

MODEL BUILDER

DECEMBER 1974

volume 4, number 36

ONE DOLLAR



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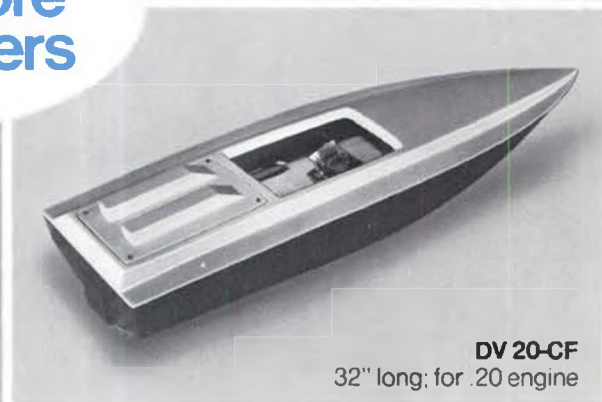


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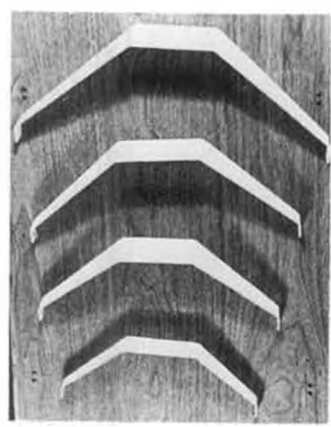


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BUILDER magazine**

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ANNOUNCING!

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FIRST ANNUAL INTERNATIONAL (Premier)... Parcel Post Proxy Peanut RUBBER SCALE CONTEST!

EVERY PEANUT MODEL, FROM NEAR OR FAR, WILL BE PROXY FLOWN, INDOORS, BY SOME OF THE U.S.A.'S BEST RUBBER SCALE FLYERS INCLUDING WALT MOONEY, BILL HANNAN, CLARENCE MATHER, BOB PECK, FERNANDO RAMOS, BILL WARNER, AND MANY OTHERS.

LOCAL MODELERS WILL BE ALLOWED TO ENTER, BUT THEIR PLANES MUST ALSO BE PROXY FLOWN, AND NO VERBAL OR PHYSICAL HELP WILL BE ALLOWED FROM THE OWNER . . . ONLY WRITTEN INSTRUCTIONS TO THE PROXY FLIER, AS ALLOWED FOR ALL ENTRIES.

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AWARDS to include TROPHIES and MERCHANDISE . . . ALSO, a KRAFT RADIO SYSTEM to the

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Contest Director: CARL HATRAK

Chief Static Judge: RUSS BARRERA

Competition will be divided into five (5) classes: Pioneer, World War I, Golden Age, World War II, and Modern. There will also be individual awards such as; most distant entry, best shipping container, entry most damaged in shipping (Don't try hard for that one!), best entry built from Walt Mooney plans, best model by a female, best entry by any modeler under 15 years of age, oldest qualifying contestant, youngest qualifying contestant, best biplane (Big John Award!), best entry from a Peck-Polymers kit, plus a few surprises.

Scoring will be based on the total of each entry's static scale points (100 maximum) and flight points (100 maximum). Static judging will be according to AMA Indoor Rubber Scale rules. Flight points will be the average of the two best flights out of four official flights (10 seconds minimum, 100 seconds maximum). Ties will be broken by highest single score, or a fly-off. Unlimited attempts subject to size of total entry. Highest individual flight and static points will also be honored. A three-man jury will preside over all decisions.

SCHEDULE: Register by mail on or before February 1, 1975.
Models to be on hand on or before April 1, 1975.
Contest to be held approximately April 15 to May 1, 1975.

Send in now for your registration form, which includes an entry blank, a complete set of rules, and other particulars. Write to:

MODEL BUILDER PROXY PEANUT CONTEST
P. O. Box 4336
Santa Ana, California 92702
USA



MODEL BUILDER



DECEMBER

1974

volume 4, number 36

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CONTENTS

FEATURES

WORKBENCH, Bill Northrop	4
OVER THE COUNTER, Bill Northrop	6
CHOPPER CHATTER, John Tucker	13
REMOTELY SPEAKING, Bill Northrop	16
DO IT ON THE SNOW, Pete Waters	20
R/C SOARING, Le Gray	22
PRODUCT\$ IN U\$E, Bill Northrop	25
PLUG SPARKS, John Pond	26
STRICTLY SAIL, Rod Carr	30
F/F SCALE, Fernando Ramos	36
HANNAN'S HANGAR, Bill Hannan	38
MB VISITS GOLDEN AGE REPRODUCTIONS, Dennis Norman	39
FREE FLIGHT, Bob Stalick	42
CONTROL LINE, Jed Kusik	47
TETHERED CARS, Ted Maciag	53

SCALE VIEWS

AMERICAN EAGLE A-129, Harold Osborne	24
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CONSTRUCTION

85' HARBOR TUG (Part One), Francis Smith	9
THERMAL THUMBER O. T., Phil Bernhardt	29
WACO SRE, George Clapp	33
PEANUT STINSON RELIANT, Golden Age Reproductions	40, 41
MOON DUST, Jack Sheeks	51

Cover: There's something about the short, tubby, but powerful bulldog-like shape of a tugboat that appeals esthetically to almost everyone . . . landlubber or old salt. The "Girard Point" is a 1/28th scale model of an 85 foot Harbor Tug. Surprisingly, it was one of a fleet built for the Army in World War II and later sold to private concerns. The model was designed and built . . . entirely of wood . . . by Francis Smith, proprietor of the Prospect Park Hobby Shop, Prospect Park, Pennsylvania. A two-part construction article for this 37" long model begins on page 9 of this issue, and will be completed next month. Photo by Smith.



"Hi . . . I, my Mom and Dad, and all the staff at MODEL BUILDER, wish all of you a safe and satisfactory holiday season, and a successful year in 1975 . . . Actually, my Daddy wrote all that sentimental stuff. As for me . . . Digh digh doo heyja, chory dow eschlim danga . . . bye!"
Belinda Northrop

from

Bill Northrop's workbench . . .

REFLECTIONS

Who'da thunk it!? Here we are, doing our fourth Christmas issue and proudly looking back at some of our accomplishments in this tricky game of being a hobby magazine publisher.

Our biggest accomplishment to date is taken for granted by some and looked upon with amazement by others . . . we're still here!

And speaking of still being here, we have had several letters and phone calls recently from concerned readers. It seems there have been rumors, of unknown origin(s), to the effect that MB is folding. The concern, in all cases, was not about our folding, but wondering what could be done to stop these false stories. From our point of view, such rumors are annoying, but we just don't have the time or desire to bother with fighting them. The easiest solution is to simply continue publishing the magazine and make damn liars out of the doers of such deeds.

Anyhow . . . back to the reflections . . .

Looking at the index section of our first December issue reminds us that we owe a slight apology to our early readers for pulling a fast one. Back then, there were just three of us in the MB office (the family room in our house) and three names on the masthead sure didn't look too convincing. So, we padded things a little, and added two more names to the list; Wm. Prince, Circulation Manager and C. R. Brown, Subscription Manager.

Well, we didn't exactly make up those two names. Prince was a grey and black tiger-striped cat who started life as Priscilla . . . until we found out "she" was a "he." Charley Brown, named by the kids in the family who owned him

before moving to an apartment and being forced to give him up . . . to us . . . is a solid black cat, part Siamese.

Prince left us a couple of years ago, but we still remember the night he decided to take his job seriously. We had an issue to deliver to the printer in the morning, and as each final paste-up was completed, it was added to the neat stack on the piano stool in the living room. Sometime during the long night, Charlie and Prince got to playing tag. Charlie, being chased, ran under the stool and stopped, suddenly. Prince, under a full head of steam, had decided to go over the stool in pursuit, and had already left the floor when he realized Charlie had stopped. He landed on the paste-ups with brakes locked, and finding that the top sheet wasn't slowing him too much, started back-peddling like mad. Within seconds, that particular issue was well circulated . . . all over the living room floor!

Incidentally, Charlie is still with us, but now he's in charge of guarding the house from any attacks by wild moose . . .

So far, he's done a great job!

There were only two of our regular contributors in that December 1971 issue; Le Gray and Walt Mooney. As for advertisers, there were only 14 all together, and 10 of those are still with us. (Several others are advertising every other month and didn't happen to appear in that issue).

To all of the above advertisers and contributors, and the many more who joined later . . . and are still with us . . . we offer sincere thanks for your help and your faith in us. There is no such thing as sitting back to relax and saying, "We've got it made," but, thanks to you

MODEL BUILDER Magazine *IS* firmly established (No more cats on the mast-head!).

For what it's worth, to the many readers who have written in and requested it, we will continue with the same format and mix. Judging by your letters, we're doing the right thing, and except for the few who complain that every photo and plan should be a bi-plane, or that combat is the only C/L subject worth mentioning, or that we don't have enough material on "straight forward" models, we seem to be giving you what you want. As long as we keep our ears, eyes . . . and minds open, there's no reason that we shouldn't con-



Mystery Modeler. One of Model Builder's regular columnists as he appeared in 1943. Know who it is?



One of AMA's more unique chartered clubs is the "Wright Flyers", of Columbus, Ohio. How can they do wrong? They're all Wrights! Pop Sam is surrounded by his sons (left to . . . er, 'wright'): Scott, James, Sammy, Kevin, and Zachary. Guess what? They live on Wright Park!

tinue doing just that.

And since this is the last issue for 1974, the staff and management of *MODEL BUILDER* extends sincere Seasons Greetings and Best Wishes for the New Year . . . and between us modelers; Thermals . . . Cuts . . . Tens. Keep your lines tight, your batteries charged and your fuses dry.

See ya at the field . . .

THE (WRIGHT) POLICY FOR JUNIORS

Bob Sargent, Rocky River, Ohio (*American Yankee*, August '74 MB) sent us the photo of those 5 Junior modelers . . . and the story that goes with it. Here's how it goes:

"Aeromodeling and AMA is assured of both present and future strength with one of the country's newest clubs, the 'Wright Flyers' of Columbus, Ohio. Obtaining AMA Charter 818 this year, the Wright Flyers have been very active in promoting aeromodeling to the public in central Ohio, with flying demonstrations and on-the-spot modeling clinics. This unique flying group performs well in both indoor and outdoor free flight, also control line model aviation compe-

titions and sport flying. Not content with just their own club activities, they have started aeromodeling clubs in local schools and have enrolled (and taught to fly) a large portion of the student bodies . . . including teachers! School clubs which they have founded show promise of sustaining strength in the future, too.

"Any time and place this unusual club gets together to fly, new interests are stimulated by introduction to model aviation, and the Wright reputation spreads . . . For years, the Wright Flyers have let it be known to the public (through hobby shops, sporting goods and department stores, and by word-of-mouth advertising), that any individual who receives a ready-to-fly plastic flying trainer and/or who wants to learn to fly (with or without his own plane), only has to contact the (W)right group and help will be freely given.

"If this sounds like a sincere, dedicated and active group, it should be—because it is . . . and membership in the Wright Flyers is *over 80 percent Junior*.

"Another thing making the Wright Flyers unique as an aeromodeling club

and within AMA is that all members (presently) are of one family! That's right, Wrights' father, Sam, and the 5 Wright's sons are the Wright Flyers (and they just happen to have an address on Wright Park in Columbus, Ohio).

"Photo shows a very proud father and 5 very happy sons (all under 14) after their recent victories (13 individual awards; 1 first, 5 seconds, 6 thirds, and 1 fifth place . . . plus the team high-point) at the 39th Cleveland National Junior Air Races in late August. Left to (W)right are Scott, James, the boss (Sam) hiding behind Sammy, Kevin, and Zachary. Nothin' wrong with the Wrights! Mom Wright may even fly in next year's Junior Air Races as a contestant in Cleveland's Powder-Puff Derby for the gals . . . Sam can certainly find time to put one Wright into competitive air.

"We're wrong if you don't hear much more about the (W)rights in the future of aeromodeling and aviation."

ARE YOU LISTENIN'?

The following article was written by Bob Owens for the July 1974 issue of the *Valley Flyers* (San Fernando Valley,

Continued on page 78

OVER THE COUNTER

● Orbit Electronics, 1641 Kaiser Ave., Santa Ana, California 92705 has announced the introduction of its 1975 "Sport" Series Radio.

Available with the basic 5 channels, it may also be purchased with optional 6th and 7th channels at reasonable prices. Special new features include the PS-8 (rack and rotary) and PS-9 (rotary) sub-mini servos which are said to be ultra fast and strong, with pots and gears guaranteed for life (!). Also for 1975, the new CR-1 receiver is the ceramic resonator version of Orbit's well known unit. Finally, the 1975 model features new Twist-adjust control sticks, quickly adjustable to different hand sizes without the need of tools.

Remember, tell 'em who sent ya!

* * *
Peyton Products, P.O. Box 6423, Orange, Ca., 92667, produces molded canopies for the popular Marks Models "Windward" and "Windfree" R/C gliders. The canopies sell for \$1.99 and are available clear, or in tints of Smoke, Blue, Yellow, and Red.

Peyton is also marketing Foam Servo Mounts. These are pre-cut pieces of 1/8 inch thick double-stick foam tape cut in 1-3/8 inch squares. A package of 8 mounts on a strip of peel-off paper sells for 79 cents.

Remember, tell 'em who sent ya!

* * *
At first glance, and without stopping to calculate the size of a 1/24 scale solid model, the photo of a display sailplane in Solid Scale's small ad can be misleading. Actually this model of the HP-14 sailplane spans 27-1/4 inches, and with its scale aspect ratio of 22 to 1, the long, slender wing fully conveys the



"Paragon" R/C sailplane by Hartman Fiberglass R/C.

graceful beauty of the full size counterpart.

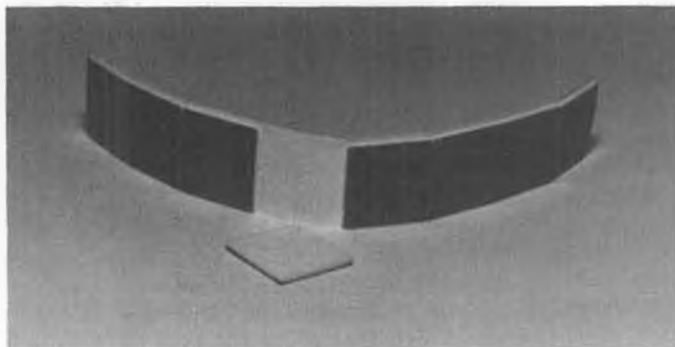
The HP-14 is the first of a series of 17 soaring aircraft to be offered by Solid Scale, P.O. Box 1703, Clovis, New Mexico 88101, all to the same 1:24 scale. The kits are machine-cut from soft white pine and sanded. Wings are pegged and pre-drilled to insure correct alignment. All parts must be carved and sanded to proper shape, and then finished in accordance with the modeler's preference.

Considering the quality of the selected carving hardwood and the accuracy of the pre-cut blanks, the \$4.95 price seems quite reasonable. An optional display stand kit for \$1.50 is also available.

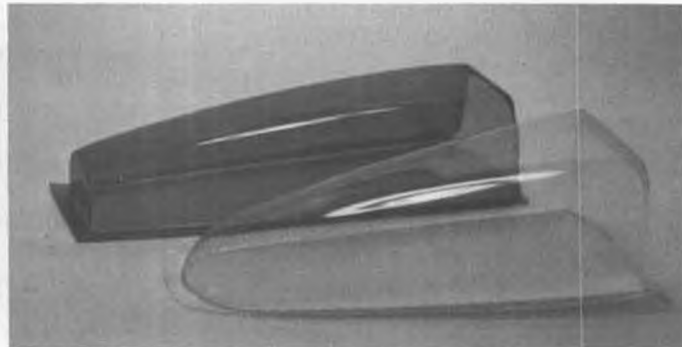
Hartman Fiberglass R/C, Argenta, Illinois 62501 is now offering a fiberglass fuselage, parts pack and plans for the "Paragon" R/C sailplane designed by Bill Bomball, Decatur, Illinois. The company also offers 5 other sailplane designs, plus many other fiberglass items, such as sailboats, a tug boat, pattern ships, and many styles of cowls and wheel pants. It also produces a fiberglass fuselage for the 12 foot span "Quasoar" designed by Neil Liptak (Dec. 73 MB). Send a dollar for complete catalog.

Remember, tell 'em who sent ya!

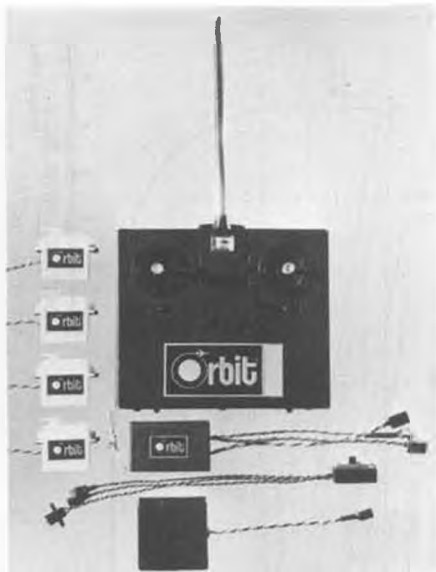
* * *
'Scuse the play on words, but Aero-tique is unique! This company, at 19900



Double-stick foam servo mount squares, by Peyton Products.



Canopies in clear or colored plastic for "Windward" and "Windfree", by Peyton Products.



Orbit Electronic's 1975 "Sport" Series 5-channel radio. Adjustable stick length.

Ingersoll Dr., Rocky River, Ohio 44116, bills itself as "Manufacturers and Suppliers for Aeromodelers," and if that sounds kinda general, look at the list of items it makes available:

Profile plans of formula racers in 3/4 and 1-1/2 inch scales.

Safety products for shop and field (see article on noise damage to the ear in "Workbench" column).

Kits for C/L Formula V event.

Stooges (Stand-ins for your engine while you're building).

Bellcranks

Shop aprons

Insignia

Awards, gifts, findings and paraphernalia

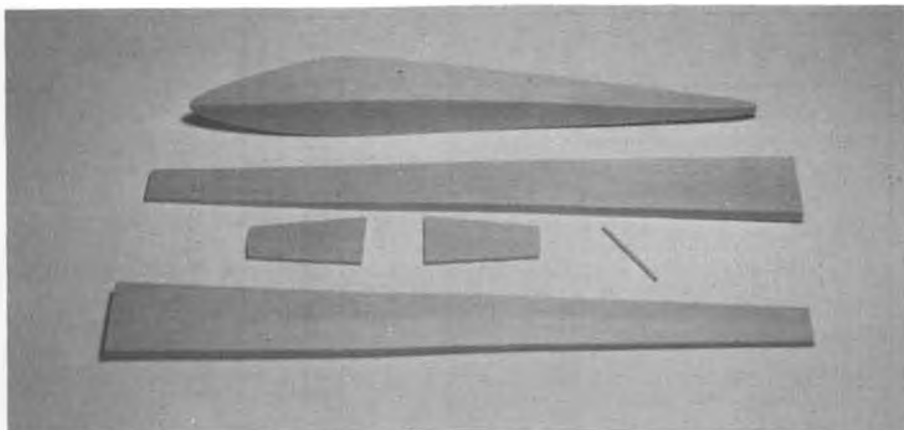
Pins (Super-hard type)

Dealers, distributors, clubs, and individuals should write for complete details and prices.

Remember, tell 'em who sent ya!

* * *

Two very special items, primarily for the exacting indoor modeler, are being offered by Ray Harlan, 15 Happy Hollow Rd., Wayland, Mass. 01778. One is an



Solid Scale's solid pine display model of the HP-14 spans over 27 inches when finished. First of a series of 17 scale glider models.

indoor beam scale and the other is a micrometer balsa stripper.

The beam scale is available in an English version, reading in .0002 oz. divisions (!) to .05 oz., or in a metric version, reading in .005 gm divisions to 1.4 gm. They feature a magnetic damper for true static readings, and the pivot system uses a hardened, ground pivot working in polished agate vee blocks. Price is \$30 plus postage.

The Balsa Stripper uses two micrometer heads for most accurate cuts. The unit includes satin finish micrometers for easy reading, smooth redwood base, heavy aluminum straightedge, and a precision machined blade holder. The strip-

per is two feet long to accommodate all indoor needs.

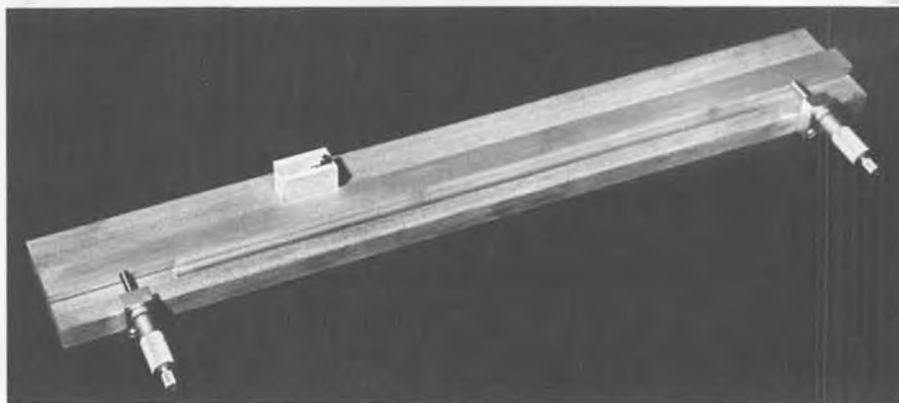
Remember, tell 'em who sent ya!

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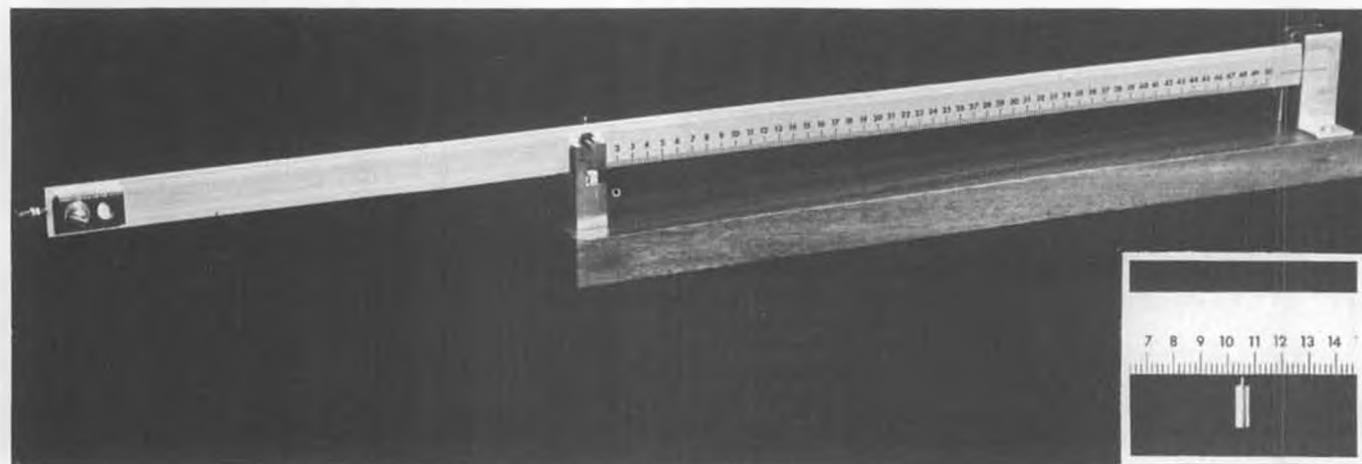
Domestic, vertical grain Sitka spruce plywood is now available for modelers and full-scale homebuilders from David C. Fleming, 18175 N.W. Park View Blvd., Portland, Oregon 97229.

Mr. Fleming points out that spruce has long been known in aircraft construction for having the highest strength-to-weight ratio of any wood. Also, sliced vertical grain veneer, though it is more expensive to produce because of higher waste and labor costs, is also much

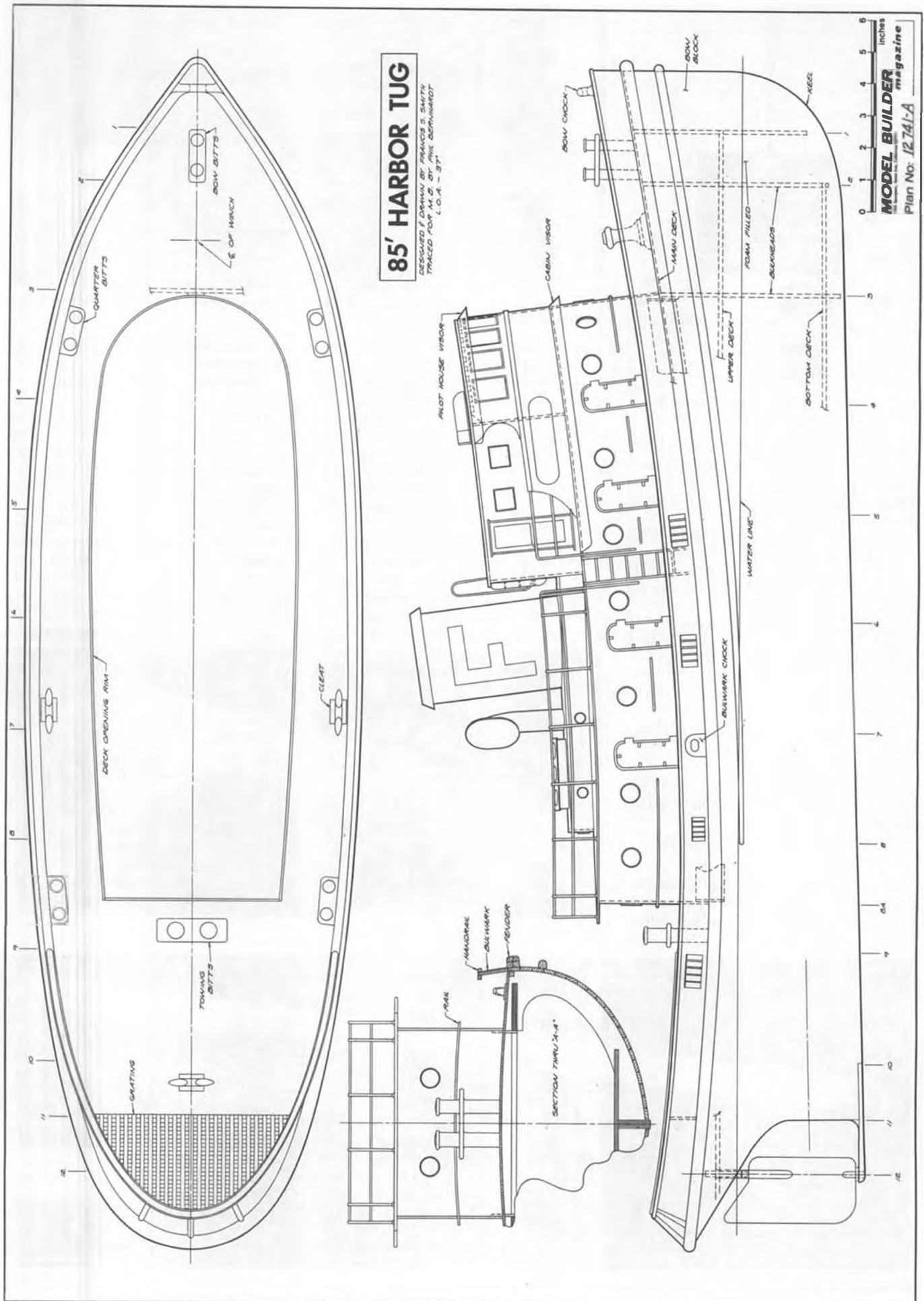
Continued on page 70



Stripper for indoor wood, by Ray Harland.



Beam scale by Ray Harland for indoor models, reads to .0002 oz!





85 FT. HARBOR TUG (PART ONE)

By FRANCIS SMITH

First of a two-part article for the construction of a classic boat style. Built entirely of wood, it's an excellent workbench project. Unusual method simplifies planking. Superstructure and details next month.

● I've been a modeler since boyhood and my interests have been many. In recent years my pleasure has been to build electric and glow engine powered boats.

The 85 foot Harbor Tug appealed to me and the desire was to make it so others could duplicate it. This tug was originally designed by the Army for World War II and later sold to private concerns for use in harbors and rivers throughout the country.

I decided to make the model 3 feet long to allow enough room for any operating features I would want to install, and yet not make it cumbersome and

difficult to transport.

Wood was chosen as the construction material, because to me it is easy to work with, and is clean and familiar to most modelers.

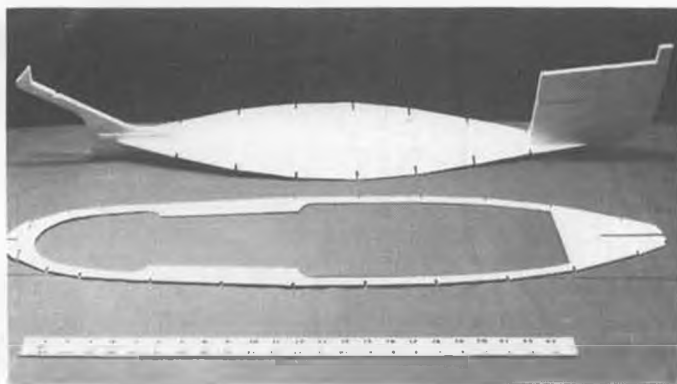
Before construction began, I purchased a set of line drawings, and developed a complete set of plans, including assembly details and templates. The templates were attached to the appropriate pieces of wood with rubber cement and the pieces were cut out on a jig saw. This resulted in what was basically a tug boat kit (very few available today).

After cutting out the hull parts (keel,

main deck, upper deck, bottom deck, bulkheads and bulwarks), I dry-fitted all the pieces to be sure all was well before gluing. Being satisfied, I tack cemented the entire hull, with the exception of the main deck, with 5-minute epoxy and then completed the gluing with regular epoxy.

I then attached the hull to a planking jig (see sketch) with small brads and planked the hull as far as the jig would permit with 1/8 x 3/8 x 36 balsa strips, gluing *only to the bulkheads* with 5-minute epoxy.

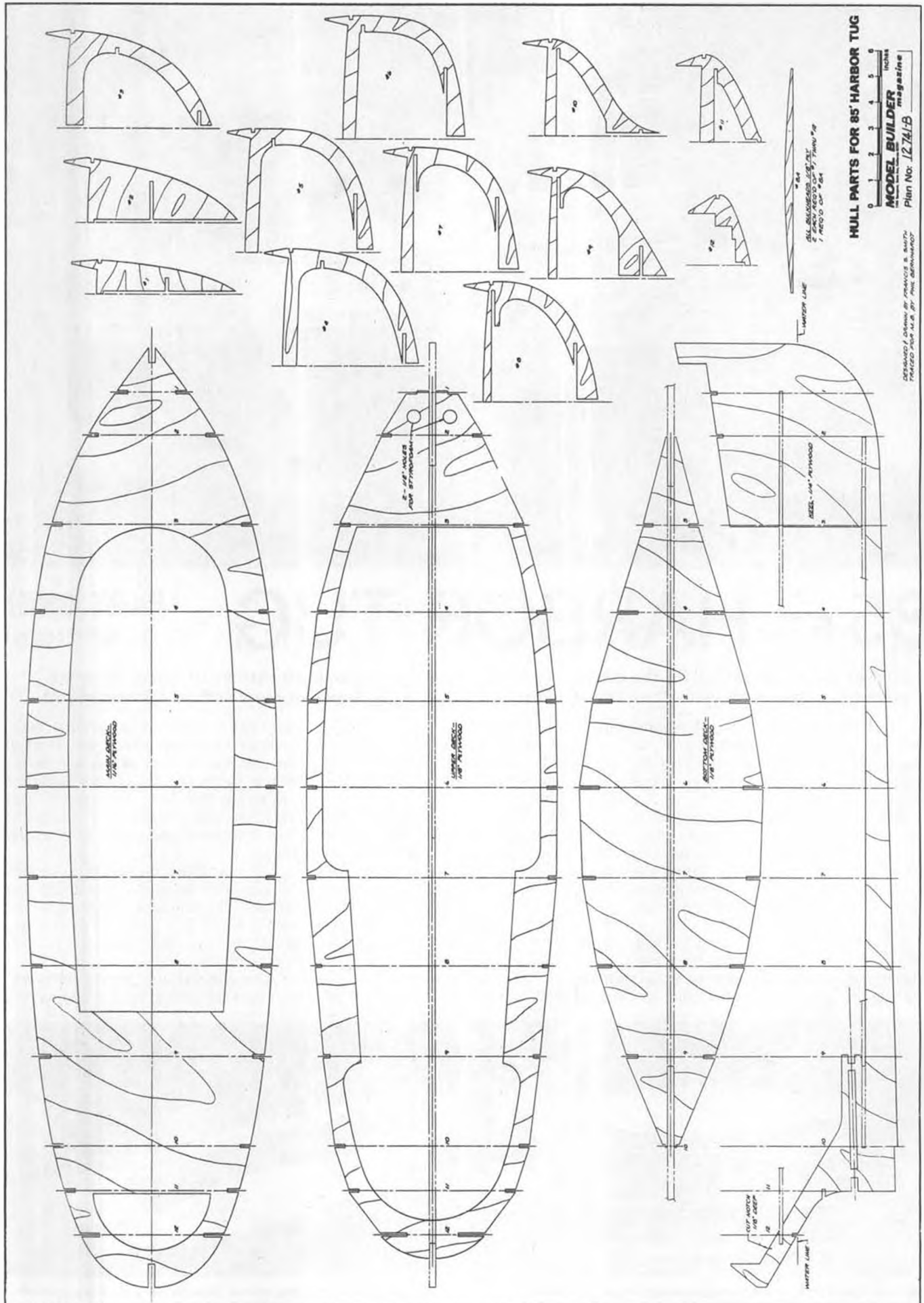
After removal from the jig, the planking was continued to the top of the



Keel with lower deck in place, and upper deck ready to slip into notches. No gluing until dry fitted.

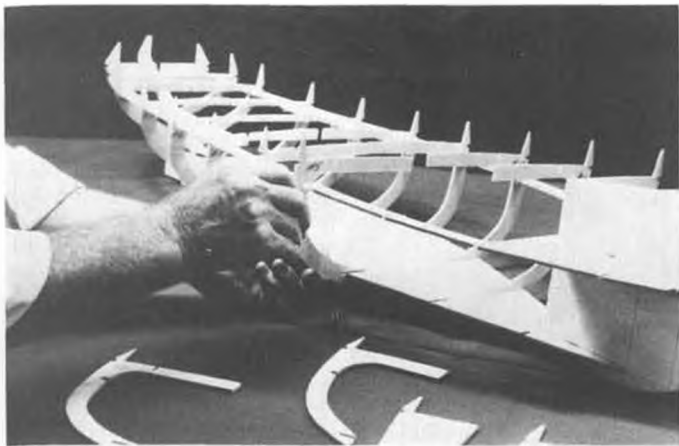


Extra-long notches at bow permit slipping upper deck in place without spring parts. Half-bulkheads can now be added.

