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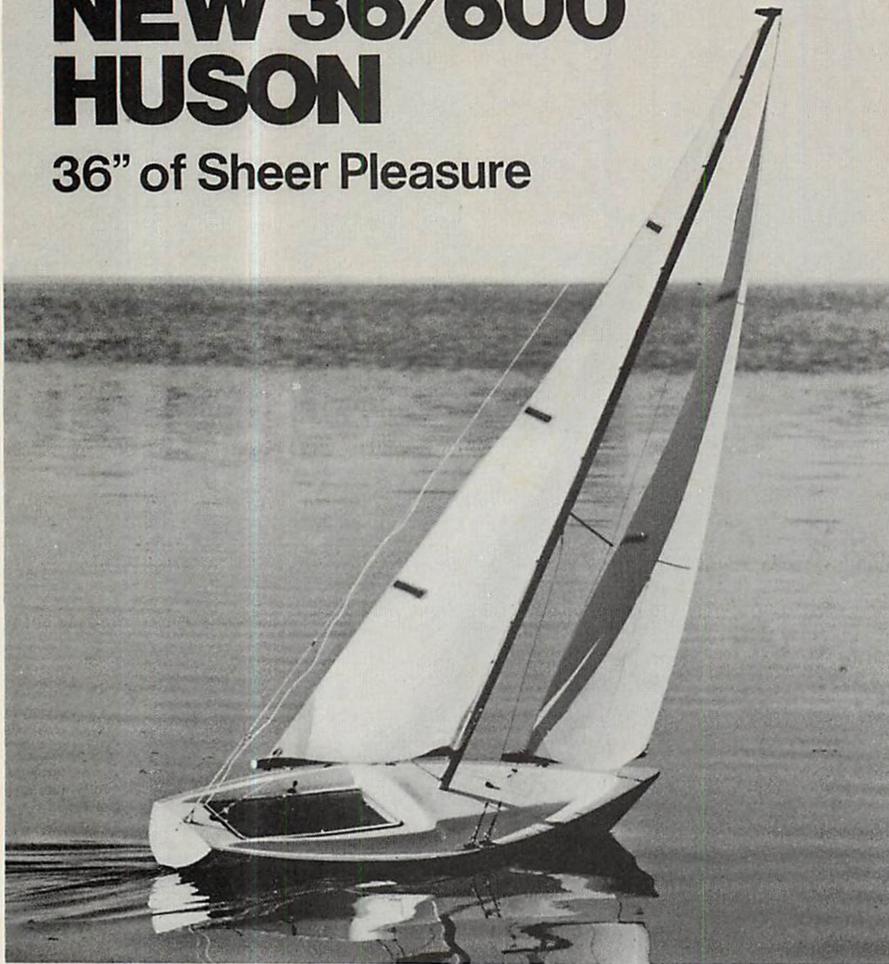
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1978 Nats



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Here to the Field

I guess it was about Wednesday when I looked at my old seaplane. Well, if I worked like the hammers on it from now to Saturday I could just have it back in shape for the weekend. And the boat needed some loving attention too, but visions of calm water, floats tracking across the sea and a spiral climb aloft to the purr of a Cyclone were enough to drive me on. Saturday dawned a brilliant blue, hot, calm and flawless. I was ready, the ship was ready, weather was perfect and the boat looked inviting on the trailer.

"Dad, can I go?" "Why of course Jack, that's what it's all about." Surely I can find room for my own son I thought. "Me too Dad?" Bob was young then, he wouldn't take up too much space. Then my wife decided the wash could wait and reached for her bathing stuff. Pat, do you want to go with us? Suddenly I had the neighbor's wife. "Halt, wait, we're sinking!" I explained there was no room for extra bodies, what with the seven foot ship, tool box and all that. "What do you want to take that thing for?" I was flabbergasted! Well, I explained it all and unloaded all but the boys. Then we went flying. Score one for a male chauvinist pig.

There's a point to all this, We're getting squeezed into a smaller and smaller bit of space. An insidious little thing is happening in Detroit, cars are getting smaller. Boats may not be too roomy on the average, but cars are our real problem. When we were all kids there was a big sedan in the garage, almost anything we built fit in, but there are more and more really small cars being offered to us and fuel economy makes us slowly accept them. Your old load is starting

FLYING MODELS

including FLYING ACES est 1928

flyi models



december 1978/vol. 81, no. XII/497

aircraft features

- 22 1978 AMA Nationals/Don McGovern and Larry Kruse**
At Chennault Field, Lake Charles, Louisiana
- 27 GMP's Me-109/Frank Tiano**
An FM Product Review: An R/C SOS winner
- 30 1938 Porterfield Zephyr/Doc Mathews**
An easy to fly SOS for .40's or .60's
- 35 Ace R/C's Digipace 1/Bob Aberle**
An FM Product Review: A battery tester that does everything
- 38 An intro to towline soaring/Bob Hoeckele**
A FLYING MODELS contest for experimenters
- 40 Starduster/Ed Capitanelli Jr.**
A competition C/L stunter
- 44 Flyin' Things for Fleglings/Earl Van Gorder**
FM's beginners column
- 46 Mike Gas Model/Gilbert Shurman**
A FLYING ACES Reprint from June 1940
- 51 With Model Builders/Ed Whalley**
News and views from all over

r/c model boating

- 59 1st 7-11 Westchester Offshore race/George Myers**
The first of many at a great site with a great sponsor
- 62 MRC's Cobra Jet/Bob Finley**
A Dry Dock Review: A ready to run mono for beginners
- 64 The Flint Motor State Deep Vee Classic/Rob Sandera**
The Deep Vee portion of the IMPBA Internats

departments

- | | |
|------------------------|----------------------------|
| 4 Air Mail | 57 Classified Ads |
| 8 Timetable | 65 Letter Rip! |
| 8 Flying Report | 72 Dealer Directory |
| 17 FM Clinic | 74 Ad Index |

on the cover

Dave Platt, the British fellow who has been taking the U.S. scale world by storm for many years, took first place at the 1978 Nats in AMA Scale with this perfectly detailed Douglas SBD-3 Dauntless with a total of 789 points. Kokochrome by Don McGovern.

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to wheeze and gasp and rattle it's valves and before too many moons come and go you'll have to replace it with a slightly shrunken version of the car you used to know.

There's a way to adjust to all this. A take-apart airplane. While the cars have been getting smaller and smaller, our aircraft have been getting larger. 2" scale ships, bigger soarers, even quarter sized replicas. Wing panels can be made to plug-in. We've been doing it with gliders. So can the vertical fin if need be, and a landing gear can be retracted, or detached for transport. Stabilizers can be removed, as can wing struts. Even the forward nose of the aircraft can be built as a module, the prop, engine and tank removable as a unit. Easy to service, shorter to transport.

We can fit our models anywhere we want if we just think and plan a little in advance. My ten foot glider packs with my clothes in a standard suitcase for vacations in Europe. Surely then if we anticipate our needs a little we can find a way. And if you've got a really oversized project on the bench and the dinkiest of cars you can always haul a small boat trailer, and your model boxed on that.

Air Mail

readers' forum

The best one

The August 1978 issue of FLYING MODELS was one of the best in a long time. Although the IC battery tester was slightly flawed by what appears to be a drafting error, even that article was a welcome and useful addition. The four-color fold-out of the Vindicator and the full-size plan were of excellent quality. I'm not a boater but even that makes interesting reading.

JOE DICARA
Vincentown, N.J.

Engine articles

Bob Aberle's article on the Webra .10 in the October 1978 issue of FLYING MODELS was great and, as he requested, I'm writing to tell you my thoughts. The format of this type of article (application rather than evaluation) is unique and quite in line with the "how-to" articles everyone seems to like. However it would seem to be useful only on the specialty engines where the average modeler would encounter such problems as Bob ran into (rear exhaust hitting the motor mount, tuned pipe strapped to the fuse, special glow plug problems, etc.). For the majority of engines we use, this type of article on every engine would be redundant since they are all set up in basically the same way. However, as I said, for the specialty engines, application ideas could be very handy.

FRANK COSTELLO
Dover, N.J.

Memories

In the article by Ned Kragness on building scale cabanes and struts on page 34 of the September issue of FLYING MODELS there is a model of the Waco Model 10 GXE Curtis OX5 90 horsepower 1929 model 3 place open land biplane. My heart skipped a beat because I owned and flew this ship in the 30's. Where can I get plans for it?

I have built models all my life 1928 to 1978 and used to fly in the old free flight contests. I worked for Ohlsson Rice motors in 1941 in Los Angeles testing the .19 and .23 motors. In the 60's I worked for R. Denny of Den-niemite Motors.

EDWIN H. ORR
East Liverpool, Ohio

Mr. Kragness tells us that he is presently working on the article and plans for the Waco Model 10—Ed.

Congratulations

Upon reading the August 1978 issue of FLYING MODELS I came upon the reproduction of the cover from the first issue of FLYING ACES which I purchased countless flying seasons ago. Congratulations on your Golden Anniversary! I have enjoyed FM's sporty style in every issue and have long admired the very high standard of draftsmanship which has become the trademark of FLYING MODELS. Now and again I reminisce in the attic as a diversion from doing other much more important things by rummaging through my old FLYING ACES. I only wish

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those old pulp days could return, but alas I fear that they would never pay their way these days. Keep going forever.

R.G. MOULTON
Editorial Director
Model and Allied Publications, Ltd.
Hemel Hempstead, Herts.
England

It happens

In the October 1978 issue of FLYING MODELS there was a picture in the Rhinebeck Classics article by Frank Tiano of my low wing Aeronca Model L on page 30. The caption called it a *Cessna*. How could you allow that when it was built from FLYING MODELS plans featured in the October 1974 issue. The plane was originally designed by Bruce Lund. I'll forgive you if Bruce will.

BOB DEAN
Waverly, N.Y.

Timetable

coming events

CLUB SECRETARIES: Items for the FM Timetable are welcome. Submit items typed, double spaced and with necessary information plus contact for complete data and entry blank. Specify AMA, FAI, NAMBA, IMPBA, AMYA, ROAR, etc. Include information on rules and classes to be run. Items will not be picked up from club bulletins to be run, they must be sent to this column.

R/C BOAT CONTESTS

HAMMOND, LOUISIANA—November 4,5. IMPBA Southern Gentlemen Invitational 1978. Fifth Annual. Hydros only, run what ya' bring. Contact: Louis Durand, Jr., 4400 Ithaca St., Metairie, LA 70003. 504/887-4986.

CAPE CORAL, FLORIDA—November 18,19. IMPBA 1/16 straight and 1/3 oval Record Trials hosted by the Gold Coast Racing Team at Nicholas Parkway Lake. Contact: Don Pinckert, 3265 Franklin Ave., Miami, FL 33133. 305/446-5358.

NAPLES, FLORIDA—November 24,25,26. NAMBA District 3, 4th quarter points, heat racing, record trials hosted by the Transom Twisters at Transom Twisters Lake 1&2. Contact: Tony Imminger, P.O. Box 7785, Naples, FL 33940. 813/262-3555.

CAPE CORAL, FLORIDA—December 16,17. IMPBA 1/16 straight and 1/3 oval Record Trials hosted by the Gold Coast Racing Team at Nicholas Parkway Lake. Contact: Don Pinckert, 3265 Franklin Ave., Miami, FL 33133. 305/446-5358.

MIAMI, FLORIDA—December 29,30,31. Winternationals 1978. Heat racing all classes. Trophies through 3rd place. Held at Northwest 138th St. and Palmetto Expressway hosted by the Florida Unlimited Racing Team. Contact: Don Pinckert 3265 Franklin Ave., Miami, FL 33133. 305/446-5358.

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Flying Report

news and comment

EWH Specialties to market Homelite engines for Radio-Controlled aircraft hobby trade

The Homelite division of Textron Inc., and EWH Specialties of Arlington, Tex., have concluded development of two-cycle gasoline engines for the rapidly growing radio-controlled aircraft and hobby industry, it was announced at Homelite headquarters by Robert E. Anthony, Director of Special Markets.

The association with EWH Specialties, Inc., marks the chain saw manufacturer's first venture into the miniature aircraft hobby field. EWH, headed by President, W.E. (Skip) Neeper, is a national leader in the engineering, manufacture and sale of one-quarter and one-third scale aircraft and accessories.

"Homelite has long been a pioneer in the manufacture of two-cycle engines, and our 2.6 cubic-inch displacement engine makes an ideal power head for the new kind of model aircraft that have wing spans of up to 12 feet and weight 20 to 40 pounds," commented Mr. Anthony. "This is a booming market, and we believe EWH Specialties can carve a giant share of it with the Homelite engine," he concluded.

After modification by EWH, the Homelite

power head will be called "EWH's Super Hustler," and will have a suggested list price of \$199.95. It will be available for \$20 less during a brief introductory period. The company will be selling the engine in the United States through its existing network of hobby/aircraft dealers, and through several distributors in foreign countries.

According to Mr. Neeper, the engine offers several exclusive features, including front-end carburetor for easy accessibility; transistorized ignition; special prop "hub" similar in design to real airplanes; aluminum engine mount, and muffler with stacks. The engine also has roller bearing mains and roller bearings on connecting rods for less maintenance and longer life. It is piston-timed (with pistons having two pinned rings), also for longer engine life, and the cylinder wall is chrome-plated. The cooling fins allow for substantial cooling even when the engine has been "cowed-in."

The "Super Hustler" is a loop scavenged engine with pump type carburetor that runs on a 32-to-1 gas/oil mixture. Out of the box, it will turn props as large as 20" x 8" or 18" x 10" in the 7,000 to 8,000 rpm range.

For more information on the "Super Hustler," write to EWH Specialties, Inc.; 607 East Abram Street; Arlington, Tex. 76010.

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KIT No. 1501

CESSNA 170A

A beautiful scale model especially designed for the R/C beginner and still be of interest to the advanced modeler. Very stable in flight at all speeds, it quickly compensates for most beginner flying errors when the controls are returned to neutral. Vacuum formed cowl and pre-shaped one piece spring aluminum landing gear — hardwood or plywood used at all stress areas.

TECHNICAL DATA: Scale: 1/4" = 1'-0" • Wing span: 45" (114.3 cm) • Wing area: 270 sq. in. • Length: 32 in. (81.28 cm) • Wing loading: 12 oz. per sq. ft. • Weight: 24 oz. with R/C equipment • Engine: .049 - .051.

KIT No. 1502

Bellanca Cruisemaster

A different low-wing scale model than offered by other kit manufacturers. Like the Cessna 170, it has a "forgiving" nature valuable to novice flyers. It will also satisfy the average R/C "pro" with its smooth flight and handling characteristics. Kit contents include vacuum formed cowl and windshield plus hardwood and plywood to beef up construction where required.

TECHNICAL DATA: Scale: 1/4" = 1'-0" • Wing span: 42 3/4" (108.59 cm) • Wing area: 252 sq. in. • Length: 28 3/4" (73.03 cm) • Wing loading: 12 1/2 oz. per sq. ft. • Weight: 24 oz. with R/C equipment • Engine: .049 to .051.

\$30.00 each

(Kits do not contain motors, wheels and R/C equipment)

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See your local Hobby Dealer for Guilow kits — check Yellow Pages under "HOBBIES." Send 25c for complete kit listing.



