When a raw beginner like myself can go out the first time and fly nearly a gallon of fuel through a helicopter, it must be good!"

Thanks for the fine report, George, and lots of luck with your future choppers. It's time to go, so will sign off now . . . and I hope Santa Claus was good to you on Christmas . . . Peace! ●

R/C Auto . . . . *Continued from page 30*

staging length, I mean the distance between the stage light and the start time light. I would guess 2-3 inches or 3-4 inches would be satisfactory. I also think that a stage light should also be

required for big R/C drag meets and for any record to be established. It would be very hard for the people conducting the drag meet to watch every car at every start. But a red light is sure easy to see.

Enough for the preliminaries. Let's look at what these guys put together to go so fast. The one thing that they all seem to have is really loose, rocker front ends. All the weight is then directly connected, and acts, on the rear wheels to keep them on the ground. The rocker front end rocks to compensate for surface irregularities. All drag cars also seemed to be using regular foam rubber tires of about 3.5 inch diameter and gear ratios of about 5.4:1. Of course, all the engines in the quick cars were K&B 21's. Normal fuel seemed to be 40% nitro, with some in the 50% to 60% range.

Harold McCoy's rail dragster is very simple, as are most R/C competition cars. A heavy-gage Associated type power pod plate and stub chassis plate, only long enough to mount the radio and fuel tank, are connected to the front end plate by two 1/4 in. dia. (or 5/16 in. dia.) aluminum tubes. The front end is a Thorp type rocker with no restraint, so that it rocks freely, and has Thorp drag-car front wheels and thinned tires. The car ends up a little below the weight limit, and lead weights are added at the rear, and a small one, at the very front. If traction is down, the front weight can be moved to the rear. During some runs you can see the front wheels lifting off the track. As you can guess, the Dick McCoy prepared engines are strong . . . in fact at Pomona there was a prototype McCoy in Harold's rail dragster. Dick doesn't know yet what the future holds for a McCoy 21.

Harold McCoy took 2nd place with his funny car at the Nats. At Pomona, he didn't get a chance . . . Harold wiped his car during qualifying when the radio was glitched at the finish line and a 2.97 sec. run. The car looks pretty typical, with a 'floppy' front rocker and a little underweight. There is a lead weight at the rear to bring the car up to weight and the battery up front. I guess the picture of McCoy's funny car really shows the details the best.

Bill Jianas' funny car is also quite typical in appearance. But Bill has gone through quite a bit to get there. The last car Bill built was quite something . . . titanium chassis, chem-milled on the bottom so the outside edge was thicker with an X-brace across the center. The car came out extremely light, and Bill could add weight wherever he thought it would help most. But . . . the car wasn't strong enough, it flexed a lot and bent easily when it touched things. So this, his Nats car, is built with a standard aluminum chassis plate and thicker power pod plate. The car weight comes out right on the limit with no lead . . . that way the car is as strong as possible using normal materials. The equipment tray looks quite similar to the typical sports car layout, and there is about 70 percent of the weight on the rear wheels. With the body on, it seems that 70% on the rear would be hard to get, but you can see what the guys are attempting to do.

There are pictures of several other drag cars. If you really look at them you'll get a better idea of the trend. I was kind of surprised not to see anybody really making any adjustments to make their cars handle better. It seems that the racers have their cars set up for

reasonably good traction and wait for the traction to improve. If traction gets even better, they don't make changes and may be loosing a few clicks of the clock. Weight transfer seems to be so important that I expected to see some changes in that area, or to see the rear ends being jacked up or down as the traction changed.

* * *

One of the reasons I got into the meat of this article is that I'm finally getting around to building a land speed record (LSR) car. Hence I wanted to know how good current drag cars were doing in order to be able to extrapolate, or estimate, speeds over longer distances. For example, 1/8 scale drag cars accelerate at well over 1g. Cars that get times of just over 4 seconds (they are "dogs") are very controllable. But if that same average acceleration was maintained, the speed at 600 feet would be 104 mph and 112 mph at 700 feet. These seem reasonable distances to control an R/C LSR car. Because the traction and handling improve so much for lower acceleration, narrower stronger tires can be used. I think the tire problem is going to be the worst thing to contend with for LSR cars. But I'm going to begin with current R/C car practices and just make minor improvements. If the tires don't stay together, then I'm going to try tether car wheels and tires . . . but I think R/C cars will have to have slightly better acceleration because of the visual and controllability problems and the distance of the run.

A picture of my LSR car gives you an idea of what I have in mind. The body is a narrowed sports car body, the slippery Parma Lola 280, with a little over 2-1/2 inches removed in the rear and over 3-1/2 inches removed at the front. A 'floppy' rocker front end and front wheels at the rear are used. Target weight is in the 4 to 4-1/2 lb. range. Drive ratios can easily be changed from 2.9:1 down, or up to 2.33:1, and uses a chain-sprocket drive after the normal pinion/gear arrangement. I have already used these sprockets and chains on some of my suspension cars.

I intend to start testing with a 2.7:1 ratio and expect to get about a .5g acceleration. First tests will be on a normal 165 foot drag strip with expected e.t. in the 4.5 sec. range. If controllability is good, I'll go on to the longer distances and see what kind of speeds I can attain. With the gear ratio range, nominal tire diameter, and expected engine speeds, the terminal velocity range is from 87 mph to 116 mph, but still pulling hard at 80 mph to 107 mph. The questions are; what kind of acceleration will I really get, and will the tires hold together? Time will tell.

* * *

Well here's a little more information on the World Championship Race to be put on by the Orange County R/C Auto Racers Club. As mentioned earlier, it will be July 2, 3, 4, 1977, and held in Orange County, California. The race class will be for sports cars. Because of the nature and importance of this race, there is going to be only one driver classification, or none depending on how you look at it. However, there will be A, B and C main events. Entries will be limited to about 125 or less, hence it is expected that all expert class drivers may be accepted and amateur class drivers accepted only after review of their past performance. Actually that's quite a few, so if you are at all

interested in competing in this first truly world wide competition race . . . send in for an entry blank. All entrants will be requested to list their racing accomplishments in national and regional races and/or letters of recommendation, so that selection can be made. Right now, we are expecting at least 30 entries from Europe, especially England, some from Japan and a possible entry or two from South Africa. The track site will be open for practice at least one full week in advance of the first event, so that everybody can really get their cars tuned up.

If you are interested in receiving an entry form for the World Championship Race, write to me at P.O. Box 4658, Irvine, CA 92716, U.S.A., and I'll see that one is sent as soon as they are available.

Well, guys it really looks like 1977 is going to be an exciting year. Good luck in your racing, and Happy New Year. ●

R/C Pylon . . . *Continued from page 32*

to pylon Two and pulled slightly ahead of Dave, then pulled even tighter so as to increase his lead.

He pulls too tight and comes INSIDE pylon Three and, at *90 mph*, smashes into the pylon judge! Complete pandemonium results, everybody rushing to the injured man. First aid is administered and he is rushed to the emergency room at a nearby local hospital, hopefully in time . . .

Fortunately, the above never really happened. Oh, the basic facts are true, but Jim didn't hit the pylon judge . . . he hit the metal pipe that was used as a pylon. The parts of the airplane splattered all over the area, but again, fortunately, they missed the judge. A good laugh was had by all because it had been an exciting race and though the pylon judge was quite scared, it was comical in the sense that the dividing line between comedy and tragedy is often a very fine one. The rest of the races were run and nothing happened to mar the day. All in all, it was a good contest.

Why do I relate the above story? Because I'm the "Jim" who was involved. On the long ride home I had time to rerun those races in my mind, and the one I just described was fantasized with several different endings (usually with me winning) until I came up with a sudden thought of how easily it could have ended in the tragedy I've just described. The thought has been with me often during the last several months; could I live with myself knowing I injured someone while playing with my toys? Could you?

While laying fault on responsible parties doesn't correct something that has happened, let's look at where the blame might possibly lie.

Was it the hosting club's fault for not providing a safety screen for the pylon judges to stand behind? (There were none).

Was it the CD's fault for allowing the race to be presented without these precautions?

Was it the competing pilots as a group who flew under these conditions?

Was it my fault for not only flying under these conditions but also trying so hard to win?

Was it the pylon judge's fault for consenting to work without a proper safety screen?

I'm sure we've all flown at contests where the safety procedures weren't

quite up to standard. Under those conditions, have we considered the consequences of what might happen to us should something go wrong; what might happen to racing; what might happen to the sport of airplane modeling??? Think about the story and place yourself in the boots of the flier who had the accident. Think about next season and what your reaction will be if you're a contestant, or sponsor, or asked to work where safety precautions aren't as stringent as you think they should be. Maybe, if you're a contestant, you should refuse to fly and withdraw; if you're a sponsor or CD, cancel the race; if you're a worker, refuse to work.

The disappointment of not flying, not having the race, or being thought chicken would be nothing compared to the misery should something tragic happen. We're flying faster these days and it only takes one split second . . .

CONTEST REPORTS

While these are of course quite late due to our up-to-the-minute reports on the Nats and the Rough River Q-M Nats, they're still interesting. It's also nice to recall those warm, sunny days while sitting at my desk with a refreshing drink (hot chocolate), while outside it's 8 above zero and there's 4 inches of snow on the ground.

June 26 & 27, Barber Airport, Alliance, Ohio: This was a great race, not only from the racing standpoint, but also from the fine mini-sized, full-scale airshow that one of the local pilots put on. On Saturday during Quicky 500 intermission, he put his stock Piper Cub through its aerobatic paces and also demonstrated short field takeoffs and landings. On Sunday, he demonstrated full scale pylon racing by flying the Formula I course. I went out to No. 1 pylon to shoot some pictures but unfortunately they didn't turn out. Probably due to my hands shaking too badly. This guy was right down at pylon height and was pulling full elevator turns. Sure impressed me!

If you backtrack to the September issue, you'll find our closing statement on our flight report on the Pro Model Products "Lil' Toni" was to the effect that we wished the plane would have lasted at least through this race. What happened was that in the first Q-M race on the first lap at No. 1, we had mid-air which almost completely destroyed the wing, but left the fuselage repairable. Utter disgust! Travel 250 miles one way, stay overnight in a motel, and only get to fly half a lap! It's a good thing that the Holiday Inn was fun. As a matter of fact, the race was worth going to for that alone. Might I suggest that you make it a point to stay there. It's the one on the NW side of Canton, Ohio. Oh, yeah . . . who won?

Q-M 1st Bernie Oldenburg
2nd Bill Weesner
3rd Allen Booth

F-1 1st Bill Hager
2nd Robert Hager
3rd Bill Johanson

August 22, Toledo Weak Signals 3rd Annual Silver Cup Races:

This race turned out to be the biggest one to this date, entry wise. Thirty-seven contestants showed up for some very competitive racing, and none of the fliers walked away without at least one prize. The weather was super and the "Weak Signals" have a super paved runway to fly off of, surrounded by farmer's fields. Five hotly contested rounds of racing were held, and the operation was a model of the way races should be held. The final results:

1st Wayne Yeager
2nd Pete Waters
3rd Garry DeWitt
4th Bill Hager
5th Gary Dabich

Fast time of 1:38.8 was copped by John Fotiu.

When we ran the picture of the Bloomington, Ill., race back in August, we didn't have the name of the farmer who provided that beautiful site. The man's name is Stan Thompson, and he is to be congratulated for his kindness. While on the subject, the club that flies there and puts on such a good race is the Sentral Illinois Radio Control Society (SIRS), and about this time they should

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be having their membership drive. Join up, guys . . . they'll provide you with a good place to fly, excitement, and, if needed, help.

That's it for now . . . there's an airplane that needs painting. I'll turn the rest over to one of this column's biggest fans.

Hi guys,

It's me, the "little woman". I see by the ole local gas station calendar on the wall that it's about deadline time. I haven't seen Jim for about 4 days. That's when he came in from the garage to get a sleeping bag, eyes glazed, muttering . . . ". . . racing season . . . almost here . . . still need 16 more planes . . . tell Northrop I broke my fingers . . ."

So much preparation for THE SEASON. It's bigger than even Christmas. It gets me to thinking of the awesome responsibilities we wives have. If you're new to racing, or have a new wife, maybe I can help you get organized and off to a good start. No need to thank me. Just seeing all of your happy, organized faces will be thanks enough. Besides, I'll be at the mailbox when this month's Model Builder check comes.

So, wives, here it is . . . the 10 Commandments for Racing Wives . . .

1. Pull out the canvas canopy and lawn chairs and check for wear and tear. Then take it upon yourself to make the necessary repairs. Same for the cooler. By the middle of the summer, you will tire of hot dogs as Sunday dinner.

2. Be sure the lawn mower is sharpened. That way it will be easier for you to push on Saturdays while he's test flying or frantically stuffing a new plane.

3. Take a picture of "Daddy" in his racing outfit so the kids will know who to "hit" for quarters to go to the food wagon. It's truly embarrassing when they ask the wrong guy for donut money!

4. Buy him a lot of Pepto Bismol. Race morning can be murder. Also, it helps *not* to make your great chili recipe for supper the night before.

5. Don't take it personally when you are not the most important "hot stuff" in his thoughts. During racing season it comes in a little bottle.

6. Clear a prominent place for trophies and plaques. Secretly buy some knickknacks in case you see it's still conspicuously empty in August.

7. Nag to get all major home repairs done by April 30. The hammer will be cobwebbed until late October.

8. Don't refuse to go to contests because you think that all wives and girlfriends look like the mannequins posing on the model magazine covers with the latest "in" planes. It's trick photography, and they probably use oversized planes to make them look smaller. I think they wear wigs, too.

9. Ask him to read certain things you've written into a tape recorder. Play these when the relatives call and ask why they don't see him in the summer. They'll think he actually came to the phone and will be satisfied. Don't try to explain.

10. Most of all, smile . . . grin and bear it . . . chin up. Believe him when he tells you he's worth it. He's probably right. ●

C/L . . . . . *Continued from page 40*

OK, believe it or not, but the element looked real bad and I'm not used to plugs lasting very long, so I tossed it and put in a new one. The seals in these plugs seem to be blow-proof, as I have yet to have a plug fail for this reason. Very good plugs, give them a try.

Not released at this writing, but coming soon is a new C/L handle from Aldrich. I've seen pictures of the prototype units and they looked pretty good, so watch for them.

ED'S GARAGE KITS

A fairly new company to the kit business is Ed's Garage, owned by Ed Jacoby. Ed is offering a couple of kits that you may be interested in. The 'Vulture' is for Profile Carrier and is a really nicely done kit. Plans are complete, instructions very clear, the wood is of a high standard, and the bits 'n pieces needed to properly do a Profile Carrier plane are all there. The bits 'n pieces includes such things as formed gear and

arresting hook, so you know this kit is complete.