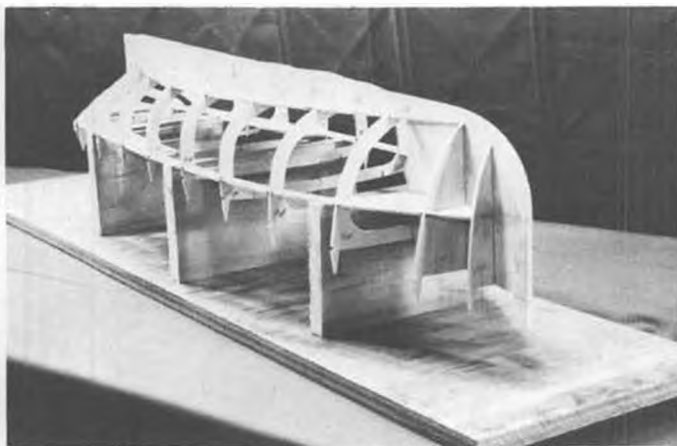


HULL PARTS FOR 85" HARBOR TUG
MODEL BUILDER
 magazine
 Plan No: 1274/B

DESIGNED BY FRANK B. FRANCIS & SONS
 PHOTODUPLICATED BY THE MODEL BUILDER



Half-bulkheads are slipped into place from the outside. After checking alignment, everything is tack-glued.



Framing is inverted and mounted on planking jig, using small brads. This prevents distortion of frame during planking operation.



Planks are glued to frames only, NOT to each other, using 5-minute epoxy.



Since planking will not show, it is unnecessary to tediously taper each plank before gluing in place.

sheer strip, which is 1/8 x 1/8 x 36 spruce. I then glued on the bow blocks and stern blocks and sanded to shape while sanding the hull lightly.

The complete exterior of the hull was covered with 1 inch strips of masking tape, after which I coated the entire interior of the hull with Hobbypoxy Formula II epoxy, giving it a generous filling and working in the medium with a stiff brush.

When this interior coat of epoxy cured, I removed the masking tape and sanded the hull to its final shape. The hull was then completely coated with Sig's Epoxilite (exterior only), which

filled the dents, cracks, seams and grain, and then it was sanded smooth.

I poured in some Sig two-part expanding foam between bulkheads 1 and 2 and then attached the deck in place.

Next I put on the bulwark sections, fenders, spray rail and handrail. I then laid out the freeing ports and cut them out with a coping saw. The bars were made from 1/16 inch dowels.

After cementing the cabin rims to the main deck, the hull was set aside and construction started on the Main Cabin.

STEP-BY-STEP CONSTRUCTION

1. Make Keel from 1/4 inch plywood. Be sure to notch Bow to identify water

line and cut slot for Stuffing Box Tube.

2. The Bottom Deck is made from 1/8 inch plywood. Draw a center line on top of the Bottom Deck and two parallel lines on the bottom of the Bottom Deck in line with the edges of end slots.

3. Assemble Bottom Deck to Keel by inserting Bow End into Keel all the way. This will allow the Stern section to engage in the rear slot. Slide the Bottom Deck fully rearward. Nail with 1/4 or 3/8 brads, using the lines drawn in step 2 as guides.

4. Cut Upper Deck from 1/8 inch plywood and install in Keel in the same manner as the Bottom Deck. Epoxy in



After saturating interior of planking with epoxy, the exterior is rough sanded and then a coat of Sig Epoxilite is added.



Flex-cable lead to rudder tiller is added before main deck is installed. Bulwark will be epoxied to extension of bulkheads.



Completed tug is large, but not so much that it becomes awkward to handle. Great model to have around for scale-like retrieval of becalmed sailboats and stalled or out-of-gas power boats.

place.

5. All Bulkheads are made of 1/8 plywood. After test fitting, tack in place with 5-minute epoxy. Join Bulkheads Nos. 4 through 11 with 1/8 x 1/4 x 2 inch long balsa at the center of the Bulkheads for reinforcement, if desired. *Do not assemble Bulkhead No. 8A at this time.* When all Bulkheads are cemented in place, use regular epoxy to reinforce all joints.

6. Make a Planking Jig as shown in sketch. Jig will keep Hull from twisting while being planked. Nail Hull to jig, using short brads.

7. Plank Hull with 1/8 inch thick x 36 inch balsa, using assorted widths of 3/16, 1/4 and 3/8 inches. Approximately 540 square inches of planking will be required, or 15 x 36. It is only necessary to glue the planking to the Bulkheads instead of gluing along the entire length of each strip. Bulkheads No. 1 and No. 2 at the bottom will require slight beveling to remove sharp corner, as will Nos. 11 and 12. Plank Hull as far as possible while on jig, then remove Hull from jig.

8. Install 1/8 x 1/8 x 36 spruce shear strip in slots near top of Hull and complete planking to this strip. *Light sand-*

ings of Hull can be done at this time.

9. Epoxy a piece of 1/8 x 3/4 x 2 plywood on each side of the Stuffing Box slot inside the Hull. File three or four slots on the end of a 1/4" O.D. brass tube to make a cutting tool. Put the brass tube in an electric drill and drill out the wood plugs to complete the slot for the drive shaft.

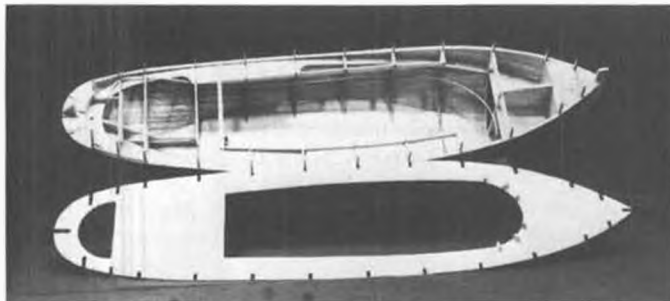
10. Cover the outside of the Hull with masking tape to prevent seepage and coat inside of Hull with Formula II epoxy, using a stiff brush to work the medium well into the wood and seams.

11. Remove masking tape from exterior of Hull. Trim planking flush with Bulkhead No. 1 and glue the Bow Blocks (made from 2 x 2 x 6 balsa) in place. Trim away interfering planking at Bulkhead No. 12 and insert Stern Blocks in place after cutting to shape from 5/8 inch thick balsa. (Laminate to make 5/8 inch by gluing five 1/8 inch thick layers of 2 inch wide balsa together.) From 1/8 scrap planking, make 4 shims 1 1/4 inches long, to taper 3/32 at the large end, and glue to Stern Block.

12. At this time, fill between Bulkheads 1 and 2 with two-part expanding foam, if desired, for flotation.

13. Cut Main Deck from 1/16 plywood, test fit to Hull and trim slots where necessary. Attach 6 pieces of 1/8 x 3/8 scrap planking to the underside of the Main Deck at the curve of the Cabin opening, flush with the edge. These are back-up blocks for attaching the Cabin Opening Rim. Coat the entire

Continued on page 61



Main deck has been pre-fitted and now ready to epoxy in place. Note braces for Cabin Opening Rim on underside of main deck.



Clamps and masking tape hold main deck in place while epoxy cures. On this model, Epoxilite coating was added after main deck.



Bulwark has been added, now a strip of balsa or spruce is clamped in place to build up top for railing.



Several hulls were built from plans, assuring accuracy of parts fit. Fender strips have been added to outside of hull.



Ernie Huber, John Tucker, and a Graupner Bell 212 Twin Jet take a stroll during the Western States R/R Helicopter Championships at Oxnard Air Force Base (closed), Camarillo, California. Ernie's flying model choppers for Hollywood film makers.

CHOPPER CHATTER

By JOHN TUCKER



● To say the very least, the Western States R/C Helicopter Championships, held Sept. 22, 1974, at Oxnard Air Force Base, Camarillo, California, was a complete success! The contest was sponsored by MODEL BUILDER Magazine and the Camarillo Flying Circus Club. Contest details and coordination was very ably handled by Nate Rambo, who also was the first entry with his beautiful Kavan Jet Ranger. I guess right here is where we stop referring to anything other than Kavan Jet Rangers, since 99%

of the entries flew said aircraft! Oh yes, there was a beautiful new Schluter "Gazelle," built and flown by John Simone Jr., a couple of "scratch builds" belonging to Charlie Gilbert, and a Du Bro Hughes 300 with a very sleek fuselage modification, dreamed up and built by Chris Spangenburg.

The flight line was absolutely amazing with the number of Jet Rangers! Sure does look like collective pitch is here to stay. Would you believe, not a single "Whirlybird 505" or "Huey Cobra" in

the whole group? That's all right fellas, I'm within a week of completing the paint job on my latest Cobra (my 5th) and I'll show you how the old girl *really* flies with that new "expert" collective rotor assembly! Incidentally, that new Dieter Schluter mechanism is now available at most of your favorite R/C dealers for just about an even hundred bucks! And, it's real simple to install into a new chopper, but might pose a few problems if you plan to retro-fit it into an existing model.



First Place winner in Expert Class, John Minasian accepts trophy from Tom Roe, CD.



First Place Novice winner, Bob Mearns, from Las Vegas. First chopper contest for him!



Contest organizer, and long time R/C'er, Nate Rambo, accepts 3rd place Expert trophy.



Line up of contest machines for Western States Championships looks like a Kavan Jet Ranger convention! CD Tom Roe at left.



Ernie displays the "Quick Stop" maneuver from fast forward flight. Top US R/C chopper pilot declined from competing at Oxnard.

In the meantime, back to the Oxnard/Camarillo contest site, where the contestants were revelling in the California sunshine and light breezes! I don't know what we did right, but it sure turned out to be ideal flying weather. At one point, we jokingly asked Ernie Huber how he was enjoying his West Coast sojourn (while making the movie) and he seriously answered that it was *too* good for him. Seems he can build choppers through the cold East Coast winters and fly them in the summer... out here, he only has time to fly and too few bad days for building! Ha!

Since National Helicopter contest rules don't yet exist, a very simple format was followed which allowed everyone an excellent opportunity to compete without busting-up their machines in all-out competition. Four tasks were outlined, with novice pilots flying the first three and the experts flying all four. Precision and smoothness was the basis for all tasks.

Task I required lift-off from the designated pad, climb vertically to shoulder height, hover for 15 seconds, then descend vertically to a landing on the same pad... constant heading to be maintained throughout the maneuver.

Task II was of a similar nature but additionally involved flying a square pattern with a constant heading between lift-off and touch-down.

Task III was *THE* task... cargo lift! It really is a chore to lift-off from your pad, fly over to the cargo pad, pick it up and fly it around another marker, and then return it to its original pad and drop it off, returning to your start pad without touching down! One or two of the pilots made it on the first pass, but the majority required a few (?) circuits before hooking the ring! At least one



John Gilbert, winner of Scratch Built trophy, test flies his "Skeeter."



John Simone, Jr. 2nd place winner in Expert, picks up the "Cargo" hoop and will now fly around a marker and return it to the pickup point. Easier said than done.

chopper ran out of fuel and was forced to land without making the pick-up! Ha!

Task IV maneuvers, for the experts, consisted of military takeoff, Cloverleaf pattern at altitude, fast high angle descent, running takeoff, 360 degree pirouette turns, Ag turns (wing-overs) and quick-stop landings. A considerable number of pilots competed in the expert class.

In addition to the flying skills, there were also awards for the best scale reproduction of a real helicopter, and best

scratch-built awards for those builders who had fabricated at least 50% of their helicopter's mechanism. The competition was very stiff in the scale event, and the judging was tedious, with all the beautiful details.

And now, here is a first-hand report and analysis from the C.D., Nate Rambo:

"One of the few chopper meets held this year was the Western States R/C Helicopter Championship sponsored by MODEL BUILDER Magazine. This contest took place on 22 September, 1974,



Ernie Huber installed several layers of electricians plastic tape on rotor shaft of Nate's Jet Ranger, which improved hovering capability, but limited maneuverability.

at a deactivated Air Force Base in the town of Camarillo, in Southern California.

"Host club for the meet was the Camarillo Flying Circus. Not to be different from others having model helicopter contests, Circus members got together and invented their own rules. Unlike many rules that we have seen to date, these involved judge's qualitative scoring of precision flight; there was no race against the clock. It was the members' feelings that there was no reason that helicopter flight could not be judged like fixed wing pattern contests, and the only way to find if the idea was good was to try it. Needless to say, it worked.

"Turn-out for the meet was not bad for such a relatively new category, with thirteen entrants actually competing. Joining the group for non-competitive fun flying were Ernie Huber and Arthur Galant. These gentlemen were out in California flying their models for the latest escape thriller movie entitled, "The Towering Inferno." And after hearing Ernie talk about his model flying scenes, I can't wait to see the show. But back to the contest.

"There were two classes of flyers: novices and experts. Novices were defined as those who did not feel competent in forward flight. Experts were defined as those who did feel competent in forward flight. Having flown helicopters for some time now, I am convinced that the definition makes all experts, including myself, liars!

"Novices did basic hovering maneuvers. To be exact, they performed a 15 second hovering demonstration, a constant heading square, and a cargo pick-up/carry task. Experts did the same maneuvers, but also flew a series of forward flight patterns. Included in the experts' maneuvers were various types of takeoffs and landings, turns, a Cloverleaf, a 360-degree pirouette, and "Ag Turns." The latter maneuver simulates a crop dusting helicopter. All the maneuvers were patterned after real helicopter



Chris Spangenburg with his sleek looking chopper built from DuBro Hughes 300 parts. Here he has just missed hooking the "cargo" hoop on his landing skid.

maneuvers.

"Winners of the flight awards were as follows:

EXPERT

1. John Minasian
2. John Simone, Jr.
3. Nate Rambo
4. John Gorham
5. Chris Spangenburg

NOVICE

1. Bob Mearns
2. Egmond Von Websky
3. John Simone, Sr.

"In addition to the flight awards, honors were bestowed for the best

scratch-built helicopter and for the best scale job. Charlie Gilbert, well known for his scratch-built ships, took the former award. Ernie Huber won Scale with a magnificent replica of a Navy rescue version of the Bell Twin-Jet based on the Graupner kit. The model was one that Ernie used for the movie.

"Generally speaking, the equipment used was overwhelmingly Kavan Jet Ranger. An exception, was Spangenburg's original chopper built with Du Bro mechanics. This was an attractive and fine flying ship which resembled a Mattel

Continued on page 69



Beautiful Schluter "Gazelle", built and flown by John Simone Sr. and Jr. It met with unfortunate disaster when throttle linkage came off in the air . . . no power, no fly!



Good idea for any contest. John Gorham took time off from competition to give close-up demonstration of helicopter and control mechanism to interested spectators. We should do more of it.



Seen at the Lake Charles Nats, Add Evans' 12 foot span J-2 Cub dwarfs the J-3 Cubs of Charles Viosca, left, and Hazel Sig, right. Add's monster was powered by a geared Webra and was 100% realistic in flight. Read about scale effect on page 22.

'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

● Glenn Carter, Walnut Creek, California, in his newsletter for the Northern California R/C Society, proposed the following motto for Sport Scale: "To duplicate full scale aerobatics with R/C aircraft in a realistic manner that is challenging for the contestants, as well as interesting for spectators."

Well, since he asked us to comment . . .

In our opinion, there is one thing wrong with this concept of Sport Scale . . . and perhaps it's because the name

"Sport" is misleading. This particular concept emphasizes aerobatics, whereas the original idea was to make the category, a scale event with *de-emphasized* detail. The proposed concept narrows the subjects to aerobatic types only, and eliminates everything else.

The idea of Sport . . . Stand-Off . . . or what-have-you Scale, was to remove the discouraging aura of super-detailing, so that *all kinds of aircraft* could be built and *flown*, with the emphasis on the latter. Given this, a modeler could

tackle most any scale project, be it anything from a Pou de Ciel to a B-36, and fly it for fun, amazement, and competition. Now then, if these models must compete in aerobatics only, they will never be built. The challenge of recreating unusual, little-known, or complicated aircraft and making them fly realistically, will be destroyed.

Actually, this proposed Sport Scale motto applies perfectly to Jerry Nelson's NSPA, and if the biplane limitation is removed (It took a lot for *me* to say that!), it could suit the requirement exactly . . . scale aircraft that are logical for aerobatics.

Taking it a little further, we feel that Glenn's suggestion, though going in the wrong direction by itself, actually has helped to bring about a clear definition of the scale categories we need for competition.

1. Super Scale. This is our current AMA Scale, and as such, is for those few modelers who wish to create the museum quality scale aircraft that so many of us envy, but couldn't duplicate for all the tea in China.

2. Flying Scale. This is currently called Sport Scale, or Stand-Off, or what-have-you, and if not allowed to get complicated and super-finicky, should become the mainstay of R/C scale modeling. Its aim should be the building and



A "phlock" of Phoenix came to Hutchinson, Kansas for the Master's Tournament that didn't happen. The popular design by Don Lowe is kitted by Airborne Associates.



Scratch-built Scorpion II helicopter by Al LoBaito, vice president of the Richmond Model R/C Flying Club, of Staten Island. Photo and info by Paul Tumminia, Brooklyn, N.Y.

flying of scale aircraft that look and perform like their full size counterparts.

3. Aerobatic Scale. This category would provide the outlet for the modeler who is primarily interested in aerobatic flying. The choice of subjects should be limited to models of aircraft that are known to be aerobatic, or of aircraft that would be judged capable of aerobatics as is, or if slightly modified. In deference to Jerry's NSPA and our own obvious leaning to biplanes, this class could have a separate multi-wing category.

With these three classes, we would have something for the three basic types of scale modelers; the patient detailer (Super Scale), the gung-ho flier (Aerobatic Scale), and the combination modeler (Flying Scale).

There, aren't you glad we've got it all worked out?

Before getting off the subject of scale . . . one more point. Our pet peeve is to see a scale model . . . be it R/C, F/F, or C/L . . . flying without a pilot at the controls. To us it is completely unthink-

able that this situation has been allowed to go on, uncorrected, for so many years.

We're not advocating complete pilots, with arms, legs, flying togs, goggles, freckles, etc. but *something*, even if it's only a profile! This applies particularly to R/C and C/L planes which can and do operate close enough to the modelers, judges, and spectators, that a pilot could be perceived, if there was one! Nothing looks more ridiculous or spooky than to see an otherwise beautifully detailed R/C scale ship taxi realistically up to the parking square, come to a braking stop, and then sit there with an empty cockpit!

As we said previously, the pilot should not be judged. In fact, in Super Scale for example, it (he, she?) should be removed for the static judging so as not to interfere with scrutinizing the cockpit. But, the plane should not be allowed to *move under its own power* without a pilot!

At this time, we believe the only event requiring a pilot is Jumbo Scale, originated by the Flightmasters, Los



Bill Rohring watches, while daughter Becky flies to 2nd place at DARTS R/C glider contest, with Olympic 99. Angeles, California.

Incidentally, MODEL BUILDER's own Parcel Post Proxy Peanut Contest requires as much of a pilot, profile or otherwise, as would show from outside the cockpit or cabin.

* * *

Dick Allen, Endicott, N.Y., a long-time R/Cer and former Nationals winner, submitted several proposals to the Scale Contest Board, and for one of them in particular, we recommend that you urge your district representative to vote positively. This proposal would require mufflers for Sport Scale models. Since AMA still refuses to make a blanket requirement for mufflers on *all* model aircraft in sanctioned competition, despite continued loss of flying fields due to engine noise, the least one can do is to chop away at the problem a little at a time.

A very apt saying, that we've heard



More action at the DARTS' contest in Dayton, Ohio. Jerry Mrlik launches his son's Astro Jeff.



Charles Schultz waits to launch while John Bachman watches for a clear sky. Contest Director Larry Gleason stands by the winch.



Dave Katagiri flying his E-Z Juan (Midwest kit, design by Le Gray) near city of Wenatchee, Washington, in the heart of apple country. Columbia River below.

repeated more and more in recent months, goes something like this, "Flying with a muffled engine is better than not flying at all."

Though we're sure Roland and Bob Boucher, of Astro Flight, wouldn't mind at all, we may be *forced* to take up electric power.

* * *

Received a letter addressed to AMA and forwarded to us as R/C Contest Board Chairman. The writer had recently flown in a pattern contest for the first time since the old Class I, II and III days. He flew in Class A, and found himself competing against 20 entries, while Class B had 8 and Class DN and DE had 4 each. It seemed to him that Class A consisted of a bunch of "trophy hunters," and he was alarmed to find that the Class A and D contestants were flying the same type of airplane.

Well, perhaps our friend has been "out of it" a little too long to realize what has taken place since the bygone days of "Rudder Only," "Intermediate," and "Multi." As most of us know, who have stayed with it through the years, the present system has the following advantages:

1. A reclassification system that prevents a winner of a few small contests in the less skilled classes from being forced into the higher skilled classes before he is ready.

2. A reclassification system that won't allow a consistent winner in less skilled classes to sandbag year after year, and therefore kill interest in these classes (His contest was a perfect example, with 20 in A and only 4 in DE).

3. A system that allows you to use the same airplane in all classes, instead of having to build a new one and/or buy new radio equipment each time you move up. Also, the same basic maneuvers are used in all classes, and are accomplished in the same way. The more skilled classes simply call for more complicated combinations of these basics. In contrast, the old Class I, II, III system called for a complete new repertoire of skills in order to fly with any success in each of the classes. We guarantee that it would take many months of practice for a top Class D expert flyer to handle a hot, 60 powered, competition Rudder Only aircraft any where near as well as someone like Jackie Gardner, yet this was supposed to be the beginning com-

petitors class . . . no way!

An interesting thought did come out of this letter, however. It is possible that we need a Sub-A Class, if you will, for almost raw beginners in R/C who want to fly a kind of pattern competition? Do we need a 3 channel class (rudder, elevator, throttle) with a .29 or .35 maximum displacement engine? It wouldn't be difficult to specify a class such as this, and there are many kit aircraft and engines that could qualify, and are already in use in R/C clubs throughout the country.

Let us hear from you out there. Tell us what you think about a Sub-A Class.

NSRCA DOINGS

The National Society of Radio Controlled Aerobatics is about to hold its first election of officers. The following candidates have been selected by the Nominating Committee, made up of Don Coleman (Chmn), Don Seals, Jim Spurlock, and Ed Keck.

For President: Joe Bridi, Jimmy Grier, and Ed Izzo.

For Vice-President: Steve Helms, Don Lowe, and Walt Monson.

For Secretary/Treasurer: Sally Brown. Since there were no other nominations for this office, a write-in vote will be allowed.

Rhett and Marjorie Miller, whose son you may have heard of, were scheduled to mail ballots to NSRCA members before the first of November. A great deal of thanks should go to Rhett Miller Jr. for volunteering his services as "Temporary" Chairman, newsletter editor, and whatever else, of the NSRCA during its infancy. Without his efforts, it is doubtful that the organization would have held together long enough to get itself off the ground.

Now that things are rolling, it behooves all R/Cers interested in aerobatic competition to join the NSRCA and give it the strength it needs to obtain proper recognition with AMA. Also, with the end of the year coming, it is time for all members to renew their commitment for 1975. Until the office of Sec/Treas. is established, send your \$4.00 dues for renewal or new membership to NSRCA, c/o Rhett Miller, Jr. 3039



As pylon racing events become "nationalized" and the choice of designs becomes stilted, other events come along to renew interest for the "grass roots" modelers. Fortunately, 1/2A racing still has that flavor. Witness this LIT Special by Jerry Holcomb, Vancouver, Washington.



Jim Whitley and Phil Kraft try to figure out when the next rain squall is going to attack during the Lake Charles Nats. Jim now representing Kraft in southeastern states.

Lakeshore Dr., Tallahassee, Florida 32303.

The Hutchinson, Kansas Masters Tournament fiasco brought to a head the very strong need for organized representation to AMA of radio control pattern competition flyers, and the NSRCA is now in a perfect position to pick up the ball. John Worth, AMA's Executive Director, has indicated that an organization such as NSRCA is strongly needed by AMA, and that it (AMA) will be only too happy to cooperate.

So, gentlemen, the opportunity is here right now . . . ready and waiting. In our best Confucianist language, we say to you, "Shout together or get off the pot!"

TRICK TRANSMITTERS

Several radio manufacturers have been making modifications to transmitters for some of their customers. These mods are usually in the form of instant idle buttons, slow roll rate buttons, dual rate switches (normal or half servo movement rate and total travel), etc. It's even possible to program 4-point rolls and the like.

Some of the top D Expert competitors have been using the mildly modified transmitters in contests for the past couple of years, and no problems have developed. However, if it was to go beyond certain basic modifications, the question of "how far" could become a problem.

The National Sport Pattern Association has already faced this question, and has decided against permitting any use of special transmitter gimmicks in competition. Only the standard levers and trim functions will be allowed.

When making or changing rules for AMA, the R/C Contest Board must consider the effect on hobby manufacturers and not make arbitrary changes or innovations that will cause needless problems for the industry. Conversely, before



Jay Christie launches his new Astro Flight AS-W15 from top of Badger Mountain, east of Wenatchee, Washington, during Red Apple Flyers Slope Soar-In.

manufacturers take any serious steps toward automation of production transmitter equipment, they should keep these factors in mind and check out the possible effect on competition rules.

POLYHEDRAL OR AILERONS

When we first started fooling around with proportional R/C gliders back in 1965, Walt Good advised us that as far as he was concerned, ailerons were strict-

ly superfluous, and not worth the extra trouble. With enough dihedral, straight or poly, roll response and stability are more than adequate without putting "them flapping things" on the wings. Thus we got a kick out of reading the following comments by Chet Tuthill, as published in the Coffee Airfoilers newsletter. Incidentally, Chet is working in LSF Level IV. *Cont. on page 00*



Photo by Roy Stephens of Luther Kindel's Stitts Flutterbug. Both are members of Tri-Cities Aeromodelers, Kingsport, Tennessee. Ship is powered by OS .15.



Original flying wing design by Ken Sthur, seen at Wenatchee Soar-In. Cab covers radio gear which is mounted in center section of wing. Note thin tip section.



Ski trails make interesting patterns in the snow and form a backdrop for Hank Yates as he does some mid-winter flying. Field is 960 acres of hospital property (!). Note twin and trike geared traces.

DO IT ON THE SNOW!

By PETE WATERS

No need to discontinue flying just because the white stuff is on the ground. With warm clothing, a little anti-freeze (?), and keeping in mind the shorter battery life in cold weather, have a go at winter flying!

● On October 1st each year, Michigan moves to within the Arctic Circle and many R/C modelers hibernate to their basements to build for the next year's flying season. But there are a few hardy types in our club who have fun winter flying.

The skis described in this article have been developed over a period of 5 years and have evolved into easily-built, extremely functional and quickly installable units that really work on snow. If you look at their design you will see that they fit right over the usual wheel axles, and have two-thirds of their area in front of this pivot point. They are held at the correct angle by the vertical spring wires that allow them to "work" over the snow, yet are stiff enough to prevent movement while flying. The weight of the plane is spread over the

ski bottoms such that there is half as much force on the front as there is on the back. This lets the nose of the ski ride very easily up and over surface irregularities with good steering. So, build yourself a set for your trusty sport plane and be prepared for a new experience in R/C flying.

The sizes on the drawing are only guides, and can be varied for the material available to you. For instance, it is un-

economical to get a single 3 inch wide piece from a 6 inch sheet, so as long as you cut to about the sizes given, it will work out all right.

Use Fig. 2 as a guide to cutting the 1/8 inch ply blanks. This will do for all sizes as it has the necessary meat to take the bending, hold the curve and still be stiff enough for the large skis. Sand the edges and back end smooth, with just the sharpness knocked off the corners.

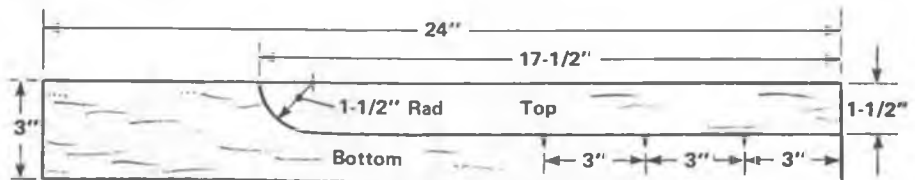


FIG. 1

BASIC SIZES OF FORMING BLOCKS



The stalwart trio of Pete Waters, Dave Timcoe, and Harold Liddell, (l to r) with 2 Jennies, a Champ, CG Falcon, and Lanier.



Trike gear installation on Senior Falcon. Main skis are 12" long, and the nose ski is 8. Note springing linkage.



Photo shows mounting of 12 inch main ski on Lanier "Rubber Ducky."



Veco 35 powered DeBoit Champion uses 18" skis. Note springing set-up.

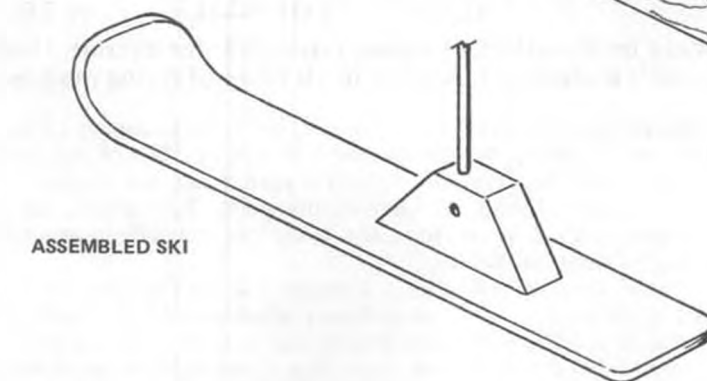
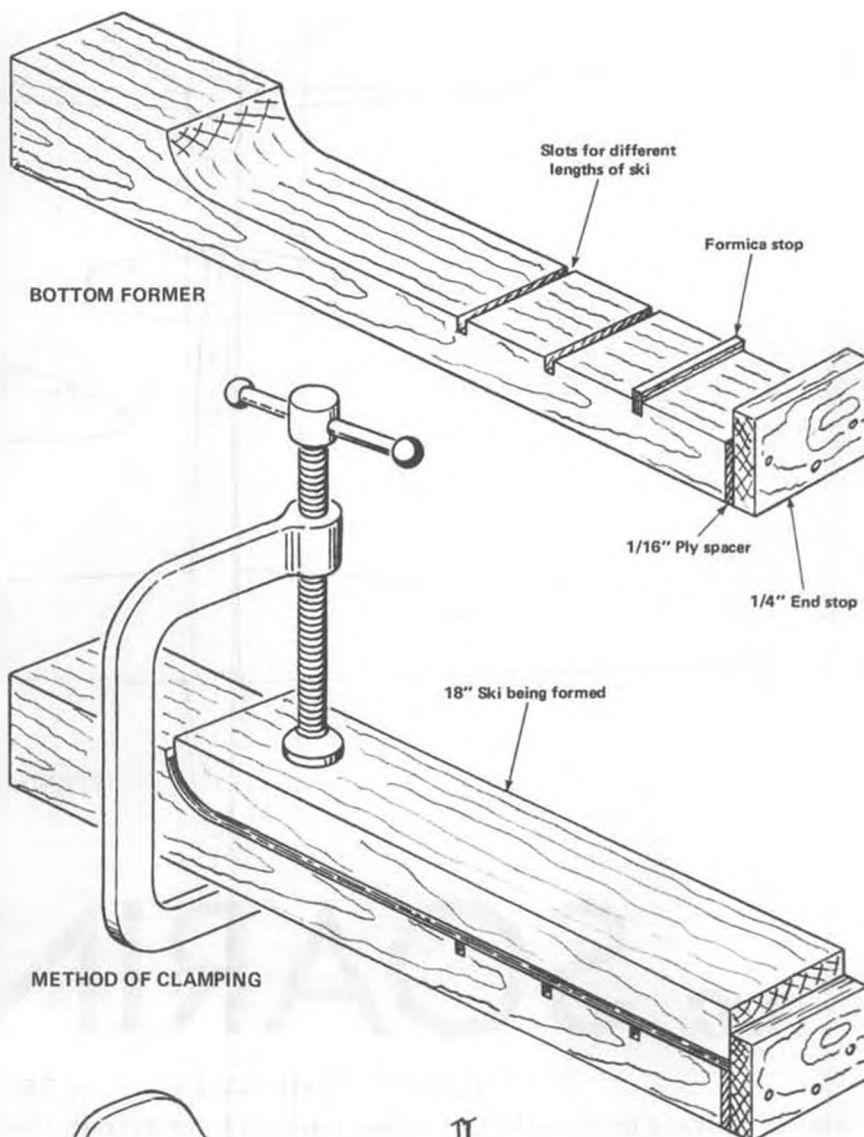


FIG. 2 1/8" PLY BLANK SIZES

	Length	Width
Small	12"	2"
Medium	15"	2-1/2"
Large	18"	3"
Trike - Nose	9"	2"
Trike - Mains	12"	2"

You may need the help of a clubmate to make the bending former. Start with a hunk of lumber that will enable you to have it finished to 3 by 3 and 24 inches long. Now mark out the profile shape of ski as shown in Fig. 1, and very carefully band saw along the line to produce 1/8" Dia. hole for springing wire.

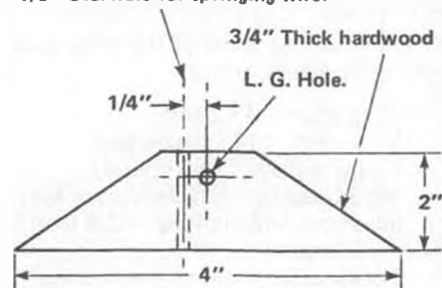


FIG. 3 TRUNNION BLOCK

a good even cut. You can sand down some of the minor irregularities, but a wavy surface is going to give problems in clamping, so saw carefully. Next, mark and cut the slots across the bottom block to take the formica stops. Go deep enough so that these stops will project about 3/32 above the surface and still

allow the top block to clamp tightly. Make and add the end stops. The 1/16 ply packing is needed because the 1/8 inch ski blank will move the top block back slightly.