Cessna 170A



Bellanca Cruisemaster

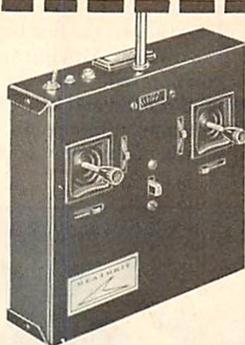
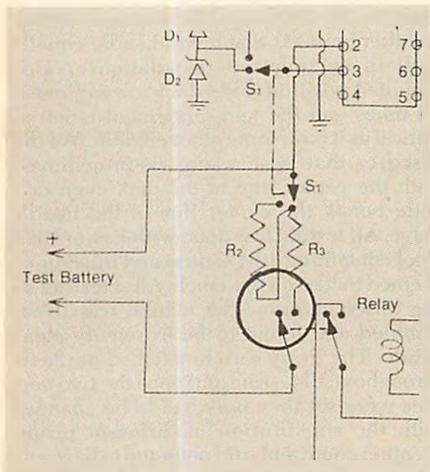


PAUL K. GUILLOW, Inc., Wakefield, Ma 01880, U.S.A.

Oops!

In the article entitled "An integrated circuit battery tester" by Don Sangl in the August 1978 issue of FLYING MODELS an error occurred in the schematic diagram of the tester circuit. We have received many letters telling us that when the circuit is built as shown and is hooked up and turned on, the tester drains the batteries. We also received many solutions to the problem, some of them very ingenious and some simply telling us what to do with it. We want to thank everyone who wrote.

The problem was simply a mistake by the draftsman. The drawing shown here points it out. As shown the circled relay is in the "off" position. S-1 is set to test an airborne



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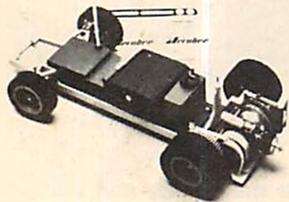


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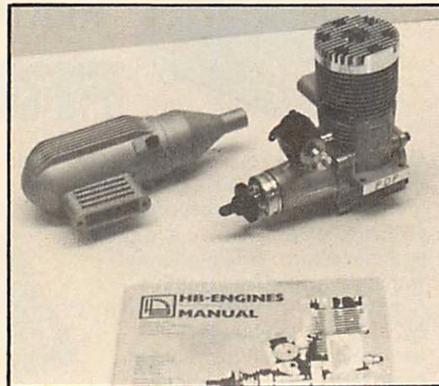
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battery pack (4.8 volts), or in other words only R3 will be placed across the test battery when the tester is turned on. Moving switch S-1 to the other position will allow the battery to feed through both R2 and R3. This is used to test 9.6 volt transmitter packs. The error was in the wiring of the relay contact.



HB .61 PDP

When one needs an engine and wanders out to the local flying field to ask his buddies which brand they recommend, I'm sure he will get a different response from everyone there. So the next best thing (maybe a better thing) would be to open up an issue of FLYING MODELS and read what the various authors have found through testing many different powerplants.

I needed a strong .60 to power a very heavy scale model while Bob Hoeckele, my managing editor, needed a strong .60 for a very heavy pattern ship he built using Sacrete for an adhesive. We really didn't know what engine to use so we scouted around and came up with a H.B. 61 from Bavarian Precision Products, 28 Vitti St., New Canaan, CT 06840. The first thing I did was to give the engine to Dan Rose, my local engine man and told him to go through it and tell me what he thought of it. Well, Dan's opinion was a very favorable one to say the least.

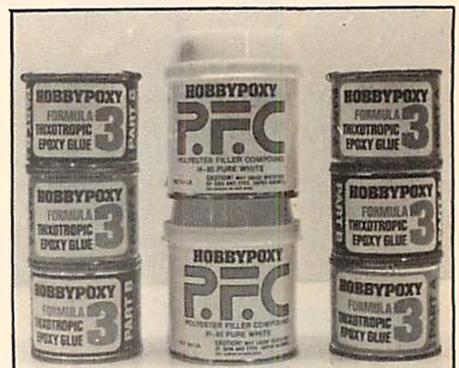
First off, there were no foreign particles inside the engine when it was opened up for inspection. Secondly, the workmanship was par-excellence throughout. Last but not least, the engine was rather pretty to look at. Anyway, rather than go into a whole lot of technical terms about this marvelous motor I'll try to just give the important data. In good old American measurements, the HB 61 tips the scales at .913 lbs. without the muffler. The bore is .9448 inches while the stroke is .866. The crankshaft features a common 1/8"-28 thread. Bavarian rates the engine at 1.43 horses at 13,800 r.p.m., a figure not hard to achieve in use. To give you an idea of just how this engine turns up we tested it with a number of different props and with a Semco muffler and a H.B. muffler. Here are the results

Props	HB muffler	Semco muffler
Rev-Up 11x6		
Extra wide	12,500	12,750
Top Flite Power		
Prop 11x6	12,500	13,000
Rev-Up 11x7	12,500	13,000
Zinger 11x7 1/2	12,250	12,500
1 1/2x6 Rev-Up	12,500	12,750
Rev-Up 12x6	11,750	12,000
Rev-Up 13x5	11,250	11,500

Top Flite 14x4	10,500	11,000
Top Flite 14x6	9,750	10,000

Now, all these figures are taken right out of the box with only one tank of fuel run through the engine. Dan doesn't believe in tweaking any engine at any time other than a race engine so I'm sure that if optimum results were needed there were a bunch of revs still on tap. The most important thing is that the motor handled very well and started with one or two flips almost every time whether hot or cold. There was a remarkable absence of vibration which really says something for any engine. You'll notice that the stock muffler knocked anywhere from 250 to 500 revs off the statistics achieved with the Semco unit but the stock muffler is also much, much quieter. With any 11x6 or 11x7 prop the engine should put out very close to its advertised horsepower rating. Another bonus is that it will handle equally well in an inverted installation or side mounted position. Fuel draw is excellent at all times and the tank placement is not as critical as it is on some other engines. We did discover that best results were achieved with the center line of the tank even or a little below the center line of the needle valve. All testing was done with Power Blast Fuel containing 12 1/2% nitro and the engine seemed to like it very much. After testing all the different props the engine was disassembled and found to be extremely clean inside. The Perry carb functioned perfectly throughout all testing and once the two needles were set they only had to be changed with the substitution of different props. Weather conditions did not seem to have any adverse effects on the engine even during high humidity.

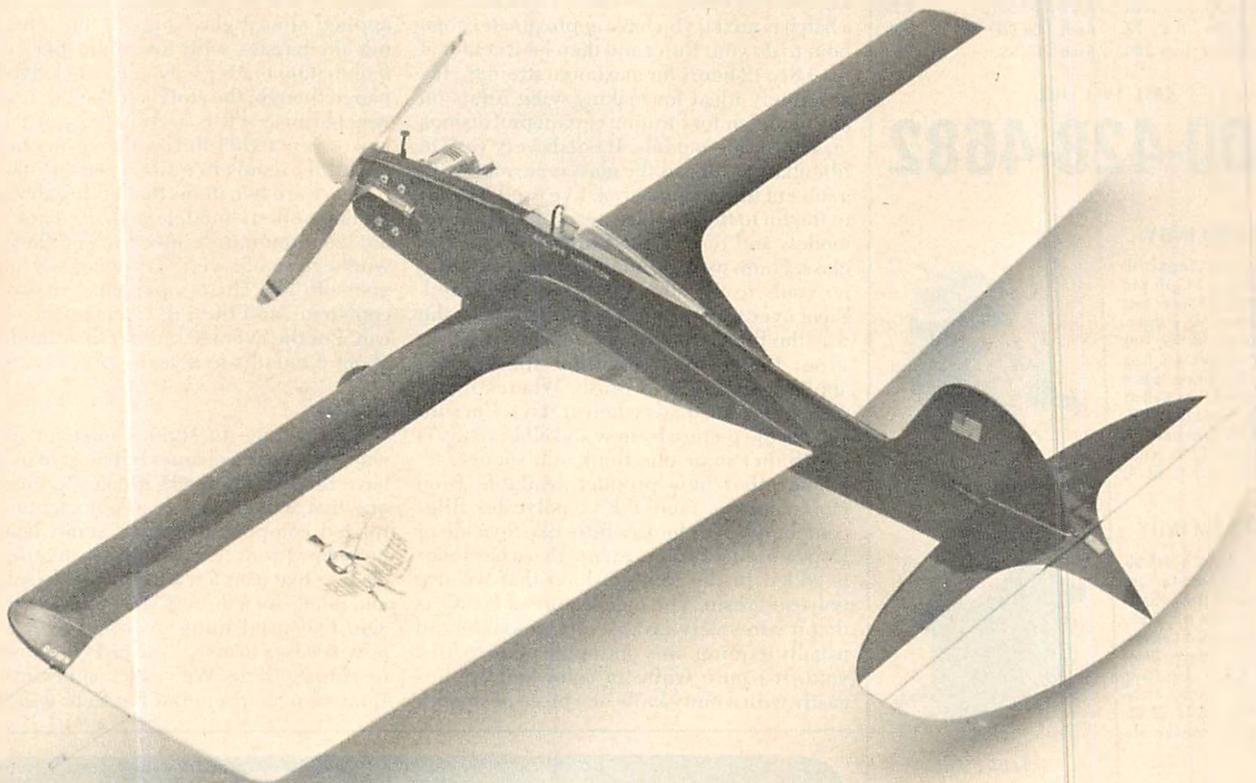
I regret that we didn't get a chance to try this H.B. 61 with a tuned pipe but every indication is that the engine would be a real bear. Best of all, it doesn't cost an arm and a leg to own one. With the astronomical prices of engines today any engine priced below \$100. seems to be a bargain. Unfortunately we usually get what we pay for with a cheaper engine. This is one of the engines that is the exception to the rule. Priced at only \$83.20 minus muffler it's a super value and I wouldn't hesitate to use it in my finest contest ship. It has every feature that engines costing twice as much have and best of all its available with Perry Directional Porting for only \$12 more. I rate it right up there with the best in every category except r.p.m.'s and in that department it comes real close.—FRANK TIANO.



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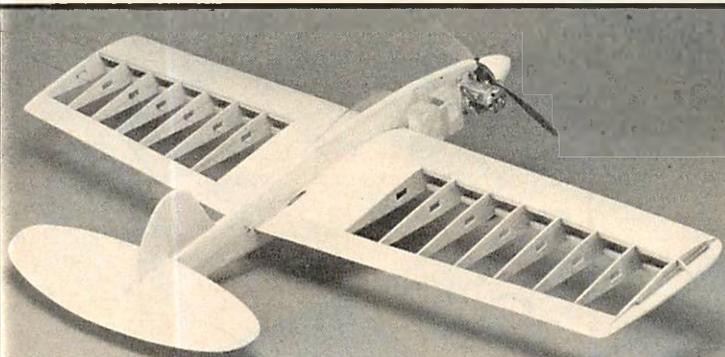
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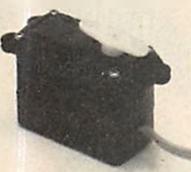
Indy's own Como Engines 40 in R/C version is \$43.50 and U/C is \$33.95. BB plus cast aluminum piston ring, a slightly over square design for Quicky 500; rat U/C and long life Sunday fly. On the side a Mill's .075 diesel, like DeBolt specs on his first LIVEWIRE Trainer—\$15.95. Panasonic AA Nicad pencils are \$1.55 in lots of 12, \$1.80 in lots of 4.



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INDY

paints and adhesives but for those of you who don't understand just how they work or how well they work here's a little elaboration. First we have their new Hobbyoxy Formula 3 Thixotropic epoxy glue. This is a two-part adhesive that must be mixed in equal parts for proper curing. But the best feature is that the stuff doesn't run all over the place while you're waiting for it to dry. It's a thick, gel-like epoxy that will not run or sag even on vertical surfaces. From the time a batch is mixed you have approximately one hour to do your thing and then let it set for at least 8 to 12 hours for maximum strength. It's absolutely ideal for making wing fillets on any model or for forming certain protrusions on some scale models. It bonds very well to fiberglass as long as the glass is cleaned with a solvent like acetone first. I've used it to fair in the fin to the fuselage on a couple of scale models and the finished fillet is as slick as glass. There were no air bubbles present and no voids to fill after the epoxy had dried. What ever way the stuff is applied that's the way the finished joint will remain. It works super for getting into tight spots when applied with an acid brush. Wherever you put a little dab, that's where it stays. I'm sure you get the picture by now and all I can say is why didn't some one think of it sooner?

The other new product available from Hobbyoxy is their P.F.C. polyester filler compound. This looks a little like Spackle or Dap household fillers except that a hardener is added in the same fashion that we use polyester resin. The nice feature of P.F.C. is that it cures very fast, is very sandable and usually requires only one application to fill a void. It's pure white in color and applies easily with a putty knife or a piece of smooth

balsa wood. This product doesn't sag or run either after being applied. P.F.C. will fill or repair *dings* in fiberglass, any wood and even metal. Some care should be taken so that as little sanding as possible should be done after it sets. The reason I say this is that in every case, the sandpaper had a tendency to clog easily while shaping to final finish. Even when used wet, the paper will clog although not as badly as when trying to dry sand. With a little care, P.F.C. can be applied almost glass smooth thus eliminating any hassles with the sandpaper later. I feel that no matter how much it clogged the paper, though, the stuff is still super in every way because it fills and shapes so easily. It makes very hard fillets and was very helpful for filling seams in a fiberglass fuselage.

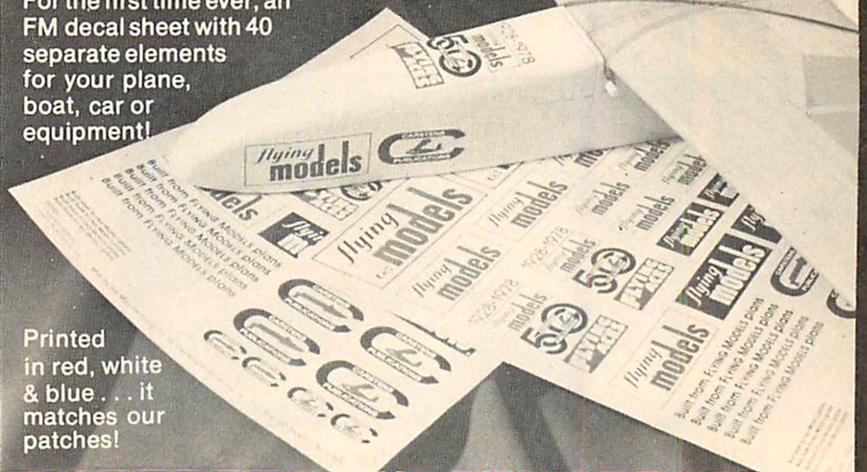
These are two items that I think should be on any serious modelers shelf. Their uses are too numerous to mention and they both work extremely well. Try some and see for yourself. The Thixotropic comes in two 4 oz. containers and the P.F.C. comes in a ¼ lb. can. For the average builder this should last about 6 months to a year—FRANK TIANO.