I've been wanting to try Profile Carrier for some time now, so will finally get into it with this kit and a new ST 35C reworked by Carlos Aloise. When I get everything together I'll take some pics of the plane and report on how it and the Aloise ST do against the Shady Acres Combat Team, who are threatening to dominate Profile Carrier in the N.W. next year.

Ed's other kit for C/L is the Misty II, which is designed for Goodyear (Scale Racing). This is also a good kit, with proper plans, instructions, wood, etc. As with all of Ed's kits, all parts are machined to shape, so no problems with fit of parts or accuracy. Die cutting may be easy for the kit manufacturers, but it sure is nice to see C/L kits coming out with machined parts.

The Misty II looks like an effective design, with a good compromise between light weight and strength. The only real problem with the plane is that it would be difficult to use either a pipe or a megaphone on whichever engine you use. Personally, I have not found it necessary to use any kind of pipe to be competitive in Goodyear, so I wouldn't worry about it too much. Also, the CLCB is considering a rule proposal that would ban any form of pipe in Goodyear starting in '78, and there seems to be lots of support for this proposal, so it will probably pass.

Ed called a while ago to tell me about his latest, a Stunt kit, that is possibly already available as you read this. Ed is really going out on a limb with this kit, as far as I'm concerned, but maybe he is right in that the market is ready for a truly high-quality Stunt kit. That high-quality bit is going to have to be true, as the kit of the "Miss Poppy," designed by Rich Leroy, will be selling for about 80 dollars! Omigosh, you say, and I agree, but let's wait until the kit is available and we take a close look at it. I was kind of hard on Stunt planes last year, so I need a new one, and if the Miss Poppy is all Ed claims it will be, then maybe I'll get one.

SPEAKING OF STUNT PLANES . . .

As mentioned, I was tough on Stunt planes last year, and with a contest coming up had to whip up a decent Stunter in just a few days. Lack of time meant the new plane had to be a profile, so I looked around and decided to try the Sig Twister, as it looked easy to build, was inexpensive, and seemed to look like a decent flying design.

I built the plane in two nights plus a bit in the mornings (Hot Stuff for glue and Monokote for covering, of course!) and the plane turned out to be the best-flying profile Stunt ship I've ever flown. Line tension is just right, it will turn nice corners without being jumpy, and is just generally a very flyable airplane.

My plane is powered by an O.S. Max 35 breathing into a stock O.S. muffler. A 4 oz. Fox stunt tank is used, and it is modified to the normal uni-flo/muffler pressure configuration. I know that lighter mufflers are available, in fact I have an Adamisin muffler for the O.S. that is super, but my plane wanted a bit of nose weight, so I'm saving the Adamisin muffler for use on another plane. A neato Fox spinner is used for a bit of show-biz effect and the fact that I think it is neat to have a spinner that cost almost as much as the kit!

The only real problem I had with the plane was that the gear supplied was long and floppy. Landings and take-offs were atrocious, so I made a shorter gear with a much narrower track out of some 1/8 piano wire. With Kraft slim-line wheels (2 inch diameter) takeoffs are fine now, and the landings are great. I prefer to land a bit fast and just grease 'em on. The Twister likes this type of landing and will touch down and stay there without bouncing off, which is always embarassing. If you like to float in on landings, good luck. The Twister has lots of wing and is pretty light, so it will float around forever.

If you build a Twister (or any other profile kit), I would definitely suggest using Monokote on it. The only problem with this comes in doing the fuselage. If you simply cover the basic fuselage in

Monokote once it has been sanded complete but before sticking on the rudder and stab, the job is very easy and comes out neat. When the fuse is covered, strip off the covering where the rudder, etc. goes, and glue these items in place. Then cover just the center section sheeting, top and bottom, on the wing. Slip the wing in the fuse, mark the covering where the fuse goes, pull it back off the wing and strip off the Monokote. Now put the fuse back on the wing and glue it in place.

With the fuse and wing assembled, it is easy enough to cover the wing panels, over-lapping each panel's covering onto the already-covered center section.

I also use Monokote for hinges, and it works great. If you know how to do it, try it on a Stunt ship sometime. If you don't know how to do it, I'll take pictures next time I build a Stunter and show ya. Or read a few R/C construction articles.

Back to the kit itself. I think that anybody right up to SSF's (that's a Wynn Paul item meaning Serious Stunt Fliers!) would enjoy building and flying it. It's a good, solid plane that can help you on the road to becoming a for-real Stunt Star, Stunt Grunt, SSF, or whatever.

YOU TOO CAN HAVE
A HOT-DOG TD .049

I fly a lot of 1/2A Combat, and find it necessary to use the meanest, nastiest .049's I can put together. I'm not going to say how I do it, because you won't believe me in the first place, but I do have a tip for you on how to get some "free" hp out of that TD .049 of yours. Try some of Nitrotane's fuel in either 1/2A 60% or 1/2A 70%. These are special blends for the tiny screamers, and the fuel really does the job. Half-A Proto Freaks love it . . . Gary McClellan ripped me for a few ounces of it last summer at the BMA contest here in Seattle, and bought (actually paid for it!) some more of it from Frank back at the NATS. The F/F guys slobber over it . . . "The Round Man", Tom Hutchinson, begged me for a quart of it at the last Power Bash. If he had used the fuel in the contest, he *may* have been able to beat me in 1/2A Gas, but I doubt it! Naturally, I was smart enough to keep from telling him why my engine was running so strong until after official flying was over.

Anyway, give the fuel a try and you can have the pleasure of watching the needle on your tach go off the deep end. Non-believers can keep on using whatever they use now for fuel, and then listen to my engines rip and snort when it comes time to fly 1/2A Combat at the '77 Nats.

HALF-A COMBAT AT THE NATS?

I guess so. There seems to be quite a bit of interest in MACA for having 1/2A Combat at the next Nats. Larry Renger has made arrangements with his people at Cox for sponsoring the trophies, so that's taken care of. Now we need somebody who will step up and agree to run the event. If you're interested, write to me and I'll put you in touch with the right people.

You'll be needing a decent plane for this event, so I'll do an article on my latest .049 Combat plane, the Dirty Beaver, and we'll see if WCN can't get it published before the next Nats. *(Can't publish it if I ain't got! Get off your duff and ship it down! wcn)*

B&M CRANKS

Last month I mentioned that Rich Brasher and Norm McFadden were working on their own design cranks for the new Fox Combat Special, and that I have one to test. I have been running the crank very hard and it hasn't popped, so look for this crank to be made available soon.

At this time, Rich and Norm are still experimenting with different materials, heat treating, etc., in an effort at coming up with an absolutely bullet-proof crank that will take any abuse possible. They are also trying different configurations, that take into account such subtle things as being able to quickly change props. Rich and Norm are very thorough, so I look for the cranks to be very special.

As design of the crank is not finalized at this writing, price and release date is not known. If you're interested, and

want to be notified as soon as the cranks are up for sale, I would suggest writing to: B&M Cranks, c/o Rich Brasher, 327 Howland Ave., Redwood City, CA 94063. Enclosing an SASE would probably help, of course.

GOING FAST AND/OR
LYING ABOUT GOING FAST

The above reminds me that Rich Brasher and I are on a kind of campaign (we're not real serious about it . . . it's kind of a loose thing) to stamp out B.S. in the Combat event. Things like guys claiming their planes turn on a dime and give change, when actually they turn on a dollar and charge tax; saying 120 mph "is no big thing", when Combat-ready Combat planes rarely go over 110 mph; predicting 120 mph Slow Combat planes; and on and on. It's been fun, listening to the B.S., getting brown stuff on our shoes, and watching to see how high the smoke-blowers can blow their smoke, but the Combat event has matured, and I would hope that Combat fliers have, also.

We need more honesty in the Combat event, and I hope that '77 brings out more Combat-related articles and contest reports devoid of the usual "punch-it-up-to-make-it-sound-better-than-it-could-possibly-be" tactics.

These tactics have caused more problems than they have done good, in my opinion. For instance, Rich and I were talking on the phone the other night and were discussing the Nats Combat scene. We both agreed that Combat at the Nats just was not what one would expect from reading the usual "Goody Two-Shoes" Nats reports. The '76 Nats was the first for both Rich and me, and we were prepared to see what everybody says is usual stuff at the Nats. You know, 120 mph planes by the dozen, super-tough fliers, mind-boggling planes that would turn tighter than tight . . .

Instead we saw what we regard as good, but commonplace, equipment in the hands of the better fliers, and marginal equipment was dominant. And a few junkers, of course. Rich said that he actually used to worry about his equipment not being good enough to compete with at the Nats level . . . only to go to the Nats and find that he was running faster than most everybody!

Don't take me wrong. Combat at the Nats is a whole bunch of fun, but not because the equipment or the fliers are anything special. If we can get rid of the B.S. goin' round, maybe we can settle down to working on making Combat an even better event than it already is, with more workable rules, better contest procedures, more honest suggestions for people new to the event, better constants for them to compare their equipment with, etc.

At the present time, there is a small feud going on via the MACA newsletter concerning "120 mph is no big thing", with one guy telling me to "Put up or shut up" after offering to rework a brand-new Super Kitty G21 for only (?) $50.00! The guy doesn't realize who he is dealing with! I'm not dumb enough to go out and buy a new engine (I don't even like G21's!) and then send him $50.00, plus the engine, so he can build an engine that not only won't go 120 mph in a plane set up for Combat, but will no doubt pop after a few runs, be hard to start, run inconsistently or blow fuel all over. Chances are the engine would do all of those nasty things at once!

Besides, I got a better offer from Charlie Johnson. Charlie says that if I send him the $50.00, he'll come out in his Combat column saying that I've got a *200 mph motor* and that I won the '76 Nats, but they misspelled my name Buckstaff!!

Stay tuned in on the MACA n/l and this column . . . it's gonna be fun!

GLIDING FAST AND/OR
LYING ABOUT GLIDING FAST

As if to prove that we Combat fliers aren't the only ones to have B.S. slingers in our midst, I see where an R/C Glider Guider has applied for the record in R/C Sailplane Speed, at (get this!) *188 mph.* This is absolutely incredible! The old record was 113 mph, set by a Russian, and it was highly questionable, as is

their record for an R/C Speed (60 powered) plane. If the whole thing wasn't so funny, I'd go into more detail . . . and maybe WCN already has someplace else in **Model Builder.** Just be advised that the B.S. is knee-deep world-wide, from here to Russia to Austria. *(What's the use, D.D.? No matter how much proof there is, we still like to believe in UFO's. By the way, did you know I once held that world glider speed record? wcn)*

G.T.M. STUFF

George Mattei occassionally advertises fuel bulbs, engine rework, etc. in the MACA n/l and in Patty's Pinkie, so I finally ordered one of his 8 oz. bulbs and an ounce of lapping compound. The lapping compound seems to work very well (I used it to set up my latest 200 mph Combat engine, of course!), so I'm switching to George's stuff.

The fuel bulb is really pretty nice. It holds 8 ounces, won't blow up when filling pacifiers, is the right shape for easy handling, and fills itself with fuel quickly. For $3.00 I doubt that you will ever find a better fuel bulb. Oh yes, George says the bulb is highly fuel resistant. I'll have to take him at his word, I haven't used the bulb long enough to be able to tell.

If you need either of the above items or a good-looking 5 ounce syringe, assembly oil, pacifiers, or engine rework, write to George and he'll send you a price sheet. G.T.M. Products, 105 Franklin Road, Hamden, CT 06517.

CAL NATS

You'll be reading all about this in all the mags, but the Nats will be in California in '77. At this time, I don't have it in writing or anything, but "a responsible informant" has told me to plan on being in SoCal come Nats time. It's about time and it ought to be a super Nats with the West Coast boys showing the world how things are done right! *(We have final confirmation! See "Workbench". wcn)*

WYNN PAUL
WON'T BELIEVE THIS, BUT . . .

At the '76 Nats, I met Wynn Paul, and we spent a few minutes talking about nothing much in particular. I started to ask Wynn about what was happening in Stunt, but didn't for some reason. Maybe it was the glazed look in his eyes, the fact that he had an E-Z-Just grafted on his right hand, the way his eyes rolled in square eight fashion, or the fact that I assumed nothing much was happening, so why ask.

Anyway, when I got back home from the Nats and sat down to do the Nats story, I realized that I really didn't do a very good job of covering the Stunt event. And the Nats story showed it, with very little being written about an event that I happen to enjoy flying.

Not only did I notice it, but so did Wynn, and he quick fires off a letter to me asking why Stunt got short-changed in the deal. And I quick sit down and make a 1-1/2 hour tape back to Wynn explaining why and throwing a lot of other stuff in besides. Poor Wynn had to sit through that whole tape listening to me . . . that ought to teach him to complain to me.

So here I am, all you SSF's out there in Looping-Land, apologizing for my lack of Stunt coverage in the MB Nats report. Won't happen again, as Wynn has promised to give me a hand with Stunt coverage at the next Nats.

NO TIME LIKE RIGHT
NOW TO GET STARTED

The '77 Nats will feature 1/2A Stunt, sponsored by Cox Hobbies and run by PAMPA. A lot of interest is presently being shown in 1/2A Stunt, so a large turn-out is expected this year. Although the scheduling for this event is not firm, the rules are, so take a look at them and build a plane to suit.

Engine Displacement: .051 max.

Builder-of-the-model: no requirement.

Entries: one entry per pilot, one pilot per plane. (Back-up model per AMA rules is allowed).

Appearance points: None

Lines and pull test: .008 diameter and 5 pounds.

Pattern: Per AMA rulebook for Precision Aerobatics.

Attempts: Same as above

Identification: Same as above. (1/2 inch high numbers are permissible, however). •

F/F . . . . . *Continued from page 54*

two sides of the prop is not nearly so important as matching the pitch of the two blades."

And there you have it . . . a good prop for that next EZB or Pennyplane. Try it.

SOME OTHER INDOOR
HINTS AND KINKS

Tissue sockets for indoor models are made from 1/8 to 3/16 wide strips of Japanese tissue about 1 inch long and wrapped around a 1/16 form which has been waxed with candle wax. Glue is

rubbed into the tissue and when dry, it is removed from the waxed form. These sockets are then glued to the side of the fuselage, allowing easy wing installation and removal as well as simple and infinite wing incidence adjustment.

"The rubber loops that we provide in our new Peanut Scale Kits, as well as the rubber on spools, is of excellent quality. This rubber is in most of the hobby shops, many of which have purchased our Rubber Power Center. The spools come in four different sizes (1.0 x 1.0mm, 1.6mm x 1.0mm, 3.0mm x 1.0mm, 6mm x 1.0mm). I hope this will clarify the situation, and hope that you will make this information available to the readers of your column."

A note from your Free Flight editor. When you go into your hobby shop, check to make sure the rubber strip you are buying that is marked "Sterling" has a brownish and somewhat slick appearing surface. That's the good stuff. The grey stuff should be left to power Sterlings 'A' Series kits.