Fill a large saucepan with about 1 1/2 inches of water, heat until boiling, and

Continued on page 71

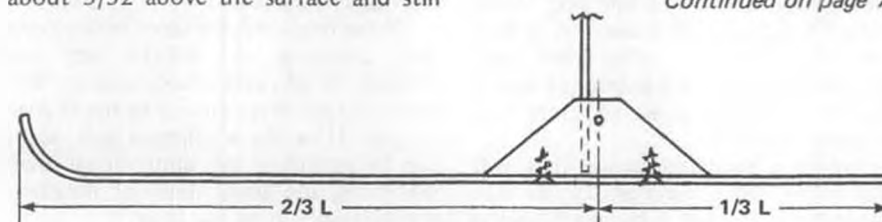
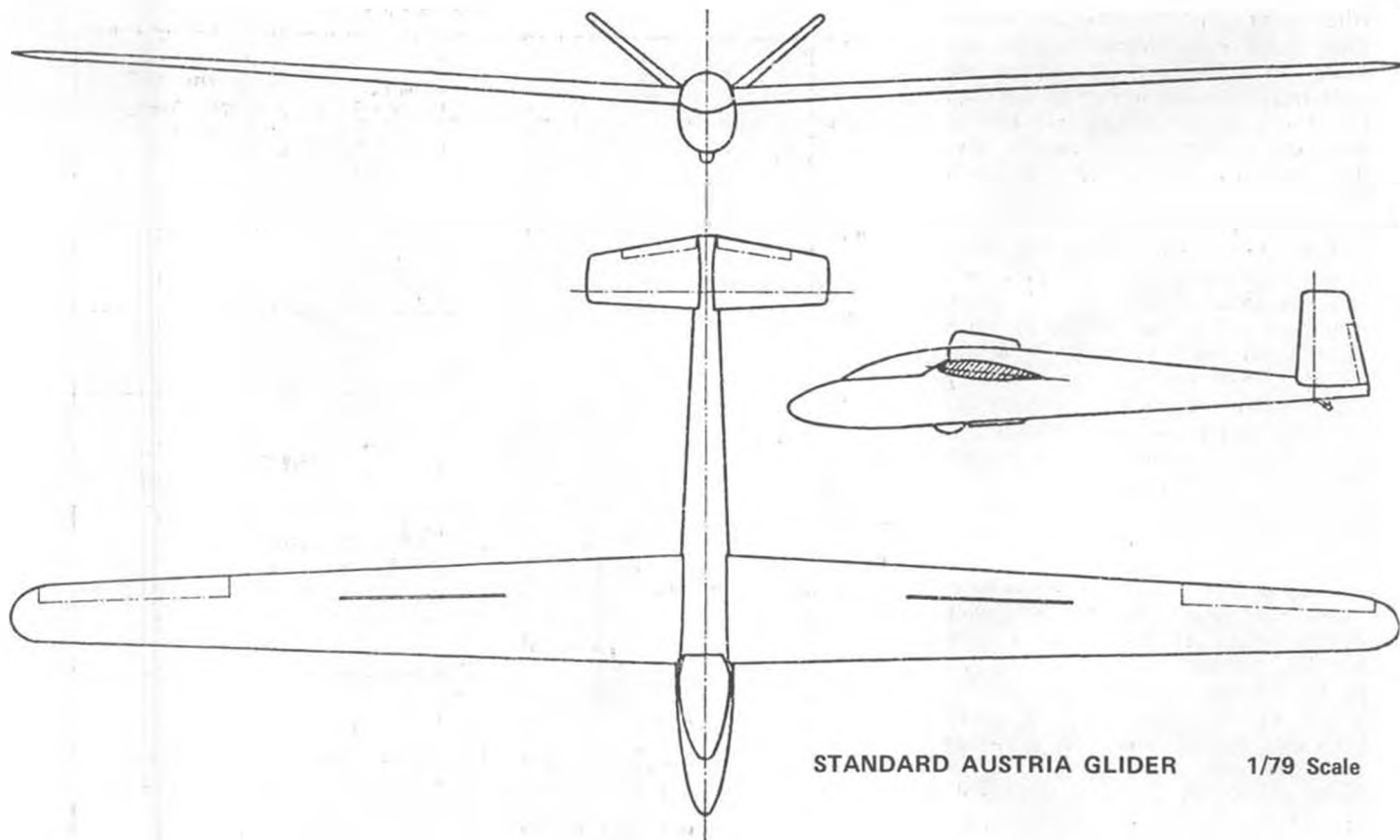


FIG. 4 TYPICAL SKI ASSEMBLY



STANDARD AUSTRIA GLIDER 1/79 Scale

R/C SOARING

By LE GRAY

THE EFFECTS OF SCALE . . . by TED OFF

An interesting study on the effect of scaling down full-size aircraft. Helps to explain a lot of things we have observed but couldn't understand. Applies to all types of flying models . . . as well as R/C sailplanes.

● The classroom was quiet as the geology professor droned on. Suddenly, he pulled a 22 pistol from under his desk and fired it . . . into a bucket of mud. The not-so-drowsy-now students jumped awake and rushed to the front of the room. Sure enough, there was a perfect meteor crater formed in the mud.

This scene happened 25 years ago on a small, Western campus. No one had yet been to the moon, but even then geologists were asking many questions that could only be solved with models.

But, what has this to do with radio controlled gliders? Lots. The professor's demonstration illustrated his talk on geological models and how to make them. In this instance, he was working with a scale of .00005 full size. Model aircraft designers don't use this drastic a reduction, but the effects of scale (size) do influence the behavior of model sailplanes . . . hand powered craft too, for that matter.

How is a model designed that will behave the same way as its full size counterpart? Or, can it behave the same way? What changes in flying ability will

or should occur if the Graupner Cirrus is increased in size by 50%, or reduced by 50%? The answers are not obvious.

Before discussing R/C gliders, let's look at a few other scale effects around us:

1. A mouse can be thrown out of a second story window and it will land on the ground and run away. Instinctively, we know that if we could throw a horse out the same window, we'd end up with a dead horse.

2. Considering two animals of different sizes but similar shapes, the movement, voice and heart beat of the smaller will have higher frequencies.

3. A model airplane engine will run at higher rpms than will the engine of a man carrying craft.

These relationships serve to illustrate that changing an object's size also changes its physical characteristics, but in general *not* proportional to the change in size. How these changes will occur can be predicted by dimensional analysis using the basic units of measurement: length, mass and time.

To make this discussion more tan-

gible, let's compare a full size Standard Austria Sailplane and two models: one at 1/5 scale and the other at 1/8 scale. The Standard aspect ratio Austria is a good choice, not just because it's a pretty V-tailed ship, but because it has a relatively low aspect ratio, and is constructed of wood and fiberglass like our models (Fig. 1). It was designed by Ing. Rudiger Kunz in 1959 as an F.A.I. Standard Class, high performance sailplane. Because of its aspect ratio (16.7), it can be scaled down to model size with reasonable fidelity. As a matter of fact, it has been kitted a couple of times as an R/C model.

Let's look at some of the basic data on the Standard Austria:

Wing Span — 49.2 feet
 Wing Area — 145 square feet
 Flying Weight — 660 pounds
 Wing Loading — 4.5 lbs/square foot
 Minimum Sinking Rate — 2.3 feet/second
 Forward Speed (at minimum sink) — 43.5 miles per hour
 Glide Ratio (at minimum sink) — 28.

What we're going to investigate is how these parameters change as we scale down this full size glider. For our two scale models, what will these numbers be? The answers we get may not be absolutely accurate because factors other than scale size are involved, but they'll sure be in the right football stadium.

WING LOADING

Let's start this discussion with wing loading. That's a number that gets knocked about all the time. My glider may have a 7 oz./sq. ft. loading while your's weighs in at 11 oz./sq. ft. Mine is a light thermal machine. Your's is a dog that will only fly in a 40 knot wind off a stormy sea cliff. Wrong! We forgot to mention size. A glider with a wing area of 10 sq. ft. and 11 oz./sq. ft. loading might be a great thermal machine. I have a 150 sq. in. glider (control by Ace's pulse system, obviously) with a 7 oz./sq. ft. loading that is good for slopes only.

Man carrying gliders fly with wing loadings of up to 100 oz./sq. ft. The Standard Austria checks in with 73 oz./sq. ft. A hand launched glider is overweight with a loading of 3 oz./sq. ft. Let's use our dimensional analysis to see why: The wing area (A) of a glider varies with the square of the span. We'll call our span ratio or scale factor Sf; S₁ the span of our model, and S₂ the span of the prototype.

Then: $S_1/S_2 = Sf$ and $A_1/A_2 = Sf^2$

Plug in some values, and these ratios check out.

$S_1/S_2 = Sf$

$49.2/9.83 = 5$ (or 1/5 scale)

$A_1/A_2 = Sf^2$

$145/5.8 = 25$ (or 5²)

Using the Standard Austria example, by definition the 1/5 scale model has Sf = 5 and the 1/8 scale model has Sf = 8. While numbers such as 5 or 8 for Sf makes the sample formulas easier to work, though the true model scale values will always be the reciprocals, 1/5 or 1/8. Purist can invert everything. A little math and unit conversion gives us a wing span of 118 and 74 inches respectively for the two models and wing areas of 836 square inches and 327 square inches.

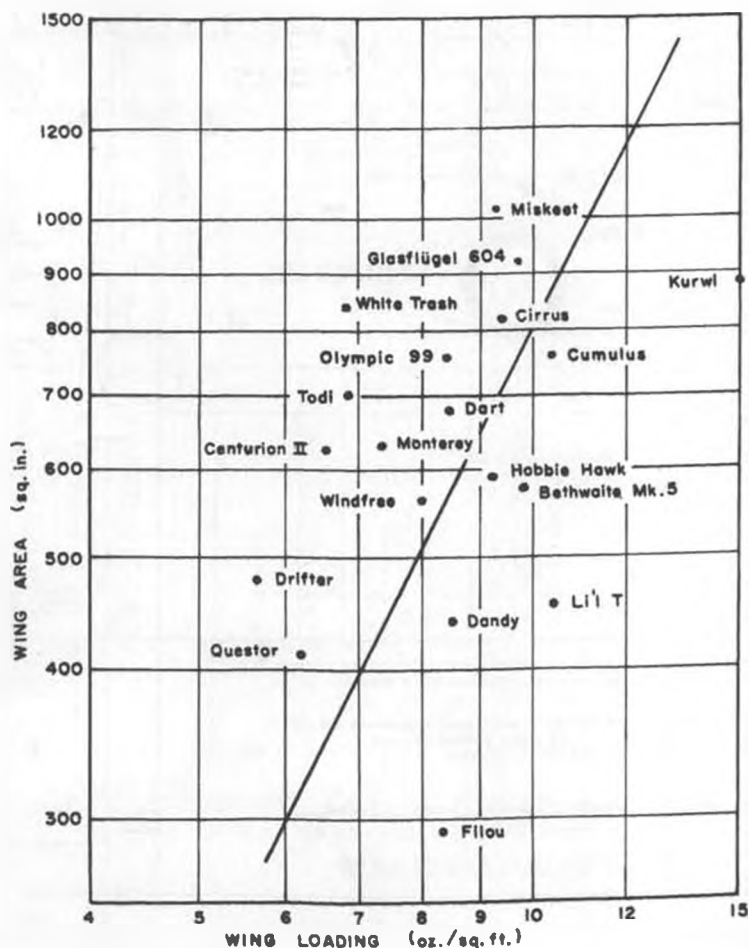
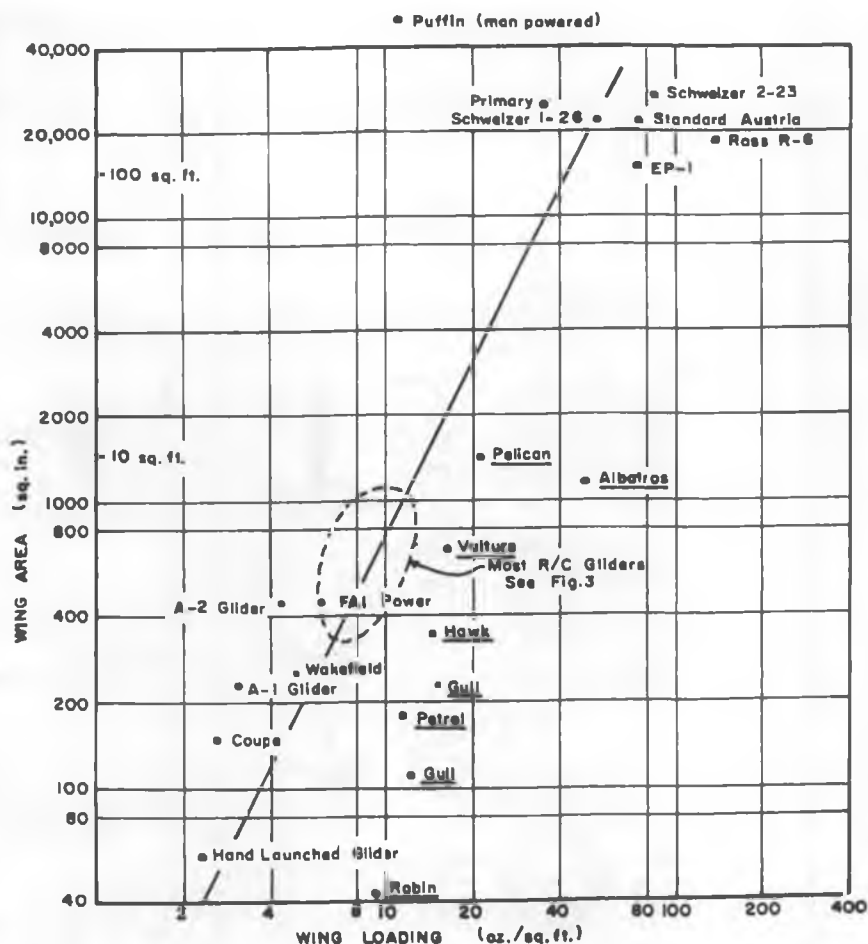
The weight of a body (W) varies with the cube of its size. For a model then:

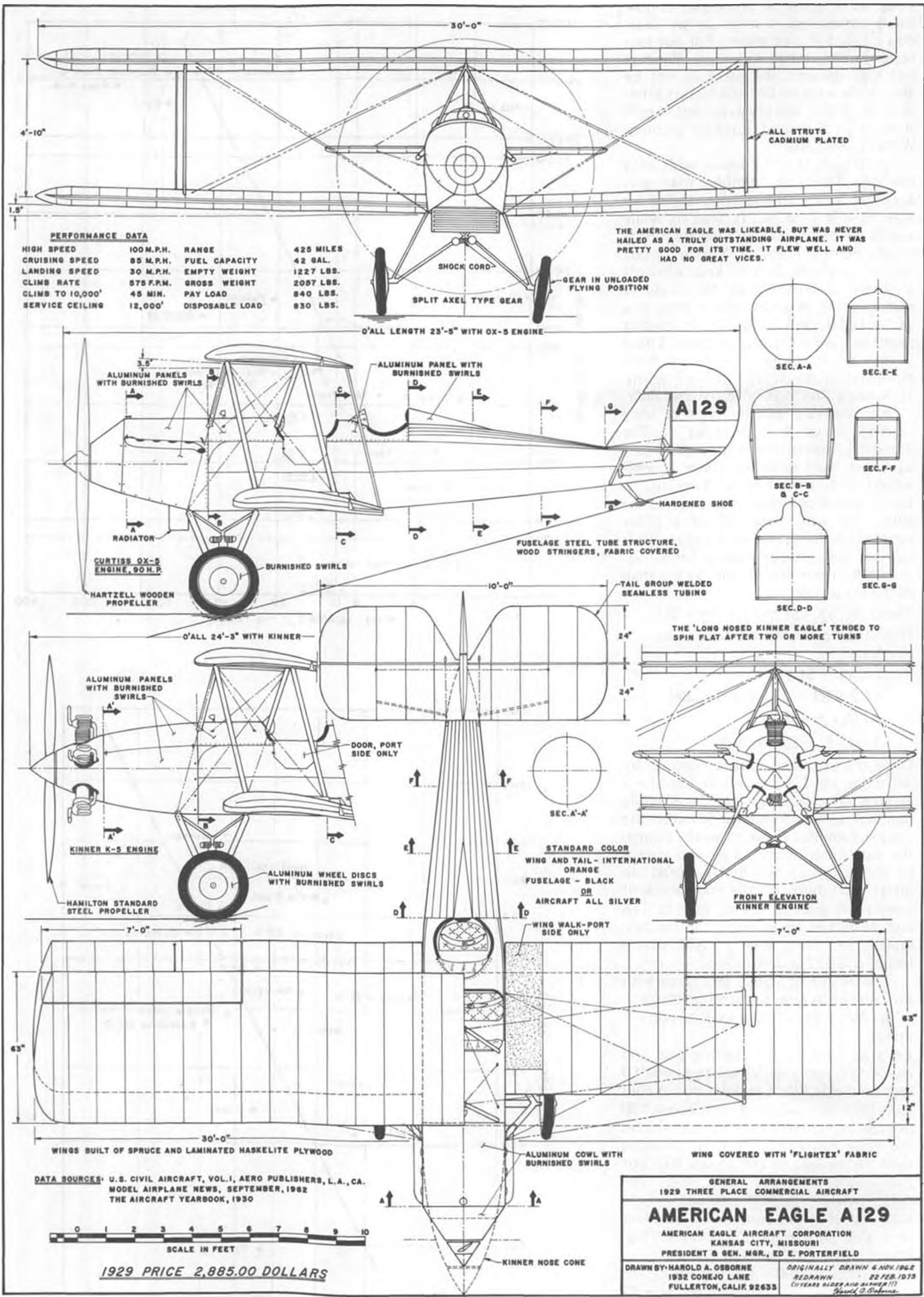
$W_1/W_2 = Sf^3$. . . Did we lose you there?

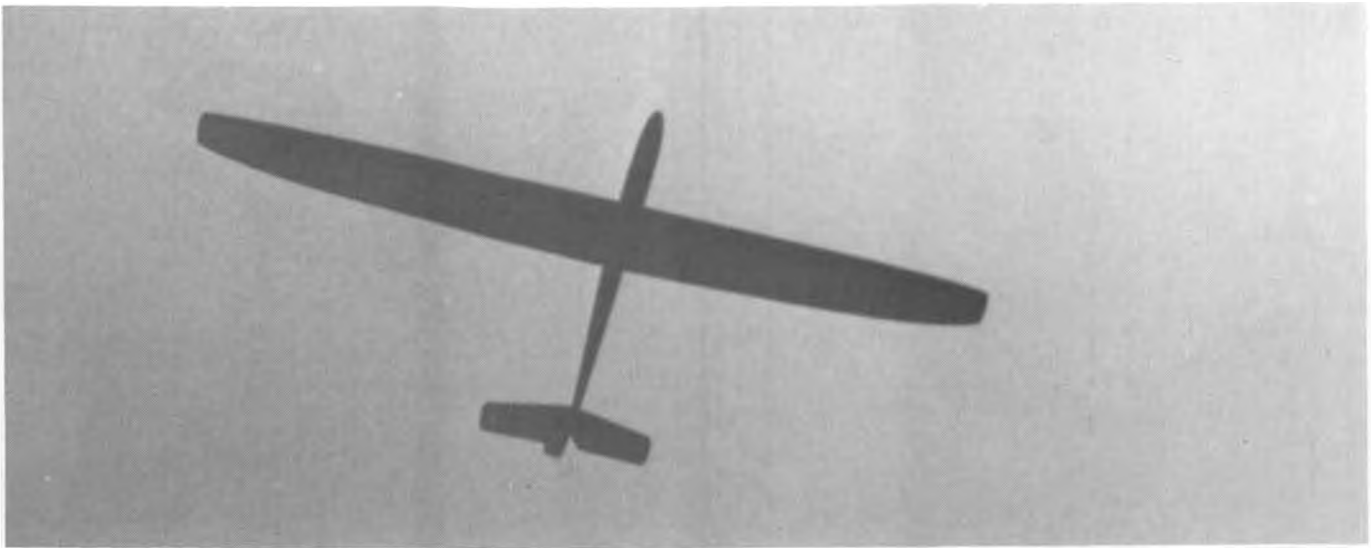
Let's go back to the starting gate and check that formula. Visualize a cube 10 feet on a side. We'll make it out of concrete because concrete weighs about 100 pounds per cubic foot and that makes the math easier. Each side of the cube then has an area of 100 square feet, but the volume is 1,000 cubic feet. The cube weighs 100,000 pounds. A 1/5 scale model of this cube would be 2 feet on a side and weigh 800 pounds. Plug-

$100,000/800 = 125$ (or 5³)

Continued on page 62







PRODUCTS\$ IN USE

THE HOBIE HAWK . . . by BILL NORTHROP



MB's editor launches the Hobbie into a 25 mph blast at the La Paz Road slope site, which is about 10 minutes from famed El Toro Marine Air Base, and 25 minutes from MB's office.

● The Hobbie Hawk is a radio controlled glider which is produced by the Hobbie Model Company, 2026 McGaw Ave., Irvine, California 92705. It is available through hobby dealers in two forms: as a complete airplane, needing only an hour or two of radio installation, or as a semi-kit, which must be covered and finished in addition to the radio installation. The ERF (Entirely ready to fly) model sells for \$129, and the ARF (Almost ready to fly) model sells for \$89. If your dealer doesn't stock the Hobbie, write direct.

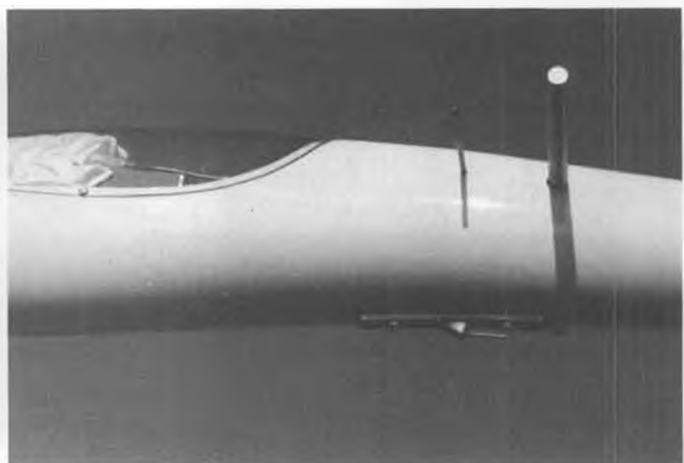
The Hawk spans about 98 inches, weighs around 32 ounces less radio gear, has 590 square inches of wing area (4.1 sq. ft.), and the wing loading, with 8 ounces of radio, is 9.2 ounces per square foot. The ERF model comes in all red, white, or yellow, with painted fuselage and Monokoted wings, flying stab, and rudder.

The fuselage is a composite of 3 different products of modern chemistry; the nose cone back to the wing trailing edge is rotationally molded of cross-linked polyethylene, the tail cone is 6 layers of pre-impregnated epoxy fiber-

Continued on page 64



EK brick is an easy fit in the Hobbie Hawk cockpit. Complete radio installation took less than an hour . . . including two Martinis!



Sturdy wing rod and alignment pin are shown . . . also adjustable Scott Research tow hook. Hankie held temporary coin ballast!



Harry Lowe, Sunnyvale, California, launching his Ontario Modelcraft Wasp at Taft flying site. How's that for flying space?



PLUG SPARKS

By JOHN POND

● Hello there, newcomer to the Old Timer Movement! Welcome to the fun! Once you try it, you'll like it! Little confused on the proliferation of events, huh? Well, relax, "Daddy Warbucks" is gonna try to straighten you out.

As Frank Ehling (AMA's Technical Director) pointed out in conversations with the author at the recent Lake Charles National Model Championships, we have been "talking to ourselves." With this column being circulated worldwide, it is only natural that the newcomer would ask about the rules that

seem second nature to the experienced Old Timer fan.

First off, before we launch into any dissertation on rules, if you are new to this phase of modeling, write to this columnist, in care of this magazine, requesting the latest Society of Antique Modelers Rule Book. There is no charge but please enclose 20 ¢ postage, as this little item can get expensive after a few mailings. While the SAM Rulebook fully spells out every regulation, the writer can quickly outline what all the fun is about!

In some respects, building old time models is like building a scale model. . . you are actually building an exact size

replica of the old free flight models. Location of thrust lines, amount of dihedral wheel size, etc., must be conformed with. Construction should be as close as possible to the original. If one uses sheet sides on a fuselage instead of the original built-up structure, he is disqualified for not conforming to the spirit of Old Timer building. Generally speaking, if you follow the published plan, you will have no trouble. If in doubt, write, we'll be glad to straighten you out.

As for the events, this is something that has always amazed the author, i.e., the way so many variations have sprung up and become extremely popular. The basic events conform to the old 1940



Our Eastern advertising rep, Walt Moucha, and his R/C Powerhouse at Middlesex County Model Airport, Piscataway, New Jersey.



Jerry "Make me famous" Otis flies his Miss Delaware on ignition and has trouble-free R/C operation with his Orbit radio.



Another version of the ageless Korda Wakefield winner, this one by A. D. Coe, from Kansas. Is unbeatable in OT rubber, but also competitive in contemporary Unlimited Rubber.

NAA gas model rules in that there are three size classes; A, B, and C. These are all limited engine run contests, with length of motor run being fixed by SAM rules or by the prevailing wind conditions at the contest site. Three or five minute flights are the maximum allowable time for any one flight; there being three flights allowed per event.

Some of the more popular developments of the Old Timer movement have been; the revival of the Texaco Event, establishment of reduced size old timers powered only with Cox .020 engines, a 30 second event for Antiques published and kitted prior to 1939, and the new R/C events.

The O.T. F/F with radio control has become extremely popular in the East where it originated. The tremendous appeal here is that the models can be flown in the very restricted areas so prevalent on the East Coast. R/C rules closely follow the F/F O/T rules, except that scaling in size is permitted. Other than that, if you suddenly find yourself in a very crowded flying area with your wide ranging free flight, the obvious step is a quick conversion to rudder and elevator control.

Anyway, that's what old timers are basically about. Of course, there are weight rules and power restrictions, but you can dig these out of the Rule Book. If you build your model according to plan, you should qualify. After all, most models were designed to conform to the 1940 rules in their day!

While the foregoing may be a little boring to the average reader of this column, you must remember there are always many new fellows coming into this game asking what the rules are. There is no doubt in this writer's mind that we will have to repeat this info in another year. Anyway, let's get on with the description of the fun.

NEWSLETTERS

Just received the latest copy of the

"Dope Bucket" put out by the Utah State Modelers (USA!) of Salt Lake City. They have just started a new S.A.M. Club called the SLAM Club (Salt Lake Antique Modelers). How about that? SCAMPS eat your heart out!! With O/T activity on the increase all the time, it was a natural that a schism in the USA Club would develop.

Incidentally, this club has been staging old timer night-flies up to 4 a.m. in

the morning! With lights attached to the landing gear, this has turned out to be real fun. How about staging old timer night flying at the next Free Flight Championships when they hold contemporary night flying? Better yet, the writer will go out on a limb right now and guarantee no less than one and at least three trophies if the entries warrant it. Doesn't that sound wild?

O.T. CONTROL LINE

Before the writer gets burnt at the stake for being a heretic to the cause of O/T free flight flying, the latest developments from the Chicago area indicate a control line contest for old timers was being held in October. Hey now! Can't you see those Fireballs, and others like it, whizzing around? Just as soon as the writer hears the results of the meet and how it came off, it will be carried in this column. After all, old timer flying is just like women, "they're all good, it's just that some's better!"

CONTESTS

Received a good report on the original Stockton O/T meet from Dick Douglas, C.D. of the AMPS, sponsors of the meet. The writer did attend this one, and can vouch for the abundance of excellent weather.

Held in conjunction with the Fresno GMA Annual, this contest drew excellently. Too bad more of the Southern



PHOTO BY BOB OSLAN

Lee Freeman, a member of the SCIFS, with his Scientific "Varsity" at Taft. Is he looking for a "Trash Mover" thermal, or trying to see what's coming on the next page? Probably a can of beer!



Master craftsman and superb mechanic, Noel Barker, of England, readies his Forster 99 powered Vulcan.



Spiro Nicholaw flew his PB-2 for a long time as a free flight before adding radio control. Funny thing is he still loses it on occasion!



Randy Wilson's Playboy Sr. at the South Glastonbury, Conn. field. One of the big O.T. meets in the east.



At the other end of the size range, this D.C. Dart powered Baby Playboy by Bill Kirby, Gainesville, Fla., at Glastonbury contest.

THERMAL THUMBER

OLD TIMER Model of the Month

Designed by: Maurice Bryceland

Redrawn by: Phil Bernhardt

Text by: Bill Northrop

● The May 1941 issue of M.A.N. featured a construction article on this Class A gas model, the "Thermal Thumber," designed by Maurice Bryceland. Prior to publication, numerous copies had been built and flown by modelers in the metropolitan area of northern New Jersey, New York City, and Long Island.

On November 17, 1940, Thermal Thumbers took 1st, 2nd, and 3rd at the annual "Frost Bite" Gas Model Contest, sponsored by the Vineland (N.J.) Aeronaughts, at Bucks Flying Field, Woodruff, New Jersey. The second place, in Class B, was taken by one Walt Schroder, a member of the Strato-Bums, of Bloomfield, New Jersey. . . Hmmm. . .

The plans, as published in M.A.N., gave no indication of the "V" cross-section of the aft fuselage, but the accompanying photos included a framework shot which gave the proper shape. Our plans, as drawn by Phil Bernhardt, correctly show this.

Thermal Thumber is excellent for

modern Old Timer pylon class competition. It has lines very similar to the popular Cleveland Playboy, and the construction surely qualifies to be described by that popular time-worn expression . . . "straightforward." ●

Plug Sparks . . . (continued)

California boys couldn't make it! Understand that Otto Bernhardt and his entourage were stranded when the Volkswagen bus blew a crankcase seal.

F. L. Swaney was seen to be gloating over the "old Pro," Sal Taibi. Seems he beat the master at his own game and was rubbing it in but good! Just goes to show, ya can't win 'em all! In all fairness, it must be pointed out that the Alert only beat Sal's Dodger by three seconds in Class B!

Larry Boyer got time off from his fireman duties and barely reached the contest in time to win Class A. That was a fast trip from San Diego! Chris Christenson was second, with John Drobkoff still flying his 20 year old Challenger to third! Some birds never die!

One innovation which seemed to go over pretty well was the use of an 8-foot takeoff board on card tables for the .020 Replica models. Dave Knight seemed to like the idea as he won the event, closely followed by Keith Morgan and Hank

Cohan. Cohan also placed second in rubber behind Jack Quinn, while erstwhile FAI team man, Bill Langenberg, brought up third place.

The big birds (Class C) are always the most interesting to watch, and this meet was no exception. Al Rasmussen and his Zipper topped the field, with Cliff Silva (wheelchair and all) placing second with a Playboy. Surprisingly, Larry Clark beat out the sailplanes for third with his Marsdon 1937 Pacific Coast Champ.

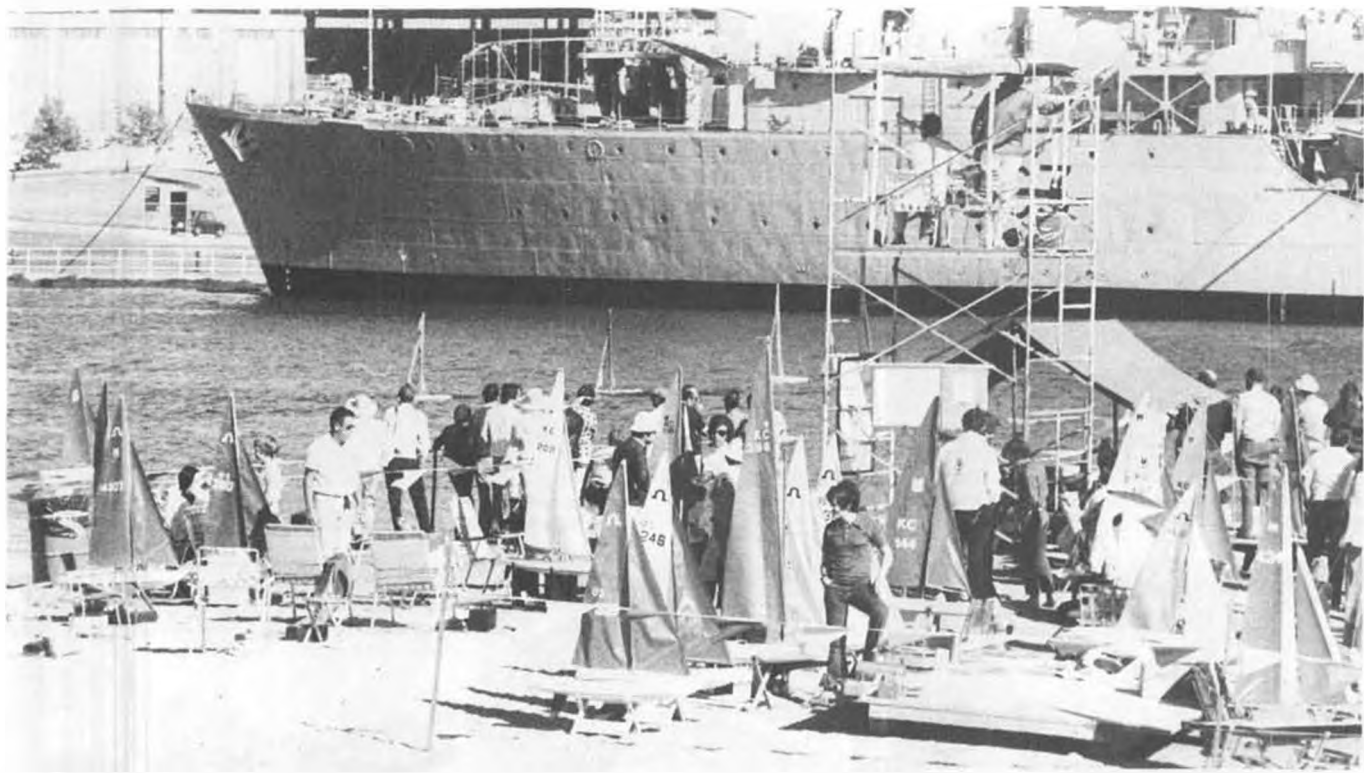
For a two-in-one contest, additional interest was built up by allowing two entries (of different models) per contestant in the same event. This appeared to work out well, as some fellows placed higher with their backup planes.

LAS VEGAS BASH

Jim Adams reports via "Hot Leads" that the Las Vegas O/T meet was the biggest and best yet. This is the meet you take your best girl to (better be your wife!) as Las Vegas offers all sorts of fun for the women. You can really make points around the house!