Sonac

Any average to serious modeler can always use a parts cleaner but most of us don't have the extra \$65-\$95 it takes to purchase one that will really clean our engines and related components. Well, *Soni-Clean* has just come to our rescue with a neat little parts cleaner that uses a readily available solution and retails for a mere \$34.95 plus \$2.00 postage. I've used mine over and over and it never ceases to amaze me just what the little machine will do. We've cleaned everything from varnished engine heads to wife Bun-

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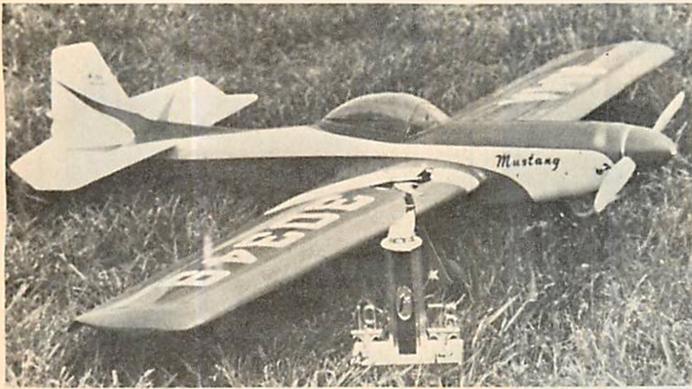
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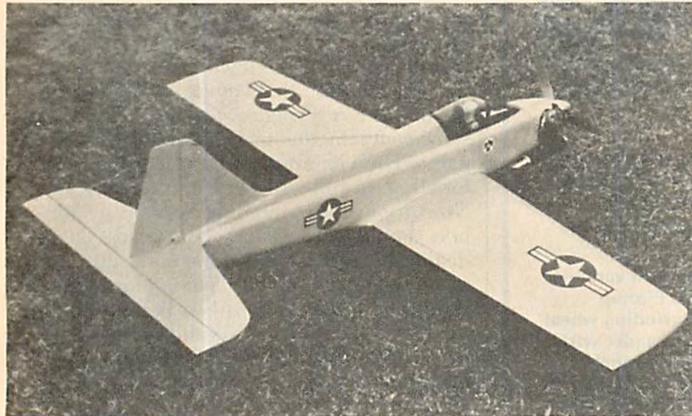
SIG KITS AROUND THE WORLD



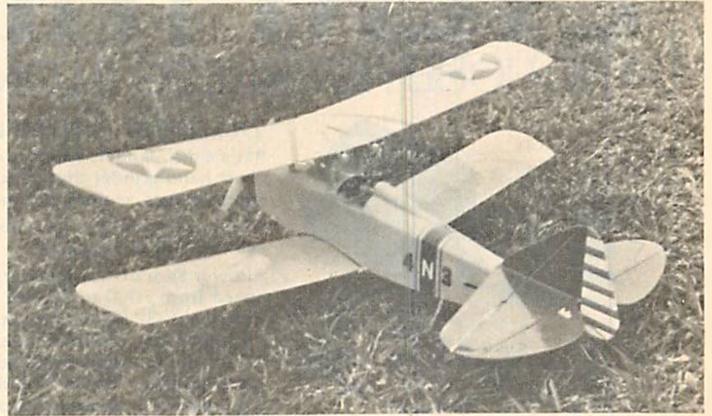
This blue and white Mustang Stunter, built by Bill Board (Peoria, Ill.) took first place in the CL Sport event at the Peoria RC Club Show.



Ronald Barling (Malvern, PA) liked his first Smith Miniplane so well, he is building another. The first one, in the photo, has an O.S. Max .40 Schneurle engine.



D.H. O'Dell (Auburn, NSW, Australia) built this smooth yellow Kougair. Engine is a Super Tigre 46 with a Perry pump and pump carburetor and Semco muffler.



Peter Cobb (Middlebury, VT) added a nice touch to his Sig Aerobipe with a 1930's Navy color scheme. He said, "It's a fine economy sportplane."



DCRC member P.S. Sugg sent us a picture of his O.S. 40 FSR powered Kougair. Sam said, "It looks very nice and flies smoothly. You really have a good design there. I previously built and flew your Komander. It was good preparation for the faster Kougair. . . ."



B.A. Raymond (Winnipeg, Canada) says, "This is my first summer flying and after two months on a high wing trainer, I started flying the Kougair with no trouble at all and now have 70 flights logged. I feel I owe most of my flying success to the design and quality of this fine Sig kit."

CL-21 Mustang Stunter\$27.95
 RC-25 Aerobipe \$21.95



RC-35 Kougair\$44.95
 RC-38 Smith Miniplane\$49.95

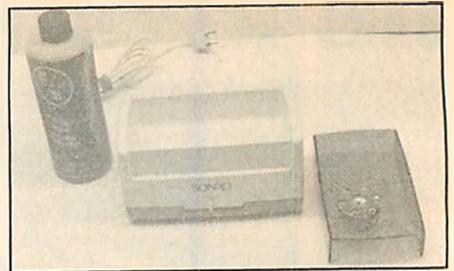
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nie's rings and everything comes out sparkling clean after one or two baths.

The Sonac as this new device is called is marketed by Soni-clean, PO Box 322, Port Washington, NY 11050. It is an electro-sonic parts cleaner not to be confused with the ultra-sonic variety. This unit will not harm even the most delicate parts whether from your hobby or your household. Another bonus is that the unit does not generate heat as do the ultra-sonic types. This means that plastic parts which are prone to warping may be cleaned in the Sonac, assuming of course, that the cleaning agent won't harm the plastic. The solution that comes packaged with the unit is R & S Engine Cleaner. This is the same company that makes that great Perfect paint. The cleaning solution is totally safe for all parts and will not harm a Perry carb. No strippers, acetone base cleaners or thinners should be used in the Sonac so as not to distort the parts and also the unit's tub. For anything but cosmetic cleaning an engine should be totally dismantled before inserting it into the Sonac. This allows the sound waves to loosen all particles of dirt and debris from all parts and float them away. After about an hour even the most stubborn dirt will be removed although in some rare cases a small brush may be required to help out a little.

I have found the Sonac ideal for de-vamishing cylinder heads, cleaning carbs, restoring retract mechanisms to like new condition, degreasing almost anything and great for jewelry! The unit comes complete with one bottle of the RS cleaning solution for the price I quoted and additional cleaner may be purchased directly from your hobby shop. I really can't find anything not good about this product for one simple reason: It does the job and it does it awfully well. And the price is one that almost any of us can tolerate. Maybe for Christmas you should buy your wife or girlfriend, one of these nifty gadgets for cleaning her jewelry and then

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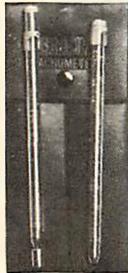
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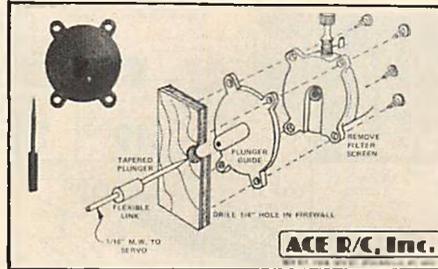


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Ace R/C Valve Engine Throttle



Ace R/C Inc. of 116 W. 19th Street, Higginsville, Missouri 64037 has been involved with small R/C models for years. It came as no surprise to me recently when Ace announced their new throttle control which is specifically designed for use with Cox reed valve engines, e.g. Babe Bee, Golden Bee and Black Widow series. The valve itself was designed for Ace by Ralph Cooney of Fourmost Racing Products. It will be exclusively marketed by Ace R/C as their catalog number 50L.630 and lists for \$2.50. The device is extremely simple consisting of only three parts, a plunger guide, tapered pin and a small flexible link for hook up purposes. To install the throttle you first remove the filter screen from the rear intake of the Cox engine. The plunger guide is assembled between the engine and the firewall. You will have to drill a 1/4" diameter clearance hole in the firewall. The flexible link will accept a length of 1/16" diameter wire which can be connected, in turn, to the arm of a servo for proportional throttle control. As you would expect the throttle does not effect the top end r.p.m. Reliable throttling can be obtained down to approximately 3,000 r.p.m. But realistically you don't need a speed that low to get your 1/2A model back down on the ground. Ace indicates that an even lower idle can be obtained by using the Cox or Tatone mufflers. This, of course, would effect the top end r.p.m. It's really your choice. Weight of this throttle device is practically negligible. You could also use the throttle as a speed control without the use of a servo. For example, you might want to preset the throttle before launching to obtain a comfortable climb on a powered glider (which normally has only rudder and elevator control). It sure beats putting the prop on backwards. A most interesting new gadget at a certainly modest price—BOB ABERLE.

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tips from the staff

Water Rudders for Seaplanes

W.P.: What is the easiest way to install a water rudder on a seaplane? Are they really needed?

ANSWER: Yes, they are definitely needed, it is hard to control a model on the water without them. A breeze will swing a model around faster than you can reach it with an outboard. Easiest way is to extend a wire down from the rudder hinge line to a metal rudder which reaches the water. It should pivot backward on a bolt in case the model skids onto dry land or shallow water.

Selecting Longerons

W.L.: What grade of wood is suitable for longeron stock in an old built-up type fuselage?

ANSWER: Look for straight-grained medium-hard balsa, capable of bending a reasonable amount. The degree of bending required will be determined by the actual design involved.

Watch out for grain that suddenly runs across the wood at an angle, it can't have much strength. Also it is a good idea to pick up four pieces at once and bend them equally, side by side. If you find one that is stiffer than the others, or conversely too soft, discard in favor of a more uniform strip. If your longerons are not pretty much one as strong as the other, the fuselage framework will pull out of shape due to the uneven tensions created.

Trouble also comes in the form of warps. Select the four straightest pieces you can find of the correct density. Balsa being balsa you may not find four absolutely perfect strips to your liking, so with a little careful planning ahead you can accept some slightly warped strips which can be bowed toward each other, helping to create the natural curvature of the fuselage. Turn the strips until you have the correct amount of bow, then make the inner sides so you do not mix them up when actually framing the aircraft.

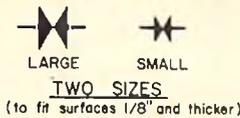
While on the subject, selecting sheet for siding is pretty much to the same set of ideas. Try for matching sheets, cut from the same log. This is the way the sheet tends to arrive at the hobby shop anyway. This will give you sheets of almost equal density. Try to face the firmer end forward if one end or the other is on the soft side.

Faired Silk Pylons

J.P.: Can you give any idea as to how the old designs such as the New Ruler dealt with covering the faired pylons?

ANSWER: Yes, it was done with care, it is not the easiest of surfaces to cover, but it can be done by any reasonably proficient modeler. Thousands of such aircraft took to the skies in the 1940 era which means thousands of modelers were up to covering this compound curvature. Wet silk was usually used. The wooden pylon must first be prepared, and properly sculptured to the expected angle the covering will try to take. Anything less will be a bumpy, less pleasing mess. I would suggest using a draftsman's french curve as a template to check the symmetry of

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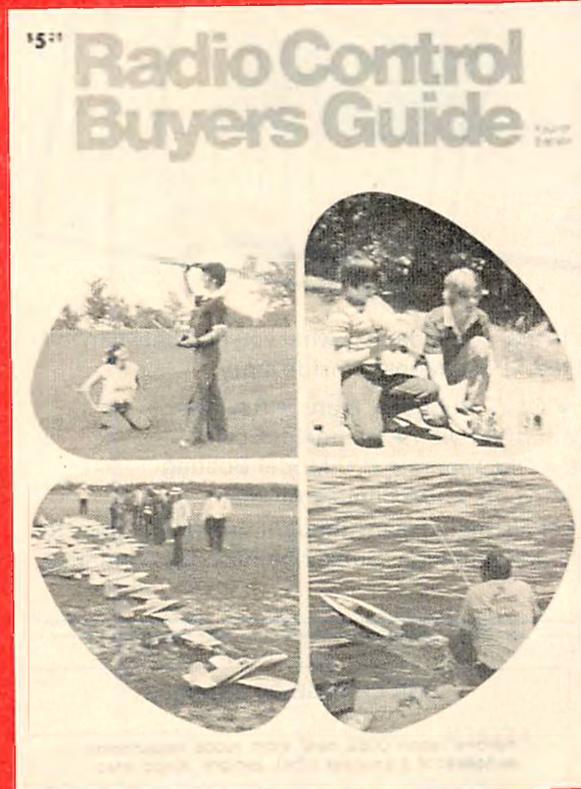
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the pylon's edges and where it will mate with the fuselage. Not a hard job, but not one to be done in a hurry either.

A large enough piece of wet silk is laid in position, enough for one half the job, one side that is. It will try to flow around easily enough, and you can pull and pin and dope as you see the need. The adhering dope will go through the wet silk and glue it to the wooden edges beneath. You might need a couple of dozen straight pins and a bit of patience, but silk will flow around such a compound curvature. I have seen nice enough jobs done on such pylons with modern-day iron-on shrinkable coverings, so if you wish to experiment you can try.

Instability

H.L.: I have just built a small flying boat and it seems unstable in slow flight. The ship looks normal enough to me, balances where it should, but turns treacherous on the slow approaches. What can be done?

ANSWER: Sounds as if you have an engine nacelle rearing up. Any configuration such as a nacelle can really disturb the air for the fin and rudder. You might get by well enough in power-on flight, but when the ship is really close to the stall speed you just might not have it anymore. Go to a seaplane meet, you'll see more than one ship with this problem. It is easily solved with a little additional rudder fin area either rising higher or perhaps below the fuselage. You'll often see full scale lightplanes with additional fins attached to the stab when they are also used for floatwork. The floats raise the stall speed and increase the side lateral area, therefore additional fin area is required. Simple to add and your tiger-like mean aircraft will turn pussycat as soon as you do.

Lightening Tail Surfaces

W.A.: My airplanes are usually kit built, but tail heavy when it comes time to fly. I do balance them, but how can I alleviate this problem?

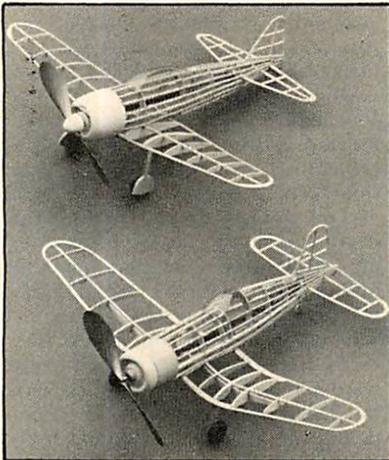
ANSWER: The original designer probably has access to his choice of fine wood. With each piece hand picked, the lighter stock goes aft of his C.G. Comes time to produce a run of hundreds of kits it is not likely the manufacturer will be able to control quality to that extent. You can bet the manufacturer would like to, but it's not commercially practical. In some cases however you can do something about it. Often tail surfaces are of solid sheet, of a higher density than necessary. You might be able to jigsaw out much of the interior, replacing the mass of airfoiled balsa with a few strip ribs of balsa to match the curvature of the section. Air is lighter than overweight balsa and the surfaces have to be covered anyway. It might not sound like much, but if the distance of the balsa removed from the tail surfaces is 2½ times the length of the nose (forward of the center of gravity) then you would need 2½ times the weight of that balsa in the form of useless lead ballast up in the cowl area to compensate. In short, ½ ounce off the tail means 1¼ ounces less in the nose for a 1-¾ ounce saving in weight. For the builder who bothers that means more available horsepower and generally better performance other things being equal.