FINAL ANNOUNCEMENT

AUTHORS ARISE: Send abstracts of Proposed Papers dealing with the science and art of Model Airplanes (Free Flight type) for the 1977 NFFS Symposium to: Robert P. Dodds, P.O. Box 436, Rancho Santa Fe, CA 92067.

HUMOR

As well as passing on the latest in Free Flight news, it seems that this column has the purpose of keeping free flighters up to date on the latest in humor . . . to wit: Do you know how to keep a Turkey in suspense?

. . . See you next month.

Dick Ganslen suggests that teflon tubing can be used as a no-stick form for rolling wing sockets. Just slip the tubing over thin wire to hold it stiff, and roll the sockets as usual. It is not necessary to remove the sockets before the glue dries, as the teflon is slick enough to allow the finished socket to slide off.

Prop Storage: One of the banes of indoor modelers is the fragility of the models and props. Wind and rain will demolish such a ship. Simply packing an indoor model in a box with loose parts rolling around is disasterous. Some kind of device which will firmly hold the model and attendant parts in place in the box is needed. Such a device is shown in sketch No. 6, and represents a method used by Hans Beck at the 1966 World Championships. All of his props were carried in a briefcase style wooden box.

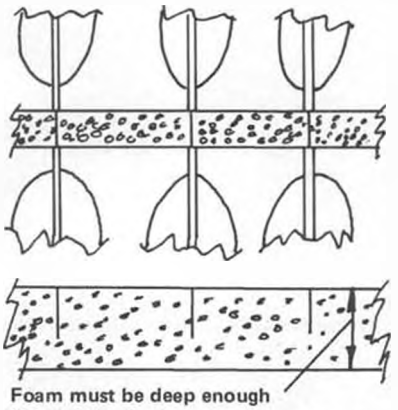


FIG. 6

Inside, each wing of the box carried a wide strip of foam rubber slotted to hold props as shown in Figure No. 6. This is excellent packing; the props are shock mounted firmly, yet easily removed. Unlike some similar arrangements, careless handling of the props has to be really rough before the props are damaged.

STERLING RUBBER REPORT . . . CONTINUED

In previous articles, mention was made of some empirical tests I had made on Sterling rubber and that my results did not agree with those published earlier by Chris Matsuno in Free Flight Digest. A letter from Ed Manulkin of Sterling confirms that Sterling is in fact marketing two different kinds of rubber. Ed says, "We have two different types. The type is put in our 'A' series kits is manufactured by B.F.Goodrich Industries and is supposed to be as close to our T-56 rubber as they can make it. Unfortunately, it does not measure up to that quality. However, since they do manufacture it in 8 different sizes that we require for our 'A' series kits, and has the

power required for the kit in which it is packed, we do use it. It will provide flights of the proper power, albeit short duration. •

Half-A . . . . . *Continued from page 58*

show where my interest in model building lies. I have spent the last few flying seasons trying to learn CL aerobatics with 1/2A planes. Please tell Mr. Northrop *your new column suits me to a tee.*

"The models in the photographs resulted from studying published designs and specifications appearing in the popular magazines. In most cases, I have borrowed heavily when considering moment arms, ratios, and proportions. These little stunters are simple, inexpensive, and most of all, fun. Since I am relatively unskilled at selecting light balsa, I have tried to save weight by using as little paint as possible. The wings have usually been clear doped only. The tail surfaces are covered with Japanese tissue in lieu of using colored dope. All trim is colored tissue. Generally, the models are under-finished but light.

"Number 1: This is an unnamed original design. It's a bit too fast and combat-like, but it has shown a fine ability to survive crashes.

"Number 2: Also unnamed, this little bipe flies pretty well and lands pretty awfully. It instantly summersaults when its wheels touch the ground. I closely adhered to the suggestions for moment arms, etc., in Peter Miller's article on bipes in the July '74 issue of AeroModeller.

"Number 3: Borrowing some lines from early Bristol and Blackburn monoplanes, I called this original the 'Bristburn'. It was potentially one of my best efforts, but I foolishly test flew the model on a much too windy day and demolished it.

"Number 4: This TD-powered plane helped me learn more about flying the pattern than any of the others. It is a scaled down version of Dick Mathis' Excalibur. His design is as helpful as his book (when I fly I keep a copy of 'How to fly U-Control' in my left hand for a ready reference in case I get into trouble in an overhead eight).

"Number 5: This model varies from No. 4 in that it has a tapered planform and more side area in the fuselage. It is supposed to resemble a Nobler 15. Having somewhat 'mastered' the round maneuvers, I am looking forward to having a go at the squares and triangles with the Noblexcal."

The last model is a "Super Skyfire", designed and built by Bart Klapinski, based loosely on my own "Skyfire" design. This model was constructed for the '76 Nats, but suffered a broken engine mount early in the week. Due to Bart's commitments as C.D. for Precision Aerobatics, the model wasn't repaired in time to compete. Bart lengthened the nose and tail moments and made the fuselage into a triple-thickness profile for better strength and vibration resistance. He also added profile mounting for a Tee Dee engine and Uni-flo tank, adjustable lead-outs, and tip weight. Finishing touch is the tricycle landing gear. Go get 'em next year, Bart!

As a grand finale for this month, I thought I'd mention that Cox Hobbies is also sponsoring an unofficial 1/2A combat event at the '77 Nats. More details as they develop. •

Magnets . . . . . *Continued from page 44*

too much. But a moderate thickness of airfoils is advisable for magnet slope soarers anyhow. *(We refer to the above material as metallized mylar. wcn)*

HOW TO FLY THE MODELS

First of all, the model must take up a straight flight course with the steering blocked. However, rarely models fly straight, even in calm air. The reason for this is unnoticed warps, and the main task of the tests is to detect these warps, not only by visual check, but also by the flight behavior of the model.

If the model is trimmed near stall, it will tend to the side of *greater* incidence because of the increased drag. When trimmed for good penetration, it may fly

straight ahead with a little yawing, but when trimmed very fast, it may turn to the side with *less* incidence!

You can check the course tendencies all together in one flight: Let the model stall. Observe it in the nose down and in the nose up position. Flying a meandering path while swinging upwards and downwards is an infallible proof for warps and where it is to be found (Fig. 5).

Another infallible proof for distortions is the behavior when descending with D/T. There is a warp at fault when turning even slightly around, as a distorted wing acts like a propeller. Let us hope you are able to observe the model's behavior during the D/T descent, which more often than not works badly. Here is our hint: Several tests seemed to prove that the best D/T angle for magnet models would be exactly 30 degrees. This tip-up angle stops loopings and has an additional advantage: The model gets a slight forward push, which puts the steering in action and the model will fly on into the wind and not push back into obstructed terrain.

Now you will have to tune the model to the windspeed. Trim by shifting the wing or adjusting the incidence screw. Add lead when the models are knocked over by the wind on the ground. About 100 to 400g, according to the model type, attached in the c.g. will do it.

Now the golden magnet flier rule: The model will make a hovering duration flight when it frees itself from your hand at walking pace. When higher up, it will stay in the air motionless. That is why you should embark on magnet flying after studying this article!

What about hills? Magnet models are very modest in this respect. Heights of 20 to 30 meters will do it, as the sinking speed of a forward steered glider is about 30 cm/sec., and of a rear-steered, light-wind model, less than 25 cm/sec., the lowest sinking speed in F/F obtained so far. Man carrying run-and-fly gliders have a sinking speed of about 90 to 100 cm/sec. That is three to four times more than our models!

Competition rules: FAI rules set five runs with a maximum score of 5 minutes each. We in Germany also aim for 2 flights of 150 sec. in each run on mini-slopes, so that the same total score is achieved. There is no restriction whatsoever to the number of models employed, neither to the size of the wing area nor to the wing load. Only the flying technique counts.

For further information write to: Hans Gremmer, Oberbreitenauer Strasse 11, D 8500, Landshut (West Germany). ●

Sailing . . . . . *Continued from page 36*

make each skipper's score a percentage of the winner's score for a given regatta. For example, in a 5-boat regatta, the winner gets 52 points, and if you are in second place you will get 46 points, 46÷52=.884619. For a 6 boat regatta, the situation becomes 54÷60=.900000 for the same second place finish. The different point totals that the Cox-Sprague system assigns to the finishing places, coupled with using a percentage way of reporting the scores, makes smaller regattas less handicapped, makes the scores much closer together, and I hope, will encourage more people to race. It is conceivable that a situation would develop that even though the two top skippers elected to sit out a final regatta, a winning performance by the next skipper down could have such an effect that he might bump one or both of them for the whole series.

I went back through the series that the Potomac R/C Sailing Association has had in past years. In no case did the final outcome of the scores calculated by the Cox-Sprague system shuffle the order of the trophy winners. What it did do was show that as the end of the season approached, the final outcome was still in doubt right up into the last regatta.

Take the Table 2 and sit down with some of the series regattas you have been in. You might discover that you could have been a winner under that format.

Scoring is the final product of a

day's worth of racing. Even before the first score is written down, before the first heat starts, there has been a good deal of effort expended in preparation for the event. As I read the modeling press, I am somewhat worried by seeing the same names coming up all the time all across the country as Regatta Directors. It is not a difficult job, but it is certainly one that should be practiced before you are handed an ACCR to run. I am going to suggest an experiment to our local EC/12 meter fleet this next year, with a goal of breaking people into the routine of regatta management, and making it something that will be worthwhile for their series boating score. Initially, I plan to run the first regatta myself, as I never believe that you can sail and officiate at the same time. At the end of the regatta, I will call for one volunteer who will run the next month's event. You will only get the chance to be Regatta Director once a season, and must sign up ahead of time. The reward will be that upon completion of your day as Regatta Director, you will be able to put second place competition points down on your score card, these points being one of the regattas you may count toward your final score at the end of the season.

Since the skippers at the top of the fleet are usually the ones who have already held positions as fleet captains or regatta directors, they will probably prefer to yield to others. The fellows who make up the bulk in the middle of the fleet will benefit the most score-wise from a free second place finish, and they are just the skippers who we must count on to keep the sport healthy and growing.

The fellows I have talked to seem to like the idea, and I'm hoping that the EC/12 Fleet will vote to accept the practice into its 1977 activities. Since I will always be there to act as scorekeeper and advisor, as well as help with the protest decisions, I hope that it will provide an easy way to increase the number of qualified Regatta Directors. I also think that once some of these people get a chance to see a Regatta from that viewpoint, their conduct and enjoyment of other regattas will be improved.

Remember to send in your $5.00 annual dues to American Model Yachting Association, 2709 So. Federal Highway, Delray Beach, Florida 33444. •

Berliner . . . . . *Continued from page 23*

Van Nuys, California. Can anyone tell us where he is now?

For anyone who leans toward scale, and would like to combine that interest with Old Timers, the Berliner Joyce would make an interesting project. It could also make an excellent Sport Scale R/C model, except that Sport Scale is steadily "detailing" itself into AMA Scale and losing its original intent . . . oh well . . .

Plans have been drawn as taken from the original dimensioned sketches. No attempt has been made to show modifications commensurate with modern-day construction materials and adhesives. The text does mention a balance point of 1/4 chord from the leading edge of the top center section. This seems a little far forward to us, but it certainly won't hurt to start out with that setting. Better than being tail-heavy! •

Plug Sparks . . . *Continued from page 20*

SAM CHAMPS GROUP TRAVEL

Joe Beshar, SAM Prezy, writes to inform this columnist that he is organizing a group travel plan originating from J.F. Kennedy Airport in New York. The price to the Las Vegas SAM Champs will be $239.00 each for double occupancy, and for single occupancy, add $50.00!!

Sounds high? Actually, it's dirt cheap, as all taxes, airport transportation, four nights accommodation at the Stardust, plus tips and gratuities are included! You leave JFK June 27, in the a.m. and return July 1 in the p.m. How can you beat this package deal?

Joe Beshar requests all interested parties in the east to contact him at his home, phone (201) 261-1281. Joe

originally hoped to get enough people by January 15, 1977 but since this issue hits the stands later than that, contact Joe anyway. There is always room for more!

Those not interested in flying to Las Vegas should pay particular attention to to the application coupon which will appear in SAM Speaks. This will allow you to obtain advance reservations at the Stardust Hotel. Only got 150, ya know! If you don't get the newsletter, write to Al Hellman, 22607 Hatteras, Woodland Hills, CA 91364.

OLD TIMER EVENTS AT THE NATIONALS

This is not to be confused with the annual SAM O/T Champs, as the Old Timer Events have been staged at the Nationals as a special event every Friday of the Nats Week.

Last year at Wright-Patterson, the Old Timer SAM Champs was held in conjunction with the AMA Nats, so there was no real reason for repeating the events during the week.

This year, the columnist is going to continue the O/T Events at the Nationals. March AFB at Riverside will be the site during August 7 through 14. Hopefully, the O/T Events will be held on Friday, August 12. Events featured will be:

Gas: Class A, B, and C
Rubber: Cabin and Stick
.020 Replica
30 second Antique

That should be enough for one day; seven events! The Annual O/T Reunion Banquet will again be revived after one year's absence. This will be on the 14th, for fun, good meal, movies, speakers, you name it! Just plain fun!!

POND COMMEMORATIVE

Here is a meet that has really taken hold on the West Coast. Thanks to outstanding efforts by Tom Bristol and John LeSeur, of SAM 21 and 27 respectively, this Annual (as originated by Red Barrows) was again a roaring success.

No question about it for 1977, the meet will be a two day affair. C.D. Tom Bristol announced at the conclusion of the most enjoyable meet that next year's date would be October 16 at the same site. But we are getting ahead of our story.

The festivities were kicked off by the Annual Saturday night dinner held at the Howard Johnson (Everyone stays at the Holiday and eats at Howards). After a rather unusual yet sumptuous dinner, the organizer, John LeSeur, then introduced John Pond, who in turn deferred to Al Hellman, the Contest Manager for the 1977 Las Vegas SAM Champs. A real question and answer quiz ensued (This is one of the major reasons this column has been carrying details of the SAM Champs).

The next day was a beauty. There were so many entries in the Texaco Event that the order of flying was drawn by lots. As it turned out, those who flew in the morning enjoyed the best weather and were the winners.

Big winner was Don Bekins, who gave an excellent flying demonstration in winning the Texaco Event with a Lanzo Record Breaker, the Class II Event with a Playboy Senior, and third in Class I with a hot Strato Streak. What he didn't win was taken by John LeSeur, who copped a first and second. Of course, the big perpetual trophy for Sweepstakes was easily won by Bekins.