The two day meet turned out to be practically a one day contest, as the wind came up so strong on Saturday that the more practical fellows called it off after 10 a.m. (This was following a 9:30 a.m. start!)

Continued on page 70



The 50/800 ACCR for 1974 was held at this site in Toronto, Canada. Judges Dick Young and Bill Stooks officiated from this two-story tower. With 45 boats entered, you really got to know the competition. Champ for 1974 was Stan Goodwin, Marlhead, Mass.

STRICTLY SAIL

By ROD CARR

● Continuing our look at mainsails, we might pause for a moment over the battens. These "sail stiffeners" are usually placed perpendicular to the leech and serve to hold the extra roach cut into the sail. Often the battens themselves need to be tailored to allow the sail leech to assume a curved extension of the body of the sail. An easy way to do this is to use the thin plastic rulers found in dime stores. Cut to a shape similar to B in Figure 1. The profile views show

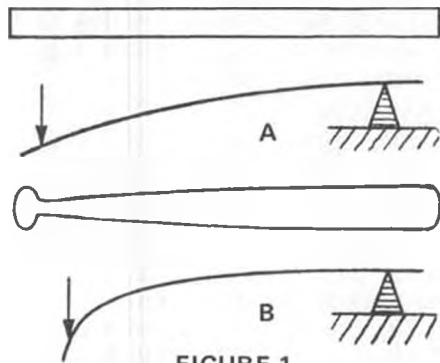


FIGURE 1

the difference in flexibility of the two types. Notice that the A batten does not easily deform at its forward (left hand) edge to match the sail's curve,

while B is most bendy right in front where it counts. The round leading head on B is left to allow the strain of the batten to be evenly distributed to the cloth, thus reducing the chance of poking a sharp point into the sailcloth.

You will probably find that each batten will be different. The ones near the middle of the sail will tend to be fairly stiff, while those near the head will probably wind up being more flexible. In classes like the 50/800, where the roach is allowed only up to 2 inches and batten length is maximized at 4 inches, we often try to reach the maximum allowable roach as near the head as possible to get as many free square inches into the rig as possible. In such a case, we end up depending on the top batten to help support the roach, and it turns out to be a rather stiff one in contrast to a top batten in a sail which has a continuous leech curve.

Spare battens should be carried in your toolbox. Good sail shape can depend on the battens, and if you have taken the time to develop a good set for your main, make some extras so you'll never be without.

Two schools of thought exist concerning battens in jibs. The first school

wants to keep sail area to a maximum, and will use battens to help hold a maximum allowable jib roach out. Most jib batten rules are really quite strict . . . for example, the East Coast 12-meter class only allows 2 inch battens, and since a batten needs to be at least twice as long as the roach it is supporting, we wind up with a 1 inch roach which stands pretty well by itself if attention is paid to leech tension as previously discussed in this column.

The other school shies away from jib battens, claiming extra turbulence which will devalue mainsail performance. I tend

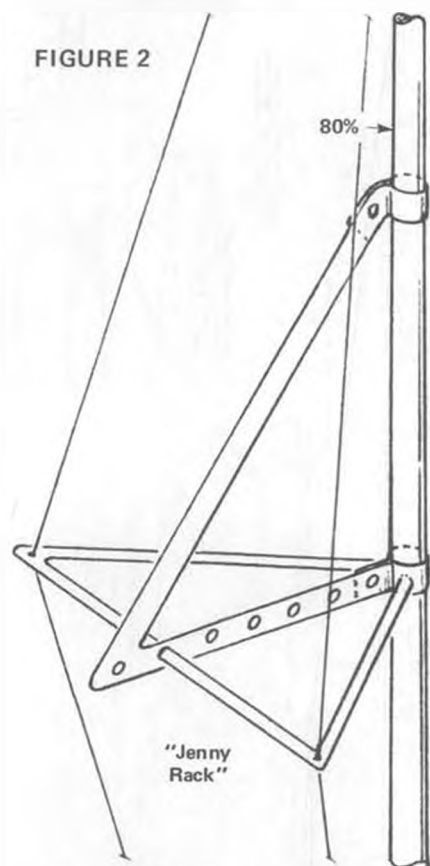


Sandy Littlejohn's Saturday performance at Toronto earned him his Sunday uniform! He's from Altadena, California.



Close work at the EC/12 ACCR. Buddy Black leads John Wing and Rich Matt to windward, pursued by Chuck Wormley. All four skippers were in the 1971 edition of the same event. For R/C yachtsmen, 1971 was the "Good Old Days."

FIGURE 2



toward the latter, but for an entirely different consideration. The gap between the mainsail luff and the jib leech is called the "slot." Now, regardless of your aerodynamic concept of how the air makes it through the slot, and how it affects the two sails, air does pass through. A beginner is very prone to sheet the jib in too close, thus closing the slot, killing his drive, and more often than not, falling into irons when he tries to tack.

As we spend more and more time beating to windward, the importance of a proper slot grows. On a modified Olympic course set square to the wind, a boat will spend 55 percent of her racing *time* beating to windward closehauled. It is essential that the boat be performing as efficiently as possible. This means that a proper slot must be arranged even if

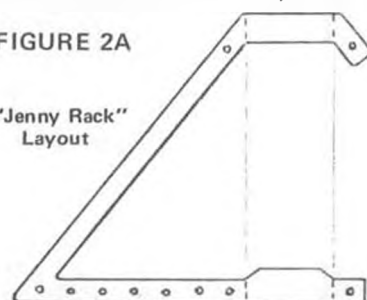
this means some small loss to the amount of jib roach which is being carried. More square inches are no bargain, if they are preventing you from sailing to wind effectively. On typical boats we find the slot to be $3\frac{1}{2}$ inches or so at the foot . . . this is the distance from the jib leech to the mast in the shortest route.

As we proceed up the mast, the slot width gets smaller and the angle we are traveling from jib leech to mast becomes more nearly fore and aft. This may mean that the wind direction will have to deviate more markedly from a smooth path between the jib's windward side and the leeward side of the main. Any rapid deviations will tend to produce turbulence which is not conducive to good performance. As a result, we are prone to whittle away a bit at the jib leech near the top in hopes of opening up the slot. Remember, the wind is moving faster the higher you get off the water. So smaller imperfections aloft will produce correspondingly greater losses from perfect performance. So battens often have little jib leech roach to hold out and are not always necessary.

Another method of opening up the slot is to contrive to mount the jib head some distance forward of the mast. In Figure 2, we show a drawing of a "Jenny Rack." The brass strut is pierced by

FIGURE 2A

"Jenny Rack" Layout



$\frac{3}{32}$ brass tubing. The tubing is drilled to allow passage of the jenny stays. (The jenny stays run from the mast head to a point 40 to 50 percent of the way down the mast. Tensioning them prevents backstay tension from hooking the mast aft.) The jenny stays must be able to slide freely in the tubes. The brass strut must be securely anchored to the mast. The easiest way to do that is to use a

Continued on page 66



Action at windward mark, Toronto. Note how deflection of wind from sails of leading boats has caused followers to be set down below the mark. They'll have to tack again before rounding.



WACO SRE

By GEORGE CLAPP

PHOTOS BY CONNIE MOYNAHAN

A classic cabin biplane scaled for free flight rubber or gas . . . also qualifies for Jumbo Scale . . . and it wouldn't be too difficult to convert for light-weight R/C. Correct size for Cover's Edo floats.

● Having four grandsons living on Oneida Lake just north of Syracuse, N.Y., gave me a good excuse to build Chet Lanzo's Puss Moth (January '72 MB) on Hal Cover's Edo floats (October '73 MB).

After seeing Walt Mooney's Peanut Waco SRE, however, and being a Waco nut, I decided to draw it up (using Walt's outline times 3) and put it on floats. As work progressed, I sometimes wondered why I didn't stick with the Puss Moth, but having scratch-built most of my life, I guess it was natural.

The size of the Waco was dictated by the size of Cover's floats, as I didn't want to do them over.

The prototype shown here was also built to be flown R/C with rudder and throttle control. This is not shown on the plans, but easily done.

FUSELAGE

The fuselage is of pretty normal construction, but built in 3 sections; (1) beneath the windshield, (2) cabin section, and (3) aft of the cabin. (No bent longerons). Then all 3 are glued together.

It should be noted here that 20 lb. monofilament fish leader flying and landing wires bear some loads, and therefore the fuselage cabin section at the top should be especially well built. These flying and landing wires not only add to the looks but also hold the whole wing assembly in place, and allow little damage in a crash, as everything simply comes apart.

The monofilament runs from the cabin to wing hooks and then back to the cabin, to make double flying and flying wires. Heat-shrink after fastening (with epoxy) at the cabin. Wires are then

stretchable enough to disassemble plane.

The aluminum tubes (4) that the wheel and float landing gears plug into are epoxied in place. The rubber band that holds the landing gear together is only on the front tubes as noted. The rear float struts are held up and braced with monofilament line.

The cowling on my ship was built up and mounted on a face plate that I made for my electric drill, then turned.

The windshield is made as follows: Iron satin-aluminum Monokote to a piece of medium weight bond paper. Using windshield pattern, cut openings and

outline to shape with model knife (Uber, of course!). Fasten .007 clear acetate to back side with double-stick tape.

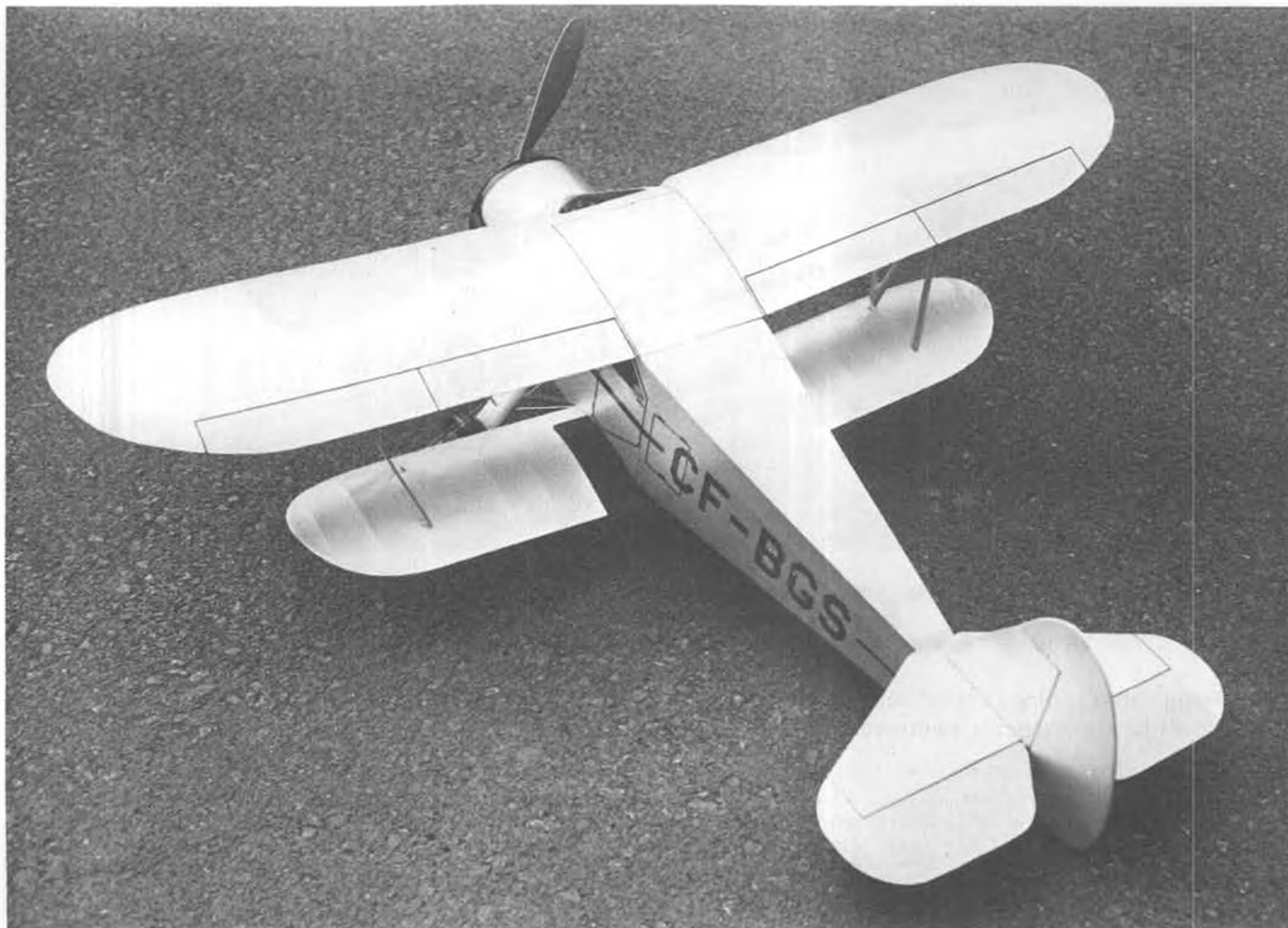
Side windows are made in the same manner.

WINGS AND TAIL GROUP

The top wing is built in one piece, with two dowel plugs that go into block at top of fuselage. It is important that front plywood splice extends out to second rib from root because of cut out at front of wing. The tips are built up of four 1/32 by 1/8 inch laminations of balsa. Being my first attempt at laminations, these proved unsatisfactory. That's



Land and sea versions of the Waco are shown on this page. Model is covered with satin-aluminum Monokote, which provides a very realistic finish. Floats from Oct. '73 issue, by Hal Cover.



Top view shows pleasing lines of the SRE. Nice long tail moment. Bolt-on wing set-up was found unnecessary; the monofilament rigging holds everything in place and allows for "sudden dismantling" in the event of an unscheduled collision with "terrible firmal"

why they are noted as basswood on the plans. Take your choice. The 1/32 gussets shown on the wing, stabilizer, and rudder, are very helpful in preventing warps.

The most unusual part of the wings

are the small hooks that the monofilament "wires" are attached to in assembly. A cross section on the plans clearly shows these. They are installed on the top of the bottom wing, and the bottom of the top wing, as close as possible to

the "N" strut. Done this way, they are barely noticeable. They and the aluminum tubes for struts are epoxied in place.

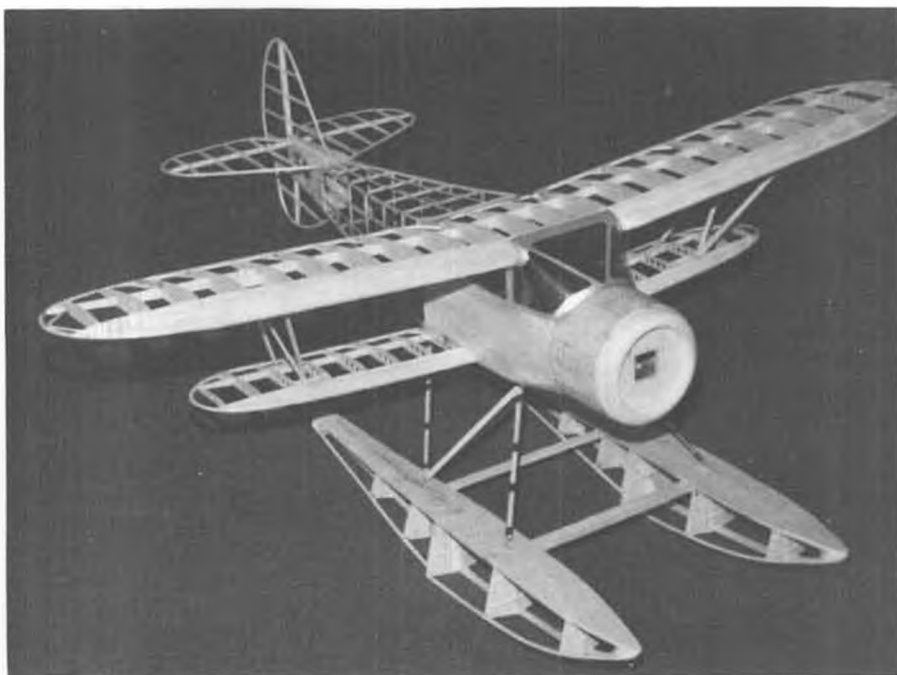
The leading edges of both wings are covered with 1/32 balsa, back to the front spar, on top only.

The horizontal stabilizer/elevator is built with 1/16 x 1/4 ribs which are sanded to a thin airfoil shape as shown, flat on the bottom.

The rudder is done in the same manner, but sanded on both sides for symmetrical airfoil.

PROPELLER

Selection of prop block is very important. Medium weight is best... too hard can be brittle. Lay out all sides very carefully, then drill center hole in drill press, if possible. Next, cut out back center ("A" on plans). This leaves layout of sides ("B" on plans) on uncut side. Cut these out next. Now carve back sides of blades, using edges of blank as guides. These back sides should have about 1/32 inch concave in them. Then carve front, being sure blades are uniform in thickness... about 1/16 inch at tips and thicker nearer hub. Make blades airfoil shape but not too blunt at the leading edge. Cut blade outline from template, and finish sanding. Brush on several coats of talc and



The Waco framework before receiving its "kote of Mono." Although a little on the heavy side, the original model is a rugged and consistent flier.



The Waco parts before "getting it all together." Building a model for disassembly makes repair work a lot easier, though initial construction may take a little longer. Author suggests replacing all aluminum landing gear tubes with brass.

dope, sanding in between. Balance very carefully.

COVERING

My ship is covered with satin aircraft aluminum Monokote, and looks like the real thing. In my opinion Monokote is the lightest way to go, saving all those coats of dope. On larger R/C models, where wind penetration is important I prefer the added weight of silk and dope. If silk and dope are used on the Waco, do not stretch too tight on tail surfaces, as they will warp.

I used 14 strands of Sig 1/4 inch rubber. Lubricate well with castor oil or rubber lube, and tie ends with nylon thread at the "S" hooks. Be sure to balance ship as shown with rubber motor installed.

My Waco climbs out with torque, to the left. The right top wing has slight wash out to keep the torque effect to a minimum. As torque runs low it gradually goes into a right glide.

MISCELLANEOUS

The sub-fin used on the float version may not be exactly to scale in outline. The only picture I could find of an SRE on floats was in "Classic Biplanes," by Robert T. Smith. This one appeared in the background of a shot of a Beech Staggerwing on floats. These sub-fins differed from plane to plane anyway, so I

guess it's not all that important. But the sub-fin is needed to balance out the frontal area of the floats. The fin and rudder area was also slightly increased from scale because of this. The Canadian

registry on mine is authentic, as far as the CF-B goes, for that era. The rest of it (GS) is the initials of my daughter and her Canadian husband! All research I did

Continued on page 69



George does a 5-minute epoxy job on a propeller blade as an interested spectator stands by. Ship would be easy to convert for glow power and light weight radio.



Chuck West's glow-powered Avro triplane flies well in spite of the absolutely zero dihedral. Had takeoff problems, however.



Bill Warner's sharp Gipsy Moth. It should have no trouble getting off the water with that curved step on the floats!

FREE FLIGHT SCALE

By FERNANDO RAMOS

● The Flightmasters celebrated their Silver Anniversary Annual by hosting one of the largest scale contests in their 25 year history. There were 112 models entered in the following events: F/F Gas, Rubber, Peanut, CO₂, Electric, Exhibition, U-Control, and R/C. U-Control hasn't been a regular event at any of the past annual contest for quite sometime, and to everybody's pleasant surprise, the turnout was excellent. The quality of the U/C models was extremely high with many exceptional models. Unfortunately, I was unable to see either the U/C or R/C models fly because they were

flown in a different area than F/F.

This Double A meet begins on Saturday evening at Rockwell International's Recreation Center where the models are displayed for viewing and judging. The many contestants and spectators had the option of seeing R.I.'s films on the B-1 project and other similar type films, or spending the evening discussing and trading new ideas.

In attendance were modelers from Northern California, Utah, Arizona, Nevada, and Texas... and many of them returned home with some of the trophies and merchandise, making their trip a little more meaningful.

Judging began around 7:30 PM and lasted until about 11:30 PM, at which time the trophies for Exhibition Scale were awarded. The perennial winner of this event, Ced Galloway, was up to the task again, with a magnificent solid model of a Junkers. This diminutive model had full interior cabin and cockpit detail, as well as full corrugations on the exterior. Ced can really put a plastic model to shame. Second place went to Chuck West and his ME 109, and third to Bill Hannan with a Peanut size Fokker F2.

Sunday morning, the flying took place at Sepulveda Basin. It was cool and overcast, indicating that the flying would not be hampered by winds. Flying started promptly at 8:00 AM and continued until 2 PM. There were many models making beautiful qualifying flights during that time.

Electric was a very popular event, with both the contestants and the spectators. Very realistic flights were being made with this type of motive power. The models had a nice long takeoff run before becoming airborne. Bill Warner's Petit Brochet took top honors, with Hal



Addie Naccarato's 5 foot span Aerona C-3 with electric power, which is coming on!



Hal Cover's Jumbo Scale P-38 on takeoff run. Makes smooth, stable flights.



Glutton for punishment, Bill Stroman, with Stinson Trimotor. Three Cox .010's and pendulum ailerons.



Steve Walton with his .020 powered Flying Flea. Looks like it might be from the old 1936 Flying Aces plans. Golden Age Repro has 'em.



Hal Cover and his 2nd place winner in electric class; Bellanca YO-50. Easy to start!



Ken Sykora's Fleet Canuck Jumbo Scale passes overhead. Note dangling wing struts.



Big Bill Caldwell and little 3rd place CO₂ Dormoy Bath tub. Bill came up from Texas.

Cover and his Bellanca YO-50 taking second place. Addie Naccarato placed third, flying an Aeronca Chief. She also had about a five foot span Aeronca C-3, which failed to qualify.

There is a great deal of experimenting going on with electric power, and with different available motors and batteries. Astro Flight has a motor designated as an .020 for the free-flyers, which can turn a 5/4 x 3 prop about 12,500 RPM's! Bill Warner was using the reliable Mattel unit, and Hal Cover had an experimental system which incorporated planetary gears. The latter performed just like a gas-powered model, with the exception of the lack of noise. There's no doubt about it . . . electric power is worth considering for your next scale project, particularly if your flying site hinges on using mufflers. I plan to gather more data on this subject for a future article.

In F/F rubber, there were 25 models entered. Many were excellently built, and flew as good as they looked. Bob Roden, from Phoenix, Arizona, won with a Fairchild PT-19 by putting flights that averaged 76 seconds. Bill Warner was close behind with his Compte AC-4. Clarence Mather was third with his incredible P-51 Mustang.

One of the highlights in rubber was watching Hal Cover's Jumbo P-38 fly.



A portion of the static display during fidelity judging for the Flightmasters' biggest of all annual. There were 112 models entered in this Silver Anniversary contest.

It was an impressive sight to see this well-detailed model takeoff and circle overhead in very stable flight. Fact is, every rubber powered model of a P-38 I have seen has been an excellent flyer.

During the course of the flying sessions, Peanut models were dotting the skies like a swarm of bees. With 46 Peanuts on the roster, you can readily see why. There were several original designs, but without question, Bob Peck and his Peck-Polymers kits has certainly given this fun event a genuine foothold in

model aviation.

Bob Roden definitely made his long trip from Arizona worthwhile, as he took another first with an out-of-sight flight. Bob was flying a sharp Dayton-Wright, and after the launch it continued to climb until it was finally lost. The flight set a new world record of over 12 minutes. Fudo Takagi came in second with his very reliable Miles M-18. Clarence Mather had another third place flying a new delightful Moraine design.

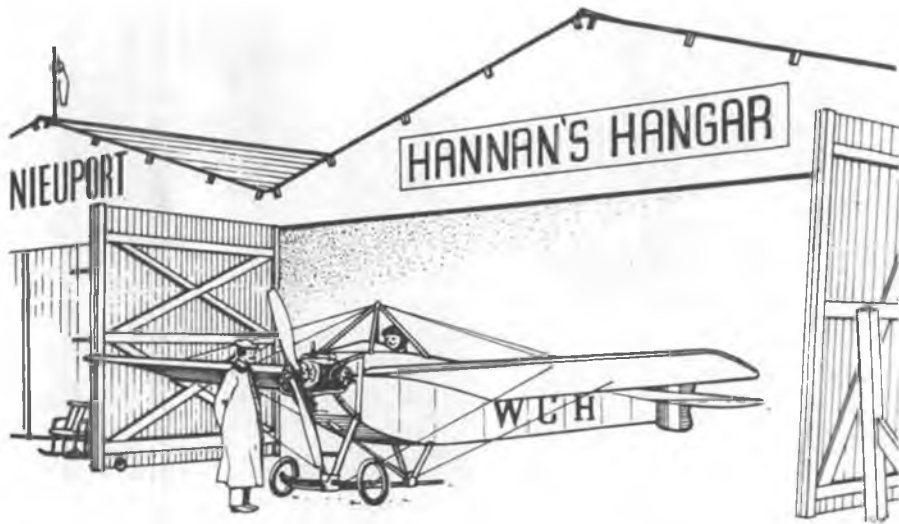
Continued on page 56



Russ Barrera's Arup ('scuse me!) flying wing rubber scale ship . . . well, it's not exactly a flying wing, nor is it tailless . . . you name it!



Bob Roden, the current Peanut endurance record holder, from Phoenix, Arizona, built this rubber powered Lockheed Vega.



... being a bountiful harvest of aeronautical trivia.

VINTAGE AERO

Is the name of the newest firm to enter the small model aircraft supply business. Phil Koopman, proprietor, offers a large variety of hard-to-find items including reed, bass, balsa, steam-bent ribs, plastic props, prop hooks, and binding wire, in addition to complete kits. Vintage, as the name implies, will concentrate on "good olde days" pioneer types of aircraft and supplies. For \$1.00, you can obtain a copy of the catalog, plus a bonus offering consisting of plans for Santos Dumont's Demoiselle, as originally published in Popular Mechanics way back when. We think you will feel that these drawings alone are worth the asking price. Vintage Aero, 1 The Glen, Tenafly, New Jersey 07670.

AND SPEAKING OF OLD TIME PRODUCTS

When was the last time you saw a genuine solid model kit? The kind with blocks and sheets of balsa. And metal propeller... And cast metal engine... And hardwood wheels. It's been a while, hasn't it? Well, now you can get another one, the Travelair 4000, in one-quarter inch to the foot scale for \$2.50, plus 40¢ postage, directly from Eckland & Associates, P.O. Box 7555, Van Nuys,

Ca. 91409.

THE DIFFERENCE WITH PEANUTS

We received a nice note from Jim Whelan, of Miami, Florida, who had this to say: "Am just getting cranked up into the hobby after an absence of twenty years, and I'm really hooked on "Peanuts." They are amazing flyers if they are built right. But boy, if they aren't

Continued on page 76



Chuck Schobloher launches his Clipped Wing Monocoupe, built from MB Mooney plans. Member of Detroit Cloudbusters.



Beautifully built Waco 10 peanut model by Warren D. Shipp, Brooklyn, N.Y. Now doesn't that model look much better with a pilot in the cockpit? You bet!



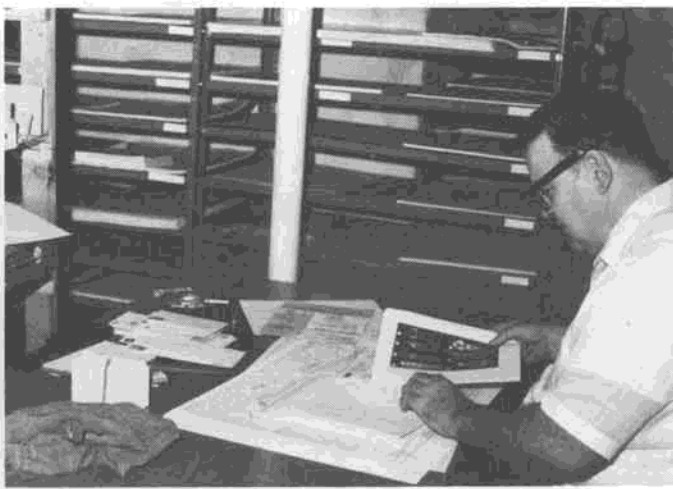
Ouch! Jim Hyka, Cleveland Free Flight Society, has already reacted to the obvious outcome of his Stinson "Detroiter" flight path.



Leonid Ugryumov, from far off Russia, sent this photo of himself and his Fieseler "Storch." Balsa is almost non-existent over there.



A stockpile of history! Golden Age Repro's shelves carry more than a 100 different plans, each reproduced by sharp off-set printing.



Golden Age's mastermind, Joe Fitzgibbon, at his desk, preparing an order for one of his many customers.

MB VISITS GOLDEN AGE REPRODUCTIONS

By DENNIS NORMAN . . . With the dedication of a National Society for the Restoration of Historical Documents, Joe Fitzgibbon is preserving kit and magazine model airplane plans and making them available.

● It's that old dream. You have had it dozens of times. You are in a room, not a very large one, in someone's attic or maybe their basement and all around you are the artifacts of model airplane building. Complete sets of "Model Airplane News," "Flying Aces," "Aeromodeler," "Popular Aviation" and even "Model Builder" are arranged neatly on book shelves reaching from floor to ceiling. Stacks of original plans from Peerless, Scientific, Megow, Comet and dozens of other kits from the 1930's and 1940's are there and available for you to examine. You handle the yellowed and often tattered paper with a reverence that scholars reserve for medieval parchments. And, well you should, for these old plans printed on cheap pulp, have already out-lived their anticipated lives.

Your host is a jovial, rotund man. He is a school teacher with nearly twenty-

five years experience. He has earned four college degrees, written two books on 20th Century European geopolitics, is a pilot, owned three bowling alleys, has just rebuilt a Corvair engine as a project with one of his six children, lives in a spacious and comfortable New England home, has a lovely, charming and accepting (if not understanding) wife who graciously allows you and your host to visit to the wee hours about your passion, "antique" rubber powered aircraft plans and kits.

Add to this, the realization that many, many of these old plans have been painstakingly restored and offset printed (not blue line ozalids) on good quality paper (unlike the originals) and are available to you, for the most part, at \$1.25 each, and you have the makings of a first class model builder's dream. But, brace yourself, it is not a dream. In mid-

September, 1974 this writer personally had the pleasure of a two day visit with Mr. Joe Fitzgibbon of Braintree, Massachusetts, and all the ingredients named (Fitzgibbon included), and more, were there.

Fitzgibbon is a lively and enthusiastic man whose wit and charm make him a delightful host. His openness and candor about himself and his contribution to the art of model building is refreshing. As a boy in the 1920's and 1930's he grew up with the Depression and the sometimes called "Golden Era" of aviation. Times were hard, money was scarce, and Fitzgibbon, like many others, found comfort and a sense of achievement in building and flying the fragile rubber-powered models of the time.

"Do you know how many different model airplane companies have come and gone?" he asked. *Cont. on page 72*



Another Golden Ager, Harry Keshishian, gets ready to shoot Peanut Stinson for next pages.

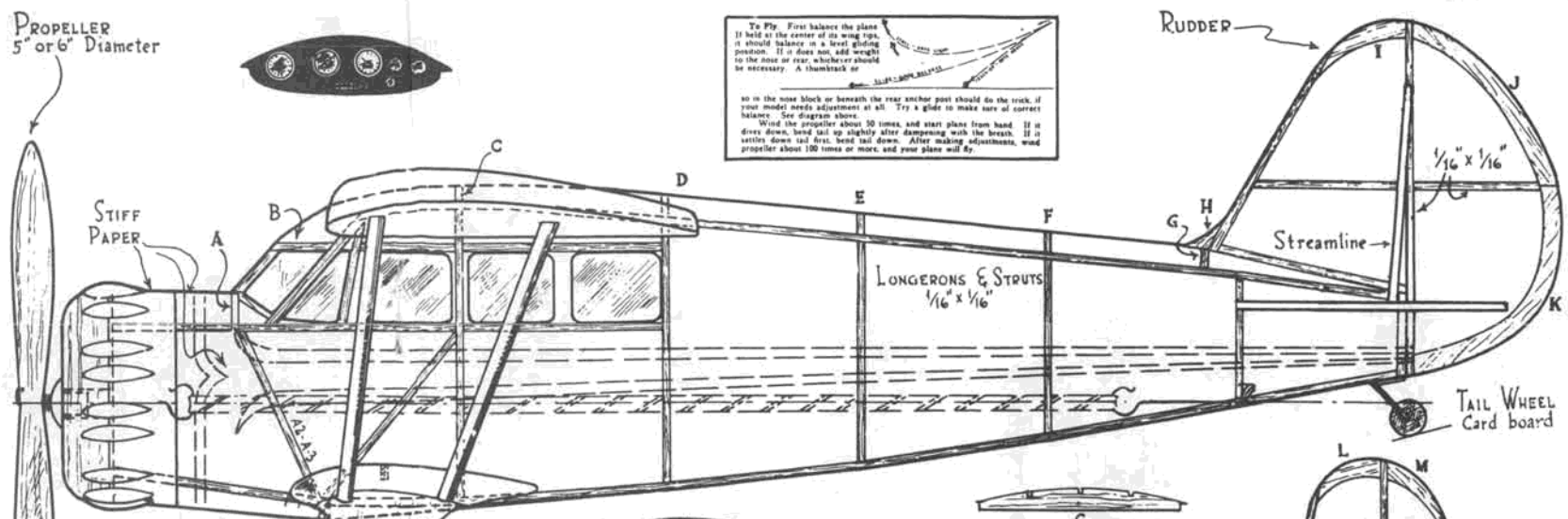


Hot off the press! Restored plans are often much better than the originals, longer lasting.

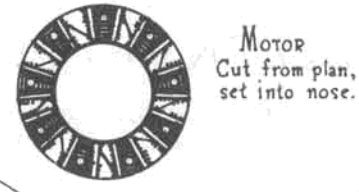


Joe and Harry at the light table, check over all details to make sure plans are complete.