Placement of the Wheels

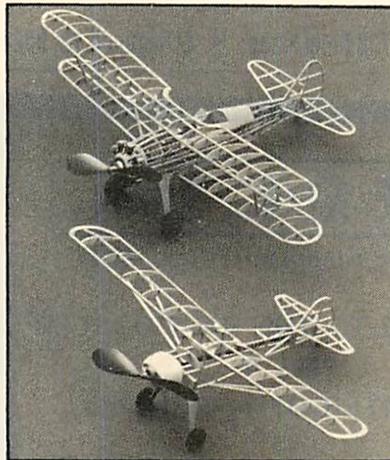
F.L.: Is there a rule of thumb to follow in positioning a tricycle landing gear, or a

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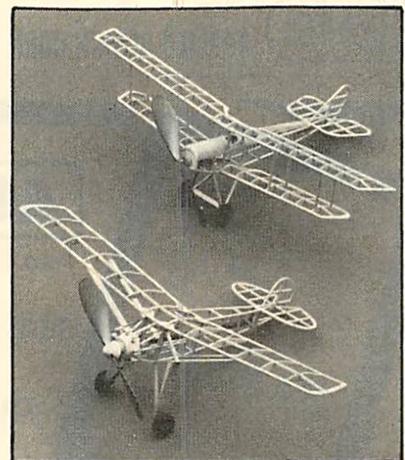
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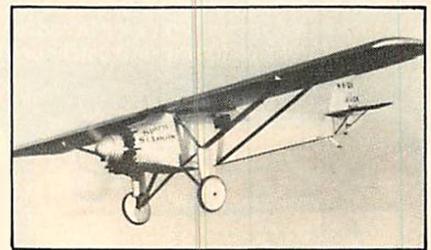
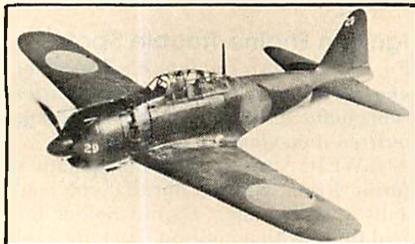
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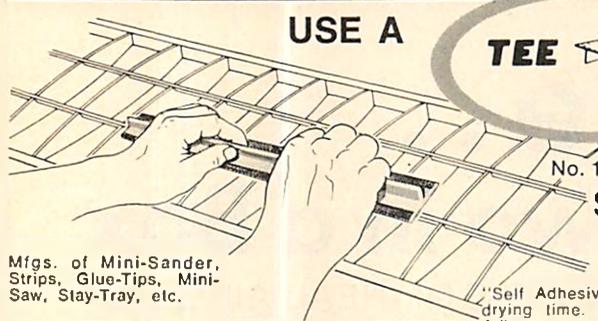
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conventional two-wheeled gear on an R/C model?

ANSWER: Generally the main wheels of a tricycle type landing gear are positioned a short distance behind the center of gravity. It would be just about perfect to place them directly on the C.G., but the model would not sit in a stable manner, that is it would rock from the nose wheel to the tailskid, depending upon the whims of the wind. It would take off well however and novice flyers might find it a boon to so place the gear here, all they would need to do is add a fourth wheel, a very small tailwheel. In that way the model could seek it's own rotation position without the flyer being much involved. If the main gear is too far aft of the C.G., the model will sit a little too heavily on the nose gear and resist rotation at take-off time. The rear gear may be somewhere around a half inch to an inch aft of the C.G. on most aircraft encountered.

As for a two-wheeled landing gear, too far forward deflects the nose violently upward on landing, as was commonly the case on old time Free-Flights where the importance was on saving the hand-carved prop. If the gear is too far aft, the model skids in on an unprotected nose cowling. A good position to start with is with the axle in line with the leading edge of the wing (given no taper). This seems to work well. When viewed directly from above you should see the forward half of the tires protruding. As for gear tread, the space between the wheels, a 45 degree angle to the legs should suffice. It is not critical, but the wider the spread the more solid the stance. If the wheels are too close together the model will be upset more easily by the wind.

Ignition Engine Trouble Spots

F.L.: I was born too late. Can you give me any advice on how not to end up with ignition engine ignition problems? Not much is written nowadays on the subject.

ANSWER: After two years of sporadic sputtering I finally found out that you couldn't substitute Lepage's Liquid Solder for the real thing with a hot iron. Lacking a soldering iron in the depression days of the late 1930's I neatly coated all my connections with the silver colored liquid solder. In otherwords silver glue. The eye couldn't catch the difference, but the engine runs were blah!

Doubt you'll try that one, but do avoid such other dumb ideas as bridging the battery box with piano wire, as a conductor of electricity it is poor. Also the landing gear is a poor booster connection, even if wired into the circuit. Same reason. Watch out for ground wires to the engine becoming oil soaked, and the connection to the timer points. The points must be cleaned frequently, a business card pulled through the closed points will clearly show if they are dirty. The coil must be relatively close to the engine, not mounted too far aft to achieve balance. Replace the condenser from time to time if things are not running well. Batteries must of course be fresh, and the start made with a larger booster. The spark plug is another sensitive spot, keep the porcelain clean, the top electrode should be tight, the gap checked with a gauge. A high tension wire removed from the plug should produce a ¼" long spark when the points are bridged. Bridging the points with exhaust open should produce an audible spark from within the cylinder.

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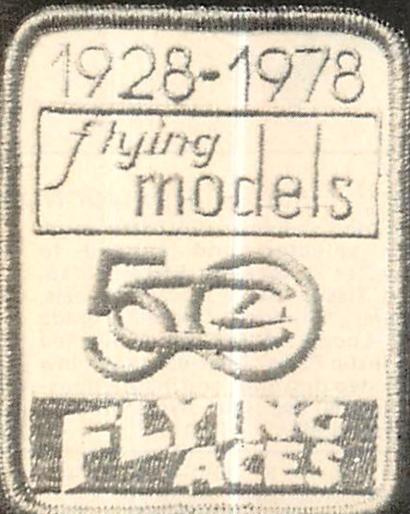
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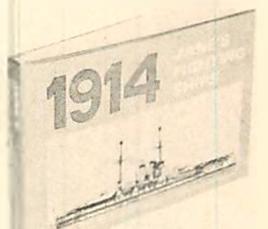
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1978 Nationals

This year it was at Chennault Field in Lake Charles, Louisiana. The weather was hot and humid but there was plenty of time and space/**Don McGovern and Larry Kruse**



Wallace Johnson's D-Gas machine goes screaming off. He took 2nd in Open with a score of 1572 seconds. **Beneath:** William Burks' entry, C-Gas, being nicely cared for while he rumages through the old flight box.



The 52nd running of the Nationals now takes its place in the history books. It all started somewhere back around 1923, and with the exception of a few war years when there was no time left for such pleasurable endeavors, the A.M.A. sponsored Nationals has become something of a tradition for the competitive modelers. The years 1948 through 1972 saw the Nationals hosted by the United States Navy aboard various Naval Air Stations, starting at Olathe, Kansas, in '48 and '49, then to Hensley N.A.S. in Dallas, Texas for 1950 and '51, after which the big meet grew steadily in stature and size, rotating about the United States to Willow Grove N.A.S. in Philadelphia, to Glenview N.A.S. in Chicago, then Los Alimitos N.A.S. near Los Angeles. The Nats then returned again to Dallas and repeated the cycle until in its final years with the Navy it settled down at Glenview N.A.S. once more. After 25 years a slightly worn out U.S. Navy decided it was time to cast us adrift. The phasing down of air bases, budget cuts and manpower shortages were a bit too much and we were once again on our own. The Nationals went to Oshkosh the next year, tied to the end of the E.A.A. convention, but corn and crops decreed another Free-Flight site. 1974 saw the big meet move to Chennault Field outside of Lake Charles, Louisiana in the deep Southland. A hot and humid climate! There was lots of land, plenty of motels, a fine indoor site, sunshine, food, clouds, thermals. Also some snakes, alligators and rain, but we can't be too fussy, can we? It all worked and worked well. This writer flew a search pattern in a Cessna looking for a downed aircraft and the terrain adjacent to the Chennault Field site is kind of bounded by some evil looking waterways. Still, Chennault offers more land than most Free-Flight sites. Some dense brush and other problems were cited by modelers in discussing a possible return to Louisiana for the '75 Nats, but the local Chamber of Commerce and powers that be were very reasonable and vowed the site would be improved in time for the forthcoming meet. It was. And after a Nationals in Springfield, Ohio in 1976, and California in '77, the A.M.A. again chose the Lake Charles site as the best possible choice available for the 1978 meet. Visibly, the field was much improved. What had been a barely cleared camping site that first year is now a fine golf course with resident alligator in the pond. Some of the brush now sports a few grazing cattle, and chasing terrain is generally better. We won't say perfect, but definitely better. There is room. The big Nationals is all but swallowed up in the enormity of the place, there were affordable accommodations at the University, and a wealth of motels as Lake Charles is something of a tourist attraction in itself. Enough restaurants and a thermal generating sun.

Now about the sun. The sun fries your head and brains to a crisp and golden brown. To keep you from drying out it comes complete with excessive humidity. 90 to 100% humidity, with 90 to 100 degree temperatures. Enough to make you think about going home to work. Huge clouds billow in from the nearby Gulf of Mexico and if one is smart one takes it a little easy in this kind of torrid climate. At the day's end a dip in the motel swimming pool will put the world back in focus for you and then it's business as usual with the gab fests with fellow modelers through the evenings.

As large as the site might be, it still does

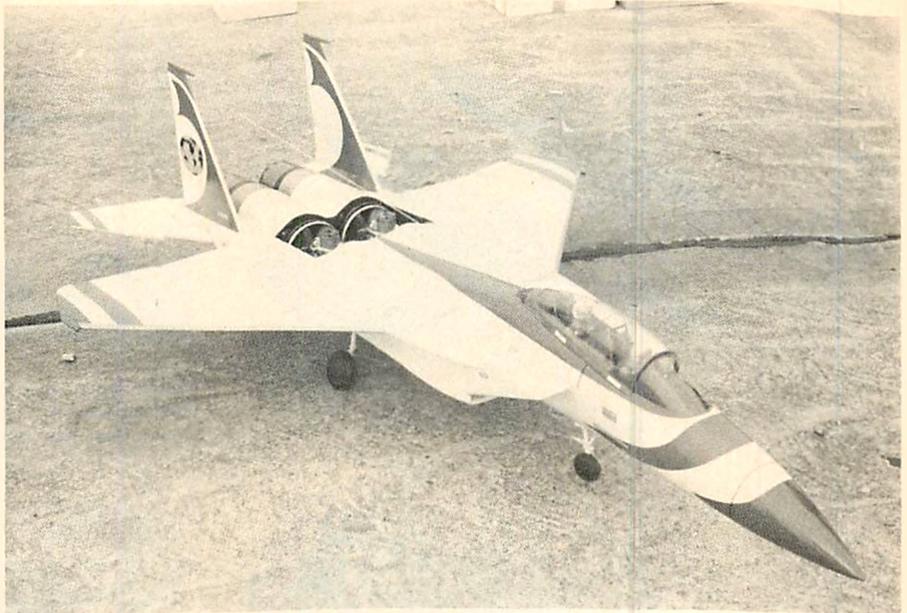
not support the entire meet. As there are in the order of 60 events, a wide variety of special needs must be considered. The Indoor events require a vast domed arena, and a half hour drive provided just that, the newly built Burton Coliseum, quite magnificent for the purpose as described elsewhere in our coverage. And R/C Soaring, long flights on a 984 foot winch line. Best to go to the L.A.R.K.S.' club field for this, a beautifully manicured model flying site a few miles out via the Interstate. Here the gliders could tickle the clouds without hogging frequencies. Choppers too flew here another day. It worked well and modelers enroute from one site to another had time for a lunch or an air-conditioned respite, sorely needed as a rule. While there were occasional passing showers toward the very beginning of the week, the meet, in general was blessed by remarkably fine and almost windless weather. Those of us who have attended a great many meets can certainly remember a few less endowed with such fortune.

It all came off on schedule. You can thank the L.A.R.K.S. club for much of the organization, three hundred odd officials and volunteers who tried to make it happen, the A.M.A. Washington contingent who handles the backbreaking work load, and most certainly John and Lillian Worth who arrived early, and lingered around for days afterward making sure the site was left as clean as God made it, in apple pie order. It's one of the reasons Lake Charles keeps inviting us back, and invitations to fly snarling airplanes are hard to come by elsewhere!

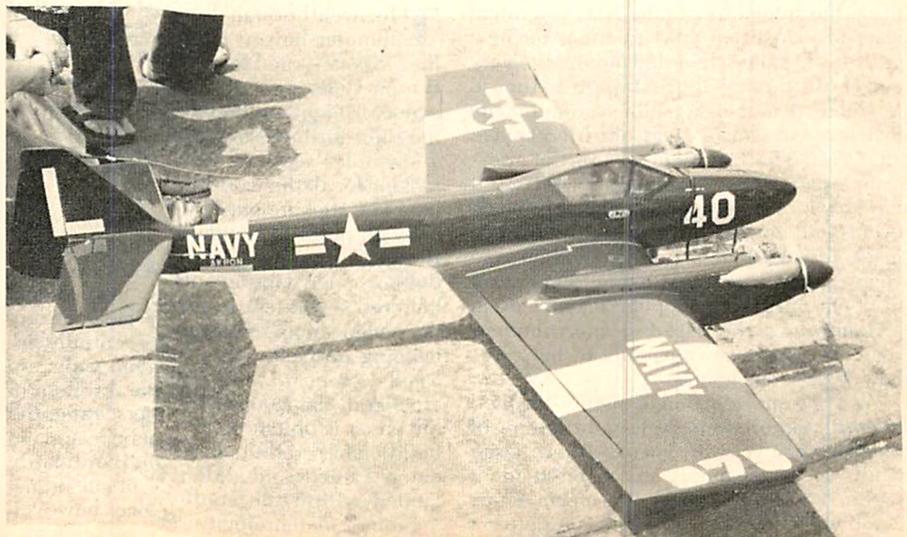
Field facilities moved from the original hangar used in 1974 to a complex of buildings just walking distance down the road, about adjacent to the Controline Combat site. A.M.A. Headquarters had its office space for the myriad details of the week at this location and contestants kits were provided at another window. Just across the road bathroom facilities, a hobby shop in operation, scale aircraft of all types well displayed on a gymnasium floor. Gone was the chicken wire approach which detracted so much from the viewing of the aircraft at past meets. Models seemed well protected, out of reach, yet visible to all. After scale judging the models were claimed and next seen again on the field during the week as scale events were flown off in their scheduled time slots.

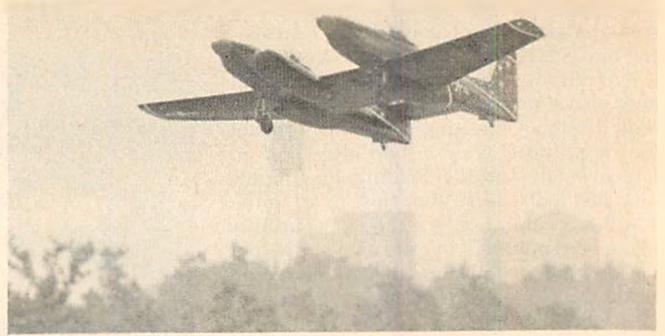
Nearer the weekend, the local young fry were on hand, deeply engrossed in the A.M.A.'s Delta Dart program, sponsored by the Academy of Model Aeronautics in association with the Lake Charles Jaycee and Jayne Club members. We can all become so engrossed in our own flight activities that we forget how important it is to encourage a new nucleus of young modelers. So often all a kid needs is a real hint of soaring flight, his own handiwork reaching for the rafters. It was so for this writer, a paper glider around the Christmas tree turned me on. I was about 5.