Some of the more interesting models flown more than held their own. Tom Mahon's Miss Philly IV, a 1935 cabin design by Maxwell Bassett, came in with a fine flight of 15 minutes for second place in Texaco. The columnist showed up with a Lanzo R/C Stick model of nine foot wingspan. The model was quite similar to the Tex Newman "Dragonfly", featured as a construction article in **Model Builder.**

An excellent writeup of the meet also appeared in the Hobby Shack Publication under the column name, "Give me that Old Time R/C." Written by Bob Sliff (who pulled a second in Class I with a Zipper), the article was enthusiastic over the weather, the turnout, and in particular, the way the contest was run. The whole point was that if you missed this good meet, don't miss the third Annual. With two days to fly, the meet should again revert to that most

desireable leisurely flying atmosphere.

SAM 27 REVISITED

Hard on the heels of the Pond Commemorative Annual, the columnist took in another meet at Santa Rosa, this time sponsored by that young active club, SAM 27. Most surprising for this time of year was the beautiful weather and excellent condition of the field.

SAM 27 puts on a meet well worth paying attention to. There are always two people at the desk, recording, and most important of all, making sure there is no frequency conflict. Of course, the fact that there are plenty of timers also helps.

The visiting club, SAM 21, took home most of the top places, with Pond winning the Limited Engine Run Event, Don Bekins the .020 Replica Event, leaving the Texaco Event for Ed Solenberger of SAM 27. It should be noted that Ed did not have an easy time as six SAM 21 members were in the first ten (Bekins, Pond, Bristol, Tulp, Cullens, and Nicholau).

Ed Wood, the motivating factor behind this very active SAM Chapter, has announced the club will run monthly meets, or as near as possible, with all due respect to other big meets. How fortunate the modelers are in the Northern counties across the bay!

REGION II COLLECTOGETHER

Normally this column does not report much on the Model Engine Collectors Association activities, but the Region II Collectogethers have been getting so big, one simply cannot ignore them any longer.

Dick Dwyer, the regional Coordinator, reports this one turned out to be an all-time gang-buster whoop-de-do (that is a direct quote!) Special guests were all over the place, most prominent being Johnny Brodbeck and Dick McCoy. The fartherest distance traveled was won by Jorge Nouhra of Quito, Ecuador! And those guys from New York and New Jersey thought they had it sewed up!

Best Engine Display was won by Christine Morris (yes, a woman!) with Ted Dodd a close second. Eleven door prizes, including four engines, were given out to the lucky. This was followed by that ever-popular auction as staged by Bill Daniel of Long Beach. Don't say we didn't warn you of these collecto-gethers in Region II. They are great!

BRAIN BUSTERS FALL CONTEST

Not too many people are aware of it, but the Brain Busters of Hampton Roads, Virginia, are still quite active, as their recent Fall contest will attest.

According to Ed Sullivan, it was a "really big shew" (apologies to the original Ed). Caldwell Johnson cleaned house on the boys this time, taking firsts in .020 Replica and Combined ABC O/T events. You wouldn't think a good rubber man like "Cadwell" would be that much of a threat in gas. Just goes to show, "Class will tell".

Interestingly enough, Bryton Barron, that 70 year old trophy hunter, was shut out in the Old Timer events, but like Caldwell, pulled a switch and won the Glider Event.

To show the interest, despite poor weather (wind, cold, and occasional rain), 41 contestants showed up for the meet. More surprising was the number of spectators. Just goes to show you, put up good prizes, publicize and promote the meet, and you will be surprised how much interest you can generate. Nice going, Ed!

ANOTHER GOOD MAN GONE . . .

Just received the latest Florida Model News, and the sad news that Jim Kloth had passed away. Jim had survived one bad attack and appeared to be recovering nicely. Well, only the good guys die young . . . rats! *(Jim was scheduled to cover the C/L World Champs for* **Model Builder,** *but had to cancel at the last minute. We'll sorely miss his frequent and newsy letters about F/F activity in Florida. wcn)*

In that same line of thought, the columnist is quite alarmed to see some of the oldsters in this O/T movement take a very hard headed attitude regarding old timers. What everyone fails to grasp is that to continue this great hobby of ours and the old timers (which are near and dear to the writer's heart), we must introduce new blood into the action. We can't do it by saying we have to approach old timer flying *only*

one way. Restrictive rules only breed restricted flying. Take a good look at FAI if you don't believe that!

SCOTTY MURRAY MEMORIAL

A little late in reporting this one, but it should be noted in this column, as here is a meet that could become a regular fixture in the Florida area. The idea of dedicating a meet to Scotty Murray is a great one.

Big winners at this meet were Jack Bolton in R/C O/T, winning both Texaco and Pylon events, while Jim Singer cleaned house in the F/F O/T Events. Get this, he won O/T pylon, O/T .020 Replica, and the 1/2A Gas Event. Whew! Then down at the bottom line, we find he won the combined Class ABC Event. Doesn't that guy ever wear out?

Also noted, before his demise, was Jim Kloth placing in Rubber and .020 Replica. Couldn't beat Ralph Hanegan in Rubber with his twin pusher! Wonder if Jim's daughter, Carolyn, will fly his model at the upcoming KOI. Wouldn't that be something!

HOT LEADS

Just received that latest "Hot Leads", the SCAMP Newsletter, as edited by Jimmy Dean, who takes the columnist to task for confusing him with Jim Adams. Hmph! He didn't even know when I was complimenting him on his good looks. Anyway, sorry about that!

The Bowden Precision Event will be history by the time you read this, but I did note they (SCAMPS) left out one important rule, i.e., the model will be inspected for damage after landing. This gets away from ideas like a minute and 50 second motor run with an extremely nose heavy condition in attempting to hit the two minute target time.

Other than that, the contest rules shape up real good, especially the one where you are called in rotation and given three minutes to get started. That will eliminate the sandbaggers! Also like the idea that you have to enter by ten a.m. You are either ready to fly, for this event or you are not. We'll try to get a writeup on this for the next issue.

SAN VALEER WINTER NATS

The San Valeers, one of the largest and most active free flight clubs, ran into tough luck again. First, their annual in the spring suffered from too much heat, and this time it rained on Sunday. Night flying was practically shot down in the cold and wet.

Saturday (two day meet) was the best day of all from the standpoint of weather, and most of the O/T events were flown on that day. With rain on Sunday, the Class C Pylon Event was dropped due to lack of entries. Wouldn't you know it, Larry Clark had two maxes with his Albatross and would have won the event handily. He must have cheered up, because things *did* get worse (If you know the saying).

Big winners were Larry Boyer and Sal Taibi, flying the same machines they always have; a MK I Clipper and Powerhouse, respectively. Wade Wiley continues to make believers out of the boys as he again won the A-B Cabin Event using a Red Zephyr. Also noted in the .020 Replica Event, in fourth place, was Jim Robinson. This Robinson is no dummy. He gets sent to California on business during the snow season. This makes three years in a row. How lucky can you get?

AMPS ANTICS

Latest information from Jim Persons is that old timers will get a real shot in the arm in 1977, as the Northern California Free Flight Council (NCFFC) has agreed to allow old timer events to be flown at the same time as their regularly scheduled free flight meets.

Waegell Field has been known for years for its excellent site, obstructed only by a few fences (over which, subsequently, stiles have been erected). With the gymnasium available for indoor flying at Camp Parks, 1977 promises to be a banner year!

THE WRAPUP

The writer has been telling tales on others, so one is in order on him. The scene is the Saturday night banquet at Santa Maria, honoring the Pond Commemorative Annual.

To freshen up activities and to show the boys there was still life in the old boy, the columnist selected this par-

ticular affair to stage the debut of his new high priced topper. Upon making an appearance during the cocktail hour, the writer was subjected to all forms of witticisms, compliments, and comments. Most seemed to agree the new hair piece improved the general appearance of the old man (anything would help!)

It was during the speeches after the banquet that Al Hellman was reminiscing about old timers and how we must enjoy all phases of old timer flying as we were collectively getting older. It was then that one wag spoke out loudly, "But John is getting younger". Score one for the opposition!

Just as we go to press, we hear of the unhappy demise of Raoul G. "Brick" Brickner who died in his sleep, December 26, 1976. Brick will be remembered for his outstanding efforts as Editor of the SCIF newsletter, "The Flight Plug". His many contributions and club activities will be sorely missed by the rest of the SCIF members. SAM Western Vice-President John Pond has announced the launching of a fund-raising campaign for a suitable memorial dedicated to Brick. Hopefully, this trophy, to be identified with the outstanding .020 Replica flyer at the SCIF Kickoff meet, will be ready for presentation at that time.

Please send your contribution to John Pond, 4269 Sayoko Circle, San Jose, California 95136. •

F/F Scale . . . . *Continued from page 49*

I can recollect is centered around the removable nose plug. Too often, the plug is so small that the fully wound motor will not slip into the fuselage. This means, of course, that the motor has to be partially unwound so that it can be inserted into the fuselage. No duration can be achieved this way. The other problem is that the nose plug may fit so loosely that it falls out long before the motor has unwound completely, causing an immediate drag effect. Nothing brings a rubber model down any quicker than the prop dangling below the fuselage! You can see that the front of your model is definitely an area to inspect.

Working on back to the motor peg, rubber motors often have to be replaced, and you'd be surprised how many models have absolutely no access to the rear motor peg. Some designs look as though the rubber was inserted before the covering was added. The fuselage should not be so narrow that the motor cannot be replaced. Another problem that can arise from a narrow aft fuselage is that a fully wound motor will knot up in this confined space. Even though the motor unwinds in a seemingly usual manner, these knots do not unwind, leaving the model with too much weight in the tail. You know what that does to the flight attitude! If the design of your model is narrow in the aft section, move the motor peg location sufficiently forward to avoid this pitfall.

Weight is probably the biggest contributing factor to poor performance, and with Peanuts, even more so. What can be done to cut weight without sacrificing on scale and all of the detail that scale demands? Choose your wood carefully. Use hardwood only where strength is paramount. An example would be the fuselage longerons, and wing and tail spars. Laminate all tail surfaces. I personally use two laminations of 1/32 x 1/16 basswood. Initially, this may seem like a heavy way to go, but I feel that it isn't. By the time the laminations are sanded round, nearly half of the outer lamination has been removed, and thus the weight. In my opinion, laminating surfaces accomplishes three things: primarily, it gives realism to the flying surfaces; second, it helps make a lighter structure, and third, I feel it is much stronger and warp-resistant. If you feel that basswood is not for you, then by all means, use balsawood . . . but laminate!

One other lamination I do on all my models, regardless of size . . . and that includes Texaco old timers . . . the entire wing trailing edge and wing tip. Again, the strength, weight, and realism, plus ease in construction makes this a desireable way to go. Try this approach on your peanut wing, using two 1/32 x 1/16 pieces of basswood.

If scale rib spacing is used, this can mean lots of ribs, and more weight.

Many modelers put in every other rib or so, to help with the weight problem. If you don't want to sacrifice on scale, use 1/64 sheet for the wing ribs. Sig used to carry this size, and Micro-X surely does. If it is not available, take some 1/32 sheet and sand to 1/64. It certainly won't take you very long.

Sliced wing ribs definitely cut down weight as well, but they become very fragile if 1/32 sheet is used. Though 1/16 sheet is recommended, the scale size is way off. In this case, one has to decide which way to go.

If painting of any kind has to be used, then by all means try Floquil. I've said so much about this product that I'm sure you don't want to hear any more, but one coat covers like nothing else. You can't use paint that takes coat after coat to get coverage.

Please test-fly your model if at all possible. I realize that many parts of our country are winter-bound, but to send an untested model is a bit unfair to the fellows who are proxy flying these planes. They shouldn't be the ones to have to debug your latest creation. *(Untested models are set aside and only flown after all other entries have been flown and qualified. wcn)*

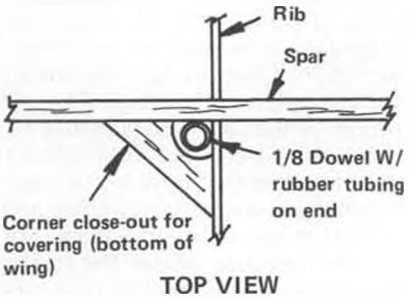
Last but not least, pack your model safely. This I know is a real challenge . . . your model against the postal service. However, if packed properly, your model can and will survive the rigors of the mail. One of the best and simplest methods of packing that I have seen is to place the model in a plastic bag. Place the bag in a strong cardboard box, and surround the bag with styrofoam "worms". In the past, we have received models that have been totally destroyed, so please be careful! I hope that these few reminders have been helpful.

* * *

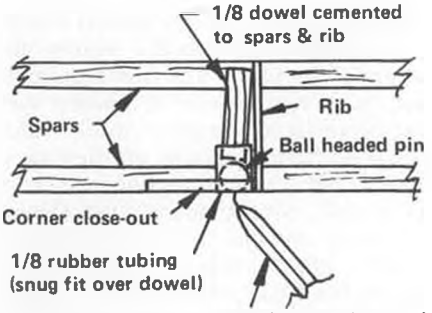
This month I have a neat hint to pass along, and it comes from Cliff McBaine. This is a novel way of attaching struts onto the wings and fuselage. The illustrations explain everything quite well, but here's a bit more clarification. Cliff uses 1/8 inch surgical tubing, into which a short piece of 1/8 inch dowel is inserted. This dowel provides a very snug fit for the tubing, and is then glued onto the appropriate structure. Ball-headed pins are then used at the end of the struts, and are plugged into the tubes.

The pins should not be just pushed into the end of the struts. I would recommend using two pieces of 1/32 basswood for each strut. This way, the pins can be sandwiched between the two pieces of wood. The pin's shaft should be bent as shown so that it cannot rotate. Many years ago, it was common practice to wrap thread around the end of the struts to reinforce the area.

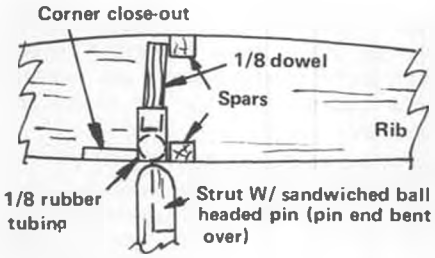
WING INSTALLATION



TOP VIEW

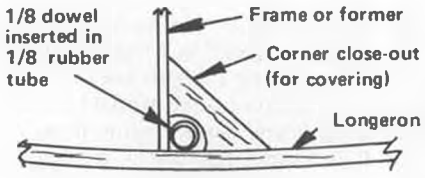


FRONT VIEW

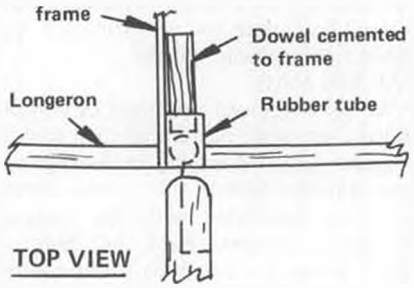


SIDE VIEW

FUSELAGE INSTALLATION



SIDE VIEW



TOP VIEW

However, it certainly doesn't look very good, and seldom is seen anymore. This installation is suited for larger rubber models and for any size gas model.