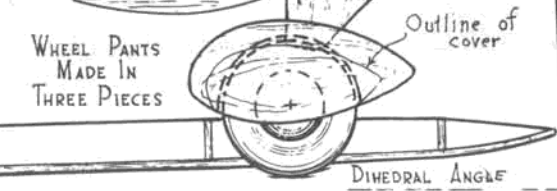
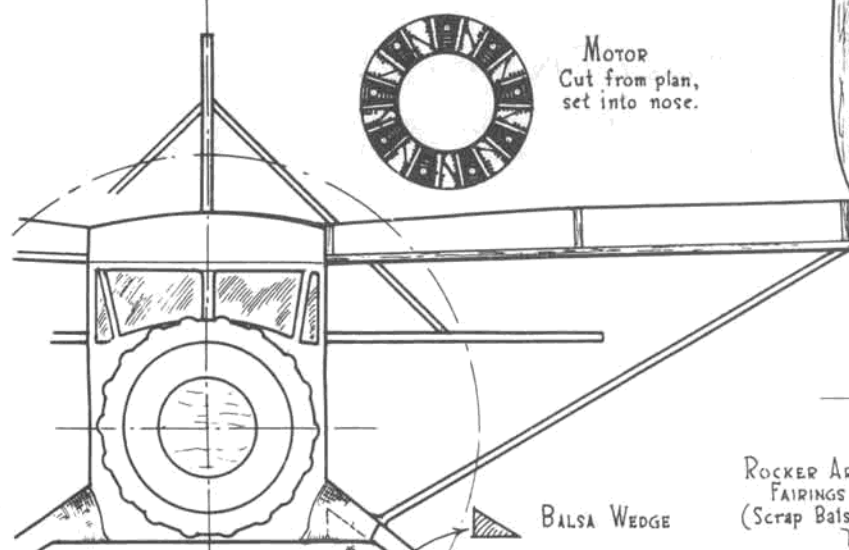
Stinson Reliant



To Fly: First balance the plane. It should balance on a level sliding position. If it does not, add weight to the nose or rear, whichever should be necessary. A thumbtack or so in the nose block or beneath the rear anchor post should do the trick, if your model needs adjustment at all. Try a glide to make sure of correct balance. See diagram above. Wind the propeller about 30 times, and start plane from hand. If it dives down, bend tail up slightly after dampening with the brush. If it settles down and does not tail down. After making adjustments, wind propeller about 100 times or more, and your plane will fly.



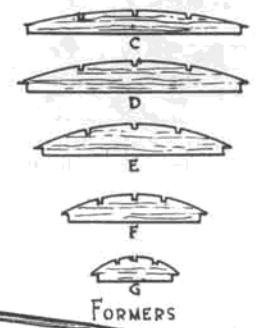
MOTOR Cut from plan, set into nose.



WHEEL PANTS MADE IN THREE PIECES

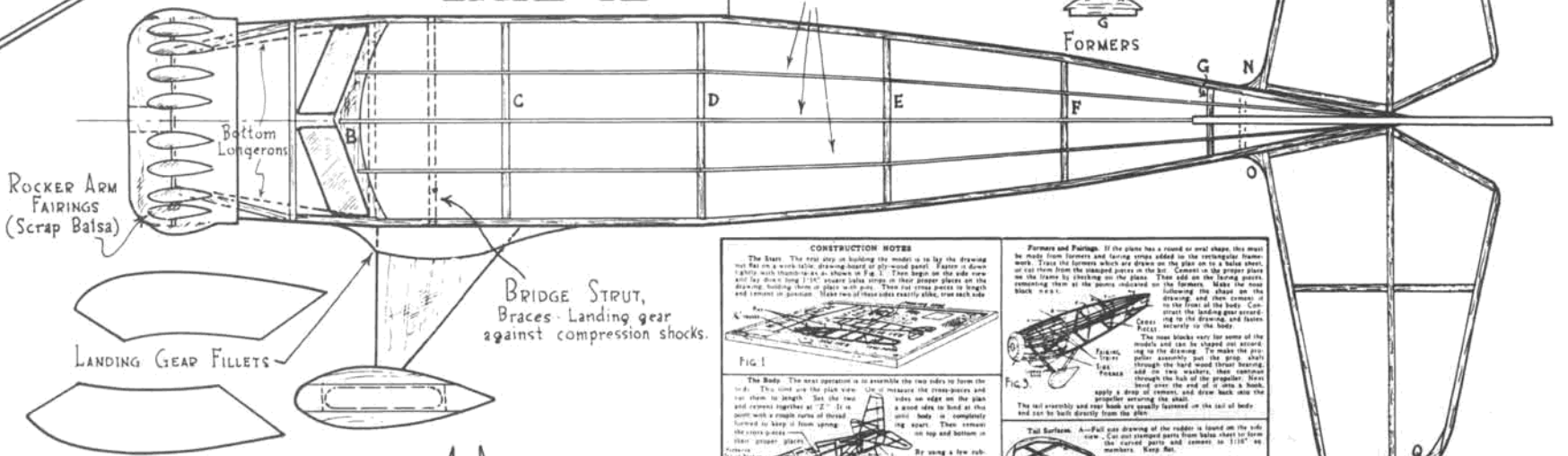
Outline of cover

LANDING GEAR STRUT



FORMERS

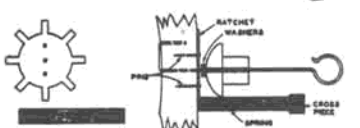
STRINGERS Bamboo



ROCKER ARM FAIRINGS (Scrap Balsa)

BRIDGE STRUT, Braces - Landing gear against compression shocks.

LANDING GEAR FILLETS

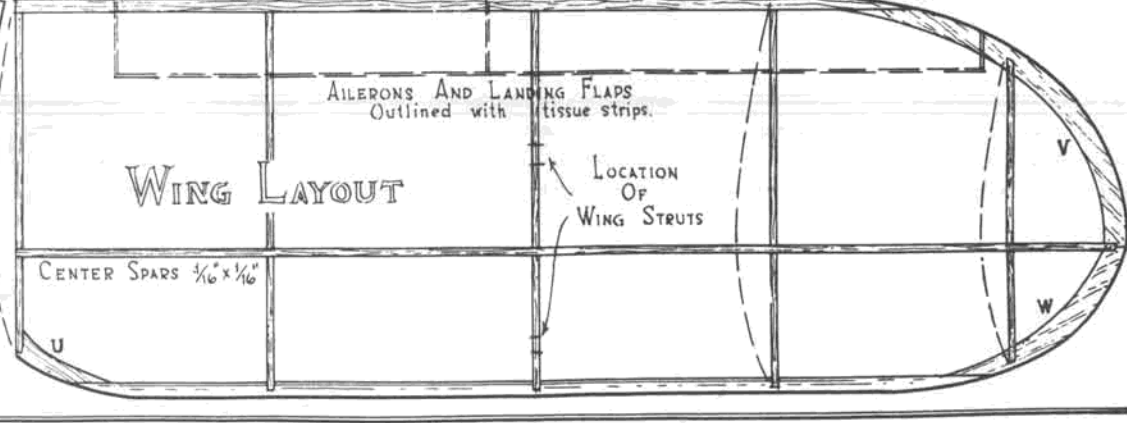
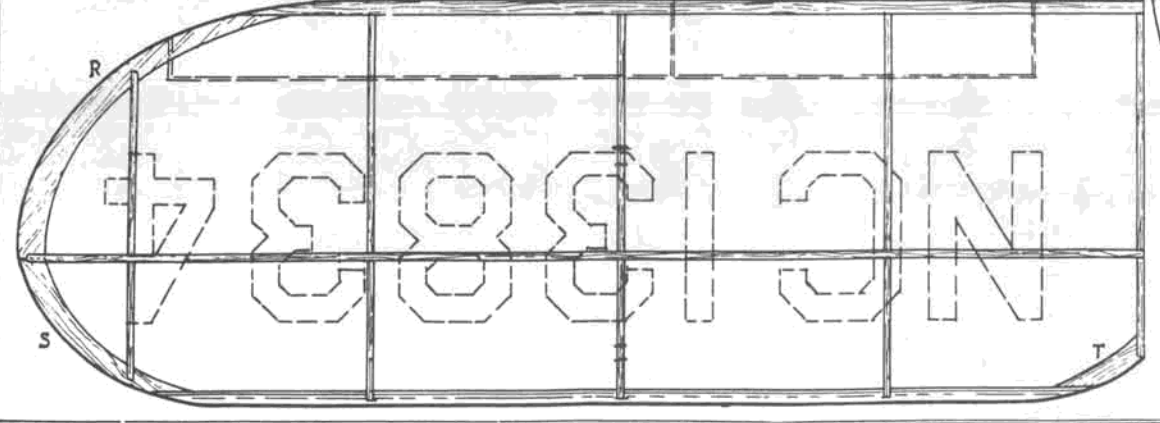


The MEGOW "Motor Hum" DEVICE

Directions for Installation: Fasten ratchet to back of propeller with cement and pins. Nose block must be hollowed for spring to pass through, so that spring may vibrate freely. Spring is included in balsa cross piece which is cemented to back of nose block. Spin propeller and see that tip of spring hits against teeth of ratchet to produce a smooth even hum.

MEGOW'S MODEL PLANES

WING NUMERALS CUT FROM TISSUE AND ATTACHED WITH BANANA OIL COLOR SCHEME BLUE AND YELLOW LEADING AND TRAILING EDGES 1/16" x 1/8" Balsa



CONSTRUCTION NOTES

The Plan: The first step in building the model is to lay the drawing out on a work table, drawing board or 20" wood panel. Trace it down with the tracing paper, or a sheet of 20" paper. Then begin on the side view drawing, building from the rear to the front. Make the three pieces of longerons and struts in position. Make two of these sides exactly alike, one each side of the fuselage.

The Body: The next operation is to assemble the two sides to form the body. This can be done by using the cross-pieces and the sides on edge on the plan and across together at 2". It is a good idea to hold the sides together in a clamp or with a rubber band. Then cement the cross-pieces in place on top and bottom of the sides.

Formers and Fairings: If the plane has a round or oval shape, the most to make from formers and fairing strips added to the rectangular frame work. Trace the formers which are drawn on the plan on to a balsa sheet, or cut them from the tracing paper in the air. Cement on the proper place on the frame by checking on the plan. Then add on the fairing strips, cementing them at the points indicated on the formers. Make the nose block next.

The nose blocks vary for some of the models, and can be shaped by according to the drawing. To make the propeller assembly, cut the propeller through the hard wood thrust bearing, add on two washers, then cement through the back of the propeller. Drive a small screw through the propeller, and tighten the shaft.

The tail assembly and top block are usually cemented on the tail of body and set by both directly from the plan.

Tail Surface: A - Full size drawing of the rudder is found on the tail view. Cut out rudder parts from balsa sheet or form the curved parts and cement in 1/16" or 1/8" members. See plan.

Assembly: A - Cover the body first, keeping the nose on right and cement at propeller. Use balsa oil or banana oil to the frame. Leave unattached one panel over rear block in order to be able to get at the rubber motor.

B - Cement the wings and tail parts. Be careful to keep paper flat and tight. Cement the wing surfaces according to the drawing, taking care with gluing strips. Make sure everything is even and symmetrical and when mounting wings be sure to give them the correct dihedral angle shown in front view on drawing.

This plan of a Megow Stinson Reliant was reduced to Peanut Scale size especially for MODEL BUILDER Magazine, and to go along with the article which starts on the previous page. Since original plan was not much larger, wood sizes are OK as is.



The big winners at the Taft FAI Team Finals (l to r): Bob White, Willard Smitz, Jon Davis for Wakefield; Dick Lyons, Dave Rounsaville, Frank Wolff for Power; and Don Chancey, Bob Isaacson, Jim Walters for A/2 Nordic. Program Administrator Bill Bogart behind Dave and Frank. More information and photos on page 45.

FREE FLIGHT

By BOB STALICK

● With the Nats over again for another year, and the FAI F/F Team Selection Finals now history, many of us will sit around and fret as to why we didn't win . . . again!

I know why I didn't win . . . again. The reason is simple. I didn't practice enough. I didn't plan my own program and follow through on it. I am convinced that no matter how sophisticated and complex the equipment . . . that is not all it takes to win at a contest. There is little substitute for good, reliable equipment, *well* known by the flier who is *well* practiced. The ability to put the model into the air time after time, flight after flight, and day after day . . . having it fly in all kinds of possible weather conditions, times of day, and fields of competition, will do the trick. That's

what I believe . . . of course, I didn't even make it to the FAI Finals, this year.

Now is the time for each of us to plan the approach we are going to take to make sure we have a spot at the 1976 finals. This may mean a building program, and it *certainly* means a flying program. Set it up reasonably and follow through on it.

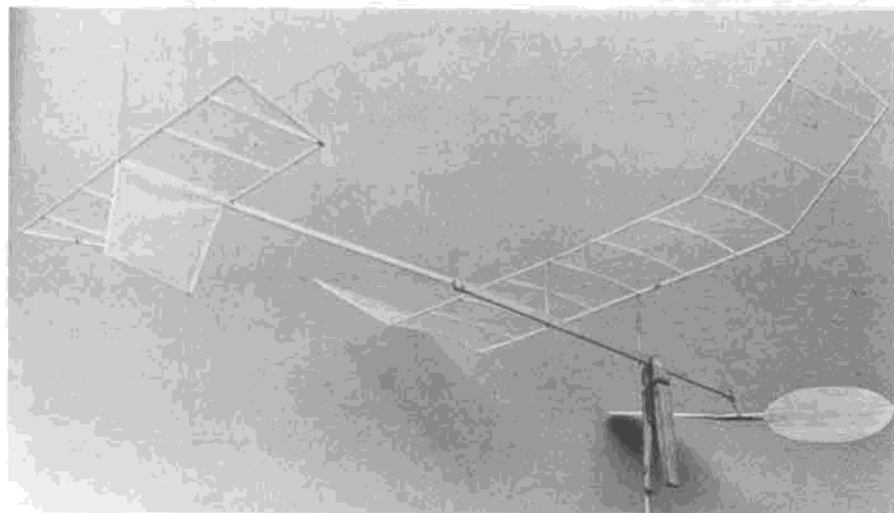
To help you along, I plan to feature several designs in the next several months. With these designs we will attempt to represent the present state of thinking in FAI competition. They will be reproduceable by any free flyer who has built a few competition models. Hopefully, they will encourage some modelers who have not yet entered the field of FAI competition to give it a try for the 1977 program (which, incidental-

ly, begins January 1, 1975). If you are one of these free flyers, stick with us for the next couple of months (and longer, I hope) and find out a bit of what you might be missing.

DARNED GOOD AIRFOIL: The Goldberg G-610B

This is one of my all time favorites. I have used it on everything from 1/2A gas to C gas, and from FAI Power to Coupe (thinned down). It is highly recommended. It is very comfortable with a flat bottomed stabilizer section of about 8% thickness, with the high point around 28-30%. It might be just a bit dated for present day FAI use, but it is hard to beat for hot AMA class ships with small wing area/high wing loading/high power ratios.

With the model trimmed for a fairly



Close-up of a typical Easy B. This type of model is a good first step toward getting into the FAI indoor program.



Pete Sotich (left) awards "McNeill Cup" and Rossi engine to Charles Markos, Deerfield, Ill., for perfect 900 in FAI Power at 1974 Nats.



What happens when nitrate dope and hot solder get together. Jack Knapp's old timer Brigadier after the resulting fire.

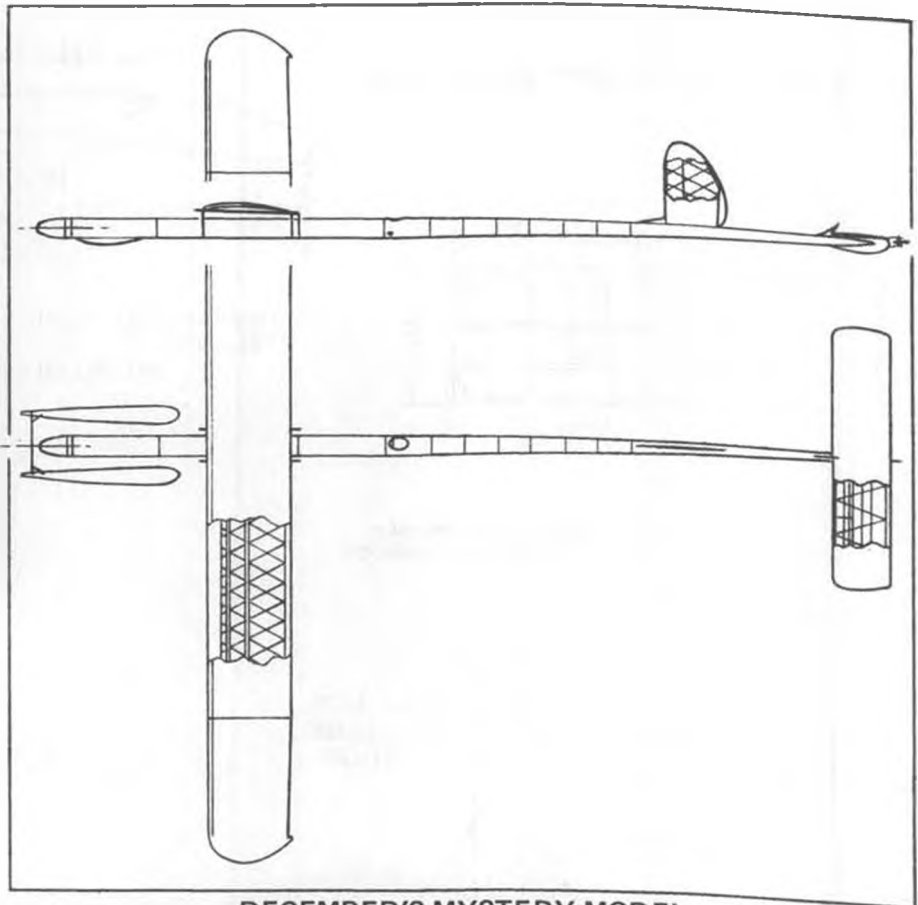
"The National Free Flight Society is soliciting papers for the 1975 NFFS Symposium to be held at the 1975 Nats. Papers will be published in the 1975 Symposium volume whether or not the author is able to present his paper personally at the Nats. Papers should cover some aspect of the science and art of free-flight models, including technical studies, practical design and engineering as applied to models, new or unusual model aircraft developments, or historical items. Both indoor and outdoor free-flight modeling developments are to be included. Please send proposed papers to:

W. Hewitt Phillips
310 Manteo Ave.
Hampton, Va. 23661

"Send title of proposed paper together with an abstract of 200 words or more, or a complete paper if it is available. To be considered, abstracts should be submitted by March 15, 1975."

forward C.G. (around 65-75%), and gliding at just the hint of a stall, it is excellent. If you haven't tried it, do so. Carl Goldberg designed it in the 40's and it's still a good one.

MYSTERY MODEL FOR DECEMBER
Here's a clinker for you. It's a Wake-



DECEMBER'S MYSTERY MODEL

field, but not just an early run-of-the-mill job. It's one which was years advanced for its time, and which contained features still being found on the most modern machines. Guess the name, and if you are the first one to do so, you win a one year subscription to MODEL BUILDER. Mail your answer direct to Bill N., genial MB Editor.

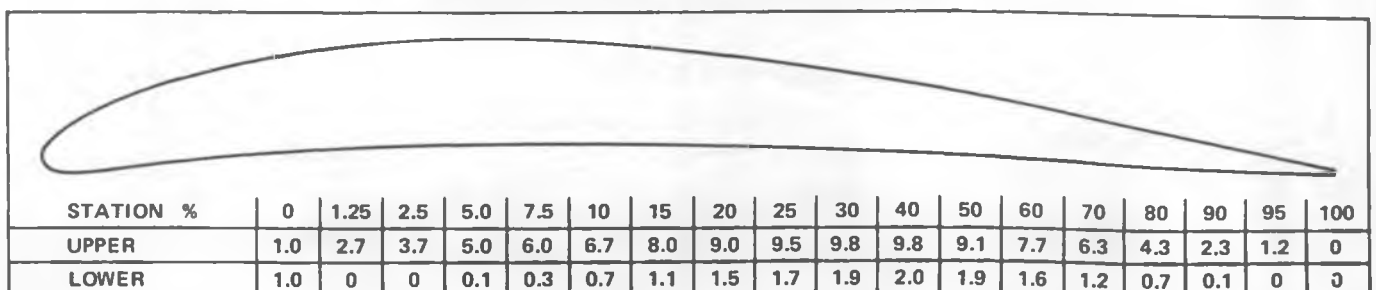
(We had lots of correct answers to last month's Mystery Model, Dick Korda's "Powerhouse." kitted in several sizes by Berkeley, and also several guesses that were way off. The first correct answer, handicap included, came from Bill Hale, of Columbus, Ohio, wcn)

SQUARE SHOOTER WAKEFIELD

In the August, 1974 issue of MODEL BUILDER Free Flight, I presented the nose assembly and front end detail of John Clear's Wakefield. This month, I am proud to present a full 3-view. *(That's really putting the horse before the cart, Bob! wcn)* It's a minimum area model
Continued on page 74

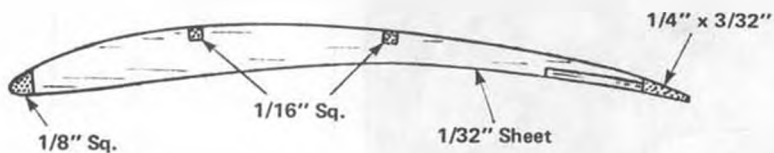


DARNED GOOD AIRFOIL - G-610B

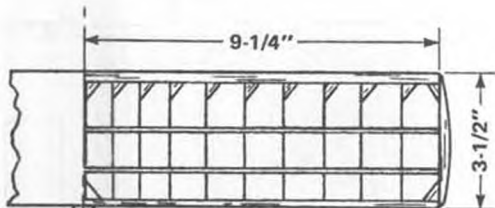


"SQUARE SHOOTER" by John Clear

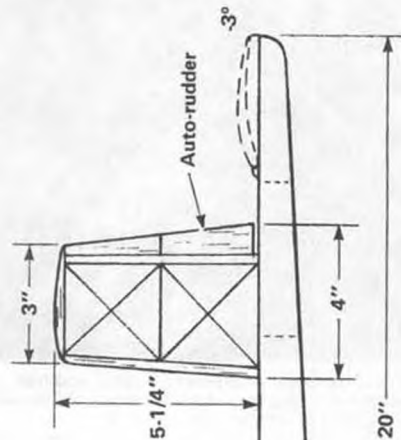
FULL SIZE TAIL SECTION



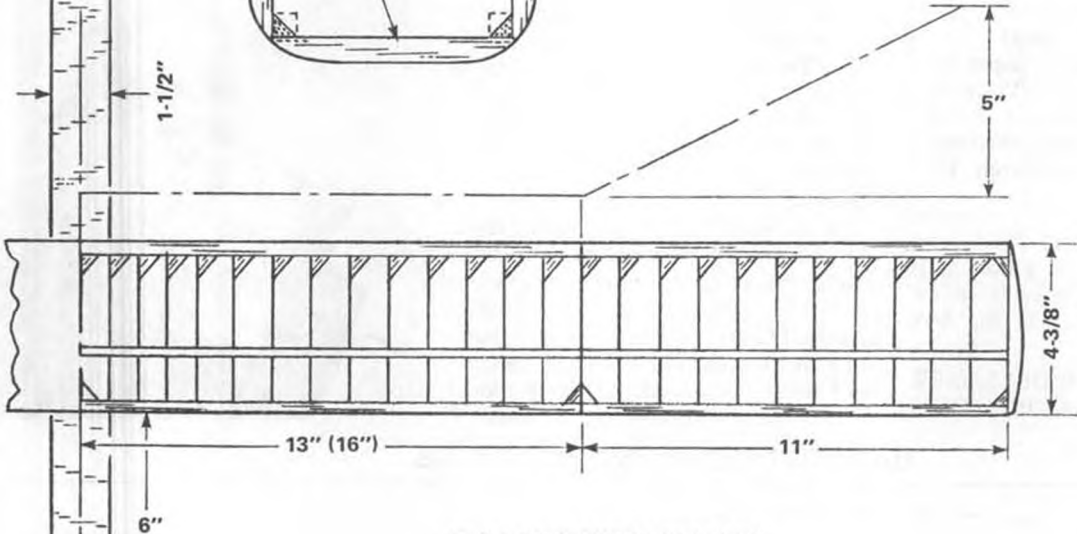
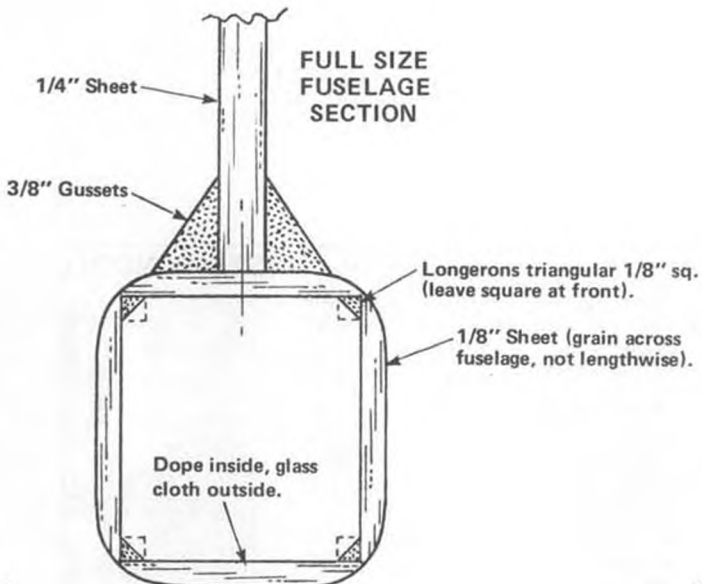
Wing area = 202 (228.25)
 Tail area = $\frac{65}{267}$ (293.25) Sq. in.



Note: Prop details appeared in August, 1974 MODEL BUILDER



FULL SIZE FUSELAGE SECTION



FULL SIZE WING SECTION

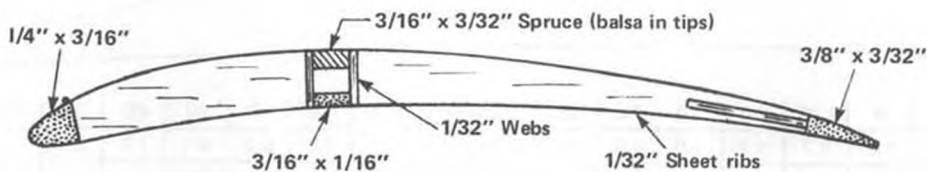


PHOTO BY CARL TAYLOR



Power winner Dick Lyons, timers Jim "Replicas" Crocket and Don Spranger, and Wakefield winner Willard Smitz, from left to right.



Doug Joyce launching his out-of-the-rut power ship, "Lightning." He maxed three times and placed 8th.

The USA FREE FLIGHT TEAM SELECTION FINALS at TAFT. Summary by Bill Hartill, from SCAT newsletter.

● Labor day weekend saw the USA Team Selection Finals held at Taft, California. Here are the winners . . . the USA Team for 1975.

Wakefield:

- Bob White, California, 1260 sec.;
- Jon Davis, New Mexico, 1260 sec.;
- Willard Smitz, Wisconsin, 1260 sec.

Nordic:

- Jim Walters, Washington, 1249
- Bob Issacson, California, 1239
- Don Chancey, Texas, 1233

Power:

- Frank Wolff, New York, 1260 + 180;
- Dick Lyons, Illinois, 1260 + 155;
- Dave Rounsaville, N.J. 1260 + 122.

The weather was great for a change at this, the 5th central flyoff. Plenty of room to fly, lots of enthusiasm in spite of the "off-center" location.

One surprise for some was the lack of mass flyoffs. The idea that Taft is an

easy field to max on and that anything and everything goes up in Taft superlift, suffered somewhat. Another myth bites the dust!

There were some complaints about dust and the hard ground. Taft is not covered with soft green grass, alas, but the locals hope everyone survived and hope it was all worth while.

Bill Gieseking, Tom Kerr, and Don McGhee had the only flappers on the field. What happened to the flap "craze"? The potential of the flapper certainly has been demonstrated, but there seems to be a lack of consistency in the pattern. Could this be because of the more critical speed developed? Or is it that the hinges, wing mount, and reduced torsional rigidity add up to inconsistent shifts in wing panel alignment? A careful study of this question should prove interesting and helpful.

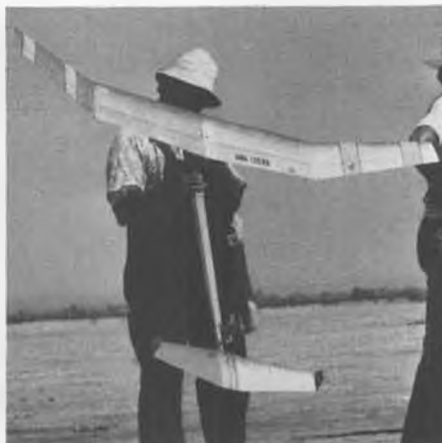
Three-views of A/2 winner, next page.



Bob White watches some approaching lift while Fudo Takagi lights the fuse.



Bob Siffleet holds on while Hank Struck gets ready to crank in the potential energy.



Bill Gieseking, Denver, Colorado, hides behind his flapper ship which placed 23rd.



Gene Jensen shows his best Olympic form as he javelins Wakefield into the air.



Gene Lamber and his scratch-built Spad. Ship is 1-1/2" scale, weighs 11 lbs., and is powered by muffled Veco .61. Dale Kirn photo.



Proto-Scale Air Race Pesco Special by Dick Leitrich, of San Jose, California. Photo by Dale Kirn.

Control line

"FROM THE HANDLE"
By JED KUSIK

● Here we go again folks; new month, new issue, new models, same old idiot pushing the pen. This past month has been pleasant, however. I built some new models, crashed some new models, won a couple of contests, saw some old friends, made some new friends, taught about 6 new Juniors how to fly, and even went "crotch rocket" riding without falling off!

How do you please everyone? It can't be done! Every month, without fail, someone has to ask me why did I have all that information about the "Whiz-banger" event and nothing on "Shuttle-snorts." I really do try to write for all control line, but it can't be done all in one issue. Those who pay attention are aware that each month, one particular

category is featured more than others. If your particular specialty does not appear to be getting enough attention, the reason is probably a lack of suitable material finding its way to the MODEL BUILDER offices. Even if you do not have any super hot information to share, a letter asking specific questions to be answered would be helpful.

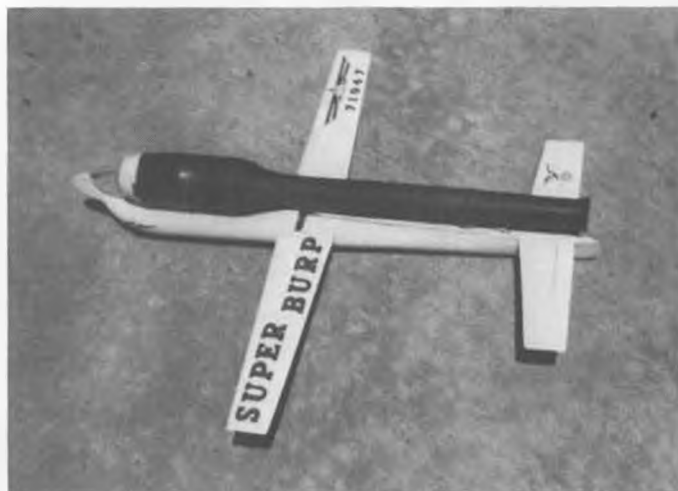
MISCELLANEOUS RAMBLINGS

Several months ago we presented various fuel formulas and lists of ingredients. Shortly thereafter, Bob Sargent, of Ohio, wrote, explaining that certain chemicals should not have been listed for public knowledge due to their extreme toxicity. Mr. Sargent specifically refers to the nitrites and benzines. Mr. Sargent has written again, because he

feels my reply was not specific enough. Again I will print a portion of his letter because I feel that what he has to say is worth repeating.

"I'm not nit picking... just trying to set the record straight. Leave fuel blending to the experts who have the chemical knowledge, facilities and respect to create 'safe' fuels. Caution fuel users to leave fuels in the original safety-labeled containers and encourage them to respect the hazardous warnings."

PAINT REMOVERS. No, not your contest fuels. *Real* paint removers. Arlie Preszler, editor of the Headwind Newsletter of the Lodi (Wisconsin) Model Association, writes of his use of commercial paint removers as an aid in repairing and refinishing models. He has



Mike Langlois' Senior Jet Speed record holder (199.04 mph). Designed by Bill Pardue and Mike Langlois. Photo by Pardue.



Phil Cartier, Fridley, Minn. and his Slow Combat ship, "Big Pig." It's mostly made of cardboard.



Jed Kusik's two Slow Combat ships made by modifying Goldberg Shoestring and Cosmic Wind kits.



Same aircraft as at left after doing battle at North Island, San Diego, where Jed took first in Slow Combat. To the victor ?



'Super Saratoga' by Drew Lance uses much-modified Cosmic Wind wing, extended tips.

found that dopes, enamels, and epoxies, can be removed quite well with these materials. His experiments with various brands has shown the more expensive name brands to be the better buys. His reasons for using paint remover are;

better results when starting at the original surface, also a lighter airplane . . . or at least as light as the first time it was painted. Also it's easier than sandpaper and elbow grease!

KRAFT GLOW PLUG ANALYZER

I received one of these units for evaluation. It's real pretty, fits right on top of a standard dry cell, has a Neat-O, Keen-O meter that shows the condition of the battery (dead) and plug (burnt), and a swell switch to eliminate shorting the leads when you pile all your junk in the box to go home.

Even though it really looks good and functions exactly as intended by the designers, I do have some minor complaints. Two styles are offered, round and square. I discovered that Fernando Ramos' hand was quicker than my eye as he grabbed the round style an instant before me . . . leaving me with the square setup. The square unit cannot even be forced onto a round battery (I tried), and I had to drive all over town to find a square battery. (*Moral: Buy the battery first, and then the appropriate analyzer! wcn.*)

Secondly, the meter is polarized and

the hook-up leads inside the unit are color coded for proper assembly . . . That's right, folks, the red lead was negative, not positive, in my unit! After assembling the unit according to the instructions, the needle disappeared out of sight the wrong way when switched on! No damage occurred and re-assembly had everything working fine. Lastly, the "On" and "Off" words cannot be read next to the switch and additional labeling, such as paint or tape, is necessary to make the unit easy to use.

DON'T RUN THAT ENGINE!

Not until it has been inspected and cleaned. I have said it before and I'll say it again! It has even been printed in other model rags, er mags, too! Nearly all mass production engines, especially the less expensive ones (\$50.00 and less!), are full of metal particles, grit, and grime. Even engines that *appear* to be clean have loose flashing and machine burrs. You will even find engines assembled improperly with reversed or wrong parts, and most often, horribly tight fits.