Nationals officials and volunteers numbered in the hundreds. A party for all Saturday night at the Burton Coliseum complex, where the Indoor events had been held. Food and laughter in abundance, with only one day left and the promise of more fine weather for that, all the harried event directors and the Nationals staff officials could start to relax. A resounding "thank you" is in order for all the timers and judges and folks who stand behind the scene tabulating the

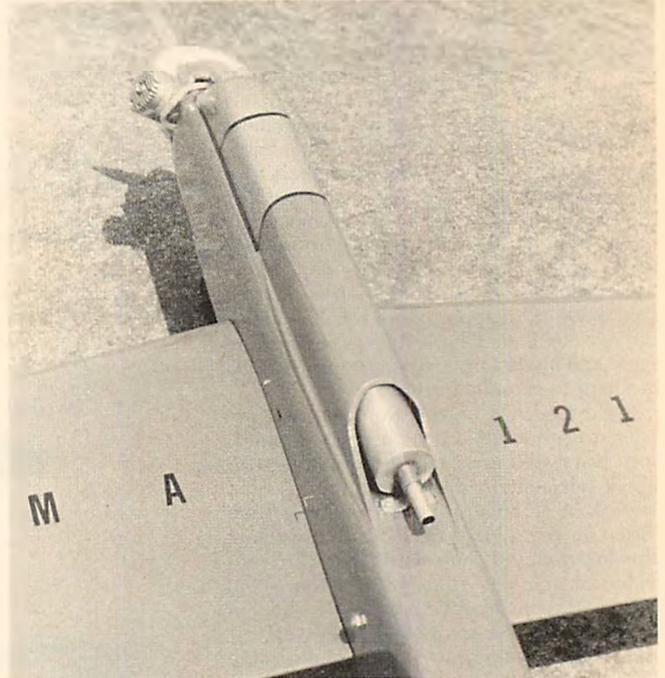
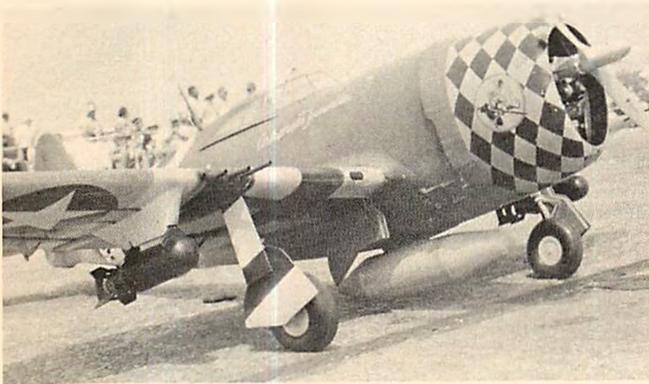


Enough to bend the mind. This F-15 is to be kitted soon by World Engines. Duane Johnson designed it, Jim Gerwitz the builder. Two .40 engines driving ducted fans. Rhom Air retracts, comes in at 13 lbs. **Center photo:** On the winch, winner Overall and Unlimited. Jim Fitch of Tullahoma, Tennessee. A Sailaire by Craft-Air. **At bottom:** Twin screws motivate Dave Platt's beautiful Duellist II, his R/C Pattern entry.

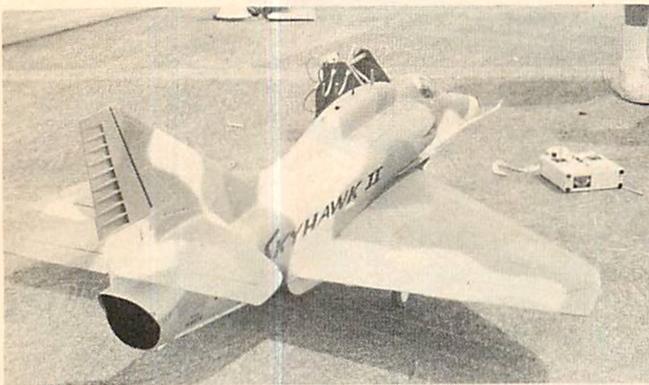




The North American F-82G. An unlikely marriage of a pair of Mustang's on a common wing. Art Johnson's R/C Scale. It flew well. 91" span, 18 lbs. Kraft receiver, Heathkit transmitter, Rhom Air retracts, Hydra-Lock. Postwar era.



Indoor plumbing. Dan Kowallek's Pattern ship, tuned pipe is inside fuselage. **Center shot:** Republic P-47 Thunderbolt by Tom Czikk. OS Max .60. Perry Pump, Rhom Air retracts with Hydra-Lock. Flaps, bombs and a belly tank. Awesome! **Left:** Bob Violett's Skyhawk ducted fan. K&B .40.



results year after year for together they all make the big meet work. If you've never made the annual trek to the Nats you might want to mark it on your calendar for next year. It's usually scheduled around the very end of July through the first week in August. Modelers plan their vacations around it and that way you get to meet old friends year after year. The first meet was sort of a less complex affair, just 23 contestants in 1923. It has grown in stature to encompass some 60 events and entrees hover around the 1,000 mark. Add to that other family members, and you've got a major undertaking. If you want to join in and become popular in one motion just show up at the Nats desk and volunteer some of your spare moments to help. It's how it all keeps going.

We hope our selection of pictures printed here will capture something of the feeling of the meet. You've really got to be there to see it all. There is simply not enough room within our pages to cover all aspects. Ships climb with a whine and seek to outperform

all others, but win or lose, just being there is the real experience.

The weatherman forecast intermittent thundershowers for the first two days of the '78 Nats — and that was for the *inside* of Burton Coliseum, site of the 1978 indoor events. Height and humidity seemed to be the chief attributes of the building, standing a few miles south of Lake Charles proper, looking for all the world like the top half of a beer keg sticking out of the Louisiana soil.

By all physical standards of indoor sites, Burton Coliseum was an excellent choice for the gossamer wing events. A bit over one hundred seven feet to the top of its dome, the rodeo arena's interior is clear of any hanging obstacles, save one centrally located scoreboard. The Coliseum walls are circular in shape and while the dirt floor of the arena is oblong due to the seating, the building has so little drift that once a plane entered a centered glide path, it ordinarily landed within the confines of the arena.

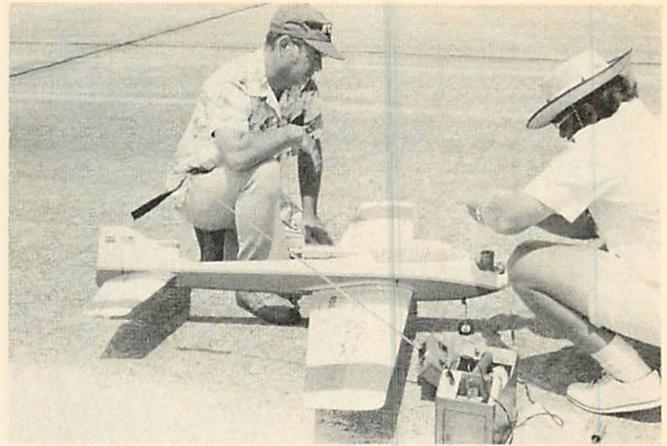
From a meteorological stance, however,

those who were there would testify that it was a bit less than perfect. With the humidity outside the building staying at or above 90% and the exterior temperature ranging from 92° to 97°, inside the Coliseum was miserable. Simply strolling slowly about on the dirt floor caused profuse sweating, and those involved in the heat (no pun intended) of competition, found carefully rolled motor tubes turned to mush after absorbing two or three hours of Burton atmosphere. Wing posts needing adjustment became spaghetti from moisture on the fingers of the adjustor, and entire airplanes rolled up in neat microfilm balls when central support structures weakened by moisture gave way.

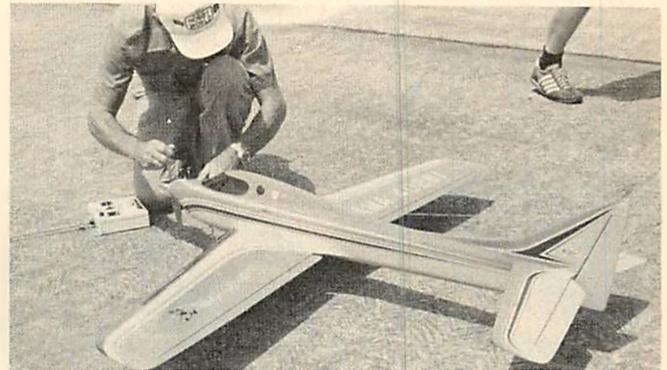
The first day of competition saw most of the super-delicate stuff being flown. In Junior Indoor Stick, David Lindley turned a creditable 11:50.6 for first, topping both the Juniors and the Seniors. His performance, in fact, would have placed him eighth in Open competition. Clarence Mather won Open



Sky Night 6, R/C Pattern. Paul Clements model, Rossi .60 with a tuned pipe. A Zinger prop, 11-7. Rhom Air retracts, Pro-Line system. A wooden fuselage. **Photo right:** Out on the starting line. Robert Redmon, 3rd in Expert Pattern.



3 Perfection. Bill Thomas' aircraft. Fox Hawk, OPS pipe, Goldberg retracts. Sonic actuators, EK Logictrol radio. Tuned pipe faired within the fuselage. **Center right:** Joe Whelan cranks his machine to life. Tense moment for flyer. **Right:** A modified Compensator by Ed Hartley of Knoxville. Rhom Air retracts.



with a time of 26:16.4.

Paper Stick was a repeat for David with Bob Boyer winning Senior and Stan Chilton beating Dan Domina by a little over 14 seconds in Open. Chilton flew a design utilizing the Jim Richmond idea of locating the motor on the side of the stick, rather than on the bottom.

Cabin had three Juniors, Mike Clem, Bryan Fullmer, and Carl Linstrum put up creditable flights. Carl flew a modified Easy B or Pennyplane (I wasn't sure which) that he and Ol' Dad Dave (VTO) modified right there on the spot, oblivious to heat, humidity, and kibitzer's advice. Joe Kubina won Senior and Dan Domina needed just one flight to top all other Open contestants at 16:35.0.

The Dan Domina show continued in FAI Stick as Domina bested Clarence Mather, Cezar Banks, Dan Belieff, and a host of others with a time of 52:56.0. It was rumored on the arena floor that Domina was only flying his third (some said fourth) best airplane, so FLYING MODELS

it may be that the up-coming World Championships could feature his name rather prominently, if all goes well.

The second day of indoor HLG during the first part of the day, followed by the scale events, and Easy B and Pennyplane later on.

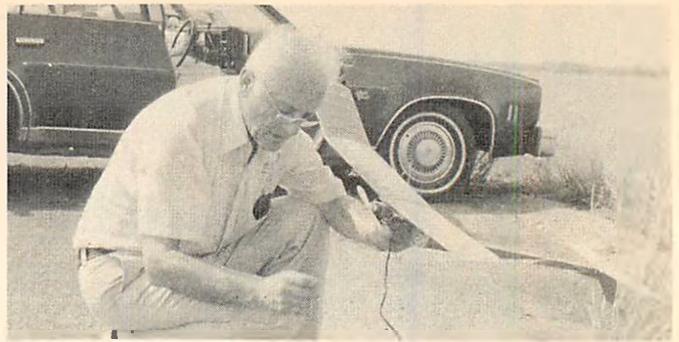
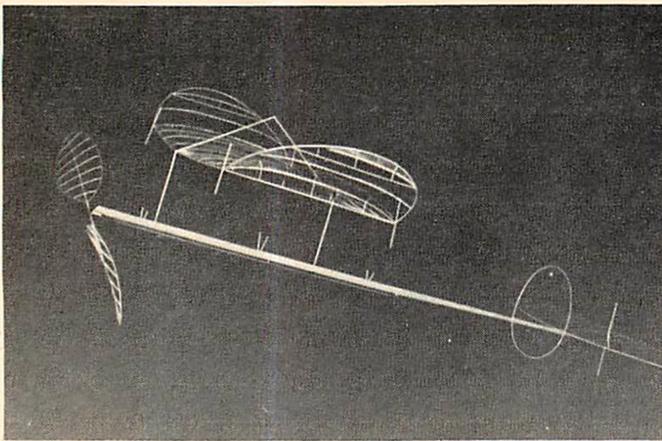
Indoor HLG saw some quality flyers on hand, and although Wittman, Blanchard, Hines and company were not present, Stan Stoy, Rudy Kluber, Dan Domina, Dick Mathis, Chuck Markos, and Paul Shailor were.

In a nutshell, Paul Shailor won the closely contested Open category, followed by Dale Segle and Stan Stoy, but the stories in HLG were elsewhere.

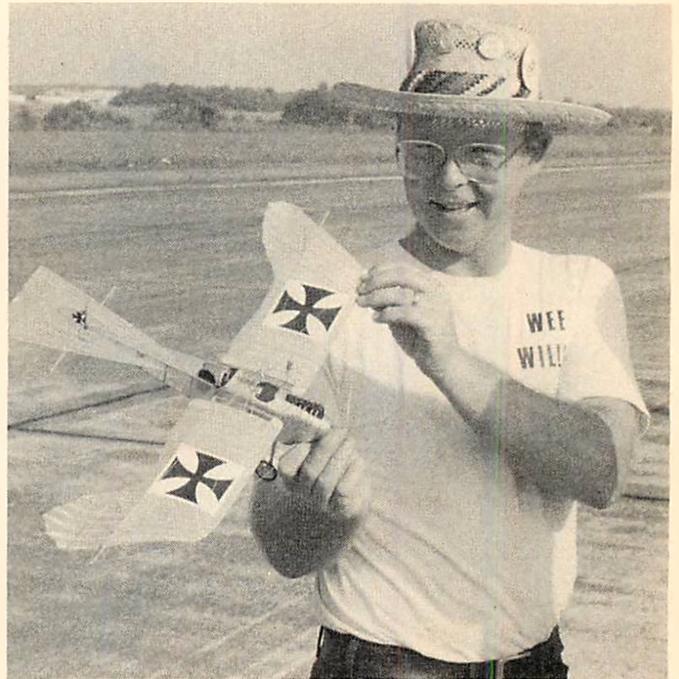
One of the stories is of two real comers, Junior Dave Turgeon and Senior Bob Boyer. Both are blessed with golden arms and could stick it to almost any Open competitor at any time. David is a little guy, but he can "flang" 'em with people twice his size and three times his age. Bob, on the other hand,

is already a good-sized lad, and will shortly be in the "super-arm" category, if he's not there already. As a footnote to Indoor, Bob also won first in Senior outdoor HLG and the Tulsa Glue Dobbys high time trophy in the process, besting everybody.

The other story in HLG is of a non-performance by a non-performer. It goes this way. During designated "practice" flying times in HLG a person can see a whole flock of gliders go up at any time. While watching these practice flights, it soon became evident that one glider out of the whole mess was consistently going higher and staying up longer than any of the others. When several of us put a clock on it, the plane was staying up for two to three seconds longer than any time currently being posted by Paul Shailor, who was leading the event. After timing two flights of 67 seconds and another of 69 seconds, it finally became too much for me and I went down on the arena floor to corner the erstwhile performer. It turned out he was Bernie Boehm from South



Just a boy and his airplane. Carl Goldberg is the only modeler who has made every Nationals. Originated the pop-up stab D.T. Left: An FAI Stick heading for the upper atmosphere. Only two or three models hung up.



Bill Stroman placed 4th with his Taube, an FM construction design. The model is very stable in flight, a frail antique from days gone by. AMA Gas Scale. Center above: The 150' Sailable that won for Jim Fitch. A splendid machine. Left: Melvin Duval makes ready his beautiful Unlimited.



Bend, Indiana, and he wasn't entered in the event. It seems he doesn't fly HLG very much and really didn't care about flying in competition. He was there as a mechanic helping a friend of his. I congratulated him on an outstanding non-performance and walked away mumbling to myself. Makes you wonder, doesn't it?