* * *

Tom Moore sent me the following idea regarding his way of making props. Tom starts out with a balsa prop hub with diagonal end slots. The blades are scissor-cut from 1mm plywood and formed at an angle over a broom handle (or equivalent) after soaking a short time in water. When these are dry, they are aligned in the hub slots and held with epoxy. The center of the assembly is then located and marked, after measuring the length and finding the balance point. Next, a hole is drilled through the balsa hub to accept a hardwood dowel which likewise has been drilled to bear the wire prop shaft; epoxy does the job here also. At this time, the hub is cut and sanded to fair with the blades. If needed, Epoxy-Lite can be used to better mold the hubs with the blades, thereby achieving a smooth, one piece, carved effect. (Incidently, maybe some modelers may not be familiar with Epoxy-Lite. This is a product put out by Sig, and is a two-part, water soluble epoxy. Its consistency is like putty, and it's great for making fillets). With the completion of final shaping, a length of wire is slipped through the hole in the hub to check prop balance once again, and to make sure the pitch of both blades is the same. Hand-warping with steam is used on the yet untreated plywood blades to "true up" the angles.

After attaching one's choice of a free-wheeling device, the entire unit is coated with polyester or epoxy resin, the primary purpose being to "fix" the pitch more or less permanently. Lastly, silk is applied over all and doped to suit.

The end product is as light or lighter than a comparable size plastic prop. What's more, it offers the distinct advantage over plastic of unlimited size and design . . . and according to Tom, it's completely biodegradable!

As you can see from the photographs, Tom does a superb job of model building. ●

Hannan . . . . . *Continued from page 48*

that model builders themselves should be given first chance to become sponsors, but alternatively, industry members may be invited to participate.

Locally, vocal response to the idea has been favorable, but no constructive action seems to have been taken.

Bob Neulin, of Pennsylvania, had this to say; "The Lindbergh Trophy is a swell idea, but I never thought it would take $10,000 to swing the deal . . . Wow! Lindbergh financed his whole airplane for about that much. Just shows how times have changed. Of course, Frank Zaic knows what he's talking about, so if it is going to take that much, I say go ahead, as it should be something very special for such an event."

THAT AMAZING LACEY

Dr. John Martin, in thanking the Experimental Aviation Association for their annual "Best scale model of a homebuilt" award, compiled a list of

wins by models of the Lacey M-10:

1975 Nationals: (U.S.)
- 1st outdoor scale
- 2nd and 4th outdoor Peanut
- 2nd indoor scale
- 1st and 2nd indoor Peanut

1976 British Indoor Nationals:
- 1st scale, 1st Peanut

1976 New Zealand Nationals:
- 1st outdoor scale

1976 U.S. Nationals:
- 2nd and 4th indoor scale
- 2nd outdoor scale
- 1st and 4th Peanut

Dr. Martin remarks that about 15 M-10s were entered in this Nats! The M-10 also has quite a record of California and Nevada wins, not to mention the 1976 Model Builder Grand Peanut award.

AND SPEAKING OF PEANUTS

We keep hearing rumors that one or more *gas-powered* Peanuts will be entered in the California Nats! Seems the loophole finders have discovered that the AMA rulebook does not specify rubber power! Interesting to note that two of the limited interest model publications have recently seen fit to publish Peanut plans. Must be catching!

AND ON THE SUBJECT OF RULES

Some of the new proposals are real dillys . . . funnier than the Bob Newhart show . . . at least one MUST be a put-on . . . and some of the ones that may not be put-ons certainly seem not to reflect much serious thinking. If you have the slightest interest in competition, you should take the hour or so it takes to read through all that fine print, and (1) let your District Vice-President know your reactions, and (2) be ready to vote when the time comes. Doubtless some of the current rules controversies are the direct result of non-action on the part of the majority of model builders.

Another interesting observation: Many rules proposals are put forth by people who are never seen with a model aircraft in their hands. Ought not being an ACTIVE participant be a basic requirement for offering rules changes?

(Incidentally, Bill, the preliminary rules vote for 1978-79 is already history. At this point, those interested (?) can contribute cross-proposals and contact their district CB members before the second round of voting. wcn)

HOW FAST CAN A MODEL FLY?

That all depends. We were sent some tear sheets from a back-issue MECCANO MAGAZINE, which featured shadow photographs of a toy (literally) aircraft in free flight at Mach 1.4!! Seems that a Dinky Toy cast metal model of a Gloster Javelin actually reached that speed during tests at the Canadian Aeroballistics Range, which is a facility used for experimental work with guided missiles and rockets. In a demonstration of the techniques employed, the small toy was fired from an anti-tank gun. The model was mounted in a "sabot" which is a device fitting the gun bore exactly, to guide and protect the model from the hot firing gases. On emerging from the barrel, the sabot falls away, leaving the aircraft in high speed free flight. A special photographic method renders the shock waves visible and allows examination of the air disturbances. It is a remarkable tribute to the accuracy of the Dinky Toy that its performance was stable at supersonic speeds!

GARAMI MAIL

We have received a number of compliments on our November tribute to designer Louis Garami, including this from Charles Sotich: ". . . you stirred up some memories with the write-up on Louis Garami. Back in 1946 or 1947, when I started to build models that would actually fly, the articles by Garami in my brother Pete's old magazines were among my favorites. I remember in particular a small all sheet balsa model with a diamond fuselage. The model had a parasol wing and was supposed to be a speed model. It climbed very well, just as my present speed models do. Thirty years and I still haven't learned very much about adjusting." Charlie is, of course, excessively modest, as his models are indeed most competitive, be they non-scale, scale, indoor or outdoor varieties.

Bob Neulin commenting on the Garami item says: "The group photo taken at Holmes Airport makes you want to step in that clubhouse and join up, and what an atmosphere for a club house . . . right on an airport and in the Golden Era when aviation was in its growing pains. Maybe they are right when they call them the 'good old days'. One paragraph really hit home, when you mentioned Garami arriving at the park with his model in a paper bag because he may have been embarrassed carrying a 'child's toy'. I remember feeling that way even when I was young, but what bothered me most and still does, is that model airplanes are regarded as toys, when they really are a scientific achievement. It's a shame that people

aren't more educated concerning model airplanes and what they mean to our society. The cartoon by Paul McIlrath, at the head of Bill Northrop's Workbench, tells exactly what I'm trying to say. Lets hope this situation will be rectified some day, and model airplanes receive their just dues."

HOW NOW, BROWN COWL?

Over the years, we've been puzzled and amused by the wide variation in the way aviation enthusiasts pronounce certain names and terms. We think this may be explainable by the fact that most of us first encountered such words while *reading*, rather than hearing them spoken, and thus formed our own ideas as to pronounciation. Readers of Phineas Pinkham, in that famous pre-war model mag FLYING ACES, will instantly recall P.P.'s "fractured French", based upon *his* interpretations . . . such as for example "Barley Duck" for Bar-le-Duc, or "Bon Sour" for bonsoir. Then too, some differences in pronounciation may be due to the effect of regional locations which may later overall speech patterns.

In an effort to straighten things out (at the risk of being proven wrong ourselves!) we offer the following often-maligned aircraft related names and terms:

WACO . . . should rhyme with TACO . . . and never mind about that Texas village!

AVRO . . . in England they rhyme it with "have row". Actually a synthetic word (semi-acronym?) derived from A. Verdon-Roe, name of the company's founder.

FILLET . . . NOT fil-lay, as in fish, but fil-it.

CAMBER . . . Kam-ber, not came-ber,

HELICOPTER . . . It seems scarcely possible in this supposedly enlightened age that some are saying heel-e-copter (or worse) instead of the correct Hell-e-copter.

When it comes to French names, we are really going out on the proverbial limb, but here goes:

DEPERDUSSIN . . . frequently "butchered" and difficult to represent with phonetic precision, but try this: Dep-pair-doo-sohn.

MORANE-SAULNIER . . . another tough one, which so frequently trips up American tongues . . . try: More-ran-Sol-Knee-A (with the "a" as in hay).

NIEUPORT . . . we're almost afraid to say the name of our favorite aircraft, as featured in our column head drawing, but it seems to come across something like Nieu-pwah, with the "t" being totally silent as it is in Chevrolet.

And speaking of autos, we can't resist correcting the most frequent omission of all . . . the "e" on PORSCHE is sounded as an "a". Keep saying it until you get it right! Since that sort of power plant is sometimes used in aircraft, we have every right to mention it here! So there.

CATCH 25

Full marks to the Japanese plastic kit manufacturers who are reported to be releasing a kit of the "captured" Russian Mig 25. Reminds us of the time the Lockheed U-2 appeared in Model Airplane News, embarassingly in advance of any U.S. government admission that there WAS such an aircraft! The Mig kit, however, represents a fantastic accomplishment, since normal industry allowance for tooling a new plastic kit can be in the nine-months to one-year range. •

Letters . . . . . *Continued from page 7*

subject. We will honor requests that comments not be used for possible publication.

• • •

Bill:

Just have to remark on your mention of the guys in the "pen" in Walla Walla, Washington.

The Clipped Wings (neat name, huh?) used to be very active, although I haven't been in touch with them for a couple of years now. The two guys who I personally enjoyed the most aren't in the club anymore. Ike (I guess that's his name, I never heard him called anything else) was paroled two years ago and Dave escaped! These two guys did most of the promotion of the club, so I had always

assumed the club died. Dave did his disappearing act very subtley. He was on good behavior and got transfered to minimum security. As soon as he hit minimum security, he started on a C/L Scale B-17 or something similar (and just as ambitious). Anyway, he got half-way done with the plane and split. I guess the guards thought the plane was more important to Dave than a shot at freedom! As far as I know, Dave is still on the outside . . . I've never heard from him again.

The Clipped Wings used to put on the best contests! We'd go over to fly most anything, Rat, Slow Rat, Carrier, etc., but Combat was the big thing. Sometimes we would use the normal pyramid matching system, but most of the time we would just take as many planes as we could round up and go over to fly in a "bash". A bash is where everybody puts their lines and planes into a common circle and the first two guys to fly are those who get their engines started. When one crashes or runs out of fuel, the next guy able to get started takes his place. It's continuous Combat and is fantastic!

One time, Ron Scoones and I took his VW over, loaded down with 14 planes, fuel, etc.! We flew from 10:00 in the morning until about 6:00 pm. Ron and I came home with only two flyable planes, but we flew Combat all day long and it was great.

It was a bit of a hassle "processing" before contests. We had to check in with the guards, be escorted (in our cars) to one of the gates to the exercise yard, park and then carry all our planes and stuff (had to get it all the first time . . . once inside the pen nobody could leave until everybody did). After going through two gates, we would load everything into wheeled carts, which were pushed about 100 yards to the super-heavy gate to the main yard. There a couple of guards would search all our tool boxes, planes, etc. When they were satisfied that we were OK, the big door in the wall of the exercise yard would be opened and we would be locked in with the inmates.

I wanna tell ya that the first time I went to Walla Walla and heard that door lock behind me, I immediately had second thoughts about what I was doing! The first time was especially bad, as the yard was empty and we had to wait for an hour or so before club members could be let into the yard. It was the first time I'd ever been locked in anyplace, the only other people we could see were guards armed with carbines walking the tops of the walls. And the place is just plain spooky . . . very bare of common things . . . no nets on the basketball hoops, for instance. A small building at one end of the yard proved to contain the toilets. A step inside showed there was no roof on the building! A guard can watch you, even if you just want to "sit for a while." And the toilets are bare. No seat, you just plant your buns on cold porcelain.

But after an hour of waiting around and getting nervous, a door at the far end of the yard opened and here came about thirty guys whooping and yelling, carrying all kinds of planes and looking forward to something I almost take for granted . . . a day flying toy airplanes without having to worry about anything but broken props and blown plugs.

Naturally, I was a little cautious for an hour or so, after all, we were in a prison and everyone of these guys had been found guilty of all kinds of crimes right up to murder, probably. Hey, we were in the maximum security section of the prison! Wouldn't you be nervous?

But, looking back, it is almost embarassing to admit to the above. We'd be flying, joking with each other, flying Combat and it was just like any other contest I've ever been to. A stranger walking into our midst would not have been able to tell inmates from outsiders, especially as the inmates are not required to wear prison clothes and many wear jeans and T-shirts straight from Sears.

Did I say it was like any other contest I've ever been to? That's wrong. In many ways it was better . . . and a good lesson in values to boot. For instance, when I go to a contest, I generally have at least two full cards of plugs, more props than I can possibly use, enough fuel to level a small house, and every kind of tool you can imagine. Without all this stuff I feel unprepared, yet the guys at the pen were able to get by with very little and never complain about it.

One particular instance sticks in my mind (and, for my own good, I hope I never forget it). Somebody came over to me and challenged me to a match. I said fine, that I was ready to fly. He said he was almost ready, just had to get a glow plug. His plane was close by and I watched him get ready. Turned out that he didn't have any glow plugs and had to borrow one from his buddy. His buddy had one glow

plug left and it was in an engine! The guy didn't hesitate for a second, he just pulled the plug and handed it over. Now I don't just hand out plugs and I have bunches of them! But these guys were able to get along fine on one plug between them!

This attitude prevailed in everything they did. One time a guy from this area ran out of airplanes and a member of the Clipped Wings let him borrow one of his last planes . . . for use in a Combat match! Amazing. Like I said, I hope I never forget some of the stuff I learned at the pen.

The only bad thing about flying at the pen was leaving. It felt good to be outside, of course, but after several hours of flying, you kinda forgot where you were. All of a sudden it would be time to leave and you would realize that people you had come to know as "good guys" were going back to cells and you were going home to a free life.

Once, we had just had the door shut on people we'd come to really enjoy and we were all quiet (for a change!), thinking about the whole experience. Mark Saterlee finally spoke up and said that the only difference between us and them was that they got caught. It was funny . . . and yet it wasn't. Circumstance, and the way the chips fall in each life is not entirely under our control.

We had some really incredible things happen at the pen . . . maybe someday we'll talk about it.

I just know that anybody who ever went to the pen (Gary Stevens, Ron Scoones, Phil Granderson, Howard Rush, just to name a few of the better known fliers who went over with us) will never forget the experience.

You guessed wrong, by the way. Although much of their flying is C/L, I recall several R/C planes. Didn't see them fly, they have to get special permission to go outside the pen walls to fly R/C (and a guard to escort them, of course), but they would bring them out to show us.

Dirty Dan

P.S. I don't know if it is very clear from the letter or not, but I want to say that we went to the pen for contests about 5 or 6 times . . . not just once. I'll write to this Don Stephenson, maybe we can get something going again.

Geez, Dan, didn't know you were so sensitive . . . a very interesting and thought-provoking letter.