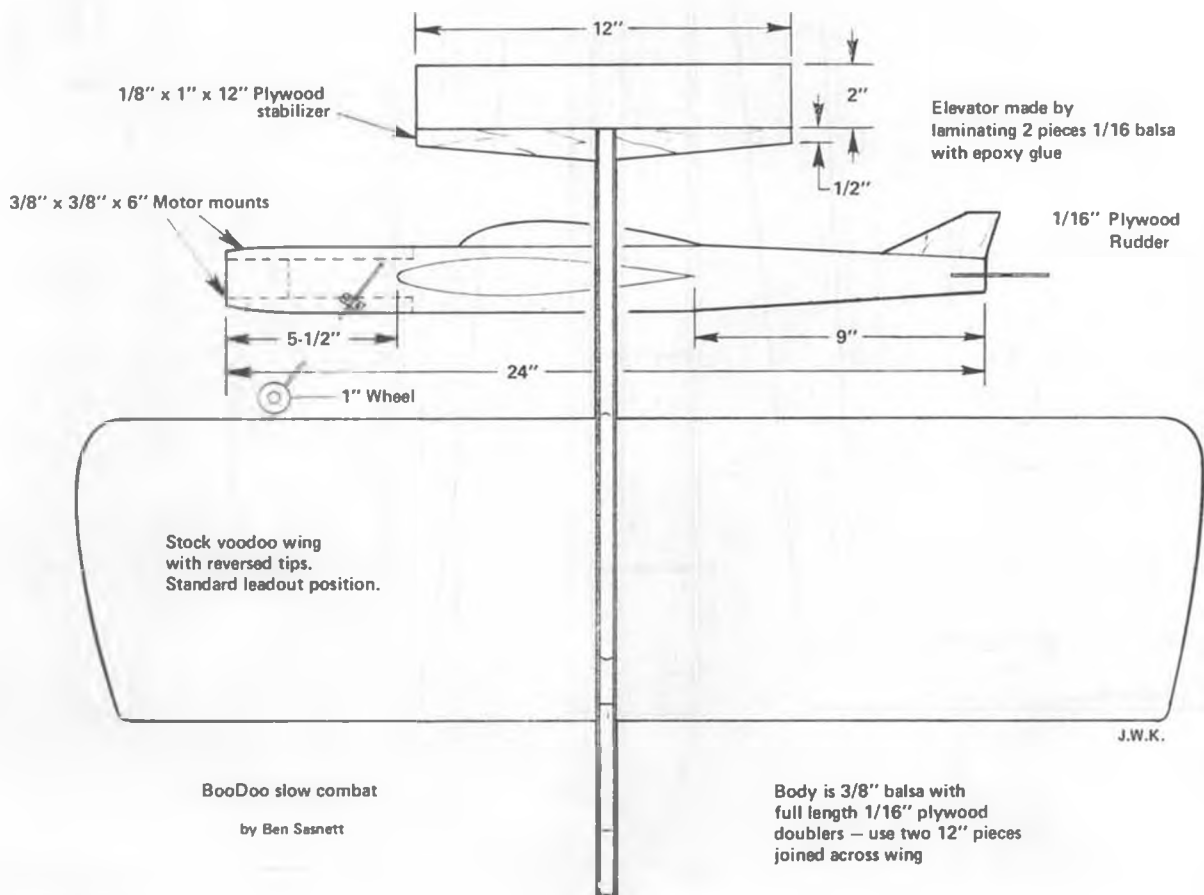
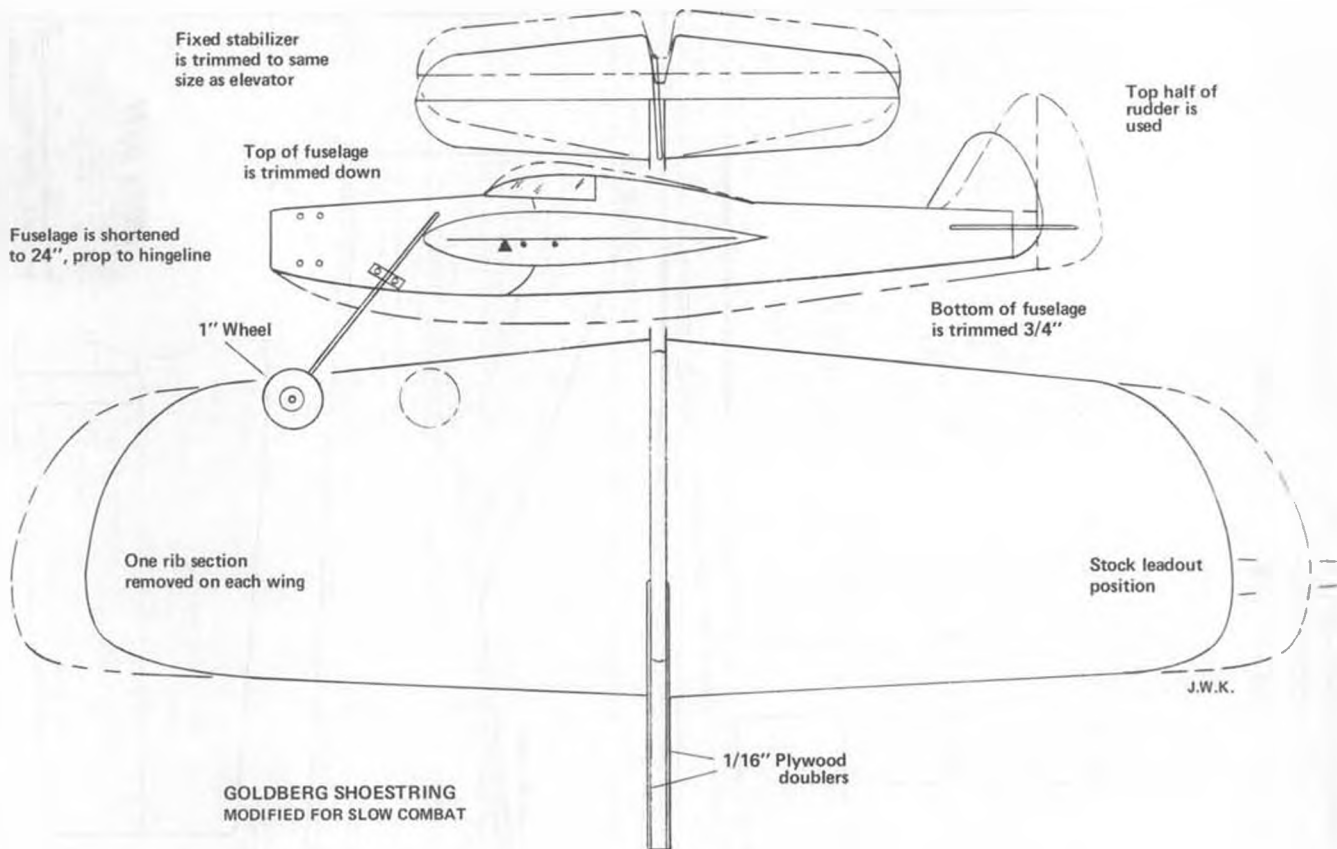
If you aren't experienced or do not
Continued on page 56

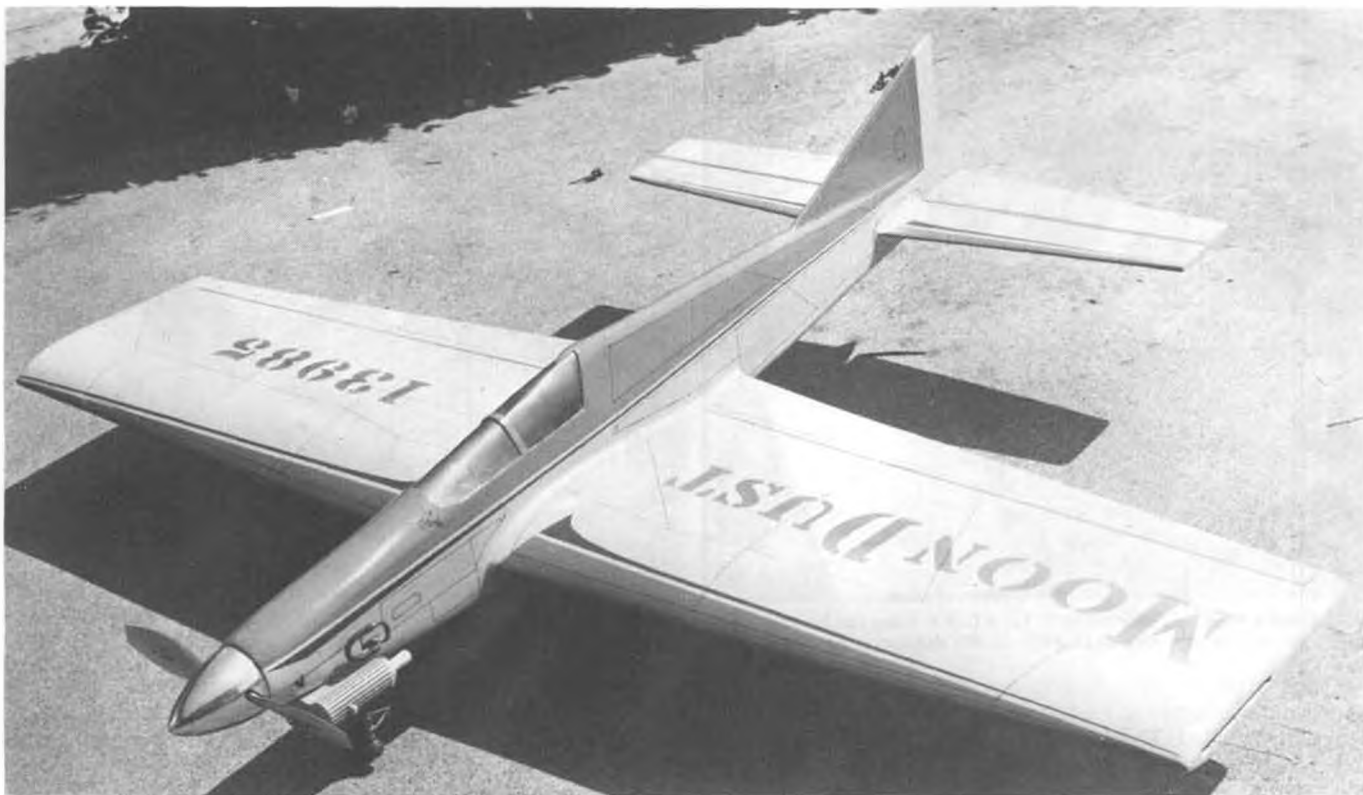


'Kombat' Slow Combat ship by Bob Paul, Cleveland, Ohio. More decor than usually found on these perishable birds.



Slow Combat is rough! Look at the left wing and stab (?) on this Goldberg Buster after a little action.





MOON DUST

By JACK SHEEKS

PHOTOS BY AUTHOR

Clean, out-of-the-rut lines are a feature of this model by the most prolific designer of control line stunt aircraft. Ship also features the choice of a sheeted foam or built-up wing. A .35 will do the job.

● What do you do when you have a Custom stunt engine and nothing to put it in? No, you don't punt . . . you draw a ship around it!

Big Art Adamison had reworked a new OS 35 engine for me and we were hot to trot to use it. This man really knows engines, and if you need a good one, write him at 22454 Fairfax, Taylor, Michigan 48180.

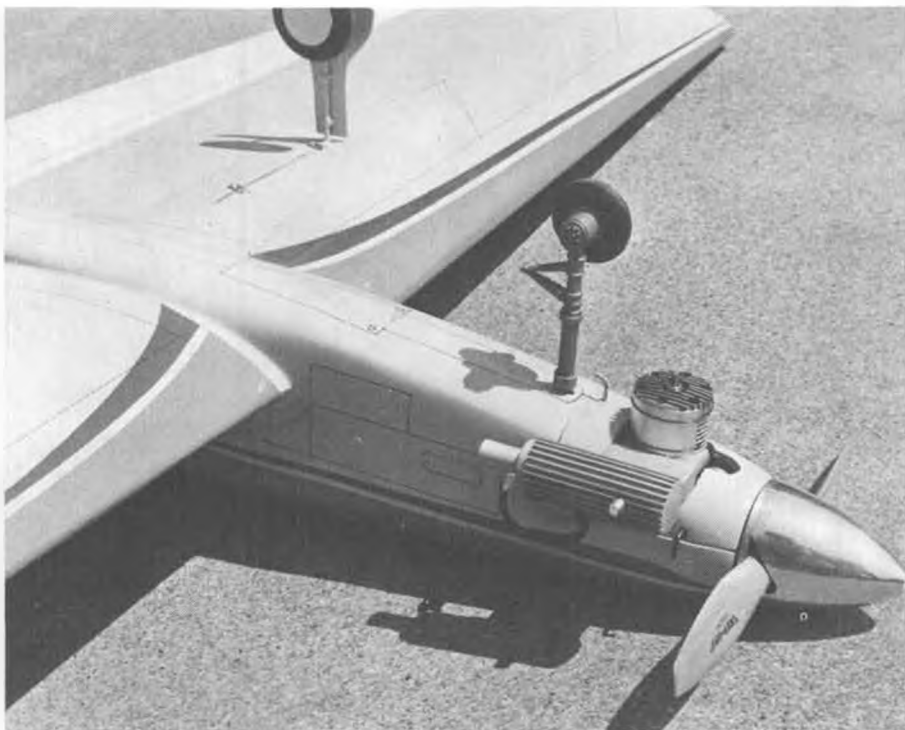
Anyhow, I couldn't see just letting this jewel sit around gathering dust, so I wrote to Foam Flite, got a very fine wing, got the drawing board dusted off, and began. The basic design you see was snatched from a homebuilt aircraft we spied in a magazine. It was changed somewhat in order for it to conform with stunt moment arms, but the final result wasn't too shaggy looking, so I'm told.

As far as we could determine from the article, the ship hadn't been named yet. After pondering long and asking all who were interested, we settled on Moon Dust. Why? Well, my sons and I rooted for a race car with the same name at the local drag strip which we thought was a sharp looking car. The driver didn't win, but the name stuck with us over all the others. Well, it's better than calling it "Fred," isn't it? (*Ask Fred. wcn*)

The wood we found to build this ship wasn't the best, so it picked up

weight rapidly. This is a "No-No" on stunt models. Some say that because of the balsa shortage that this wood was some they floated the good stuff over

on! But you use what you can when you're rarin' to build. No sweat tho, cause the engine proved it would pull 60 ozs. very well. —



Engine is customized OS .35 by Big Art's (Adamison) Custom Engines, 22454 Fairfax, Taylor, Mich. 48180. Shield on cylinder head improves cooling by forcing air through fins.



Mike Sheeks fuels up "Moon Dust" for a flight. Wing can be made with a foam core or with built up frame. It's sheeted either way.



Donna Sheeks poses with "Moon Dust." Wish more of our authors would have their wives hold the models. Sure improves mag quality!

Later, after a slight accident, the ship gained more pounds and a larger engine had to be installed. That's another story, and I never snitch on myself. We still don't know how much the ship weighs now... we're afraid to weigh it. Our scales are delicate, you know. Besides, most guys feel my scales won't weigh a ship over 42 ozs. That's one way to keep them light.

After going to a larger engine (46), we also used longer lines. This helps the heavier ships have more time and space to turn in... It also makes them fly smoother.

Mike Duncan now has the ship and puts in 20 to 30 flights a week with it and he doesn't look too bad with it

either. But everyone who has flown the ship feels it would really be great if it were lighter. They're right too, for weight makes the difference between having a good stunter and having a great stunt ship.

So if you like the Moon Dust, think light while building it and we feel you will have a winner.

The construction of the ship is quite simple and is made even simpler by using a foam wing from Foam Flite. Their address is: 628 West 6th, Mankato, Minnesota, 56001.

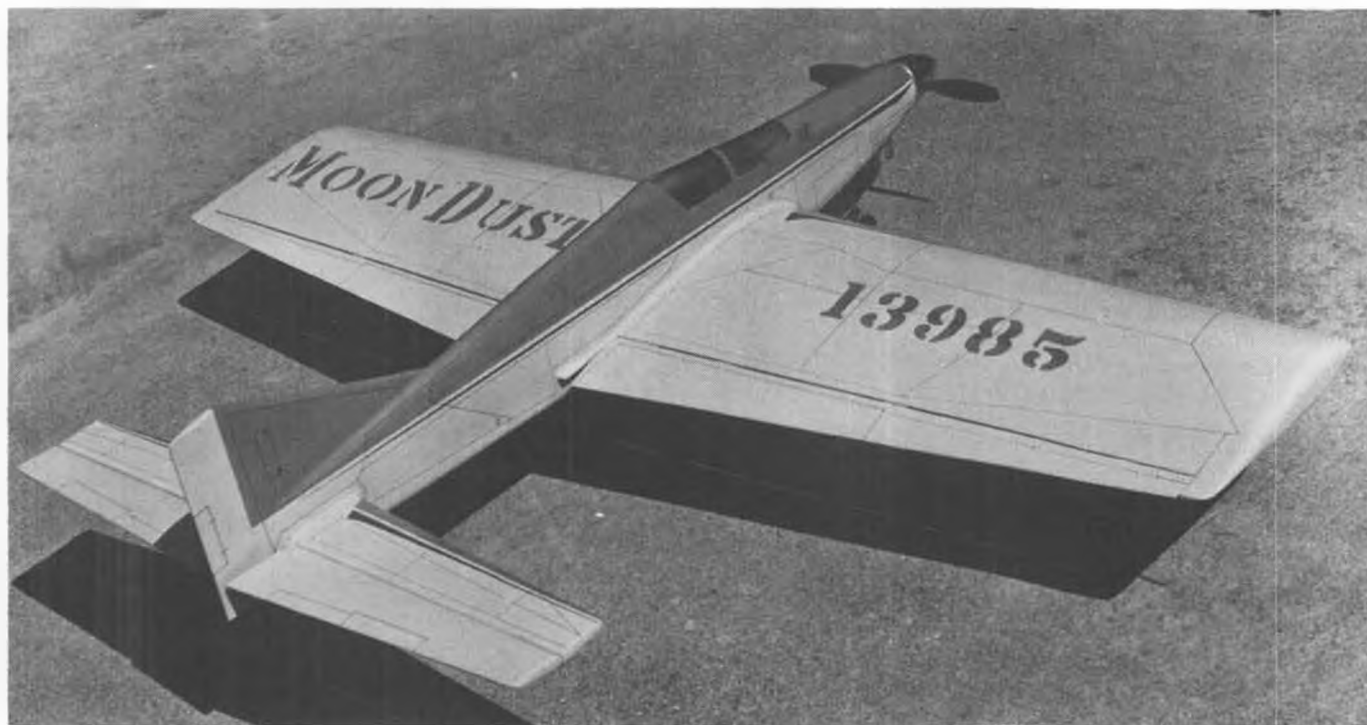
If you would rather build your own wing, cut the rib patterns from plywood or aluminum, sandwich the correct number of pieces of 1/16th balsa between

them, and carve the ribs out. Build the wing halves in two equal sections.

Place the ribs on the lower wing spar over the plan, pin and glue each one. Then glue the top spar into place. Make sure the rear of the ribs are blocked up so they are centered. Now glue the rear 1/16th balsa planking into place, along with the leading edge.

Next, build the second half of the wing, and when done, join the two panels in the center with the 1/8 inch plywood bellcrank floor. Install the bellcrank, lead outs, and push rod. Next, plank the entire wing, making sure there are no warps. Install the landing gear mounts in the wing with 5 min Epoxy.

Continued on page 68



Another view of "Moon Dust." Nice to see something that doesn't look like another modified "Nobler."



Roy McAtee's collection of pre-war (World War II, that is) race cars on display during the World Championships in Indiana. How many of these spit-polished beauties can you identify?

TETHERED RACERS!

By TED MACIAG

PHOTOS BY AUTHOR

Our reporter sums up the action at the World Championships of tethered car racing, recently held in Anderson, Indiana. The Dooling engine has been thoroughly dethroned by OPS!

● Dear Diary: I must remember not to give my fuel to a non-modeler to warm it up on a cold day.

The first day of the tethered car World Championships, held at Anderson, Indiana, September 5th, 6th, and 7th, started off with a bang both literally and figuratively.

I arrived at the track about 8:30 on a typically cool Indiana morning. The first project was to mix some fuel for the day's running, since it is less than cool to carry nitro fuels on a commercial airline. It wasn't warm enough for the oil to mix, so I gave it to the proprietor of a snack truck to put in a warm place until I was ready to run, and went back to preparing my cars for the race. The first run of the day was by Harold Arlutzki, from Germany. His streamliner had a long smooth acceleration and turned 166 mph! As he was coming back to the pits, I understood him to say that he made the run on cold fuel! This was going to be some meet, with the first run more than ten mph faster than the American cold fuel record!

Now there was a commotion at the snack truck. The man operating the truck, trying to be helpful had put my fuel in the top of the coffee maker and the bottle had exploded. No fire and no one hurt, but the coffee would sure be hot that day.

Well, a new coffee maker and some more fuel, this time warmed elsewhere, and I was ready to go again. As the weather warmed up, 160 plus runs followed each other like clockwork. The

pipied OPS engine was clearly the dominant powerplant, with the European streamliner cars pitted against the more conventional American types.

About noon, problems arose in the form of timer malfunctions. A break was called for lunch and yours truly was ap-

pointed official timer fixer. I found a loose plug in the timer, fixed that and hooked it back up to the track only to discover a broken wire leading to the centerpost. Some more soldering and wrapping, and we were finally ready to start again. The rest of the day went



Bert Kuebler, Indiana, holds two table-top tethered cars that he built. They have .008 engines, and run 25mph! His OPS Class II car turned 168.54.



Class III Champion, Garold Frymire, whose car turned top speed of 172.41 mph.



Adolf Malik and his 2.5cc class winner. The .15 powered car turned 138.46 mph! Rossi engine.

smoothly with more super-fast runs.

That night, Phil McDonald threw a party for all the contestants and wives. As the foreign visitors sampled more of

1974 World Championship Tethered Race Car Results

CLASS III 10cc engines

1.	Garold Frymire	California	172.41
2.	Harald Arlautzki	Germany	171.43
3.	Bert Kuebler	Indiana	168.54
4.	Ted Dodd	California	167.29
5.	Paul Kruse	Indiana	167.29
6.	Bob Holliday	Indiana	166.05
7.	Horst Denneler	Germany	163.98
8.	Lars Wahlund	Sweden	163.04
9.	Phil McDonald	Indiana	161.29
10.	Elmer Sordelet	Indiana	159.29

5cc class

1.	Bengt Abrahamson	Sweden	152.80
2.	Paul Ziegler	Germany	149.75
3.	Horst Denneler	Germany	131.96
4.	Ted Maciag	California	94.73
5.	Ted Dodd	California	---

2.5cc class

1.	Adolf Malik	Germany	138.46
2.	Bjorn Larsson	Sweden	133.14
3.	Dieter Hecht	Germany	125.35
4.	Horst Denneler	Germany	109.48
5.	Echart Oelsclager	Germany	107.65
6.	Reiner Bruns	Germany	107.27
7.	Christer Abrahamson	Sweden	---
8.	Person Hagel	Sweden	---

1.5cc class

1.	H. J. Rottner	Germany	104.77
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CLASS II 10cc engines

1.	Roger Phillips		139.75
2.	Bill Pistoll	Pennsylvania	134.73
3.	Guy Richards	Ohio	133.53
4.	Jerry Anderson	Ohio	133.53
5.	Nick Tucci II	New York	133.14
6.	Craig Asher	Ohio	---

CLASS I 10cc engines

1.	Bill Pistoll	Pennsylvania	135.75
2.	Ed Baynes	California	131.20
3.	Herbert Herrel	Ohio	127.66
4.	Bill Geiger	Pennsylvania	120.64
5.	Waldie Abercrombie	California	115.38
6.	George Bryant	Georgia	---
7.	E. O. McCullough	Michigan	---

CLASS IV 10cc engines

1.	Ed Turnross	Colorado	109.35
2.	Herbert Herrel	Ohio	106.63
3.	Garold Frymire	California	101.23
4.	Phil Cole	Maryland	91.55
5.	Mike LePurage	New York	90.63

our American spirited beverages, they began to speak more and more English. This medicine lasted the rest of the week, so communication was no problem. As I left the party to work on my cars, a group of Germans was singing "Old MacDonald had a farm," while the wife of an American racer gave them the words.

The second day was much like the first, with more fast runs, and more timer troubles. Phil had plugged the 9 volt trigger circuit into the 110 volt mains! Since this is hard on the transistors, we replaced the still smoking timer with a mechanical type and plunged onward.

The Europeans totally dominated the smaller classes. These little cars showed a great deal of originality in design. They all had front and rear suspension to cope with the rough European tracks. Adapting stock airplane engines to these cars took a lot of ingenuity. The small cars don't carry batteries to keep the plug hot while the car is going slow, so they have to be horsed up to eighty mph until the plug clears out. Lars Wahlund put on quite a show at the center post, doing a toe dance with the cable in hand before stepping out of the way to let the car continue on its own.

Bengt Abrahamson, of Sweden, won



Another photo of those fabulous pre-war cars of Roy McAtee's. This picture was taken by Olle Karlsson, of Sweden, who later visited MB.



"Und den ve schrew der kolbenfarben mit der hoopschraum . . ." Paul Ziegler, Germany with 2nd place 5cc streamliner; 149.75 mph.

the 5cc class with a home built car and engine, at a speed of 152 mph. My Super Tigre 29 powered, Borden spur gear car was the only American 5cc car to even post a time, and it was way off the pace.

Adolph Malik, from Germany, was first in the 2.5cc class with a Rossi 15 that he had modified to allow the exhaust and pipe to come out over the crankshaft in order to fit into the car body. This was a lot of work, but that is what is needed to win in the small classes in Europe.

The 1.5cc class had only one entry, which was proxy-run by Paul Ziegler. As this tiny car was being pushed off for its 104 mph run, one of the Ameri-

cans cracked "there goes a motorized roach." The lack of hot .09 engines on the market limits the participation in this class, with the winning cars having home built engines.

As the mite classes were almost exclusively European, so the American antique classes were the specialty of the U.S. participants. Bill Pistol won both the Class I and II for Arrows in his usual tradition of blowing a piston each run. Ed Turnross won Class IV with a McCoy powered Papina car.

Besides the new faces from Europe many of the old American faces were seen in the pits. Guy Richards, who held the 10cc record for a few weeks last

year, was trying again, but had troubles. Nick Tucci was in great form as usual, and livened up the race and after race activities in his hilarious style. Cris Lupo finally made it, after much trouble with his truck on the way from California. George Bryant came from Atlanta, only to have tank trouble with his interesting Webra powered Arrow. George also brought along a car which he made entirely on a drill press. He has put a lot of thought into the design of this car that anyone can make without access to a machine shop. Waldie Abercrombie flew to Anderson with me, and on the way, we discussed using taper pins to hold the

Continued on page 64



The timer bench. From the front: Ed Baynes, Julie Turnross, and Glenn Fairabend.



And our intrepid reporter, Ted Maciag, contemplates a leaky tank and the dire consequences therefrom.

The Pattern Engine to Watch...

the
K&B
.61R/C
with MUFFLER*

*Sold only with muffler



Take a good look - you'll be seeing a lot of this engine!

All indicators point to the **New K&B .61R/C** as the pattern engine to watch. It is proving its worth by challenging the imports for the top places. Thus, more and more pattern flyers are switching to the **New K&B .61R/C** when they see and hear its amazing performance.

Muffled against noise and engineered for performance, the **New K&B .61R/C** includes a specially designed muffler that does not inhibit its performance. It is rugged in construction, contemporary in design and fitted with a pressure tap.

The engine features new improved head, piston, by-pass, port timing, rod, ring, and cylinder, plus a beefed up housing.

Another big bonus for flying with the **New K&B .61R/C** is its *quick availability of parts*.



F/F Scale . . . Continued from page 37

There were eleven entries in CO₂, and all but one were Brown powered. "Bric" Brickner had an O.K. CO₂ engine in a Caudron that was considerably larger than most of the other models entered in CO₂. Bill Stroman and his unusual Valkarie took first with some fantastic flights. Hal Cover (who entered all of the F/F events) came in second flying his last year's winner, a T.A. 152. Bill Caldwell, who flew in from Dallas to participate in the festivities, along with Vic Larsen and his son Guy, took third with a petite Dormoy Bathub. (Bill was pleasantly surprised to find out that we didn't have any white lines running all

the way to China.)

As usual, Walt Mooney had another unusual model, that of a Trigull seaplane. This was powered by the new Brown Twin. It flew extremely well, but had to be hand launched.

Of all the F/F events, gas still has to be the most difficult, and to my way of seeing it, the most challenging. Bill Stroman really went all-out with a Stinson Trimotor! It was powered by three Cox .010 engines, and incorporated pendulum airlerons. Unfortunately, Bill was unable to get it qualified, however he made every effort to do so. Another unusual model was Chuck West's Avro Triplane. The three wings are as flat as

a plank, but it flies very well . . . slow and realistically. Chuck couldn't R.O.G. the Avro due to prior damage to the gear. Maurice Smith won with Tom Stark's Nationals winning design, a Loening M-8. Ken Sykora took second with a beautiful model of an American Eaglet powered by an .020. That triangular fuselage gives the model a great deal of character. "Bric" Brickner placed third with a large size model of a Piper J-3. No Juniors or Seniors were able to qualify in gas.

This special Annual saw a higher percentage of expertly built models, and a higher rate of flying excellence from the contestants than ever before. If scale is your bag, this is truly an event in which you should consider participating in next year! ●

C/L Continued from page 48

have the equipment for proper cleaning and fitting, there are always numerous individuals at the flying field who will help you, usually for free. I'm not advising anyone to have their engine modified or hopped up. Just cleaned and assembled properly.

I firmly believe that current engine design and technology is right on, leaving very little for the workshop tuner. I do not change timing or porting on any of my contest engines. But I do spend many hours fitting and mating parts and making sure everything is clean inside.

Two things prompted me to write on this topic again. Malcolm Nevin, of Lutherville, Maryland, wrote, telling of two new engines he purchased . . . an O.S. 25 R/C and an Enya 15 R/C. In both engines, the connecting rod was installed backwards! This caused excessive drag and accounted for the long break-in time experienced by some of his buddies with the same engines.

If you check any engine, you'll find there is usually a radius or chamfer on the side of the rod that fits against the crank facing forward.

The other example was a Taipan 15 R/C Schneurle which I was preparing for a friend to use in R/C Quarter Midget. This engine was really clean inside, but complete disassembly revealed that the mill slot for the intake port in the crank shaft had not been deburred! The port was completely closed by flashing, thus there was no way for that motor to draw fuel!

HOW TO CHANGE YOUR SUNDAY FUNNER INTO A WEEKEND WARRIOR

Slow combat is one event that has not been featured here yet, so let's jump in and tangle things up a bit. Just to set the record straight, I do fly combat fairly well and have over the years taken a bit of gold, so I am not just talking from outside the circle . . . even though I do prefer FAI Team Race.

Generally, slow combat is intended

SAILFISH

One of the prettiest Sailboats you ever saw either Free Sailing, or R/C. Construction is simplicity itself. Die Cut Frame, features Plywood for strength and long life. Printed-planked Deck is Die Cut and ready to slip into rub rail, molded into Sleek Plastic Hull. Kit is unusually complete with Die Cut Mahogany Cabin, Brass Chain, Many Cast Metal Fittings, CLOTH SAILS, Rigging cordage, Mast & Boom Material stamped Rudder and Keel with INTEGRAL LEAD BALLAST, Step by Step Plans show simple assembly. Base shown not included.

HEIGHT 32½"
LENGTH 24"
BEAM 5"



Sterling
MODELS
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PHILA., PA. 19144, USA

Kit B23

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*with carved hulls,
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Re-live history as you walk the deck with Captain Bleigh and Mr. Christian on the Bounty. Sweep the seas of the Spanish Armada with Sir Francis Drake's Golden Hind. Join the infamous pirates as they attack Merchant Shipping and exact ransom with their swift and deadly vessels. All this in amazingly easy to build kits that feature new simplified rigging and modeling techniques. Unusually complete kits include easy to read and detailed step-by-step plans and instructions.

**All
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to allow most modelers to enjoy combat flying with what is considered standard Sunday fun flying equipment. As in all forms of competition, the serious minded have studied the rules and equipment available and started preparing models especially for the event. There are now at least three kits available for slow combat work, but they are not as readily available as the dozens of stunt trainers, that have been marketed for years in standard form. What I want to do is to explain and show how to modify existing kits to make them more suitable in competition.

Generally, what must be done is to streamline and lighten the model, reduce

wing and tail areas, and change the nose and tail moments. These models have been customized hundreds of different ways. My methods are not unique, but they do work.

First example is the Top Flight "Flight Streak." This is really excellent in standard form, and is very strong, with its full length leading and trailing edges and spars. A full ounce or more can be removed from the body by carving it to an oval shape... not just rounding the edges... and by using 1/16 plywood doublers instead of 1/8. The tapered oval is best for all fuselages.

More ounces can be removed from the wing by not using the spars at all.

That's right, those big leading and trailing edges are very strong. Discard the flaps, and shorten the wing one full section on each side, but retain the stock tips. The rudder should be cut in half horizontally, and only the top half used. You now have a lighter, faster "cut streak!"

Landing gears take a lot of abuse, especially when a straight length of 1/8 inch wire is used. If you wind a couple of loops into the wire, flush with the bottom of the fuselage, it will not be necessary to straighten the wire after each landing. If you can't make a decent coil spring in the heavy wire, then buy a Goldberg or Tatone pre-formed R/C

IN THE AIR

ALL BALSA
MODEL PLANE KITS

Ready to Assemble



BEGINNERS FOKKER D7
Kit S41 Span 20½" \$4.50



BEGINNERS HELLCAT F6F
Kit S42 Span 20½" \$3.95

You can use most any .049 engine made (even from an abandoned plastic model, tho it may need some modification). They are just perfect to learn to fly on (First time flight instructions on plans). Everyone of them flies just great—and you can't hardly hurt them—because they're light and rugged. We've got 13 in the line now—priced so low, you'll want to build a fleet. Wing Span's are all about 21" and the tools you'll need are usually found around the house—So get over to your dealer and take a look—they're the most . . . for your fun . . . for your dough!



BEGINNERS FOCKE WULF—190
Kit S43 Span 20½" \$3.95

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nose gear wire . . . Not too expensive and real neat.

The Goldberg models are also excellent choices for customizing. The Cosmic Wind, and Shoestring are illustrated. The dashed lines show their original size and shape, and the solid lines are the finished modifications. On both models, the fixed stabilizer is cut down to the same size as the elevators and the fuselage is shortened a corresponding amount. The nose on the Cosmic Wind is also cut back 5/8 inch and the engine is moved back. Be sure that the new fuselage length measures 24 inches from prop to hinge line, as this seems to be a universal minimum for most rules.