Scale was the third act of the Dan Domina show as his ultra-light Piper put on a ceiling scraping performance high above the circling ships of Don Shull, Charlie Sotich, Clarence Mather, and Doc Martin, who finished in that order. Of note in scale, again, was the spontaneous applause of the audience as each ship completed a successful flight. Doc Martin's Weymann-Lepere WE-L10 was particularly nice in its silver micro-lite covering as it reflected the Coliseum lights that came not from overhead, but from the walls of the structure. Don Isaacks and Nick Decarlis won Junior and Senior, respectively, with realistic flights.

Peanut Scale was not the Lacey derby it

used to be. In fact, only one Lacey was entered, and that by a Senior. The Fikes still abounded, but the highest placing Fike was third in Open. Clarence Mather won Open with a Davis and several bipes and low wing ships were seen as contestants tried to take advantage of weighted flight points in Peanut.

Pennyplane and Easy B were flown simultaneously with scale, but at the other end of the Coliseum. No one seemed to mind, though, and no one complained of collisions that seemed imminent, but never occurred. Both Easy B and Pennyplane seem to be the areas where experimentation and innovation are taking place.

Noteworthy in Pennyplane is the experimentation going on with wing chord, numbers of wings, incidence angles, and covering surfaces. Numerous bipes and even one triplane was entered. Black surfaces, white surfaces, silver surfaces, clear surfaces all had their proponents as the search for the ultimate continues.

Easy B appears to be far from its original intent or title, since it's fallen into the hands of the experts, but that's apparently the nature of progress in all indoor events. Probably the most interesting development in Easy B was the use of winglets by Stan Chilton. The performance of his ship was significantly better than any of his competitors. Whether the performance differential can be attributed to winglets or not, they certainly bear investigation in any event where the wing span is restricted.

While the overall number of entries in Indoor was down from the Riverside Nats, the quality of performance was maintained at a high level. Considering the adversity posed by the heat and humidity, it is not remarkable that new national records stayed away in droves. In total, though, the indoor portion of the '78 Nats was a success in the minds of those who participated and those who watched, and I'm sure, if given the opportunity, Indoor flyers would return to Burton Coliseum another year.

Gas Model Products

Me-109

A Stand-Off Scale ship that retains the fighting flavor of the original and that can win contests for you/**Frank Tiano**



PHOTOGRAPHY: FRANK TIANO



It seems that no matter where you are with a German model airplane someone will walk up and say, "What's that, a Messerschmitt?" I don't care if you took a Jap Zero and painted Iron Crosses on it, people would still think it was a Messerschmitt. That really says something for the real aircraft. The ship was so well known that even someone totally foreign to aircraft has heard of the name. Not ironically, the little fighter was produced in vast numbers and did everything but win or help win the war for Germany. Some of the adjectives that could be used to describe the ME-109 are; Fast, deadly, bad, good, lean, light, eager and strong. Now, of course, there are also a million other words that could be used to describe this potent machine but it would take almost every adjective in Webster's Unabridged to do so. The ME-109 was everything and somewhat more to the pilots and the adversaries of the German Luftwaffe during the immediate years before World War II right through 1945. To put it in better perspective, I'd like to quote a paragraph from *Aircraft of World War II* by Kenneth Munson, copyrighted 1962 and first published in the U.S. by Doubleday and Co. Inc. in 1968.

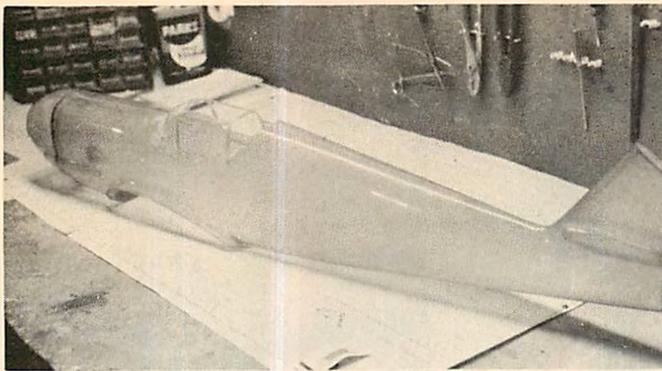
"Professor Willi Messerschmitt joined the Bayerische Flugzeugwerke in 1927, and in 1932, when that company became insolvent, formed the Messerschmitt A.G. to take over its interests. In 1934, his first design, the BF-108, appeared; this four-seat monoplane being described on page 208. The first high-powered inverted Vee

liquid-cooled engines, the Junkers Jumo and the Daimler-Benz DB 600, were being developed at about this time, and under the cloak of civilian usage a modified BF-108 airframe, using the new engine, became in effect a small scale prototype for a fighter. The first prototype ME-109, later called the BF-109 (695 h.p. Rolls Royce Kestrel) flew in September 1935, followed in 1936 and 1937 by subsequent prototypes fitted with the 610 h.p. Jumo 210A. The BF-109 followed the familiar civil prototype, record-breaker, Spanish War train of development common to so many other German aircraft of the period; BF-109's won three contests in the military aircraft competitions at Zurich in 1937 and on November 11th of that year a machine with a specially boosted DB 601 of 1,650 h.p. set a new World Air Speed Record of 379.4 m.p.h. which stood for two years. Meantime, the BF 109B-1 (635 h.p. Jumo 210D) had entered production to equip the Condor Legion in the Spanish Civil War, being joined later by the BF 109C. Experience in this campaign led to further variations, particularly in armament, and in 1939, discarding the BF 109D after only a small production batch, the BF 109E entered quantity production, powered by the 1,100 h.p. DB 601A and armed with two 20mm. cannon and two 7.9mm. machine guns. Soon replacing all earlier 109's in Luftwaffe service, the E model remained the standard single seat fighter for the first three years of the war. Heavy losses in the Battle of Britain and

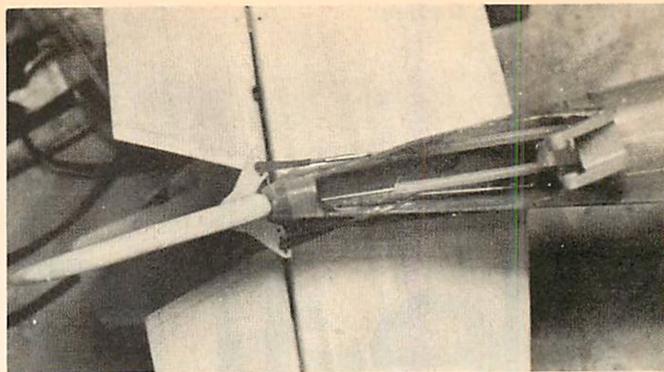
elsewhere, however, forced the German authorities to consider the adaption of the BF 109 as a defensive fighter rather than an offensive fighter. The result was the BF 109F (1,200 h.p. DB 601N), which featured a much refined and more streamlined airframe and reduced armament—one 20mm. cannon and two 7.9mm. machine guns."

The article goes on into all the Messerschmitt developments of all models but the most important thing is that the E was the most produced of the war effort. Anyone with a genuine love for airplanes would just have to admire this fighter, regardless whose side it fought on. I'm no exception and have always thought it was the nastiest looking German aircraft ever produced. When the opportunity came along to build a scale model of this famous aircraft there wasn't a bit of resistance.

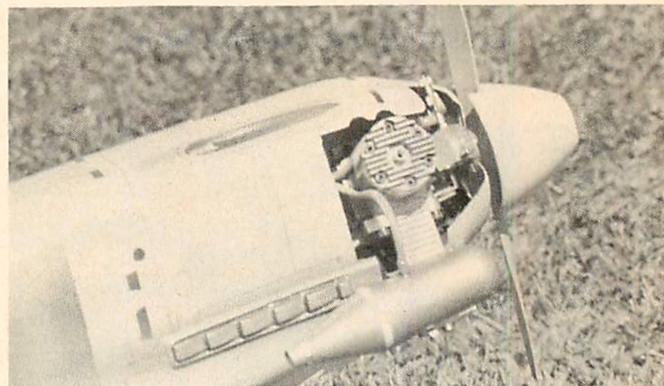
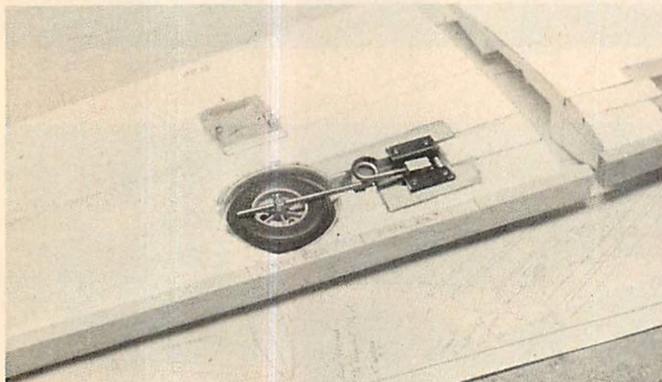
The only successful .60 sized model of a Messerschmitt ME-109E is available from Gas Model Products, 9376 Wilcox Drive, Cincinnati, Ohio 45239. Gene Steincamp, the owner of GMP has gone through great lengths to insure a fine looking and exceptional flying scale aircraft. The kit retails for a nominal \$79.98 and includes a beautiful fiberglass fuselage, an accurate set of foam wing and stab cores, a clear canopy, and a detailed set of plans and an instruction booklet. No sheeting is supplied and that suits me fine since I prefer to pick out my own anyway from the local hobby shop.



The fiberglass fuse (above) is manufactured by Fliteglas for GMP. The canopy area is cut to leave the framing, then the clear canopy is installed from underneath. The shot below shows the foam wing cores with the retracts prematurely installed. Notice all markings for reference. Robart's new Universal 3½" wheels are installed. They are very realistic on the ship.



Here's an underside view of the rudder and tail wheel linkage (above). The nylon tube in the center is the elevator pushrod which is concealed. This makes for a very neat tail assembly. This is a closeup (below) of the Enya .60 TFX engine installation. This engine did the job admirably. The scale plastic exhausts shown are supplied in the kit by GMP.



The ship is designed for basic four channel function but retracts and flaps may be added as well as a bomb or belly tank drop. I chose to install Rhom retracts and flaps for a more interesting subject with a minimum amount of weight increase. Construction of the ME 109E is very straight forward and presents no difficulty to anyone except the rank beginner. Here's how I managed to compete mine in a total of three weeks.

Fuselage

One thing about this fuselage is that one of the best men in the business, Ralph White, of Fliteglas, is the man who builds it. The firewall is already preinstalled and perfectly aligned at the factory and the fin is molded in place. The only cutting for the builder to do is to make a generous hole either on the side of the fuselage or at the bottom to allow installation of his engine. I chose a side mounted installation so the engine's cylinder head wouldn't protrude from the bottom of the fuselage. This made for much more realistic photos. Anyway, the firewall is drilled for any metal engine mount such as a Semco unit like I used and the engine slipped into place and lined up for the spinner placement. Whatever spinner you will be using must be on hand at this time for proper engine placement on the motor mount. Once you're satisfied with the engine position, drill the necessary holes for the throttle pushrod and fuel tank lines. A small platform may be built in the forward nose to set the tank onto and a Kraft 12 or 13 ounce tank installed. The only other wood parts to be epoxied to the fuselage are the forward bulkhead that captures the wing dowel and the rear plywood plate for the wing

hold-down bolts. I fashioned a balsa bulkhead to place at the rear of the wing saddle opening to capture the pushrods, thus eliminating any slop in the control surfaces. The rear fuselage must be cut out for the stab but reference marks are supplied to make the job a whole lot easier. Install the servo rails and, except for the canopy, the fuselage is basically finished. A word about the canopy installation; instead of cutting out the molded-in-canopy area and installing the clear unit, I chose to cut out a framing area and install the canopy from underneath thus allowing the canopy framing to lay over the clear canopy. This looks much more realistic than just a clear canopy with the framing painted on.

Tail surfaces

There really isn't much to say here. The rudder is provided in the kit, already precut from balsa sheet. The stab and elevators are built from one set of foam cores, sheeted, then broken down into separate units and faced with ¼ by ½ inch balsa. For sheeting the stab and wing I used Custom Model Product's Foam Tak. At any rate, after separating the elevators from the stab and adding the facings, the pieces are sanded to contour. The elevators are joined with a wire at least 3/32" in diameter. The stab is then slid into the cutout in the fuselage and epoxied into place and filleted with Pica Fillet and resin. A good idea is to cover the stab before fastening it to the fuselage as it is a bit easier when you can hold the unit in your hand. Perhaps someone who is better at covering than I could do it after installation but I chose the easy method. After everything is nice and straight and all the glues have dried the el-

evators are hinged and fastened to the stab. The rudder follows and we now have the resemblance of a real Messerschmitt. Before anything else is done, the entire fuselage should be wiped with acetone and set aside to dry. Later, I primed the fuse and tail feathers with one coat of auto primer and set it aside until the wing was finished.

Wing

If you opt, as I did, for the flaps and retracts, the wing will take considerably longer to build but the overall effect, especially for contest work is well worth it.

The wings are merely cut out for the proper pushrods and retract units and then sheeted in the usual manner. It took a bit of measuring to get the retract cut-outs just right but anyone who has installed them before in a foam wing would have no trouble. The ailerons and flaps are cut away from the sheeted cores and faced with balsa in the same manner as the stab and elevators. If a belly tank drop mechanism were to be used, now would be the time to set up all the proper linkages. A super method of installing a fool proof drop system is to go out and get one of the new Vortac releases and twenty minutes later it's in your model. After messing around with all the internal hook-ups the wings are epoxied together and the centerline joint wrapped with fiberglass cloth and epoxied. The center section reinforcing is a must since no spars are used. I don't know why, but I fastened the wing tips after joining the wing halves. Looking back it would have been a little easier to put them in place while working with just half of the wing. At any rate, the wing is basically finished except for any details you may



wish to add (cannons, blisters, scoops, etc.).

Finishing

Finishing the 109 was very simple but picking out the color scheme was quite time consuming. There must have been over a thousand different paint jobs used all during its service life and no two are the same. Anyway, first things first. All the wood parts, the wings, and balsa tail surfaces were covered with Super Coverite after preparing the wood with Balsarite for better adhesion. I used the new Super Coverite, the stuff with a different type of glue on it. When used with Balsarite, this new upgraded covering sticks better and stays put longer, even through hot summer days. As I said earlier, the fuselage and tail parts were sprayed with auto primer. The wing received the same treatment. Only one coat of primer was applied and then sanded almost all off. R&S Perfect paint was used exclusively for color coats. All markings were either hand made from white shelf paper or painted on using a stencil method. All lines were applied with a Sharpie pen. A small air brush was used with thinned black paint to form a "wash" to give the weathered effect. After all detailing was complete, the entire ship received two light coats of Perfect clear flat satin to achieve a flat metal look. The finish has held up very well for over 90 flights with no signs of deterioration.

The Rhom retracts were mounted according to their instructions and the plumbing piped into the fuselage. All the retract components such as the 4 way valve, air tank and servo were placed in the cavernous fuselage along with the servos for the rudder, elevators and throttle. The wing housed

the aileron and flap servos. Total weight after adding about 10 ounces of nose weight approached 10 pounds. A Super Tigre Bluehead PDP was installed and delivered more than enough power to fly the 109 very realistically with a Zinger 12x6 prop.