We understand that Don Stephenson has been swamped with mail and offers for equipment. The important thing is to send a list of the items you are going to send so they can be cleared into the institution. The items most needed are modeling type tools. Don's address is simply P.O. Box 520, Walla Walla, Washington 99362.

* * *

Dear Bill:

The picture of your beautiful 3 inch scale Gypsy Moth really impressed me. To start with, I am a biplane enthusiast and like 3 inch scale . . . I am now working on a 3 inch exact-scale Bristol Scout "D" . . . also a stand-off 3 inch Fleet. I would be very much interested in the Gypsy plans.

Hank Iltzsch

Thanks for your note regarding the Gypsy Moth plans. My idea in asking was to find out if it would be worth while drawing up finished plans for publication. Based on the good response, we are starting production on the finished drawings immediately.

* * *

Gentlemen:

I'm sure that I am not alone with my feelings when I say that we ship modelers are the most neglected of the modeling fraternity. There are three or more monthly magazines devoted entirely to model trains, several more to those who build plastic airplanes and tanks, even one magazine for those who play with toy soldiers. But, for we scale ship modelers, nothing. We are the unfortunate ones who scour through libraries and bookstores hoping to find that one book with at least some information we can use. We are the ones who sometimes spend years of research before a model can begin. Now, in reply to your Jan. 77 issue; how can you expect to generate "sufficient response" from ship modelers, from a magazine dealing with model airplanes? What we need is our own monthly periodical where we can exchange ideas and present our work to others, not an occasional article in a magazine from another part of the modeler's world.

Gary Krempien

Well pardon the hell out of *us!* If your attitude is representative of all ship modelers, it's no wonder you are loners, and have no common ground of communication.

By the way, how come you were reading an article in a magazine that's "from another part of the modeler's world?" ●

Rocketry . . . . *Continued from page 42*

important role in the rocket power picture . . . a new C engine. In the past, the modeler has had to choose between the "standard" C6 engine offered by both Estes and Centuri, and the FSI C4; the C4 was unbeatable in competition, but couldn't lift the heavy loads a C6 could. If you had a large display bird, but didn't care to lose it with an FSI F100, you had to go into the D range. The Estes D12 is much wider than a C, and has a bad reputation. The FSI D20 is a beautiful engine, but is still bigger around than a C; meaning that the bird had to be designed for D's from the beginning, as it is next to impossible to tear out old engine mounts. So the C6 was the standard for Centuri, who doesn't even make a D. Then the Super Kits and the Eagle came along. They're designed for the C6, and the engine gives the birds a good ride . . . up to about 80 feet. Clearly the kits were just about as much of a load as the C6 could lift.

Now along comes the new Centuri C engine. They don't have a definite NAR rating on it at the time of this writing, but the word is that it will have twice the initial thrust of the C6, and a substantially longer burn time. This is accomplished by a change in the core and nozzle throat design, and by the addition of extra propellant . . . so much extra propellant, in fact, that the engine will not be available in time-delays of longer than 3 seconds. The idea was to pack more load lifting capability into the standard 18 x 70mm casing, and there just wasn't room for more time-delay! But since you're going to be flying big birds anyway, and since there are better C engines around for the little ones, the three-second delay is just right anyway. Who's complaining?

The definite word is that your hobby shop can order this new engine at the Trade Show, and they'll be available mail-order to consumers at the same time. So dust off your big models with the standard engine mounts . . . this looks like just what we've been waiting for. Write to Centuri at Box 1988, Phoenix, AZ 85001, for a copy of its catalog and "Rocket Times". Mention MB when you write.

Turning to other product news, we have finally been able to find enough decent weather to flight test the Moray, a glider kit put out by Kopter, the rotor-recovery rocket people. This bird was designed by Walt Senoski, president and head rotor blade at Kopter. As you can see from the picture, Walt believes in BIG gliders. I know . . . most glider people get offended at any bird weighing more than your average chickadee feather. But bear in mind that these things are going to be goosed skyward, not by rubber bands or a flick of the wrist, but by smoke and flame, accompanied by loud whooshes, so there is the problem of stress. And still, I've seen some of the featherweight types deride Walt's flying lumber yards, until they get in the air . . . whereupon they wander all over the sky for inordinately long periods of time.

Walt likes to get his models back, preferably in one piece, and living as he does in the wilds of Pittsburgh, which is built on hills and rivers, he has to consider some mean breezes in his flying strategy. This led to the Kopter ejectable-rotor design, and also heavily influenced his gliders. They have pleasing durations, sure; but that weight keeps them from being kicked out of trim by the wind, and above all, keeps them circling back toward you while you are puffing after them.

The little (by comparison) Moray is designed for B and C engines, and, if the strategy calls for it, would make a reasonable competitor in Rocket/Glide. You see, there are two classes of glider competition; Boost/Glide, where ejecting engine pods and parasite gliders are permissible; and Rocket/Glide, where everything that goes up must come

down, but gliding. The Moray, by virtue of its piston-actuated elevator, doesn't litter the sky with any ejected parts after transition.

It's a strong rocket, too. Note the ribs running up both sides of the body tube, clear to the nose cone. This is to prevent crumpling if the critter noses in before you get it trimmed out properly. In fact, if care is taken to follow the instructions (an easy task since they are unusually well-illustrated), the model is just about idiot-proof. For those with repressed artistic tendencies, it can be painted up as fancy as you want without bothering the glide characteristics.

Walt was kind enough to allow is to reproduce the exploded view of the bird from the kit instructions; I just got too frustrated trying to explain how the elevator works (This little plug slides out of the tube, see . . .)

I strongly recommend the Moray as a grand demo bird. It has very fast turn-around time; jerk out the old engine, shove in a new one, cock the elevator, and go. A real crowd-pleaser, and fun to build, too. Write to Kopter at Box 98226, Pittsburgh, PA 15227, and ask for a copy of the catalog. I believe it's 15¢.

Another good way (the best, really) to check out the Kopter rockets, as well as all the other manufacturers, would be to attend the one-and-only Pittsburgh Convention. The Thirteenth Annual Pittcon will be held this year in March, and there's still time to get in on the discussion groups, space lectures, film sessions, songfest, and general craziness. Write for information to Kevin Barkes, 205 Emerson Ave., Munhall, PA 15120 . . . and do it fast.

While we are discussing the more savory things that emanate from Pittsburgh, I would like to introduce this month's Howzat-Grabya department. This time, we have an excerpt from the Steel City rocket club's newsletter, "Starburst", of several years back. This item has always seemed singulary useful to me, and I am certain that, with a little judicious mathematical skill, it could easily be applied to any modeling hobby that involves demonstrations in which the public is expected to participate.

If you've wondered why people never seem to show up at your launches, the question has now been reduced to a mathematical formula, Crafton's Excuse Equation, running thusly:

$$A=(t/w)(s-v)$$

Where the attendance (A) is directly proportionate to the temperature (t) and inversely proportional to the wind velocity (w). (s) is the number of models Danny Sternglass has built to fly at the demo. This has a definite impact on the success of the affair (sickening pun intended). Danny has a reputation for coming up with admittedly imaginative but horrendously unaerodynamic models. (v) is an arbitrary value between 1 and 10 assigned to the quality of television programming available for viewing during the demonstration.

Let us suppose that you have scheduled a large public demo on a Saturday afternoon, which turns out to be a balmy 80 degrees, with a wind speed of 10 mph. In such beautiful weather, the first figure is encouraging. Let us also suppose that Danny has 6 unusually good demo birds built (and almost painted) and that ABC's Wide World of Sports is playing re-runs of the

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In making this application for membership to the Society of Antique Modelers, I agree to abide by the rules set by the Society and realize that the goals of S. A. M. and the Old Timers movement are to encourage participation above competition and is dedicated to the preservation and reproduction of vintage model aircraft.

Signed _____

National Chicken-Plucking Championships in Peculiar, Missouri. Assign the chicken-pluckers a score of 1 (Saturday football usually rates between 6 and 10, depending on who's playing). So: A=(80/10)(6-1), or A=40, and you confidently expect a good crowd. Suppose, however, that the Steelers are playing the Packers, and the Budweiser Clydesdales are part of the half-time show. This is good for at least a 9, even if you're only a horse fancier. So, even with the beautiful day and all of Danny's still-wet birds, you get A=(80/10)(6-9) or a value of A=-24, meaning that no spectators, and probably no club members except Danny and the guy who takes care of the launch equipment, will show.

This equation has proven accurate over years of experimentation. Try it next time you're planning a meet. Let me know how it works out . . . by mail, not in person. ●

Struck . . . . . *Continued from page 26*

story of this historic model's flight with the result that the ol' crate was returned once more to Henry's hangar. Yep, the 'ol Maestro hasn't lost his touch, for it was one of those grey days when even the ducks in New England stay anchored to terra firma.

So ended a day of tribute to one of modeling's great guys . . . one who I, and many like me, have idolized in our early days, and still look up to as a true master modeler.

Proceeds from this meet were donated to the Academy of Model Aeronautics Scholarship Fund.

RESULTS

SCALE RUBBER	
Ed Novak	73%
Dave Stott	61%
Ed Heyn	48%
John Stott	39%
George Armstead	27%
GLIDER (TOWLINE)	
Al Vollmer	100%
Stan Colson	66%
John Stott	60%
Henry Hill	40%
Ed Novak	18%
GAS (COMBINED)	
F. Kevin Barrett	75%
Ed Heyn	64%
Al Bailey	33%
G. Armstead	44%
RUBBER ENDURANCE	
Jack Whittles	87%
Al Vollmer	66%
Chet Bukowski	65%
Gilles Belanger	57%
Gerald Donahue	50%
TRIANGLE SPORTSTER	
Dave Stott	89%
Royall Moore	79%
Bill Miller	63%
Bill Wood	54%
John Stott	51%
OVER ALL WINNERS	
Al Vollmer	100%
Dave Stott	89%
Jack Whittles	87%

●

Power Boats . . *Continued from page 43*

ience, 2) advanced preparation, and 3) durability of equipment with the ability for quick repair.

EXPERIENCE: Experience cannot be learned in any nutshell form. It must be developed slowly over many seasons of boating. However, there are ways for the beginner to get some help in this area.

One way is to join one of the boating organizations such as the IMPBA (International Model Power Boat Association) or NAMBA (North American Model Boat Association). From these organizations you will get basic information via quarterly letters and rule books about

hull classes, driving rules, club names and addresses, etc. You must also be a member at any of the organizations sanctioned events for insurance reasons.

More help is received on an individual basis by joining a local R/C boat club. This is where some of the experience and knowledge of the advanced boaters can be learned by the beginners. Boaters are generally very helpful to beginners. There are no mysterious secrets of success that boaters enjoy hoarding. Just join a club and ask for help.

More experience is learned at the pond. Notice the boats that perform well and then check out such things as: sponson depth, drive shaft angle, prop depth, prop, hardware installation, etc. At a boat meet you will have a good selection of hulls to watch and check. Also you will see good and bad driving techniques that should be helpful when you compete.

Also, **Model Builder** is doing its part for the beginning and advanced boater by devoting space to our hobby. We are presently setting up a letter answering column for the boaters along with our monthly articles. We will call it "Roostertail Mail" and welcome any questions about R/C power boating. Send your request to **Model Builder**, c/o Bob Preusse, 432 Emery Lane, Elmhurst, Illinois 60126. Let's contribute, boaters, and help R/C boating grow.

ADVANCE PREPARATION: There are several things the beginner should be aware of before attending a contest. Taking a few minutes time for some preventative action can help your chances of winning.

1) Check all cap screws and set screws. Make sure they are secure, with Loc-Tite. Some boaters also have good success with epoxy glue on the threads, but be sure you have cleaned the threads first with alcohol. I have seen beginners launch their boats and almost immediately, the drive dog loosens up. A little preventative action would have avoided this problem.

2) Check all linkages and metal parts for wear and fatigue. I was guilty of this at a meet in Ohio, and it cost me a heat. I had a poor solder connection on the rudder linkage of my "Lincoln Thrift", and when the boat was launched, the music wire and tubing linkage can apart. Needless to say, I had to shut down and scrub that heat. Be sure to check the pins in your universals for wear. Also look for vibration cracks in the engine mount.

3) It is also recommended to check your radio ahead of the contest. Is the servo speed right? Is the servo power strong? Are the batteries holding a full charge? The new battery analyzers on the market are a great investment.

4) Learn to inspect the engine periodically for worn parts. Check the rod for wear, distortion, or sloppy bushings. Look for scratches in the cylinder or on the piston. If parts are bad, replace them before they do more damage. It is also a good practice to change the gaskets when they show signs of falling

5) In general, give the boat a thorough once over. It may pay off on race day.

DURABILITY OF EQUIPMENT: Even the best maintained equipment can fail at an inoportune time, such as a contest. To be more successful, you must be able to repair and/or replace parts right at the pond. Thus it becomes essential to have a mini-workshop at the pond.

To carry all your equipment, why not make a pit box that will carry all the necessary items, such as: 6 volt batteries, electric starter, starting battery, props, assorted cap screws, washers, wrenches, transmitter, radios, fuel, etc. In short, EVERYTHING! But let's keep the pit box as portable as possible.

The photos show the author's latest pit box. It measures 30 inches long, 15 inches wide, and 16 inches high, less wheels. It fits in the trunk of my car very easily, and yet it is a complete workshop on wheels.

The key to this project is to keep your equipment organized and at ready, for those quick repairs during port time. Each item should have a logical place in the box so that you can work efficiently.

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I will not go through the building instructions of my pit box, because it is more or less a cube with storage areas and shelves. You can build it to suit your particular needs and size of equipment. I have built mine to handle some large items such as: 4-6 volt battery packs and electric starter; 3 transmitters and radio boxes packed in a foam padded compartment; two 1-gallon cans of fuel; quart of alcohol, saw, tin snips, assorted sheet metals, tubing, and drive shaft, 2 built-in starting batteries and amp meters, 18-drawer nuts, bolts, screws, and small-parts compartment. These items, plus all the hundreds of items you carry to the pond.

Here are a couple of items that you will want to add to your pit box. Neptune's Cave, P.O. Box 7215, Metarie, Louisiana 70011, has a flywheel wrench that allows the boater to tighten the female half of the universal while the engine is in the boat. This is very handy should the flywheel loosen up during port time and you have little time for repair. The pin on the wrench fits neatly into the hole on the flywheel, and the long handle gives you leverage while you tighten the universal. Also a must is a fuel pump by Du-Bro Products Inc., 480 Bonner Road, Wauconda, Illinois 60084. It is a hand crank pump that comes with instructions and complete hardware. The crank pumps fuel both forward and reverse in a fast, steady flow. It is a good item because it is simple (no batteries) and yet it works reliably. Please contact these two companies for their complete product lines.