Most models need some extra weight in the tail to balance properly. This is an important step many modelers overlook. Instead of lead, make it something useful. Since 1/8 inch balsa stabilizers usually break or rip off, use 3/32 or 1/8 plywood for the fixed stab, and laminate two layers of 1/16 inch balsa with epoxy for the elevator. This is very strong and rigid.

The Mongoose kit flies well as is, but the fuselage is weak, usually breaking off at the wing trailing edge. So why not repair it before you fly? Add 1/16 ply doublers across the trailing edge and extending half way down the rear fuselage. Also, a 1/16 balsa vertical web

across the spars, only in the end rib bays, will help the wing integrity.

In order to maintain precise control with no deflection, a push rod guide or fairlead is required at about midway on the pushrod. Long cotter pins work well here because they can be installed after the model is built. A split cotter pin can be snapped onto the wire and then pushed into the fuselage. A glob of epoxy will then secure it in place.

Use an engine safety wire connected from the bell crank bolt to the engine. This not only protects the spectators, but saves engines from parking lots and streets. I got out of the habit of using cables and had a good engine destroyed

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when the fuselage cut away and crashed in a parking lot. I think I will start using safety wires again. It's cheaper.

The fuel tank is usually the last item installed, and is probably the single most important item in slow combat. Most slow combat rules require suction feed. Draw fuel systems require more expertness and care in preparation than do the simple pressure bladders.

A few suggestions might be helpful in preparing your fuel system.

A. For a lazy man's uniflow, cap the top vent on a standard stunt tank.

B. Build a correct uniflow by placing the single vent tube 1/8 inch in front of the end of the fuel pickup, and extend it to the front inboard side of the tank

for air entry ahead of the fuel level when full.

C. Chicken Hopper. The Texas Flyers call this a trap tank, and claim they invented it, but it has been used for years in speed and team racing. This is more involved than mere simple words, so have your resident "go fast and level" types show you one and explain its operation.

D. If you want a real short nose on the model, try cutting a hole in the fuselage and glassing the tank in crosswise. You have to re-position the tubes, but it works.

E. Wedge out the rear of the tank to compensate for model yaw, or else place the pickup in the front of the tank.

Some last minute suggestions:

1. Know the rules: build and fly accordingly.

2. Use an engine you can count on. The hot one that is difficult to start and doesn't needle properly, is a waste of money.

3. Get several of the same engines. You'll soon be able to start and set the needle *every time*.

4. Use an airplane that you know, and stick with it.

5. Practice with the best flyers in your area. Your ego hurts from all the cuts, but you will move steadily up the pyramid in real competition.

FUNNY LINES

The most dramatic performance improvement ever has also created a dramatic amount of discussion. This new technique is so radical, and so few people have seen or used the tied lines, that there is an understandable concern for what might happen . . . because we really don't know what will happen. The Speed Advisory Committee of the Control Line Contest Board has been doing some serious and honest discussion on the matter of safety, and has considered a possible emergency ban on the use of tied lines.

The first and biggest fear appears to be that the tied lines *MIGHT* create a full up or full down situation during flight and cause the load to suddenly shift to only one line. The cited example is the shut off sequence of full down on a racer. I've personally been using tied lines for several months, and can detect no change in control response or sensitivity. If a sudden full down causes an unsafe overload, then all racing models are flying unsafely on one line at every contest! Incidentally, I have had and have seen down lines break (due to wear and faulty construction) and the models did a series of high G loops before striking the ground. The single up line held the model. This isn't proof of safety, but it has happened.

The second worry is the amount of time required to make a set of lines . . . 3 to 5 hours is about average. I submit that time is of secondary concern in our hobby. We all spend hundreds of hours on our models and equipment. The one exception might be Junior-only events. Because my job is teaching industrial arts to juniors 12 to 15 years old, I know that they are not capable of preparing Funny Lines properly. If a Junior is flying with them, then Daddy probably made them. Banning tied lines for Juniors would be fair.

A concern for safety is justified. But so is the need to allow all the modelers in the nation a chance to evaluate the new technique. Dale Kirn has conducted a good preliminary study of the new method. He has contacted 34 West Coast AMA flyers for their opinions. Included were people who have actually

used the lines in competition and those who have not. Accurate calculations have been made on speeds and safety factors and some wire sizes were found to be too small at projected possible speeds. One noticeable, favorable comment from several "ex-speed flyers" was that they would fly speed again if line ties were allowed, because they would be very competitive against Monoline equipment. Wouldn't it be nice to see long entry lines at speed contests again?

More controlled test flying must be done before all the answers are found. So get tied up and go flying. ●

Remotely . . . Continued from page 19

"I believe I've finally made a decision which a lot of other R/C glider designers have also made for one reason or another. I've flown two identical (as identical as two can be) gliders for over a year now; one equipped with coupled-aileron-rudder, and the other a polyhedraled arrangement. I enjoy making gadgets, so the aileron installation and linkages did not affect my decision one way or another. Both planes have been flown in contests and under varying sets of conditions to evaluate their relative performance. Both planes, Dreamer II with the ailerons, and Dreamer I with polyhedral, are high performance aircraft that require more hands-on flying than hands-off flying. The real difference between the two is in roll response and stability . . . the polyhedral wing winning by only a small margin. But the margin is enough for me to go to the polyhedral wing for Dreamer III which is now on the boards. Also, the Dreamer III will have a three piece wing (continuous center section) which lends itself to the polyhedral approach very well."

There's nothing like experience to make believers out of us. ●

Tugboat . . . Continued from page 12

underside of the Main Deck with Pettit Epoxy Formula II and install to Hull using tape, clamps, and weights to insure contact with the tops of Bulkheads. In-

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sert Bulkhead No. 8A flush with rear of Cabin opening.

14. Cut away the exposed Bulkheads Nos. 4, 5, 6, 7 and 8 flush with the Cabin opening. Glue back-up strips made from scrap 1/8 x 3/8 planking between these bulkheads for attaching the Cabin

Opening Rim. Then cut Cabin Opening Rim from 1/16 plywood and install, keeping top edge approximately 3/8 inch above top of Main Deck.

15. Coat the entire outside of Hull with Epoxolite, and sand smooth.

16. Draw the water line, using the



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notch cut in the Keel at the Bow and the intersection of Bulkhead 12. (Drill a 1/16 inch diameter pilot hole down through the center of Bulkhead 12 to locate water line at the Stern. This will serve as the center line for the Rudder Post as well.)

17. Cut four Bulwark strips from 1/16 plywood. Attach one piece to each side of Hull, gluing to each Bulwark upright and using top of Main Deck for the bottom edge. When this has set, install the second Bulwark strip to the first. An optional way of applying the outer Bulwark strip is to use three pieces, one piece about 8 inches long to cover the Stern section, and two pieces to complete the sides.



18. Make the Fenders from eight strips of 3/16 x 3/16 x 36 balsa or spruce, using four strips to each side of the Hull. Glue one strip on at a time until a 3/8 x 3/8 square has been made. Use a piece of 3/8 x 3/8 x 12 balsa or spruce for the Stern portion of the Fender. Cut serrations about 3/16 apart and down to within 1/32 of the bottom, then glue in place. Fill serrations with Epoxolite or wood filler. Sand corners round to complete Fender.

19. Glue a 1/4 x 1/4 x 26 piece of balsa or spruce to each side of the Hull, 5/8 below and parallel to the Fender from the Bow to Bulkhead No. 6, continue with a smooth curve to end 1/16 below the water line at Bulkhead No. 8. Cut or sand a taper off the bottom from 3/32 inch at Bulkhead 8 parallel to the water line to Bulkhead 7. Sand all corners round.

20. Glue a 3/32 x 3/32 x 36 length of balsa or spruce to the upper outside edge of the Bulwark flush with the top. Cut with a sharp knife all Bulwark uprights to 3/32 below top of Bulwark and glue another 3/32 x 3/32 x 36 length of balsa or spruce to the inner side of the Bulwark flush with the top. This will give a 5/16 inch wide handrail 3/32 inch deep.

... Continued next month ... ●

R/C Soaring . . . Continued from page 23

But, you say, this doesn't work with model gliders because they're hollow. If a model is *true to scale*, each part, be it a wing spar or fuselage skin, must be scaled down in proportion. And each of these parts is a solid . . . though, granted, the structure is hollow. Let's check this out with the Standard Austria glider. Using the formula, the 1/5 scale model would weigh about 85 ounces and the 1/8 scale, 21 ounces . . . Sounds reasonable.

Now, let's throw the mess together and see what we come up with for wing loading. But definition wing loading is W/A. Then:

$$\frac{W_1/A_1}{W_2/A_2} = Sf$$

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Substituting real numbers, we get:

$$\frac{660/145}{5.3/5.8} = \frac{4.5}{0.9} = 5$$

Thus, as we scale up or down, if the scale is true the wing loading must vary in proportion with the scale factor. How about *THAT!*

Figure 2 is a plot of representative wing loadings for various categories of free flight competition models, common birds, man carrying sailplanes, and R/C gliders. The diagonal line, or *any line parallel to it*, represents the effect of scale on wing loading.

Spend some time with the graph. It offers some interesting thought food. Does your R/C glider really have a higher effective wing loading than Joe's or is it just that your's is larger? (Incidentally, it would seem that real birds have about 2 to 2½ times the wing loading of our models. Not "Many times" as has been often stated.)

Figure 3 is an enlargement of the R/C glider portion of Figure 2. A dozen or so models are plotted, using wing areas and loadings as reported in various magazines. The dots kind of spread out on the graph. Part of this is because each designer had a specific objective in mind when designing his model. The balance of the "spread" is due to two items in the real world of model building that distort this scale relationship between size and wing loading:

1. All R/C gliders have to carry radio gear which doesn't vary proportionately in weight with the size of the model. Thus, a small model would tend to have a higher scale wing loading than its larger counterpart. It has to carry the same radio.

2. Though to a lesser degree, the finishing method tends to be the same weight per square inch of surface covered regardless of the model size. This tends to make the smaller model heavier in proportion to scale.

SPEED, SINK RATE, AND GLIDE SLOPE

Back to the two models of the Standard Austria: the 1/5 scale model would have a wing loading of 14.5 oz./sq. ft.

and the 1/8, 9.1 oz./sq. ft. (To walk through the math for the 1/5 scale model: the full-size Standard Austria has a wing loading of 4.5 lbs. per square foot or 72 ounces per square foot. One fifth of this is (72/5) about 1.45 ounces.)

If wing loading is proportional to the model's size, what happens to speed and sink rate as we scale a model down? How does this affect glide slope? The engineers tell us that:

$$V = K\sqrt{W/A} \sqrt{1/C_1}$$

where V = horizontal velocity in mph

K = 4.92 (a constant incorporating air density and unit conversion)

W/A = wing loading in oz./ft², and

C₁ = lift coefficient of the total plane (0.94)

Plugging in our scale factor for wing loading, it is obvious that velocity varies with \sqrt{Sf} , if the lift coefficient remains the same. Does this check out with what we see? Our full size Standard Austria glider flies at about 43 mph at minimum sink rate. We might think that a 1/5 scale model, will fly at 1/5 the speed or 8 mph. However, our 1/5 scale will fly closer to 19 mph, which is approximately $\sqrt{1/5} \times 43$ mph. (15 mph for our 1/8 scale).

The formula proves the point for the 1/5 model:

$$V = 4.92 \sqrt{14.5} \sqrt{1/0.94} = 19 \text{ mph}$$

or in the shorter form,

$$\sqrt{1/5} \times 43 = .45 \times 43 = 19.35$$

All the above, of course, explains why models appear to be flying faster than their full scale counterparts. They do . . . considering relative size. Because of the effect of scale, they don't fly at scale speed.

In all free flight contests and many radio controlled glider contests, the name of the game is sink rate. How fast does the model come down? As a close approximation:

$$V_s = K\sqrt{W/A} \sqrt{1/C_1} C_1/C_d$$

where V_s is the sink rate. C_d is the plane's drag and the other symbols are as before. Here we run into problems. The simple scale theory doesn't appear to work. A full size glider has a sink rate of about 2 ft./sec. Thus, we might expect our 1/5 scale model to sink at about .9 ft./sec. ($2 \times \sqrt{1/5}$). Instead, the model also goes down at about 2 ft./sec.

The culprit, of course, is the drag coefficient. Although the lift coefficient does not change significantly with scale (our Standard Austria glider at minimum sink rate has a C₁ of 0.94, and indoor microfilm model 0.85), wind tunnel data indicates that the parasitic drag coefficient is a complicated inverse function of scale (that is, it increases as we go down in size). Why? Again the effect of scale. Here, we get involved in Reynolds number stuff, viscous and turbulent flow, critical phenomena and things like that.

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This gets messy so let's accept, as a reasonable approximation, that with scale wing loading our scale models will have a sink rate about the same as a full size glider. Might check MODEL BUILDER, December 1972 for some real sink rate data on R/C sailplanes, and suggestions about how to measure your own model's performance.

Combining horizontal velocity and sink rate, we can determine glide slope, or L/D, as it is generally called. For example, the Standard Austria sinks 2.3 feet for each 63.8 feet (43.5 mph) forward. That works out to a ratio of 27.7 to 1. But now we know why our full size Standard Austria can develop a

glide slope of about 28 where as R/C sailplanes have to stretch to reach 15 and hand launch gliders are doing very well at 10. It's the scale effect . . . and there's not too much we can do about it.

SUMMARY

If a model glider is a *true scale model*, there are certain scale effects we have to live with: Its wing loading will be in proportion to its scale factor, velocity in proportion to the square root of its scale factor, and sink rate appears to be more or less independent of size (if we correct for the Critical Reynolds number effect). Let's look closely now at the the two model Standard Austria gliders

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STP-10x6	10x6	.85	STP-14x6	14x6	1.50
STP-11x7	11x7	.90	STP-15x4	15x4	2.00
STP-11x7½	11x7½	.90	STP-15x6	15x6	2.00
STP-11x8	11x8	.90	STP-16x4	16x4	2.50
STP-12x4	12x4	1.30	STP-16x6	16x6	2.50
STP-12x5	12x5	1.30	STP-17x4	17x4	3.00
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Flying Weight (oz.)	85	21
Wing Loading (oz/sq ft)	15	9
Minimum Sink Rate (ft./sec.)	2.3	2.3
Forward Speed at minimum sink (mph)	19	15
Glide Ratio (at minimum sink)	12.5	10

A look at these figures shows why the big models often win the contests. Because of the scale effect, they can usually fly faster and develop a higher glide ratio. They also, obviously, have a higher momentum and are thus less sensitive to wind gusts. Look at the relationship between the various parameters of the two models. This is as revealing as their relationship to the full size ship. Here, the scale factor is 0.625.

All this doesn't mean we should abandon design. In the real world of R/C gliders, a better one can always be built. For example, we can reduce both horizontal velocity and sink rate by making our gliders "lighter" than scale. We can reduce drag by making our fuselage, wing and control surfaces "thinner" than scale and thus increase the glide slope. Or, we can juggle the aspect ratio, airfoil and tail size to improve efficiency beyond that reasonably expected from a "true scale" configuration.

But, the scale effects are real and always present. They won't go away. ●

Race Cars . . . Continued from page 55

gear on the axle. He was telling me how pins break at inconvenient times, and sure enough, he broke a pin on his Arrow and I broke a pin on my 5cc car . . . Maybe the cars heard what we were saying and accommodated us!

On the final day, Garold Frymire was leading the open class with a speed of 172 mph. He tried to better that during the day, but had tire trouble. Harold Arlantzki would have the last run of the meet, and he also had the best chance of beating Frymire. The car ran well,

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but reached only 171 mph, so he had to settle for second place.

So the biggest tethered car meet in many years came to a close. This meet has pointed the way to the future in engine and car design. The conventional type of car has proven superior, but not by much. Several Americans are planning to try the European Streamliner design, and adapting the use of front suspension to our present designs. In one short year, the Dooling has lost its hold in the model race car field. After over 25 years of holding all the records for race cars, a special class is going to be established so that the Dooling cars won't have to be relegated to the mantlepiece. Times are changing. Instead of ignition timing and special pistons, the talk is now about pipes and glow plugs. ●

Hobie Hawk . . . Continued from page 25
gloss, and the tail piece is injection-molded A.B.S.

The wing is of plywood-covered foam construction, with a top skin of 1/32 ply, bottom skin of 1/64, and a core of high density styrofoam. A preshaped spruce leading edge completes the assembly. The unusual curved dihedral is formed during production, and to lighten this otherwise heavy combination, chunks of the wing are removed in a final assembly operation that leaves it looking like a typical open structure with ribs, sheeted leading edge back to a main spar, and cap strips.

The flying stabs and rudder are similarly built, but with all 1/64 ply covering. Molded tips and root ribs complete the assembly of all flying surfaces.

Both the ARF and ERF Hobies come in a molded foam container within a cardboard box exterior. The container, with its molded dividers, makes an excellent carrying case for the disassembled model. Also included with the model is an excellent 48 page manual, which, with a profusion of sketches, assists you in final finishing and assembly of the ARF model, and the radio installation and flying of both the ERF and ARF (Beginning to sound like Little Orphan

Annie's dog, Sandy).

The Hobie Hawk is an unusual model aircraft in many ways, not the least of which is its source. It is produced by a company that is known the world over for its line of catamaran racing sailboats.

Obviously, for a mere model airplane to be designed, produced, and marketed by a multi-million dollar boat company, there had to be someone way up the line of command who would have the interest and the desire to do such a thing. Well, why not the top? It just so happens that Hobie Alter, who went into business at the age of 16 to make surfboards, and is now the worlds largest producer of catamaran sailboats, also found time to become interested in model airplanes. This particular interest lay dormant for many years, while the surfboards and sailboat phenomenon took place, but finally, a few years ago, it again came to the surface.

Being a man who had succeeded in developing his own talents in mass production with modern materials, it was only natural that Hobie's renewed interest in model aircraft...radio controlled gliders in particular...would lean toward mass production of such an item. Thousands of hours...and bucks...went into the research and development of the Hawk over the past couple of years, glider guiders in the Orange County area of Southern California had many impromptu meetings at various slope sites with Hobie Alter, as he designed, redesigned, flew...and demolished test model after test model in his search for the final product; a rough, tough, but esthetically beautiful radio controlled glider that could be mass produced, and in its finished or almost finished form, provide the means for both experienced and inexperienced modelers to get into the air with the least amount of bench effort.

Radio installation is extremely easy. Most any type of 2 channel rig can be fitted, and the servos can be mounted right on the polyethylene cockpit, using sheet metal screws. The pushrods come all assembled, and adjusting for length is simply a matter of softening the hot glue connection enough to slide the wire portion in or out of the tubes at servo end.

The EK brick we used was simply pushed in place. With a snug fit, the hold-down screws are hardly necessary. Carrying out the theme of doing as little work as possible, the switch was mounted so that the EK "switchamajigger" handle came out through the canopy. The only adjustment necessary was to rotate the clevises a few times on the threaded pushrod connectors. Easy.

To finish the model, we mounted a Scott Research tow hook at the suggested location, using sheet metal screws. The hook allows 5/8 inch adjustment in either direction, which is more than enough to compensate for variations.

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Seriously, this method will give you a tougher, more flexible, more fuel proof, super-shinier finish than a half-dozen coats of dope will. Cheaper and quicker, too. It's ideal for the weekend flyer who's in a hurry to get in the air, and will have his dope-happy buddies eating their hearts out.

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Hobie has accomplished almost all of his goals with the introduction of the Hawk. It is an extremely rugged aircraft, capable of taking all kinds of punishment, and if a part does become damaged beyond repair, it can be replaced with an exact copy of the original item. It has extremely graceful lines, and the factory finished fuselage is, all by itself, a beautifully sculptured piece of functional art. Add to this the distinctive wings with the upswept curve of the elliptical dihedral, and you have an example of superior art form in the field of model aircraft.

If the Hobie Hawk has any shortcoming at all, it is in its flight characteristics. Although each modeler will have a different opinion on this matter,

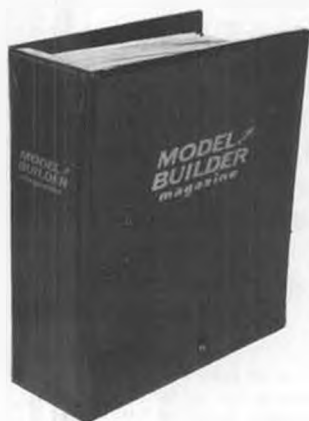
it is generally conceded by those who have had many hours of R/C glider experience that the Hobie is a bit tricky in the air. While the experienced modeler can recognize the problems, diagnose them, and make appropriate changes, the neophyte will be faced with characteristics that are beyond his comprehension. If the Hobie was unattractive and scarce, this wouldn't pose a problem, but its beauty and availability means that it is finding its way into the hands of many newcomers to our hobby/sport, and like the coming of the first all-plastic, ready-to-fly control line models some years ago, it has to be met with mixed emotions. On the one hand, you have the means of encouraging more people into the hobby, which expands

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the market for everyone involved in the industry. This in turn, raises the stature of the hobby and the acceptance of the public. On the other hand, you have the old saw, "Model airplanes? Yeah, I tried it once. Bought all this fancy equipment, crashed the damn thing on the first flight. You can *have* it!"

Experts will discover for themselves that the Hawk's airfoil has an extremely sharp leading edge, making for a very low stall tolerance. The angular differ-

ence between the wing and stab (at 0° setting) is extremely high, eyeballing around 6 to 8 degrees. This may be OK for free flight, but in R/C, it creates a terrific amount of drag and a resultant drop in penetration. If not balanced at, or forward of the recommended point, the Hawk will stall and drop off on a wing faster than you can yell "Help!"

As they come from the factory, the wings have a certain amount of tip wash-out to help avoid those tip stalls, but we'd recommend that you try to warp in more, and particularly try to create a gradual washout which starts well in toward the root and continues to increase all the way to the tip. Also, we moved the balance point ahead so that the measurement shown in the manual increased to about 21 inches, (Not from the nose!).

For anyone willing to take the trouble, we'd suggest decreasing the wing incidence by relocating the front wing wire. This has been done by an experienced glider R/Cer friend of ours, and it resulted in generally improved flight characteristics and much better penetration.

Plans for the future include the introduction of various wing sets for various weather conditions, including smaller ones for slope soaring in strong winds, larger ones for light thermal action, and... we hope... a set with a thick, flat-bottomed airfoil for the beginner who needs all the help he can get.

The Hobie Hawk has aroused a lot of comment among R/C soaring enthusiasts, hobby dealers, distributors, and even competing model glider manufacturers. Reaction to the Hawk's design, construction, and production methods is strongly positive, but what's most unique is an almost unanimous desire on the part of all factions for Hobie Alter to succeed with the Hawk, as he has the

means of expanding the hobby market into previously unexplored consumer areas. If his success in surfboards and sailboats is any indication, we've got us a spearhead!

Sailing *Continued from page 31*
simple laboratory hose clamp, or a brass strap all the way around the mast. This thing carries the jibstay tension, so make it light but strong!!!!

Now, if you put one of these on your 50/800, make sure that none of the jenny rack parts stick above the 80 percent rule for point of jibstay attachment. Consultations with the last class secretary produced a ruling that if it didn't stick above the 80 percent height of the mainsail head it was OK. I'm also using one of these racks in conjunction with a full width jib traveler on my EC/12, and like it very much. Again, in this class, nothing which holds the jib up must extend above 59 inches, so measure it well when you put it on.

What makes a good slot? How do you tell if your set-up is optimum? Since each boat is set up by a different skipper, there are no answers which can be given in 32nds of an inch. But if you watch your boat while going to windward, there are a few benchmarks you can use to plan adjustments.

1. In a gross way, you can tell if your jib is too far in and the slot is closed off or "choked" by looking at the mainsail. (Is the bottom main batten parallel to the centerline of the boat?). If you are backwinding your main, it will be getting hit by wind behind the mast and collapsing, losing its shape periodically, or never being allowed to assume the convex airfoil built into it. The answer here is to slacken off on the jib sheet a bit and carry your jib farther outboard.

2. Now, it may be necessary not to point quite so high in order that the

newly slacked jib keep from luffing. You can only determine this by sailing against another boat which does not make any changes and is used as a standard. If you have lost your ability to point, some of it may be regained by flattening the main using the foot outhaul, and by adding backstay tension. The main may be sheeted in a little tighter also. Having made these adjustments, your boat will now be pointing higher, but have you slowed her? Crack the sheets off just a bit and see if this doesn't free her enough to get rolling again, then pinch up and sheet home now that you've established some boat speed.

3. Keep track of your adjustments in a log book. This is the only way you will be able to set the boat up in a reproducible manner. I can truthfully say that a boat which will take second place in every race will win any series competition in the country if her skipper is consistent in setting up his gear. The winners will all be different, as each just happens to get a good "tune" on race day. But when the season is over, Mr. Consistency will take home the Silver.

4. In rare cases, a recut of a mainsail may cure backwinding problems, but 9 times out of 10, it is a simple adjustment of jib camber (too full and it'll backwind more readily), main camber (too full and it is more easily backwinded), of jib and/or mainsheet positioning.

5. Jib stay tension can cause backwinding by producing a too taut jib leech which will not match well with a full mainsail behind it. On light air days, slack off backstay somewhat to allow fullness and curve to develop in your jib. Don't carry it to extremes, but match jib leech and main leech curves for the "shape of speed" we have been studying.

6. Now that you are all tuned up, switch hats and act as benchmark for your partner who has sailed patiently for you during the last hour. By continually changing from tuner to tune (not some kind of a fish) you'll soon begin to see large changes in performance between the two of you and the rest of your fleet. The wages of practice are victory.

The development of a sail system for windward drive is a three-way compromise between the jib, the slot, and the main. Unless the jib is very tiny . . . making up less than 25 percent of the sail area as on a Dumas Star 45 . . . I would place them in order of importance: jib, slot, main. Each sail is being pushed to give as much power as possible; by freeing off the main and jib to let the drive vector's share of the total force vector become as large as possible. At the same time, pointing ability is being compromised, so we harden up to point higher. All the while, the slot is being changed, going from a choked to a too open configuration, which doesn't take maximum advantage of jib/main interaction power.

A proper slot should show an even



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rate of closure from foot to head. It should successfully "accelerate" the air moving through it, and not retard it at any level. The slot is the result of an even, parallel twist in both main and jib. This means that you are now to the point of having to think of the total sail plan whenever you adjust anything on your rig. Seems more complicated than turning a needle valve on one of them these greasy engines, don't it . . .

* * *

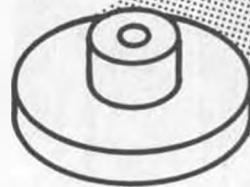
On the news front, AMYA welcomed aboard sanctioned club's No. 36 and 37. The former is the UPPER CANADA MODEL YACHT CLUB. Members sail at Hamilton, Ontario, and hold their meetings in Mississauga. Contact Robert Preston, 2440 Barcella Crescent, Mississauga, Ontario, Canada L5K 1E2, for further information. The second club is the WICHITA MODEL YACHT CLUB. A thumbnail sketch from their vice-commandore shows that they are sailing every AMYA class of vessel. New skippers will have somebody to race regardless of their type. The Secretary is a refreshing change from the usual male chauvinism found in our ranks . . . Mrs. Joan Jones, 8418 Peachtree, Wichita, Kansas 67207 will field your inquiries.

I'm looking forward to seeing how crowded the 1975 Regatta Schedule is going to get with all the new activity we are seeing across the country.

Any of you skippers living in the greater St. Louis area should know that a focus of activity seems to be forming there. Contact Harry Vink, 512 Joy Drive, O'Fallon, Ill. 62269. Harry is fresh from the Washington, D.C. Club, and is acting as a figurehead for a new club in that area of the mid-west.

AMYA 1974 Elections were held on August 11, 1974. The new two-year

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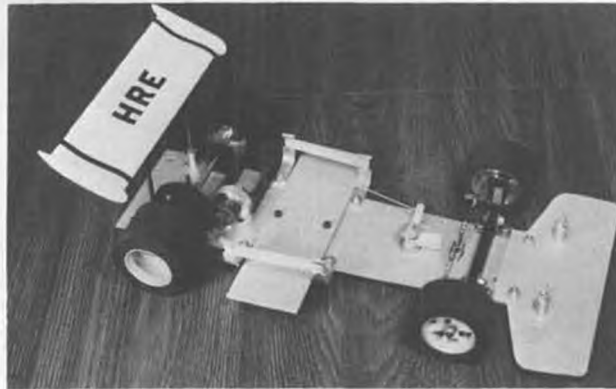
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term President is my old nemesis, Bob Harris. Should you wish to give him the benefit of your reactions to AMYA postures and policies, he can be reached at 7628 Dunston Street, Springfield, Va. 22151. The AMYA Secretary is Gene Salika, 3917 Sunnyside Ave., Brookfield, Ill. 60513. Mail your membership

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applications and five dollar annual dues to him, as well as your vessel registration forms.

Among the motions that passed at the elections was that covering the 50/800 Class Specifications. With a sigh of relief, I'm happy to report that the AMYA Specs will stand as written for another year to allow time for a committee to work over suggested changes.

The new class secretary for the 50/800 Class is John Ball. John is forming a rules committee, and has requested input from all skippers concerned with the class. I know John will serve the members of that class well, but he must

be supported and communicated with. In some cases the motions which were voted down in the election had been made without even the common courtesy of informing the class secretary. Such a procedure is contrary to the health and well being of any association!

I was recently sent a copy of a hardbound book which addresses itself in a cursory way to the problems of model boating beginners. It is called **MODEL SAIL AND POWER BOATING BY REMOTE CONTROL**. Written by George Siposs, it is available from TAB BOOKS, Blue Ridge Summit, Pa. 17214. If nothing else, this volume points out the dire need for a good basic reference on R/C sailing to assist the novice. George's reputation and credentials place him in that exclusive category of individuals who take time out from their own modeling to assist others. He is not a model sail yachtsman and as such, gives only a once-over-lightly to the nuts and bolts of model yachting.

I was pleased to see AMYA prominently mentioned in the Chapter 10 coverage of Clubs and Activities, but was greatly disappointed to find that of the three national organizations for boaters, each gave a listing of local clubs *except* AMYA. Why it was missing I don't know, but since there are 37 AMYA clubs now, there is certainly rationale for including it in any subsequent edi-

tions.

The purchase price of \$7.95 for the hardbound, convinces me to recommend the paperback, and to urge that the difference be put into an AMYA membership. Four issues of the Quarterly Newsletter will carry as much technical information as is available in the book.

George struck a responsive note when he urged beginners to obtain sails from reputable sailmakers. Then he goes right out in the next chapter and tells us to launch our boats with a string tied to the bow. "George, they're radio controlled!!!" My compliments to George Siposs on his attempt to fill the boating information gap. I was a party to an in-house AMYA project which tried to float an all-sail version last year, and ran into a dead end. George's book is the best and only one available. He has touched all the major bases which our sport offers in its widest application with a very general, broadbrush treatment.

* * *

Over the years, I've talked with a number of skippers who were interested in setting genoa jibs on their boats. All agreed that this would be little advantage on an all-out racing boat, 'cause what do you do with the bloody thing when you are not close-hauled? I would like to open these pages to a discussion and description of the genoa-fever. Seems as if we've all had it in one form or another. Drop me a photo of your boat underway and a sketch of your sheeting system, and we'll see just what clever tricks you fellows have under your hatches. At the present time we have a genoa on the cutting table for Keith Simons of Bermuda. Any of you other fellows try this madness? Let me hear about it. ●

Moon Dust . . . Continued from page 52

Install the wing tips and the adjustable leadout guides now. While you're at it, cut the flaps from 1/4 inch balsa and install them with the flap control horn.

Set the wing aside now and cut out the fuse sides and doublers. Glue the doublers and motor mounts into place and weight or clamp them in order to keep them straight and get a good glue joint. While this is drying, cut out the stab, elevators and rudder. Shape them and install the hinges and control horn in the stab and elevators.

Saw out all the body formers, epoxy the plywood former behind the tank compartment, and align the fuse. Slide the stab into place with the rear push-rod connected to it. Now install the rest of the body formers, making sure everything is aligned.

Next, finish the tank compartment and install the nose gear. Drill for the engine you are going to use, then slide the wing into place, align and glue. Connect the rear push rod now and build the turtle deck. Glue all the rest of the blocks into place after they are hollowed. Build

the cowling and fit it to your engine.

After you have built the cockpit detail and have the canopy installed, glue the rudder into place.

Sand everything a final time and check and see if we have missed anything. We don't want it falling apart in the air, do we?

Now that you have this wooden delight built, it's time to start the finish. I won't go into how to do this because there are many different ways of doing it and most of them are probably better than mine. But I will pass on a piece of advice given to me by one of the modeling greats, Charlie Mackey. "It's not how much paint you put on that makes a good finish, it's how much you sand OFF." This is very true, so when you think it looks good, sand it one more time with 400 W/D paper, wet. Then shoot another coat on it. You'll be surprised how much better it looks.

Good luck with your MOON DUST and happy, safe landings.

WACO *Continued from page 35*

on the Waco on floats turned out to be of Canadian registry. Many still fly the bush country up there.

While researching the SRE in "The Waco Story," by Ray Brandly E.A.A. 38963 (he is also the president of the National Waco Club) I ran across some very interesting facts. The first SRE model came out in 1940, powered by the Pratt and Whitney 450 h.p. Wasp Jr. engine. This ship had a cruising speed of 195 m.p.h., a rate of climb of 1,550 f.p.m., and a landing speed of only 55 m.p.h.! No five place, single engine aircraft has ever equaled that performance to this day. This includes some with retractable gear.

May many happy hours be yours while flying the SRE.

Choppers . . . *Continued from page 15*

toy helicopter. Also flown for demonstration at the meet, was John Simone's beautiful "Gazelle" by Schluter. The ship appeared to handle very smoothly, but unfortunately suffered a mishap when the throttle link disconnected. This minor crash was the only unhappy event of the contest.

"Hats off to MODEL BUILDER Magazine and the Camarillo Flying Circus for sponsoring a real great contest."