Flying

To say that this is the best flying stand-off-scale ship I've ever had would be a lie but I can safely say that it ranks right up there with the best. The ship has no bad quirks or habits. It's relatively easy to take off as long as the pilot remembers to gain enough flying speed. In fact, only on grass fields does this become any concern. Off of a paved runway, the ship accelerates quite briskly and gently lifts off with just a touch of up elevator. I've flown the plane in pattern and faired so-so. At ten pounds vertical flight leaves something to be desired. I don't doubt, however, that with fixed gear and minus flaps the ship would fly the complete pattern with ease and grace. For scale maneuvers it reacts very well though, never dropping a wing or reacting violently. It tracks through loops quite well and does an excellent roll. Because of its generous dihedral, inverted flight requires a lot of down stick for level flight but 109's couldn't fly upside down for very long anyway. Landings without the use of flaps are quite easy although a bit wam. Dropping the flaps produces a softer sink rate and easier flare out. A bit of up elevator must be added at the moment of touchdown or the ship has a tendency to flip over on its nose. On a paved strip, it can be caught in plenty of time but on a grass field it's a bit more difficult. The reason for this is not poor designing,

but rather poor location of the retractable landing gear. There is simply not enough room to install them any further forward than I put them. With the fixed gear, the landing gear wires may be raked forward a lot to get a bit better ground handling and no noseovers.

Because of the nature of this particular kit it is quite competitive in stand-off-scale but not the ultimate. The wings have been stretched for better performance and the tail surfaces enlarged to eliminate any snapping tendencies. These liberal changes are readily noticeable and the most score anyone could achieve, I think, is about an 85 static. However, the plane flies so well that it will make up any static scoring deficits with sharp, crisp maneuvers. Best of all it remains docile enough to use it as a Sunday flying machine when everyone else is zooming around with their sport pattern jobs.

I definitely recommend the kit to anyone just starting out on the stand-off-scale circuit because the ship builds easily and flies like a big bird. There's just enough airplane to teach someone what stand-off-scale is all about and then some. It's an ideal stepping stone for a more detailed ship later on that requires more experienced hands. As a bonus it's very different. After all, how many times have you seen a Messerschmitt at any flying field whether it be at a contest or just a club gathering? If you do buy one and enjoy it, don't ever give it up because it makes an excellent reserve ship for the times that the more difficult to fly scale ship is in the hanger for repairs. The ship can win and win big. In ten outings last year it placed in the money 7 times and gathered a Grand Champion trophy to boot.

1938 Porterfield Zephyr

Sometimes a fighter is too much and you need an easy old bird to tool around with. Here's one in keeping with developing skills for .40's to .60's/**Doc Mathews**

The Porterfield Zephyr was designed in 1937 by Noel Hockaday as an improved version of his earlier American Eaglet. Powered by a Continental 40 horse engine, the aircraft proved underpowered and sold poorly. Only 45 were built, even though the selling price was a modest \$1355 FOF Kansas City, Kansas.

As an interesting sidelight, these aircraft were constructed in a factory at 25th and McGee, Kansas City, Missouri sharing space with another struggling young company called Hallmark Cards! If a truth can be derived from this it must be that it is more profitable to manufacture greeting cards than aircraft as the Porterfield Co. expired from a lack of interest in 1947. Hallmark on the other hand had sales in excess of 100

million in 1977.

I had purchased a book entitled "History of Aviation in Greater Kansas City" many years ago, mainly since it contained a three-view and a photo of the Zephyr about which I had never heard. During the ensuing years the Zephyr lurked in the far reaches of my memory, cropping up occasionally as a subject worth modeling, but about which too little material was available to do it well.

About two years ago I asked a friend who had purchased the FAA registry computer readouts to check under Porterfield for a registered Zephyr. To my considerable surprise Chuck Lebrecht of Chicago had recently registered Zephyr NC 18743. I of course rushed a letter to Mr. Lebrecht explaining my long interest and asking for his

help, to which he most graciously complied.

Charles Lebrecht is President of the Porterfield Club of America and has a fund of historical knowledge of the Porterfield Co. that is second to none. I would caution any contest scale builder that I have 12 color photos and an authenticated drawing of the Zephyr that I will provide at cost to avoid bothering Mr. Lebrecht who is a busy man.

My original development thrust on the Zephyr project was an extremely successful Free-Flight Scale for rubber and CO₂ power. This little project was published in the past issue of *FLYING MODELS*. As a second effort, an R/C sized model was decided upon. Since my radio flying has been primarily directed toward a strong orientation in Old Timers, my flying skills are somewhere well below the average Pattern flyer's. Therefore, any scale type model for my use had to possess gentle handling qualities and excellent stability to compensate for my slower reaction times. This model is an absolute pussycat, with flying characteristics resembling a Sig Kadet.

It is not surprising that this Zephyr should behave like an oversized Kadet as it's wing section and construction should be quite familiar to anyone who has built Sig's best seller. The fuselage construction techniques used in this project also reveal my background as an Old Timer, that is, strong but light, with lots of strip and a minimum of solid sheet. Any builder with some experience in scratch building should not encounter any insurmountable problems and could well learn some new tricks. Actually the model builds easily and quickly.

The model's size was dictated by the dimensions of the Sig Cub cowling and other readily available hardware. Please do not misinterpret the powerplant in my prototype, it is a very ancient and tired Super Tigre .51. I rarely run the throttle over $\frac{3}{4}$ ths and I am certain any good .40 or .45 would be

PHOTOGRAPHY: DOC MATHEWS





adequate. I'm sure someone will install a .60 in their Zephyr and fly around at the same speeds as a P-51, but they'll be missing some great low key fun. Even if they enjoy sweaty palms and armpits while burning holes in the atmosphere, let's ignore them and build yours with more realistic lightplane-like power.

In General

The term "cement" refers to aliphatic resins (Sig-Tite, etc.) only. Epoxy is meant to be 2 to 1 type only, no 5-minute epoxy should be used. The abbreviation CA stands for cyano-acrylate (Hot-Stuff, Zap, Jet etc.). All wood sizes and types have been carefully chosen, so please do not substitute. The cowling, aluminum landing gear and other

Sig items are all obtainable directly from their catalog or your dealer can order them.

The 1/4" panel plywood used in the fuselage siding is scrap from a cabinet makers shop. It is good on both sides (although blemishes could be placed inside), and it is approximately half the weight of 5-ply aircraft birch ply and excellent as far as strength and warp resistance when used properly. Better yet, it's dirt cheap.

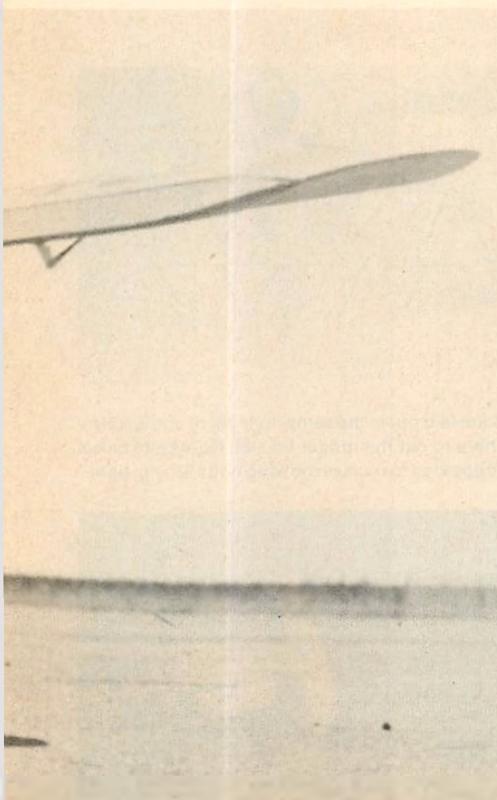
The Fuselage

Since box frame type fuselage construction tends to frighten a few modelers, I'll show you a method that gives a true box every time. For any of you who have built one of my published Old Timers, the next several paragraphs will cover what you al-

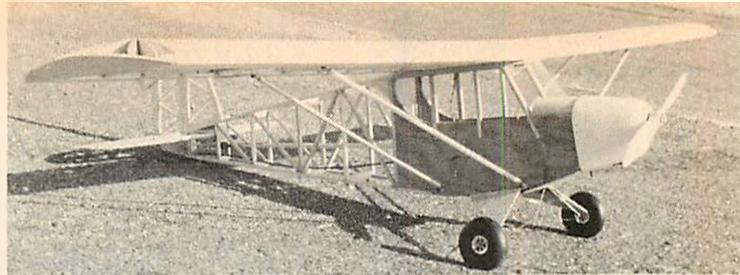
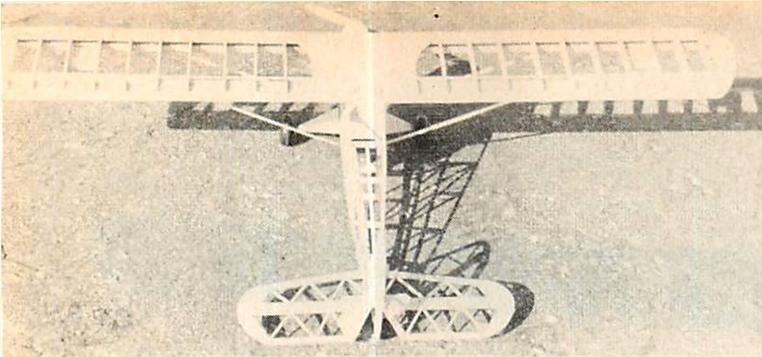
ready know to be a pretty darn good technique.

Cut two identical fuselage sides from 1/4" plywood (not aircraft ply, just plain old three ply, 1/4" mahogany panel ply). Place carbon paper between the plans and the plywood and trace. Nail through 1/16" dia. holes a second piece to the first and develop a left and right side. Use carbon paper to develop the ply bulkheads (of 5-ply aircraft plywood). Cut and drill all holes now! Use a mounted engine to determine the firewall hole positions.

Place one plywood side (recheck that all notches and holes are in line) onto Saran Wrap covered plan side view. Cut and fit spruce frame pieces and join. Use epoxy for all ply to spruce joints and aliphatic resin for



An ancient Super Tigre .51 still puts out more than enough horsepower. Uses a 3/4" K&B extension shaft. Cowling is from a Sig J-3 Cub. Tailwheel steering with horns is simple. At top: in flight, dead stick.



A few longerons, uprights, diagonals does it. Your radio will fit in easily. At left: Built up tail feathers. Framework is enough, light, well stressed.

the remainder. Be certain to leave clearance for bulkhead C between the gussets. Pins do not penetrate the spruce, they are placed as clamps on either side. Allow 4-8 hours for the glue to set, so do not remove from the plan.

Remove pins and nails that will be in the way. Place small masking tape pieces over any joints that will be difficult to reach, construct an identical second side over the first. Wait 24 hours, then remove frame from working surface. Pop the two sides apart using a table knife, then sand and smooth glue dabs etc. Add triangular stock to the front and make a left and a right.

Trial fit bulkheads A, B and C. Adjust by sanding to obtain a tight but non-binding fit. Invert and pin the wing rails onto the top view, then epoxy A, B and C, holding in place with masking tape, clothespins etc. Try for perpendicular and horizontal squareness using triangles and a carpenter's square. Do not feel rushed, the epoxy gives plenty of working time to carefully develop a square box.

It is now time to add part CT and the top cross-members. Bend $\frac{3}{32}$ " dia. music wire or welding rod cabin reinforcing wire over plan and trial fit it. Groove $\frac{1}{4}$ " x $\frac{1}{4}$ " spruce for a loose fit around wire using a $\frac{3}{32}$ " dia. carbide bit in a Dremel Moto-tool. Cut the $\frac{1}{4}$ " x $\frac{1}{4}$ " pieces to length, then epoxy wire and

spruce to inside of the front cabin frame holding it in place with clothespins. The photos should be helpful in understanding this step.

With the wing rails still pinned to top view, pull the tail posts together, directly centered over the mid line of the top view. Use a triangle to be absolutely sure the beveled center corresponds to the drawing. Epoxy the tail post using clothespins for clamps. Cut two of each $\frac{1}{4}$ " x $\frac{1}{2}$ " balsa cross-brace and glue onto top and bottom of the frame. Be careful not to pull tail post off center during this step.

Remove fuselage from the top view after allowing for overnight glue cure. Complete by adding threaded blocks, bottom infill, hatch detail, tank compartment, cowl block, etc. Cut the rudder/elevator slot as per photo. Wrap the nose area with glass cloth and polyester, then trial fit main gear, tail-wheel bracket, engine mounts and engine.

I used cyano-acrylate to join the A.B.S. cowl with strips of material provided to reinforce the joint. Cut the clearance holes a little at a time until the cowl slides over engine. The area behind the cylinder may require removal to clear, depending on engine used. File and sand the corners at the firewall to allow the cowling to fit nicely.

Do not attempt to cover the fuselage until wing and empanage are completed and

radio equipment has been trial fitted.

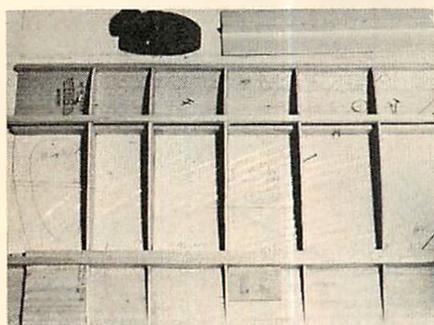
The Empanage

I enlarged the stabilizer about 20% (another leftover from my Free-Flight background) anticipating some possibility of pitch axis instability. The prototype model exhibits excellent stability in all axis, leading me to conclude that a scale size horizontal tail would be acceptable. Therefore, the drawing shows the scale stabilizer dashed inside the prototype outline for those wishing to construct one.

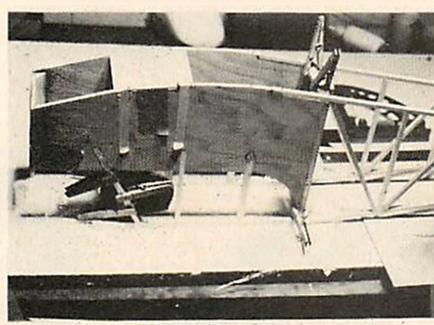
The construction of both vertical and horizontal tails is so simple I will not bother the builder with step by step detail. The only unusual step involves cutting the outlines after basic construction. If the $\frac{1}{4}$ " sheet is positioned to meet the inside lines while covering the outside perimeter, one need only trace the outline using carbon paper, then saw the perimeter to the line. This method is much simpler and more accurate than attempting to match pre-cut pieces.

I prefer to add the joiner wire and hinge slots before cutting and sanding. The full sized Zephyr had tube frame tail surfaces, therefore a half-round edge is scale. No air-foil is needed.