Well, that's all for now. How about sending a question, comment, or suggestion to "Roostertail Mail"! •

Sealanders . . . *Continued from page 11*

leading and trailing edges to provide good overall rigidity. The dihedral angles and the center section are heavily strengthened by doubling the spars with 1/16 inch plywood. The method of construction that follows assures building ease and warp-free wings. The instructions apply to each section; build the center section first; a pair (opposites) of tip sections can be built at the same time. *When you cut out the front parts of the ribs, save the curved scrap from under the front bottom part for later use.*

The following general assembly order should be used; 1) build the sub-leading-edge, main and rear spars by doubling with 1/16 ply and adding joiners (center section only); 2) pin down the bottom front sheeting (3 inch sheet); 3) add the bottom cap strips and middle sheeting; 4) install the main spar; 5) add middle parts of the ribs (make sure they have been trimmed to allow for the dihedral brace and that the holes for the aileron nyrods have been cut); 6) add the rear spar . . . install rear, bottom sheeting (2 inch sheet); 7) install rear parts of ribs; 8) install front parts of ribs but cement to the spar only; 9) bevel the sub-leading edge and cement the front dihedral brace to it (center section only); 10) install the sub-leading edge; 11) moisten the bottom front sheeting; 12) apply cement (Titebond) to the bottom of the sub-leading edge and the bottom of the ribs; 13) slide the curved scrap pieces you saved when cutting the ribs (you did, didn't you?) under the sheeting at the rib locations and the sheeting will curve nicely into place; 14) add pins as necessary and let dry; 15) add tip sections to center section before adding top sheeting; 16) add front and rear, top sheeting; 17) add middle, top sheeting only after aileron control linkages have been installed; 18) add leading edge and trim to shape; 19) add tip blocks and shape (tip sections only).

TAIL ASSEMBLY

The tail assembly is a conventional flat structure. No special instructions should be required, other than a reminder to keep things warp-free. We used rayon/silk covering (like Silray) and butyrate dope plasticized with castor oil (4 drops-to-the-ounce) to cover the stab. The flat balsa surfaces (vertical fin(s), rudder(s), and elevator) were covered with light-weight silkspan before doping.

ENGINE PYLON AND BOOMS (SEALANDER I)

The engine pylon center core is cut from 1/4 inch plywood; we used Fir Plywood because it is light, strong and easily obtained. Lightening holes may be cut in the core to minimize weight. The engine bearers are then laminated to the top of the pylon center core, adding a layer on both sides at one time. We use Titebond for laminating and clamp the assembly while it dries. The hardwood engine rails extend back to near the end of the tank. Hard balsa should be used for the remaining parts of the pylon top platform.

The throttle servo is mounted in the

tank fairing of Sealander I. The fairing is built up of balsa block and sheeting, and is slit horizontally to allow access to the servo. A sponge rubber gasket seals the servo in. An "extension cord" is needed for the throttle servo. It should be built into the pylon as it is built. Note its location on the pylon cross section. After the top of the pylon is finished, add the 1/8 balsa sheet sides and the 1/2 x 3/4 trailing edge fairing. Note that the 1/8 sides extend 1/4 inch beyond the center core at the rear to provide a passageway (Sealander I only) for the throttle servo extension cord.

The booms are built by first cutting four 1/8 sheet sides exactly alike. Medium-hard balsa should be chosen for all of the boom parts. The 1/4 square framing is cemented to one side and the other side is cemented to the open side of the framing. Weight or pin the booms down on a flat surface while they are drying.

ENGINE PYLONS AND BOOMS (SEALANDER II)

In Sealander II, the booms are integral parts of the engine pylons. The 1/8 sheet boom side extensions become the sides for the lower, rear parts of the pylons. Care should be taken to build the two booms exactly alike and to assemble them onto the pylons such that the stabilizer will end up parallel to the wing center section and with the correct angular difference. Except for the integral boom/pylon assembly feature and the solid tank fairings, the pylons are similar to those for the Sealander I; go back to the previous section for instructions on the common parts.

The foregoing building orders omit certain very important check-out steps. These include eliminating warps, checking out the RC installation for binds and for range, both with and without the engine(s) running. The location of the CG and alignment of the wings and tail, including the angular difference, should be carefully checked before test flights are made: give your test pilot a fighting chance! •

Fokker . . . . . *Continued from page 39*

just tapered and rounded at the edges. Cut at the dihedral joints, using a razor saw, and block-sand the proper dihedral angle. Join panels with Hobbypoxy Formula II. It's sort of like building a 34-1/2 inch HL Glider at this stage. The nacelles are 1/4 inch sheet, faced both sides with 1/32 ply . . . full length. An additional thickness of 1/32 ply simulates the cowlings. Uh, don't glue the nacelles on until you've eyeballed and cut a slot through the fuselage and installed the wing. No, Backer, I *didn't* forget . . . but you know how "Murphy's Law" goes.

The tail pieces are all 1/8 inch sheet, joined by the old "tube-and-wire-trick" (see plan), and hinged by small Du-Bro, or equal, hinges. Ya gotta be real careful slotting 1/8 sheet for the hinges, but it does work. If you can't stand the hassle, use over-and-under cloth hinges. No rudder offset was used on the original, because I forgot all about that, and luckily none was needed . . . or desired, as the model pulls like a horse.

Anyway, cut out all the parts, round 'em off, and glue 'em together. OK folks, here it comes . . . no article is complete without the statement, "Construction is straightforward" *(You hadda do it, didn't ya! wcn).* Now that we have *that* out of the way, notice that there are neat little "V" braces under the stab. These are spruce, bass, or whatever's handy in the scrap box, but leave them until you're finished with the painting. Landing gear is 1/16 wire, fastened with K&B clips. LG doors are 1/32 ply. Tail wheel gear is lashed on with copper wire.

Sand everything smooth, add the ply reinforcements for the bellcrank on top and bottom of the wing, and apply the finish. The original received 2 coats of Aero Gloss clear, followed by 3 coats of Aero Gloss Sanding Sealer (*not* the Balsa Fillercoat, but the Sanding Sealer, which is one of the best-kept secrets when it comes to grain-filling). Final color was Aero Gloss "Military Flat" dopes, brown and light green, with flat black on the bottom. An airbrush would have been ideal here, but I don't have one, so the original was masked off and hand-doped. I started out by trying to establish a definite camouflage pattern, but after several Coors' a random pattern developed! Let dry 2-3 days, then lightly wet-sand with 600 paper, used wet, to remove the sharp edges. All window areas are masked off, then brush a coat of clear around the edges. Mix up a light blue from Curtis Blue and Swift White. To simulate window framework, apply thin (approx. 1/32) strips of tape, and just dope overall. When the light blue has dried, remove the tape, and voila . . . Instant Framework! National insignia is that applied by the Dutch following the outbreak of war; orange triangles outlined in black, both fuselage sides, and top and bottom of both wings, facing aft. Rudders are also orange. These were doped on, using International Orange. Caution: apply a coat of Silver first, or you'll be doping orange forever. Use black striping tape to simulate ailerons, cowl flaps, etc., and give the whole machine two coats of Aero Gloss Flat Clear. This prevents shiny "windows" and insignia on an otherwise flat finish . . . absolutely gauche! (If this article sounds like a commercial for Aero Gloss, so be it; they have a great product). Add ID numbers: white decals . . . to fuselage sides. The series appears to have been 850 through 862. See photos for correct placement.

For the nose machine gun, cut a length of 1/16 OD aluminum tubing and epoxy a pin into one end. Wrap a 1/4 inch wide strip of tissue around the end near the pin, dip the whole thing in flat black dope, and Hot Stuff into the nose. After you've finished making .30-calibre strafing noises, install the controls, remembering a pushrod support. Bend a leadout guide from .045 wire and install with epoxy. Fuel tanks were small "Perfect" brand, modified as shown on the plan. Formula II Hobbypoxy holds 'em on.

At this point, you'll notice something funny going on if you used beam-mounted engines and the above tank setup. It's necessary to drill through the inboard nacelle for the leadout wires (which, by the way, were .018 stranded C/L wire on the original); thus, you will see that you'd have to drill through the inboard fuel tank to exit the forward leadout. This is not recommended for a variety of reasons . . . mainly fuel economy. Fret not! Once again, sheer luck triumphed over physics: run 'em *both* through one hole behind the tank . . . works fine. Bush the hole with some aluminum tubing, edges rounded, though, or you'll saw the nacelle off when you fly it. Add some tip weight. I used one of Prather's "Stick-on" lead slugs (1/4 oz.) and it was perfect. Add wheels to suit, and don't forget to balance the model where shown.

FLYING: We had some painted 3-bladed props for display, but use 6/3 two-bladers for flight. Start the outboard engine first, tune 'em both in (ahhh . . . beautiful), and have fun. Just be careful of the outboard prop while starting the inboard, or you'll end up with a "Frank Kelly Finger" (he came over to assist me on contest day, and was rewarded with a deep gash for his efforts). We used .008 x 35 foot lines. Oh, there is one little thing I should mention, and that is the phenomena known as "P-Factor". No, it does not have anything to do with the Coors, but it *is a* nasty gyroscopic progression, or torque effect, or what-have-you. Should your inboard engine quit on takeoff, as mine did on two occasions, sheer luck goes straight to H...; physics *will* triumph, and this thing'll roll in on you quicker'n you can say . . . er, whatever it is *you* say in those situations. Assuming you've got two turning and none burning, takeoff is smooth and realistic. Controls are sensitive, so don't yank it off. Landings are a pleasant surprise. A *touch* of Up, just before settling in, and you'll be treated to a nice, rolling, main-wheel landing. A blacktop surface is recommended. Hope you like it.

If you need additional information, write me at 6618 Dashwood St., Lakewood, CA 90713. Full-scale details of this aircraft are found in Volume 5, Spring 1969 issue of "Aero Album", by Paul Matt. Contact Aero Publishers, Inc,

329 Aviation Road, Fallbrook, CA 92028. Tell him **Model Builder** sent you.

Finally, I'd like to thank my wife, JoAnn, who bought that issue for me and started this whole thing, and Pat Rasile, who took the black and white photographs. •

Counter . . . . . . *Continued from page 8*

Aldrich plugs have been available for some time in Cool, Long and Short; and Standard, Long and Short types. The recent addition of two Magnum idle bar models completes the line. These latter two are available as wide bar, or narrow bar models, and the narrow idle bar plug is claimed to be the best idling plug available today. The wide bar plug is recommended for older, cross flow engines.

Attractively priced at only $1.39 each, Aldrich Plugs can be found in most hobby store display racks, or inquire from Aldrich Products, PO Box 1426, Mission, TX 78572.

* * *

Sonic Systems, manufacturers of the well known pneumatic retract gear systems, has just released its 'Taxi-Master' power disc brake, also pneumatically operated, for R/C model planes.

It is claimed that the system will provide positive stopping power for models of up to 15 pounds, though two brake units on the main gear are suggested for airplanes of more than eight pounds. For tail draggers, two control valves can be installed, operated for 'left' or 'right' braking by the rudder servo. For trike gears, the brake control valve can be operated by full 'down' on the elevator.

The brake assembly consists of two parts; a disc with a hub that engages the spokes on most wheels of over 2-1/2 inches in diameter, and a backing plate which is actually an air cylinder and dual piston ring with a cork face. The piston, keyed to the cylinder to prevent rotation, is secured to the axle by a lock screw. The pressure tubing is small and flexible, and can be routed and secured to the strut.

The complete 'Taxi-Master' system consists of the brake assembly, control valve, a "T" fitting, and the tubing. The system is available at most model shops, or direct from Sonic Systems. The price is $15.95, plus shipping.

For installation in models not already equipped with a pneumatic system, a supply tank and fill valve are required. They too are available from Sonic Systems, and cost $3.15 and $4.90, respectively.

A full set of instructions covering installation, operation, and maintenance are included, and all accessories and parts are readily available. For further information, or to order your set, Sonic Systems is located at PO Box 192, Whippany, NJ 07981.

* * *

Stand-off scale fans, bipe and I.M.A.C. fans, front and center. You've got another project to add to the long list: The "Hiperbipe", in an all balsa and plywood kit by Master-Kit.

Hiperbipe specs are: 42 inch wings, 40-45 engines, dry weight between 4-1/4 and 5-1/4 pounds, for an 18 to 20 ounce wing loading. The scale is such that readily available accessories, such as spinners and wheels are of the proper scale, thereby assuring the builder of higher static points with a minimum of effort.

Available as options are a fiberglas cowl at $14.95, and wheel pants at $8.95. Two-sheet plans and the instruction booklet are available separately at $12.50.

Documentation of the Hiperbipe is available from Sorrell Aviation, Rt. 1 Box 660, Tenino, WA 98589. The $7.50 packet contains twelve 3-1/2 x 5 color photos, one 8 x 10 black and white inflight photo, and large three-views.

Price of the complete 'Hiperbipe' kit is $59.50. Dealer and distributor inquiries are welcome and promptly answered.

Master-Kit is located at 6 Fox Road, Plainville, CT 06062, be sure you mention MB when you send in your inquiry.

* * *

The Top A/2 Model of 1976, so honored by the National Free Flight Society, Tom Hutchinson's "Ultimate Dragmaster", is now available as a high quality balsa, spruce and plywood kit from RM (Round Man) Enterprises, 3255 NW Crocker Lane, Albany, OR 97321.

This design has made its reputation as one of the easiest to build, high performance gliders available. All parts are machine cut, making construction even easier.

Available by mail only, the complete deluxe kit is priced postpaid at $22.50. A partial kit, as above, minus plans or stripwood, is available at $12.50, for those who wish to build a number two or replacement model.

* * *

New, and not-so-new, from J&Z Products (Larry Jenno and Joe Zingali.)

Not-so-new are the "Zinger" propellers, which, while only introduced in May 1976, have already established a winning reputation amongst west coast R/C Pattern flyers. Eight out of eleven U.S. flyers at the recent Tournament of Champions in Las Vegas used these excellent propellers. Already balanced, and because they are claimed to be 'True Pitch', J&Z recommends a 1/2 to 1 inch lower pitch than what you are now using.

"Zinger" props are available in eleven sizes, from 9-4 to 11-7-1/2, and are priced from $1.30 to $1.60 each.

New is the Propeller Clock, available as a desk or wall model, and suitable not only for your home or office, but for use as trophies. The clocks are battery powered and available in a variety of all dark or natural woods, or combinations. The wall models are priced to $34.95; the desk types only, $39.95. Special prices are available to clubs.

If not available in your area, inquire directly from J&Z Products, 23018 So. Normandie Ave., Torrance, CA 90502. Dealer inquiries answered promptly, tell them MB sent you.

* * *

High on every model flyer's Hit Parade should be "I Lost My Noise in San Francisco", by John Tatone and the Chorus, who's company has just introduced an advanced series of mufflers called the "Muff-L-It". Designed to obtain the best noise reduction with a minimum in power loss, a six to eight decibel noise reduction with no rpm loss is claimed.