FINAL APPROACH

The text in this issue is rather short because of the number of pictures. Before I touch-down, however, I've got to tell you about "Big Ernie" Huber. As you probably know, he's out here on a Hollywood assignment, flying R/C choppers for a movie production. Some of the tales he tells, you wouldn't believe! But you *can* believe he really puts his choppers through the paces! During the Western States Championships, Ernie was demonstrating his stable of three (2



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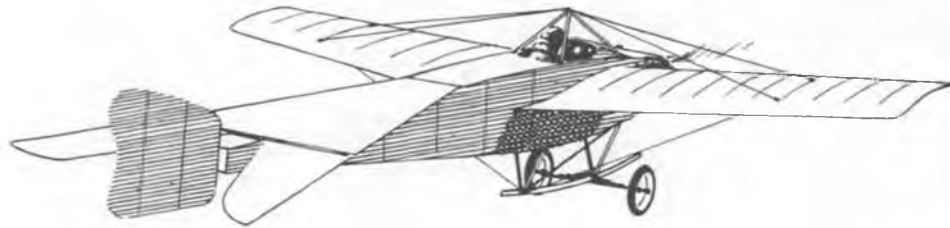
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Counter Continued from page 7
stronger than the more common rotary peeled veneer. Similar size pieces of 5-ply birch and 3-ply fir weigh 31.44% and 32.98% more respectively, than 5-ply spruce.

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them from the real thing in flight. To finish up the demos, Ernie performed several "extreme attitude" quick-stops right in front of the designated spot (see photos) and made about three attempts to loop the Jet Ranger. Today, however, was not the day for them to go completely around; the loops invariably ended up in an Immelmann "roll-out" on top of the loop. How on earth he manages to keep oriented during such a maneuver beats me, but he sure does it smoothly. My hat's off to a great chopper pilot . . . 'nuff said for that . . . BCNU next month.

Plug Sparks . . . Continued from page 29

Sunday was a slight improvement, by Saturday's standards, but still windy. The afternoon thermals were real boomers, carrying the models out of sight in three minutes. Bob Oslan was named "Grand Poobah" of the meet on the basis of his two firsts and a fourth in three events. He has the rather dubious honor of being the custodian of the "Chambers Pot" for a year.

Most unusual model on the field, a "Tomahawk," by Larry Vance, received its award "posthumously." Haw! Guess who won the best crackup award?

Kavans and a Bell 212) choppers to the delight and amazement of the spectators and other chopper pilots alike! He warmed up with "death-defying" wing-overs, steep turns and Figure 8 patterns at ground-level (rarely over 3 feet high)! Later, he brought out one of his Bell 212's that he uses in the movie work and displayed an absolutely fantastic ability to hover endlessly without moving an inch in any direction or up and down!!

I don't remember the exact number of identical 212's he built for the movie but it's something like a dozen . . . and they are so scale-detailed you can't tell

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Worth mentioning was the win in .020 Replica by Don Weitz over Sal Taibi. Don was so enthused that to say he was wildly excited would be a grave understatement. Well, we all get pepped up at our first win.

HALL OF FAME AWARD

As noted in the Sept./Oct. issue of MODEL BUILDER, Sal Taibi received an A.M.A. Hall of Fame Award. The SCAMPS organized a testimonial dinner for Sal at the Hilton Inn, Anaheim. Over 80 people showed up! What a great testimonial to Sal's popularity.

ENGINES

With everyone (so it seems) looking for old ignition engines, good news comes from Mark Fechner, 112 Clinton, Salt Lake City, Utah 84103. He is presently making Ohlsson and Arden timer housings. His latest project is to produce a "NEW THOR," which will be a dandy, with machined head and improved parts. Mark needs to know what the demand is. So encourage him, men, write and tell him to do it!

MAIL BAG

Just received a sample of vertical grain Sitka spruce plywood from David C. Fleming, 18175 N.W. Park View Blvd., Portland, Oregon. Sample of merchandise looks real great. He is manufacturing 3/8, 1/4, and 5/32 thick plywood in lengths of 12 to 24 inches with corresponding widths of 6 to 12 inch. If you are looking for the best, try Dave's new products. (See also "Over the Counter." wcn)

Letter from Jim Kloth, of St. Petersburg, Fla. asks why we can't take advantage of the British D.C. Dart engine of .035 displacement for use in the .020 Replica class. Although they are no great shakes for power, the price is good; generally under \$15.00. Best part is that they are diesel and require no batteries. You can gettun at Stanton's in Chicago. How about the idea? It is a well used engine in England for the Replica Event.

Tim Banacsak, SAM Secretary, has called and written regarding a compressed air event at the Nationals. He is so enthused over the idea that he will offer trophies for the best flying com-

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pressed air models. So, gettun built men! This is more than enough advance notice.

FUTURE CONTESTS

As this issue goes to press, the Orbiteer Annual, featuring O/T events will be history. However, a trend has been started for R/C Texaco and R/C Limited Engine run O/T events. In addition, Red Barrows indicates he will have a Sweepstakes trophy to be won by the best overall performances.

The writer will again sponsor the R/C Texaco O/T during the Dec. 1 SCIF Texaco meet. In addition, the 20 second limited engine run event will also be offered. In the latter case, five minute flights will be maxes, with all time over being deducted from the total! Be there, men, it's gonna be real fun!

CLOSING SHOTS

For those fellows who are trying to match their vacation times with the SAM Championships; in conversations with Tim Dannels, C.D. of the host Club, the Model Museum, the third week of July has been tentatively set as the SAM Championships time. This means flying would be on Tuesday, Wednesday, and Thursday, July 22, 23, and 24 respectively, with the welcoming bean feed on Monday night, July 21. I guess now that it is down on paper, it will be graven in stone. Ed Beshar will kill me! See you all at Denver. ●

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Skis Continued from page 21 slip in a blank. Hold it in with the lid, and allow to simmer for 15 minutes. Take the wet blank out and position in the bottom block with the rear end up against the appropriate stop. Next, put the top block in place and carefully clamp the two blocks together with "C" clamps. I use two; one at the back end of the ski and the other, that will do all the squeezing, close to the bending area. See the drawing. Leave to dry overnight. Set it over your heating register if possible.

When it is unclamped and removed from the formers, you will find that the curved end of the ski will spring back

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slightly. Now make the other ski.

Use a file or sandpaper on a block to round the nose and slightly sand all surfaces to remove any raised grain.

Make the trunnion blocks out of hardwood (pine is too soft). Follow the size given in Fig. 3. Drill the axle hole to suit. The vertical spring wire hole is 1/8 inch diameter. Epoxy the blocks onto skis in the middle of the width, and 1/3 the ski length from the back (Fig. 4). When the epoxy has cured, drill and countersink the bottoms for 1/2 inch No. 4 screws. Finally, epoxy the 1/8 spring wire in place.

The finish can be anything you prefer, I use two coats of resin. What is most

important is that the bottom surfaces end up being smooth and tough.

The photos show mounting details, but for two-wheelers, the following is the easiest: With a sheet aluminum landing gear, drill a 5/32 inch hole through each leg close to the top mounting area for a horizontal music wire strut that has been cut long enough to extend past the vertical spring wires coming from the skis. Lash the crossbar to the vertical spring wires with rubber bands. Check to see that the bottoms of the skis are parallel to each other and parallel to the thrust line of the model. If not, bend the spring wires to correct. Now place your model on a flat surface and it should sit slightly

tail down, as the rear of the skis do the balancing work.

For three-wheelers, the nose ski is mounted onto the original nose leg and the vertical spring wire is bound to the leg, after being bent so that it will lie against it. Use rubber bands here again. The main skis are mounted in a similar fashion. On some of our trike skied models, we added a small sub fin to the rear of the nose ski for better steering. This is made from formica epoxied into a saw cut slot.

HINTS

For clothing, nothing can beat a snowmobile suit with boots and gloves. I wear a pair of woolen gloves while tweaking the sticks. These have the thumbs cut off so that I can work the trims easier. The snowmobile mittens are worn in between flights. Hot coffee and a warm car are also close by. (A little "personal anti-freeze" won't hurt either, but don't add too much! wcn)

When you first arrive at the field, take your model out and allow it to reach the outside temperature before placing the skis on the snow. If you plonk it down immediately, then the warm skis will melt the snow, which soon freezes solid on them! Use model diesel fuel for priming, 2-volt wet cell for the fire, and an electric starter to spin up.

We find that the majority of R/C equipment is reliable at the low temperatures, though range does drop off. To check everything, I leave the transmitter and model outside for several hours, then range check to see what has happened. The older Heathkits needed to have their receivers retuned for cold weather flying, and Kraft stick assemblies tend to stiffen up. This is due to the plastic, cup-shaped ball retainer closing down onto the stick ball. You can solve this by dismantling and trimming a small bevel on the inside corner of the molding. With the lower temperatures, we fly fewer flights because the servos are stiffer working, and this means a greater battery drain.

Flying in the winter can be fun, done properly, and this year the Ann Arbor Club is organising a New Years Day Fun-Fli. In the past, the Pontiac Club has run a similar event off a frozen lake, and this is a great way to shake out the winter cobwebs and the festive season's hang-over.

Golden Age . . . Continued from page 39

"Oh maybe fifty," I guessed (feeling comfortably accurate).

"Ha!" he said, "guess again . . . Try five hundred and you will be about right."

Five Hundred! Good grief, I had no idea! But why so many? Fitzgibbon explained that one and two-man model "companies" sprang up everywhere in the 1930's. Many sold their "kits" for five or ten cents apiece, and could not

afford to advertise more than once in the model magazines. Others, even too poor to afford one advertisement, traveled on foot from store to store trying to get their wares on the market. But the "500" is not a "guestimate." Fitzgibbon and his associates have combed the old magazines, cataloged the manufacturers and arrived at that number through research.

As many of even the smallest "manufacturers" produced several kits, there were literally thousands of different types on the market. Add to this the numerous aviation and model magazines which published one or more plans on a monthly basis, to say nothing of weekly subjects in the local newspapers, and the potential number of plans from aviation's "Golden Age" is mind boggling.

"We already have several thousand different plans," Fitzgibbon says, "and more arrive daily from all over the world. It's a challenge to decide which are most worthy of restoration and preservation." That decision is usually made by Fitzgibbon and a "committee" composed of his partner, Harry Keshishian, and interested members of the New England Wakefield Group, of which Fitzgibbon is a member.

Once a subject is chosen, it is "quick printed" for a working rough which shows how the unretouched plan would reproduce. The originals have often been used, and frequently are spotted with dope smears and have portions torn or cut away. Fitzgibbon, Keshishian and Bill Harney correct the damage by carefully re-letting or retyping instructions and redrawing portions of the plan which which became glued to airframes, thirty or forty years ago.

"Model airplane draftsmen," says Fitzgibbon, "were artists, and their work was often quite distinctive." To demonstrate this, he pulled a set of Paul W. Lindberg plans from an old Popular Aviation Magazine and pointed to the numerous perspective detail drawings dotting them. As further proof, several sets of Peerless plans by Jo Howell were laid out to show the neat little "x's" which were drawn to indicate fuselage

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cross-members. Then examples of "Tomasco" designed Toledo Model Airplanes Supply Company were pulled to illustrate the clarity and wealth of detail that rivaled the best of the famed Cleveland series, and Fitzgibbon fired off the names of several other designers, each characterized by a distinctive style.

With each project, Joe Fitzgibbon and the men of Golden Age Reproductions make every effort to duplicate the original draftsman's style so that the finished product is as close to the original plan as possible. In the few cases where the original parts were printed on balsa sheets, but not on the plans, they are carefully redrawn and printed either

on the plans or, if space does not permit, on supplemental sheets. Where a subject was a "plans included" article in an old aviation magazine, the drawings are joined together into one readable plans set. Once the final touches are made, the restored plan is again "quick printed" and checked for imperfections. Assuming all is well, a permanent metal plate is then made and a run of 150 or so copies is printed. The metal plate is then stored for retrieval as needed.

"How can you, with all this work, sell most of these plans for only \$1.25?," I asked.

"Well," Fitzgibbon replied with a steadiness in his gaze that was most

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By producing a product of superior quality at a price easily affordable by even young model builders, Fitzgibbon has sown the seeds for both commercial success today and a continued interest

and growth in the collecting and building of "antique types" for generations to come.

(Joe's project has been under way for several years now, and he has frequently advertised in our "classified" section. Last month, "Golden Age Reproductions" became one of our regular display advertisements. Look for the ad in this issue. wcn)

F/F Continued from page 43 for rough weather, but included are the measurements (in parenthesis) for a longer center wing panel (6 additional inches) that will bring the model up to maximum area. Hard balsa is used through-

out, except where spruce is specified, and the model achieved the required weight without ballast. The auto-rudder allows for left rudder with right thrust for a right-hand climb and a left glide circle.

Power is provided by 18 strands of 1/4 inch Pirelli, if available to you. An alternate power source is 14 strands of FAI Model Supply's rubber.

This is a good, uncomplicated design, which can be duplicated with a minimum of special equipment, and is typical of John Clear's creations. Might be a good one with which to get a start in Wakefield.

NITRATE DOPE: COOL IT

In the "September" issue of this column, I warned against the flammability of nitrate dope. The story accompanying one of this month's photos is interesting because every model club has a member who suffers . . . constantly . . . ill will or bad luck. Such a member exists in the Willamette Modelers Club. His name is Jack Knapp, and he had built this very nice Brigadier Old Timer, complete with ignition engine and the works.

On Saturday, he called me up and said "Let's go flying tomorrow, I'll be ready with the Brigadier."

"O.K." said I.

Sunday morning, he called back, "I can't go flying," he said.

"Why not," I asked.

"Because my plane burned up last night while I was soldering an ignition lead in the fuselage," he answered. "It went up in 15 seconds. Dropped some hot solder onto the silk fuselage."

Moral: Heat, nitrate dope and open structures don't mix.

FAI PROGRAMS . . . SOME PRELIMINARIES

Acting in concert, the National Free Flight Society and the Academy of Model Aeronautics sponsored two meetings during the month of September. Both of these meetings (one for Indoor and the other for Outdoor Free Flight) had representatives from each of AMA's 11 districts . . . all of whom are active fliers.

The purpose of each of these meetings was to attempt, for the first time in the history of the AMA, to put together a comprehensive program, not only to promote FAI events in the U.S., but also to field the best possible team to represent the U.S.A. in international competition. Both of these groups met in Detroit, Michigan, and the gist of their program proposals follows:

INDOOR. The committee, headed by Erwin Rodemsky, developed the following format: Six contests separated by at least one week. Two contests will be held in each geographic region (West, Central, East). Any participant may enter any number of contests.

The two best performances will determine the amount of travel funds and

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A system of points will be awarded at each regional contest. The sum of the four best rounds out of six will be divided by eight to provide a basis of a maximum of fifty points for each of these contests. Finals will be scored similarly, except the divisor will be four. Team selection will be made from the sum of these finals score and the corresponding two best regional scores for each contestant. This program emphasizes two important features necessary for a World Championship Contestant: Performance and Consistency. Luck is deemphasized by the dropping of two bad round scores and by giving some weight to regional contests.

This whole indoor program proposal will have been voted upon by the time you read this, so if the chances of getting into the indoor team selection program has appeal for you, get started right away, as the indoor season is upon us now. Additional details on the Indoor Program and the Outdoor FAI F/F Program can be obtained by dropping a note to Frank Ehling, c/o Academy of Model Aeronautics, 806 Fifteenth St. N.W., Washington, D.C. 20005.

OUTDOOR. The FAI F/F Outdoor Committee, headed by George Xenakis, determined that its overall goal was to field the most representative and best team. It was deemed that this goal was consistent with and enhanced by increased participation. It was also emphasized by the committee that all decisions should represent a move toward making each stage of the team selection process as closely similar to World Championships procedure as possible. Consequently, the following proposal has been submitted to active FAI F/F program participants:

There will be Qualifying Trials, Semi-Finals and a Single Finals Site, all as in past programs.

The major changes have been proposed in the operations of the Semi-Finals and Finals.

These changes are as follows:

1. All models will be launched from

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a specified launch position, on a line perpendicular to the wind. Selection of launch position shall be by random draw before each flight attempt.

2. The contestant shall have 20 minutes from arrival at his launch position to launch his model, after which he loses his timer and must return to the end of the timer line. He must return to the starting table even if there is no timer line at that moment.

3. No stationary thermal sniffers or other stationary thermal sensing equipment will be allowed in the launch area. Hand held equipment is permitted in the designated launch area, provided it does not exceed 8 feet in height.

4. Only the flyer and a maximum of two helpers are permitted in the launch area.

5. The use of thermal-finding models, flown by others, will not be permissible.

Other changes include:

1. Eight 1-hour rounds with a 1/2 hour non-flying time between each round per event at the finals level, plus flyoffs during the dead-air times in early morning.

2. Eight 1-1/2 hour rounds per event at the semi-finals level.

3. A specific set of guidelines for such contest personnel as the Program Manager, Contest Directors, Event Direc-

tors, etc.

4. A system of cost offsetting for qualified contestants who must travel some distance to attend the finals contest.

Both the Indoor and the Outdoor proposals are an attempt to get the U.S.A. more strongly represented in World Championship competition. Since these proposals have input from all areas of the country and are founded upon the results of extensive polling of past program participants, it is hoped that each becomes the team selection format for the next go-around. Each will be evaluated and restructured, where necessary or desirable, after the team selection process is completed.

If it is not too late, by the time this appears in print, you can influence the outcome of the voting, even if you didn't participate in the program during the past four years. All you need do is pre-register for the 1977 program. Again, just drop a note to Frank Ehling, c/o AMA.

HUMOR SECTION

That's right! The humor section is back this month . . . whether you like it or not. And this month, for the first time . . . but probably not the last . . . we present that purveyor of purloined and powerful parlance, that seer of the



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Dear Flappy:

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far, I have never placed lower than 15th place. I have also never placed higher than 14th. Do you think I should try a different model? Or should I give up? Or What?"

Ozzie from Oshkosh

Dear Oz:

"Of the choices you give me, I would choose 'Or What?'"

Dear Flappy:

"I have a compulsion to fly with the birds, to soar on unfettered wings, to chase the tunnels of air and to dance with silver'd wings on the cloudless blue of the sky. What should I do?"

Jon L.S.

Dear J.L.S.:

"Go ahead, but watch out for that first landing... it could be painful!"

Dear Flappy:

"I am a newcomer to free flight. I have heard that if you d.t. your model, you probably won't lose it. Unfortunately, I am unable to locate any information about the d.t.s. Can you help me?"

Nervous in Nashville

Dear Nerv:

"The d.t.s are a symptom of one of two things. One is a flier who has lubricated himself too much during the course of a contest and has trouble finding important things, such as; his model, his car, himself, etc. The other is a model which has a tail assembly that pops up at an angle at a predetermined time and

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allows the model to gently descend to the earth so it can be flown again. Needless to say, if it is *your* tail which pops up, you have the d.t.s. And this is considered 'not good.' But if the model's tail pops up, that is considered 'good.' Go out and do good things."

Dear Flappy:

"What do you recommend for my problem? I have a good paying job, I am overweight, don't know anything about aerodynamics, engines, construction, or stuff like that, but I am sort of interested in modeling. What should I do?"

Melvin from Palm Springs

Dear Mel:

"I suggest that you either subscribe to Playboy or take up Radio Control. Either should provide a surcease to your sort of interest in modeling."

(Watch it Stalick! "Big R/C Brother" is reading this too! wcn)

And so we bid adieu and semi-fond farewell to Dear Flappy. Maybe he'll come bounding across the flight lines again in the near future with some more pearls of wisdom... who knows?

And on that note (about C#, I think) we end our first year of MODEL BUILDER Free Flight, as writ by good old B.S.

Hannan Continued from page 38

put together just so, it is a disaster! On the brighter side though, you are only out a couple of bucks on a wipe-out, in-

stead of a few hundred in the case of a botched-up R/C."

PROXY PEANUTS PROLIFERATE

As you know, MODEL BUILDER plans to conduct a mail-in proxy Peanut Scale contest. By way of encouragement to those of you who may contemplate entering, we would like to give a brief review of past experiences along similar lines: Several Peanut Scale models have been successfully shipped between California and Connecticut for proxy flying. Each managed to win prizes, incidentally. Three other California Peanuts were shipped to Philadelphia for the Aero Crafts '74 show, and safely returned through the efforts of Harvey Lickstein. Walt Mooney's Miles Sparrowhawk, which was featured a few issues ago in this magazine, was proxy flown to 4th place in one of the PS contests held during the U.S. Nationals. In this case, the model was showered with attention, in the form of a TEAM of proxy-flyers including Russ Barrera, Jack McCracken, and Fernando Ramos.

The acid test of transportation feasibility was the trans-Atlantic crossing of the author's Farman Moustique Peanut, which has recently been flown in England's Cardington airship hangar by Eric Coates, Scale Editor of Aeromodeller magazine. Remarkably, the model did not require any readjustments, despite the drastic changes in temperature and humidity encountered during its travels. Another proxy Peanut contest is now being conducted by Jaques Pouliquen, in France, proving the almost universal appeal of the concept. We suggest that all of you PS enthusiasts consider getting in on the fun by entering the REALLY BIG forthcoming MODEL BUILDER event!

NEW WORLD'S PEANUT SCALE RECORD ESTABLISHED

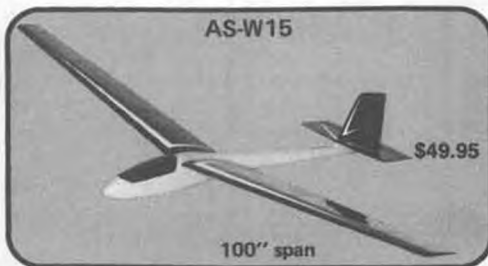
During the 25th Annual Flightmaster Scale Contest, Bob Roden of Phoenix, Arizona, flew his Dayton-Wright Racer Peanut to a new record of 10 minutes plus, at which time it passed from the sight of the official timer. Congratulations, Bob!

ENGINE RELIABILITY

Today, very little thought is given by air travelers to the possibility of engine failure during flight. Perhaps we should pause and reflect on the fact that this dependability simply did not exist during the early days of flying. For example, back in 1910, Igor Sikorsky was in Paris, scouting around for a suitable helicopter powerplant. He asked one of the experienced aviators for an opinion of the best aircraft engine available: "There are no 'best' motors, none of them are any good." Sikorsky refused to settle for such an answer and said: "Well, which one do you think is less bad than the rest?" He ended up buying an Anzani, incidentally.

Actually, the French rotary engine

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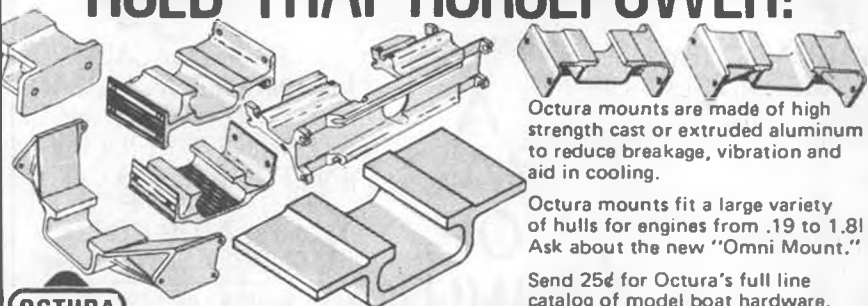
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was undoubtedly the greatest thing that ever happened for power-driven aircraft. In the words of the famous British editor, C.G. Grey: "... the Brothers Seguin produced the Gnome rotary engine which, though it consumed vast quantities of petrol and oil, was so un-naturally light that it made flying possible on aeroplanes which never ought to have flown at all. There is an old saying among aeroplane people to the effect that you can make a tea-tray fly if you push enough power into it. And that was practically what the Gnome engine did."

EARLY U.S. HANG GLIDING

Courtesy of the Russ-Craft Museum, is this brief abstract from Cosmopolitan magazine, for July, 1896: "The editor of the New York Morning Journal has brought over one of Lilienthal's machines, and under his direction, some promising experiments have been made." Reporter John Bisben Walker goes on to predict that one day in the future, almost every college campus would have a hang-gliding facility. And now, 78 years later

TURBULATION, ANYONE?

A few columns ago, we mentioned the



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introduction of the new plastic, foam-winged North Pacific "Sleek Streak" ready-to-fly model, and invited readers to comment. Dr. Julian Wolkovitch reports that performance can be improved by simply punching a closely-spaced row of pin-holes from the underside of the wing, approximately 1/4 inch aft of the leading edge, running the full span.

TONER'S HANDY HINTS

Captain Ed Toner, genial owner/operator of Buzzer Model Airplane Company, sends in the following tips of interest to builders of small models.

Many toy stores carry tiny doll-size clothes pins, which make excellent clamps. The type Ed sent along, measure about an inch-and-a-half in length, and are priced at 55 cents for a package of twelve.

Ed also points out that certain plastic coffee measuring cups work out well as radial engine cowlings. Ditto the caps from certain paint spray cans.

Well, to quote reader Ed Lockhart, this seems a good place to sign off, so I will: . . . OFF. ●

Workbench . . . Continued from page 5
Los Angeles, California) Newsletter, Ron Clem, editor. It's important to all of us, so read it carefully.

"During a recent thorough physical

examination, it was determined by test what I already knew! I have a serious hearing deficiency . . . above 3000 cycles per second (Hertz). Frankly, above that frequency I am deaf. Who needs Hi-Fi?!

"While on a recent business trip to the FAA Aeronautical Center (Civil Aeromedical Institute) in Oklahoma City, I became aware of a study of aircraft noise and the effects on hearing. A summary of the results of the study are published in FAA Advisory Circular AC 91-35.

"The publication does not mention model aircraft engines, but medical authorities have convinced me that noise produced by model plane engines can be equally damaging. I can't be sure which is mostly to blame in my case, since I have operated models and private planes since the '40s. I am sure the several hundred thousand rounds of 50 caliber machine gun ammo expended as an aerial gunner in WW II didn't help. Below I have editorialized on the Advisory Circulars.

"Most long-time pilots have a mild loss of hearing. Many pilots report unusual amounts of fatigue after flights in particularly noisy aircraft. Many pilots have temporary losses of hearing sensitivity after flights; and many pilots have difficulty understanding transmissions from the ground, especially during criti-

cal periods under full power, such as takeoff.

"Noise exposure has harmful effects that are cumulative . . . they add together to produce a greater effect on the listener. A noise that could cause a mild hearing loss to a man who heard it once a week for a few minutes, might make him quite deaf if he worked in it for eight hours a day, five days a week. Of course, these losses of hearing would not occur overnight; they would build up progressively over a period of years. But they would occur.

"The noise in the quietest cockpits is more than ten times as intense as the noise in your car when you are driving to work. In many planes, the factor is much greater. Aircraft noise a hundred times as intense as automobile noise is common, and in the very noisy types (including some of the large military helicopters) the difference may be on the order of thousands or even tens-of-thousands.

"The problems are relatively easy to solve. Further CAMI experiments

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I certify that the statements made by me above are correct and complete.
A. NORTHROP, General Manager.

showed that the use of ear plugs or similar hearing protection will prevent nearly every difficulty. Under any circumstance, a poorly fitted noise-protection device is worse than none because it gives the user a false sense of security. Similarly, loose-fitting earplugs are not at all helpful. An earplug that is so comfortable that I can hardly feel it, is not doing any good. The device need not be uncomfortable, but it **MUST BE SNUG.**

"Speech intelligibility is *enhanced* . . . improved tremendously . . . by the use of earplugs. The only people who will not reap this benefit are those who already have a severe high-tone hearing loss . . . these are mostly people who are particularly susceptible to the deafening effects of the noise, and who therefore need to be especially careful to protect themselves from further exposure to amount of noise being heard. Otherwise, it is easy to forget earplugs, and the noise must still be overcome when one talks.

"Earplugs can be bought for as little as ten cents for a pair of wax impregnated cotton, or for up to fifteen dollars for a pair of custom-made ear inserts. Plain, unimpregnated cotton is useless as a hearing protector, so a commercial earplug should be used instead. The most common varieties cost between seventy-five cents and a dollar a pair, and can be used innumerable times.

Recommended Action for Modelers:

a. Use earplugs or earmuffs whenever you are exposed to engines operating at high power.

b. Be certain that the protective device fits snugly.

c. Use earplugs; plain absorbent cotton does not work.

d. Shout a little louder to your caller; remember that the noise is still there and that one must speak loudly enough to overcome its effects.

e. Check the fit of the ear protectors by pressing earplugs with the fore finger, of earmuffs with the palms. If they fit correctly, no amount of pressure will cut down on the amount of sound that is still getting through. Sometimes pressing will increase the sound because the hearing protector is being deformed and is allowing some sound to get through; ignore such increases.

f. Demonstrate the effectiveness of the plugs by wearing only one during a test run. After shutting down the engine, remove the plug. The difference in hearing in the two ears will almost make it seem as if the ear that was open during the run is now quite deaf. It is not, of course. It is only less sensitive because of the noise exposure, and it will recover after a little time. But that loss of sensitivity is an indication of how the noise can produce permanent damage to one's hearing.

"If you are not convinced that one can increase the pleasure and safety of model flying by wearing ear protectors,

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I have a reference to several publications on the subject that should convince you."

FOR STAMP COLLECTORS ONLY

Philatelists (that's our \$25 word for this month) should get a kick out of the following. Just recently, we received a piece of mail from someone in this country (we won't mention the name or the origin) who has apparently come up with a way to lick ('scuse the pun) the high cost of postage. The first class letter was stamped with an 8 cent postage stamp (not enough, right?) and . . . get this . . . a pretty, four-color sticker from Fruit of

the Loom underwear . . . large, size 42-44 . . . machine wash warm, tumble dry medium!

Some people will do *anything* . . . for two cents.

CONFUSED IDENTITY

When John "Daddy Warbucks" Pond, our old timer "Plug Sparks" columnist decides to keep someone anonymous, he doesn't fool around. We received a letter (with a 10 cent stamp!) from Bill Hale, Columbus, Ohio, who competed in the SAM Championships at Lakehurst Naval Air Station, New Jersey. In the letter, he points out that John's report on the

Index to Advertisers

AHM	64	Misjon Industries	75
Astro Flight, Inc.	77	Model Builder Binders	66
Bridi Hobby Enterprises	4th Cover	Model Builder Products	72
Carr Sails	72	Model Rectifier Corp. (MRC)	8th Cover
Cloudbuster Venture	61	Walt Mooney Peanuts	78
Competition Models	66	Sid Morgan (Vintage Plans)	78
Coverite	60	M & S Ltd.	70
Craft-Air	61	Octura Models	77
Jim Crocket Replicas	61	PanaVise	62
D.T.C. Design	68	Peanut Contest	2
Dumas Products, Inc.	2nd Cover	Peck-Polymers	69
Dynamic Model Products, Inc.	77	Peyton Products	76
Flying Scale Models	69	John Pond O. T. Plans	62
Flyline Models	64	Proctor Enterprises Inc.	76
Fox Mfg. Co.	76	Rocket City Specialties	67
Golden Age Reproductions	64	Pro Line Electronics, Inc.	5th Cover
W. C. Hannan	70	Scott Research Co.	71
Hobby Hideaway	71	Sig Mfg. Co.	1
Hobbyoxy Products	65	SolidScale	76
Hobie Model Company	7th Cover	Jack Stafford Models	4th Cover
HRE, Inc.	68	Sterling Models, Inc.	57, 58, 59
JoMac Products, Inc.	74	Sullivan Products, Inc.	4th Cover
Kavan Model Aircraft, Inc.	6th Cover	Su-Pr-Line Products	71
K & B Mfg.	56	Tatone Products	70
Kraft Systems	3rd Cover	Victor Model Products	74
Marlow Engineering	62	Vortex Model Engineering	73
Micro Models	69	Williams Brothers	67
Midwest Model Supply	63	Earl Wolsleger	75

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SAMCHAMPS in the "September" issue included a picture of him (page 15, bottom right) where he is identified as "Dick Ball!" Furthermore, it was Bill, not Hale Wallace, who had to be rescued from the brush while plane-chasing where he was hit by heat prostration (described on page 16).

Bill went on in his letter, "Oh well, this just hasn't been my year. The Mystery Model for this issue just has to be Korda's "Powerhouse," but with my luck, who knows?"

Well, Bill, maybe your luck has changed. It so happens that with the handicap, your correct answer to the Mystery Model of the Month was post-marked early enough to win you a free subscription to MODEL BUILDER. How 'bout that!?

* * *

While we're talking about it, Bob Stalick's monthly Mystery Model contest has generated an interesting side-light. The answers come from modelers who not only identify the aircraft correctly, but often times have interesting stories to go with the answer. In some cases the letters come from the designer himself, in others, the model brings back fond

memories of great experiences and of contest wins.

In the case of Dick Korda's "Powerhouse," it brought back a proud moment for George Wagner, of San Diego, California. On October 31, 1948, George flew a Class B, Torp. 29 powered, 56" span "Powerhouse" for a National record time of 27:58.8 in Open. Of course, like any true modeler, George modified the kit model . . . in this case he increased the stab area about twenty inches.

Incidentally, George sent a copy of the record certificate, which was signed by then president C. O. Wright and secretary Russ Nichols . . .

IN CLOSING

Our closing story . . . or fable, if you will, comes from an early 1974 edition of the "Stinger," newsletter for the Cobras R/C Club, of Council Bluffs, Iowa. Larry Puls, editor. It's not exactly a Christmas story, but then, this wasn't written at Christmas time, and with the postal service the way it is, especially during the holiday season, you probably won't see it until after Christmas. Anyway . . . So why not?

"This fall, a sparrow was flying south

all alone. He had procrastinated and stalled about leaving the northern climes as he was having too much fun. He had waited too long, and was caught in the first icy blasts of a frigid blizzard. His little wings iced up and down he came into a pasture, a feathered ice cube.

"As the last feeble beat of life was leaving his poor body, a cow ambled past. Suddenly the pathetic little bird found himself covered by the huge mound of manure, fresh and steaming. Gradually life returned as the warmth permeated his body. In the space of minutes he had gone from the brink of death back to glorious life. He pushed his little head free of the pile and burst into song. A cat heard the song and came to investigate. Two swipes and the sparrow became the cat's dinner.

Now for the moral:

1. Someone who puts crap on your head is not necessarily your enemy.

2. Someone who gets you out of it is not always your friend.

3. And above all, when you have a good thing going, KEEP YOUR MOUTH SHUT!

May you all have a real good year in 1975. ●

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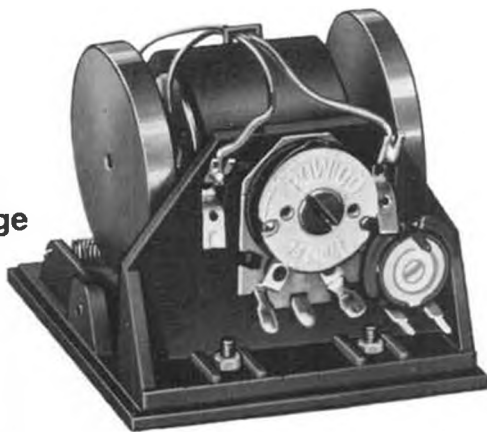
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