This exceptional performance is obtained by the proper combination of a large volume expansion chamber with a triple-reflect exhaust flow tail cone and a large diameter tail pipe. These precision cast, light-weight mufflers will fit 98% of all engines in the .19 to .80 classes without any modifications.

A new muffler for the Cox 1/2A engines is also available, also of the high noise reduction, no rpm loss type. It weighs less than one ounce, can be installed on either side of the engine, and is cast in aluminum with the same precision that most of us are familiar. In addition to keeping you popular in the neighborhood, this little muffler should help to keep your plane cleaner, as it will not allow the exhaust to spray in all directions, and should prolong engine life as it will prevent dust and dirt from entering through the exhaust ports.

These new mufflers should be in all hobby shops by now, or you can order direct from Tatone Products, 1209 Geneva Ave., San Francisco, CA 94112.

* * *

A new concept in spinners, one with free-flowing mercury contained in a welded stainless steel ring, has been introduced by VPB Corporation, of Detroit, Michigan.

Designated as a 'Dynamic Balancing Spinner", the displaced mercury within the steel ring effectively compensates for imbalances in the prop and engine. The manufacturer states that an increase in rpm occurs, as well as a smoother idle. For you R/Cer's, an added benefit is that decreased vibrations add immeasureably to your radio's life.

An increased weight of only 7 grams over existing similar spinners occurs.

These new spinners are available in 2, 2-1/4, and 2-1/2 inch sizes at an introductory price of $12.95.

Direct from the manufacturer, VPB Corp., PO Box 39090, Detroit MI 48239.

* * *

Designed by Ed Fisher, and current holder of the NAMBA .40 Vee Class, the "Formula V" 39 inch deep vee hull is now available in white gel coat fiberglas from Wardcraft Marine, PO Box 2579, Lynwood, WA 98036. The average speed attained on a two way pass during this record setting run was 48.6 mph, with a one way pass of 50 mph. This design was recently used by Ed Fisher in South Africa to win the World's Championship Enduro in .40 class, and a second place in .60 class.

The 'Formula V' is a Frank Ward design, who also fathered the Drag N' Fly hydro. The boat has a 16-1/4 degree vee at the transom, with a beam of 12 inches. The Fisher record holder weighs in at 8-1/2 pounds.

The kit features fiberglas hull and deck parts with motor mounts, stringers, and transom plates glassed in. The motor mounts are pre-drilled for the Marine Specialties QC Multi Mount. The hull and deck parts are separate to facilitate the installation of the running gear, fuel system and radio. A full set of instructions, including over 20 photos, is included.

The 'Formula V' is priced at $79.95. Available also is a $49.95 hardware package, featuring stainless steel strut, rudder bracket and rudder, flex drive prop shaft, and ride plates.

For the boater interested in a scale appearing Deep Vee, an optional cockpit cowling with provisions for three drivers is available at $9.95. Two large engine scoops are part of this option.

Be sure and mention MB when you send in your order. •

Remotely . . . . *Continued from page 16*

clined in membership over the years, and after about 1949, the club just did not exist anymore, except on paper. I stayed with it 'til the end, and tried to get it

going again, but no luck. Although there was still a lot of modeling activity around Toledo, there was very little free flight, and about 1950, we had a pretty good controline club going.

"Anyway, when the Model Manglers broke up, they left about $250 in the bank which just laid there until 1952, when Joe got permission to draw it out and used this money to start the Weak Signals. This was in the spring of '52. Three years later, in February of '55, the first conference was held in Ernie Kratzat's funeral home in Detroit, put on jointly by the Weak Signals and one of the Detroit clubs (The Detroit club is still active, by the way.)

"Joe David is still very active in modeling and lives in Columbus, Ohio now. The fellow on Joe's right (sitting down) is Jim Wumer, and Jim is also still very active in free flight. He won the semi-finals in FAI Power at Bong in 1975, and flew in the 1976 finals.

"The person with the open V-neck shirt, standing right behind the third person from the left sitting down, is Tom Dion. Tom ran the Glass City outfit for many years. I'm sure you'll remember the Glass City pulse proportional radios of the early, and I guess, middle sixties. Tom also ran the Conference from the start until 1966. Without him there would not be the show that we have today."

AND SPEAKING OF SIGNALS . . .

In case you haven't already, be sure to read about the latest FCC happenings. It's in our "Workbench" column, and is very encouraging, especially with respect to our favorable relationship with the FCC.

The AMA Frequency Committee, since last summer's successful campaign to prevent the merging of 27 MHz frequencies with CB radio, has been investigating the future needs of R/Cers. It has just (December 28) released a report to R/C equipment manufacturers, car and boat associations, the Executive Council, and the model press. The report includes a summary of the current status, and also outlines the Committee's plans for a better long-range solution to the problem of expanding R/C needs, and in a nutshell, that means more interference-free frequencies. The outlook appears excellent for obtaining new frequencies, but the process will be slow and intricate.

As an example of the encouraging news, this statement was made by the FCC on July 27, 1976:

"We believe that, eventually, alternate frequencies must be found to supplant the present 27 MHz Class allocation because of the increasing problem of interference by Class D users to Class C radio control operations."

The Frequency Committee has summed up the future R/C needs as follows:

1. Interference-free channels
2. Simultaneous use of channels
3. Capability of switching from one channel to another.
4. Total of 30 channels, based on retaining 7 channels in the 72 MHz band, plus 23 new channels.

As for the 72 MHz band, the committee's aim is to obtain only 72 MHz frequencies that are either totally exclusive, or only shared with low-power (such as the R/C limit of 1 watt) users, rather than the several instances where high power allocations have been made on the R/C frequencies in certain areas of the country.

There are seven "guard band" spots on 32 to 42 MHz which are currently unassigned by the FCC. They could possibly be designated as "exclusive" for low power R/C frequencies. Frequencies in this band are now used for R/C in Europe, and U.S. equipment is already being manufactured on these frequencies for overseas distribution.

The 222-224 MHz band, which is shared by government and amateur radio users, has been offered to the FCC by the OTP (Office of Telecommunications Planning - Executive Branch) for a projected citizen radio service. Ten low power R/C channels with a 40 KHz spacing could be considered in this band, however, shared use with Garbage Banders could make it no better than the current 27 MHz situation.

Use of the 1-1/4 and 6 meter bands is also being considered under a special RC Controller's License. This license would be similar in structure to the amateur communications class license which has been proposed as a part of the overall restructuring of the amateur service.

Other frequencies from 250 to 1000 MHz have been only lightly discussed, and no actual R/C equipment has been tested. Germany has recently allocated a band of R/C frequencies at 433 MHz, but no operational results have been reported.

The only technical modification to current requirements that the Com-

mittee is proposing lies in the area of modulation. By permitting any type of modulation that still complies with the radiation bandwidth requirement, more effective modulation techniques could be developed . . . and this spells FM, which is already in use in some European and Far East countries.

In general, the long-range outlook for more and better R/C frequencies looks very good. The best way that all of us can assist the Frequency Committee and AMA's legal council to the FCC is get everyone legally licensed . . . and right now is the time to do it!

PUERTO RICAN PATTERN

Our radio control man in Puerto Rico, Enrique Blandino, reports that a significant Pattern contest, sanctioned by AMA, took place on November 21. There were 20 entries in all, representing the following clubs: Southern R/C Club (host), Puerto Rico R/C Modeler, Boriquen R/C Club, Demajagua R/C Club, and Aeromodelistas del Oeste.

Winners were as follows:

Beginner Novice
1. Luis Martinez
2. Ricardo Maldonado
3. Leocadio Cintron

Novice
1. Domingo Gianoni, Jr.
2. Ruben Maldonado
3. Jose B. Fernandez

Advanced
1. Jose Perez
2. Gustavo Diaz
3. Germanico Becerril

The judges were:
Enrique Blandino
Gamaliel Rodriguez
Sammy Albor

Dr. Domingo Gianoni is President of the Southern R/C Club, and the Contest Director for this event was Agustin Gayers.

SAULT SHAKINGS

The Sault Modelers Radio Control Club (Sault Ste. Marie, Ontario, Canada) will be holding its annual Upper Great Lakes Model Meet on May 28 and 29 at Sinclair Park Model Airport in Sault Ste. Marie, according to Dr. Nino Campana. A low-key affair (no knives or guns, just sticks and stones), this MAAC sanctioned event will have three classes of Pattern, plus Stand-off Scale. All MAAC and AMA members are cordially welcomed. The CD is Craig Knight, 11 Broadview Drive, Saint Ste. Marie, Ontario, Canada. His phone is (705) 949-6893. Preregistration would be appreciated. ●

Workbench . . . *Continued from page 6*

thing. A little research is what I had done when I wrote in the last issue about indian heads on Nieuports. It is true, I believe, that no indian head was ever painted on the side of a Nieuport 11. After three books solely about the Lafayette Escadrille, and 64 issues of the Cross and Cockade Journal, I can tell you that the only Nieuport 17, with a Sioux indian head (the most common type) belonged to Courtney Campbell. Raoul Lufbery had a Spad with a Seminole type indian head for a time.

Another thing I didn't realize was that the Sioux type indian head was designed to show up as a red, white and blue patch of color at distances before the indian head itself was distinguishable. It's true and it works . . . the red face, the white feathers, and blue tips on each feather. The Sioux indian head insignia was transferred to the 103rd Pursuit Squadron in 1918 and went out of use at the end of WWI. The French revived the Lafayette Escadrille in the 1920's,

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New Line of PEANUT SCALE flying models. The Gere Sport, P-47D, PT-19 and others. Catalog 35¢. Gene Dubois Models, P.O. Box C. Acushnet, Mass. 02743.

EXHIBITION - or flying peanut scale "Vought Vindicator". Win contest with this one. Plans $1.50. R. L. Stearns, 514 Holden St., Raleigh, NC 27604.

100 NEW and USED ENGINES available. Also parts, accessories and kits. 25¢ brings list. T. Crouss, 100 Smyrna St., West Springfield, MA 01089.

WANTED FOR CASH: Old spark-ignition engines, parts and plane kits. Russell Stokes, Rt. 1, Box 73J, Keller, Texas 76248.

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and the same insignia flew on P-40's in WWII, and now adornes a squadron of present-day French jet fighter aircraft."

"... THREE IF BY AIR"

That's the name of a new section beginning in this month's issue, having to do with letters to the editor. The title is a play on that bit of American history involving Paul Revere and his midnight ride on horseback to warn settlers that the "The British are coming!" You know . . . "One if by land, two if by sea . . ."

Anyway, we get some interesting mail from time to time, and this is one way to share it with our readers. We'll endeavor to be discretionary about what we make public and what we don't, and will only edit as necessary to avoid strong language and/or direct reference to individuals, which could be embarassing to all parties.

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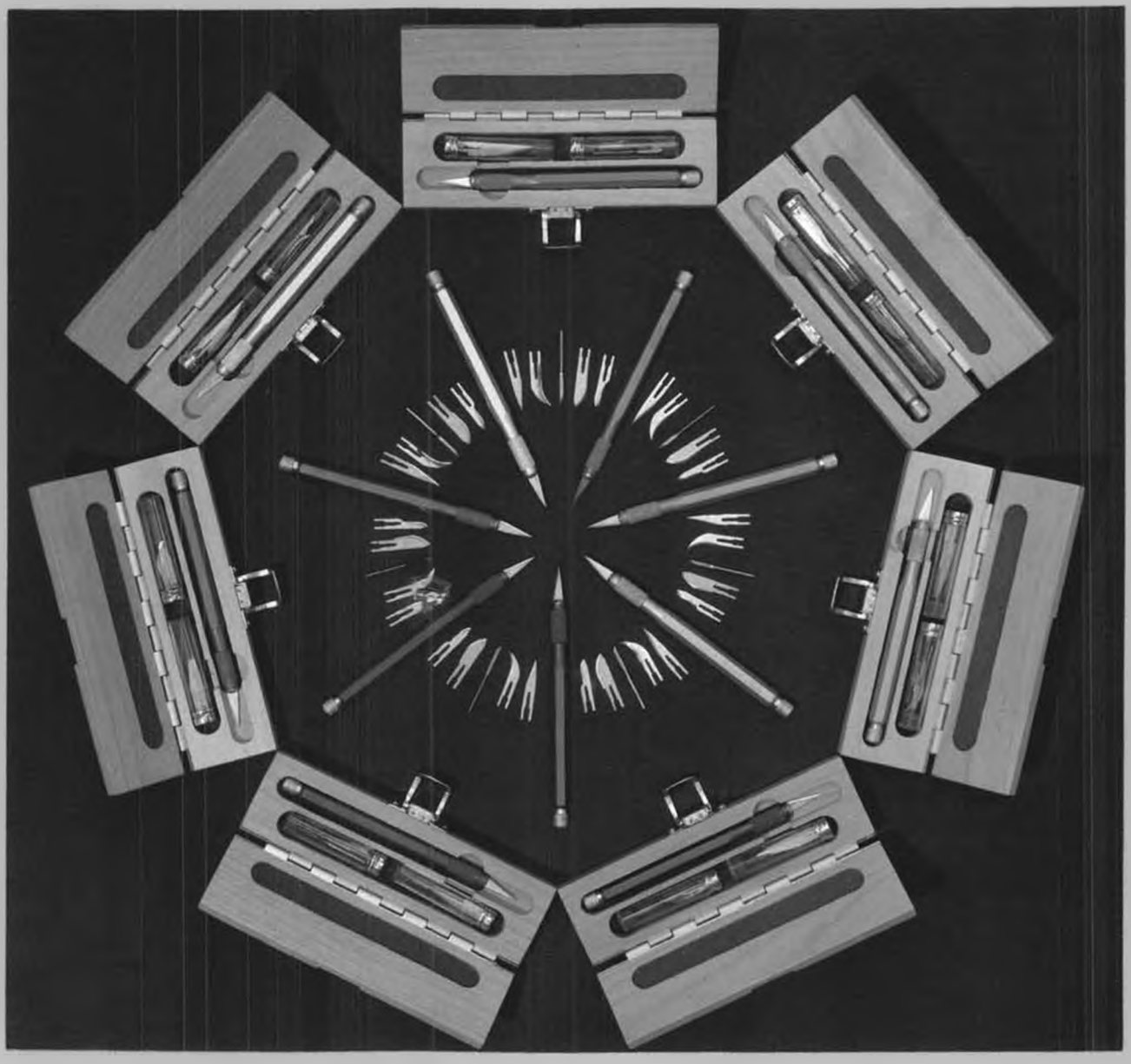

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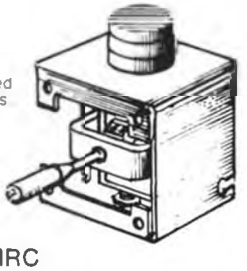

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