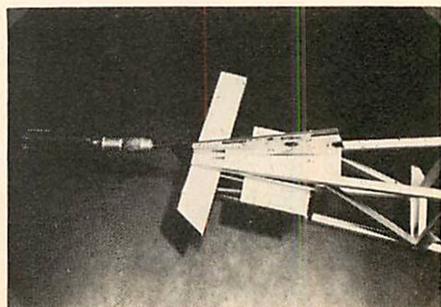
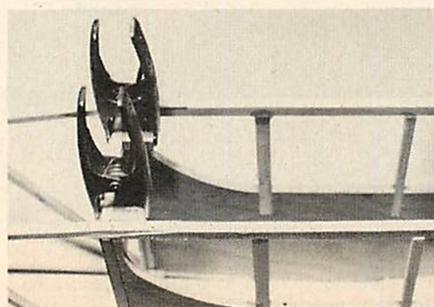
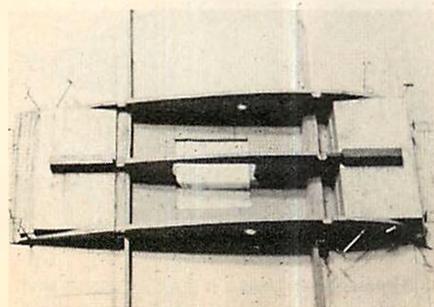
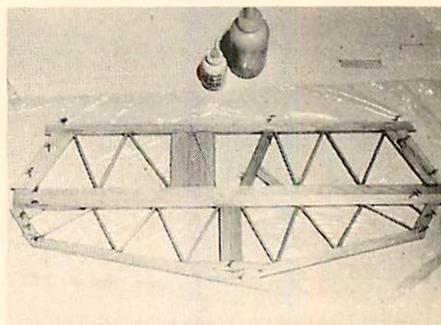
The rudder base slips into a slot in the center of the stabilizer. Make certain the

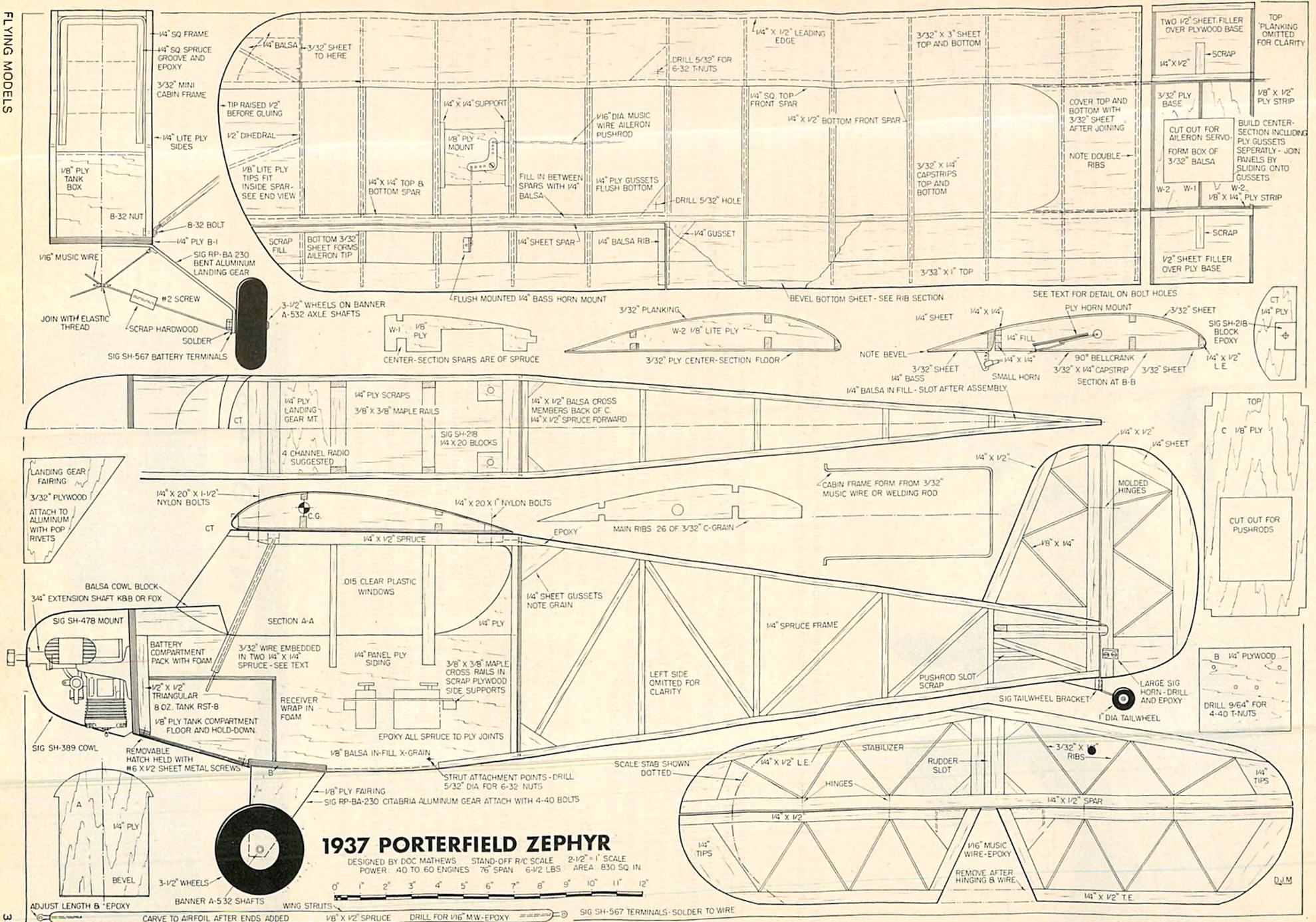


The wing structure. Sanding board tapers leading edge to the proper incline. Center shot: Wire and box being epoxied to the cabin frame. Use clothespins. Beneath: Center-section shows plywood ribs, dihedral gussets,



Your stabilizer and elevators are laid out in the same moment of enthusiasm. Below: A razor saw is used here to cut the rudder fin slot. Note shim balsa. Center: Basswood blocks are epoxied to receive the wing bolts. Clamp tight.





1937 PORTERFIELD ZEPHYR

DESIGNED BY DOC MATHEWS STAND-OFF R/C SCALE 2-1/2" = 1' SCALE
 POWER - 40 TO 60 ENGINES 76" SPAN 6-1/2 LBS AREA .830 SQ IN





It's from the age of the Cub, incorporates the same simplicity. **Beneath:** You can't say that this one is tough to build. You'll need a better excuse than that for delaying the construction. A mild performer.

base is built to the bottom line on the drawings. The tailwheel tiller fits into a scrap of inner Nyrod which has been epoxied into an appropriate hole in the rudder.

Cut the fuselage top filler to accept the rudder as per the photo. Trial fit and adjust the slot to give a level and square relationship prior to covering. Remove and cover the tail surfaces for final assembly steps.

Wing Assembly

The following steps are described for those who have not built a Kadet. Trace the master rib pattern onto typing paper, scissor to rough outline, then spray with contact adhesive. Stick it to $\frac{1}{8}$ " ply and cut to outline. Cut the rib blanks from $\frac{3}{32}$ " C-grain and pin through ply master pattern creating a stack. Slice out the ribs on a jigsaw (start top and bottom cuts from same end to compensate for any tilt in saw table), sand to final contour and remove pins. All ribs with the exception of those of ply can be cut from one pattern. Be sure pushrod holes are drilled $\frac{3}{32}$ " dia., then enlarged.

True the edges of all sheeting stock using

a metal straight edge. Position drawing so that trailing edge is at the edge of building surface. This will simplify beveling the bottom sheet a little later on. Pin the leading and trailing edges into position.

Pin capstrips in place over plan, gluing joint at front and rear sheet. Note there are no capstrips at center-section where $\frac{3}{32}$ " sheet will be used for planking later on.

Cut all spars to exact length shown, and glue spars to sheeting using ribs to position. Glue ribs to sheeting and capstrips. Tilt center rib using gauge, then glue leading edge to rib fronts and sheeting. Trim leading edge to match curvature of rib top. A razor plane and sanding block are helpful here.

Add top, front and rear spars. Also front top sheeting (dampen outside for easier bending). Bevel the rear bottom sheet to match rib top contour. Pin and glue top planking strip to bevel and rib then add top capstrips. Next cut and install light ply tips and filler pieces. Insert ply aileron horn base, gussets, fillers etc.

Allow glue to set, then trim ribs and bottom sheet parallel to spars. Fill gaps at wing

ribs with scrap balsa from the front. Remove $\frac{1}{4}$ " from front of aileron ribs and install $\frac{1}{4}$ " sheet aileron front spar slot for hinges and temporarily install the wing. Contour the wing tips with sanding block and sand the leading edge radius.

Construct the opposite panel in like manner. Just make certain you are creating a left and right wing. The model will be much more attractive if you do.

Center-Section

This assembly is built completely independent of the wing panels, then joined. Cut lite ply ribs (don't forget to drill pushrod holes) and $\frac{3}{32}$ " ply floor. Carbon paper outline from drawing onto ply floor. Pin floor flat, epoxy spars, ply gussets and ribs in place. Add filler blocks and top spars. Carve blocks to conform to rib contour and leading edge shape. Leave flat where center-section contacts C.T. $\frac{3}{32}$ " ply runs forward to this edge. Drill through wing T.E. into maple blocks for the nylon bolts.

Notch the wing panel ribs to match plywood gussets, sand double ribs flat or with a slight angle using a table edge and a sanding block. Epoxy all joints, then slide panel onto center-section. Unless your working surface is unusually long it will be necessary to join one panel at a time. I used $\frac{1}{2}$ " dihedral at the outer rib to prevent a drooped looking wing, but the wings may be flat if you prefer. Complete wing by planking center-section and panels. Wrap with glass and epoxy (or polyester resin).

Covering and Finish

The prototype is covered in polyester (acetate) sheathing using classic silking techniques, controlling shrinkage with plasterized clear nitrate dope. Obviously heat shrink plastic could be most successfully used. I find the bolt-through-solder-eyelet attachment to be adequate, however, any fastening method preferred by the builder should be satisfactory. The struts are sanded to an airfoil shape, given two coats of finishing resin and sprayed with Perfect paint.

Radio installation is at the builder's option, obviously the cabin is comodious enough to allow for simple access and hookups. The tank hatch will hold an 8 oz. tank, but a 6 oz. is easier to install and maintain.

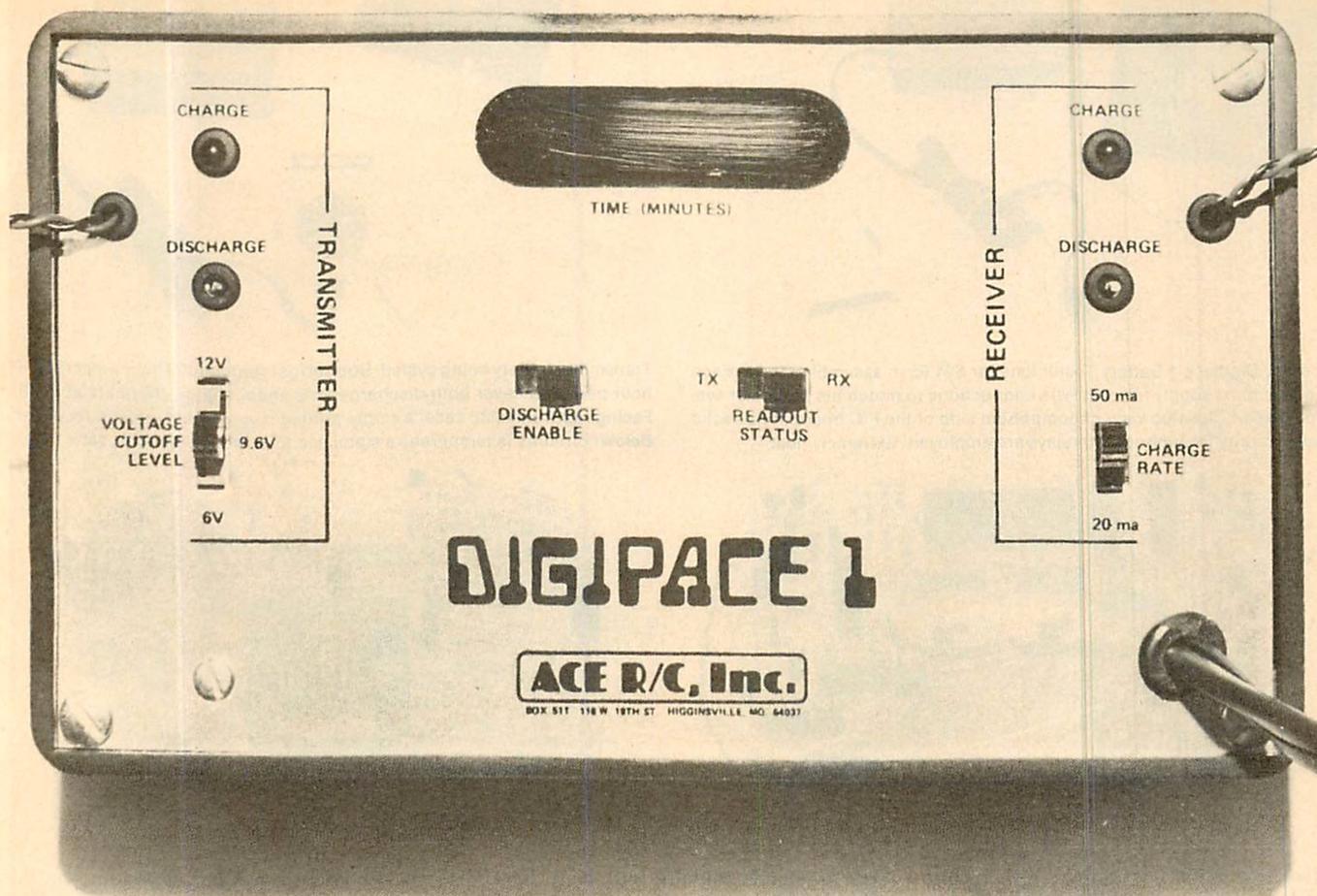
Flying Notes

What's to tell? The Zephyr is a pussycat for a tail-dragger, just be gentle with the throttle until she accelerates enough for the rudder to get a bite. Lift-off and climb-out are throttle functions. The model is light and has superior lift, making the elevator nearly superfluous. Turns are gentle, with little opposite aileron needed for recovery. This Zephyr just about flies without help, so don't horse it around! The model flies, you control.

Landings are so gentle that I have twice finaled and flaired out before noticing that the motor had died. Just set up about five feet high and retard the throttle, she'll get down from that point.

Well, if you've gotten this far you must agree that Noel Hockaday might have missed the mark somehow with a full sized Zephyr, but he surely came up with the ideal high-winged, two place cabin prototype for a model airplane. Build your's well, fly her lovingly and she'll serve you for years. ☺





PHOTOGRAPHY: BOB ABERLE

An FM Product Review:

Ace R/C's Digipace 1

This battery tester will discharge, then automatically recharge both receiver and transmitter nickel-cad battery packs. Select either 50ma or 20ma charge rate, 6.9 or 12 volt power supplies at the flip of a switch/**Bob Aberle**

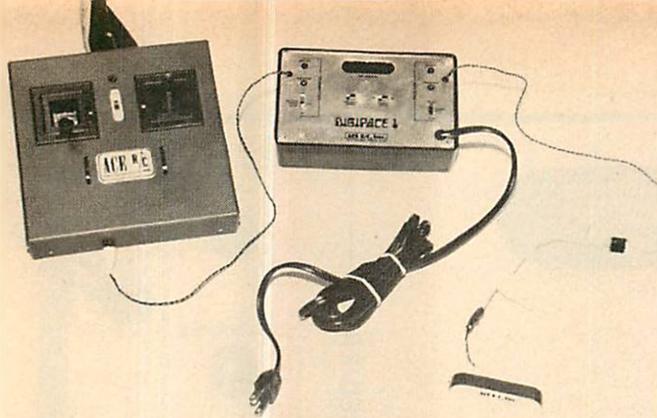
Several months ago Paul and Tom Runge of Ace R/C made available to me a prototype of their new Digipace 1 battery testing device. Since that time the unit has been in constant use checking over eight different sets (receiver and transmitter) of batteries. This probably amounts to more testing than the average modeler would do during several flying seasons. The results of this experience will be described in this text.

The Digipace unit itself is housed in a black plastic case measuring 6¼" long X 3¾"

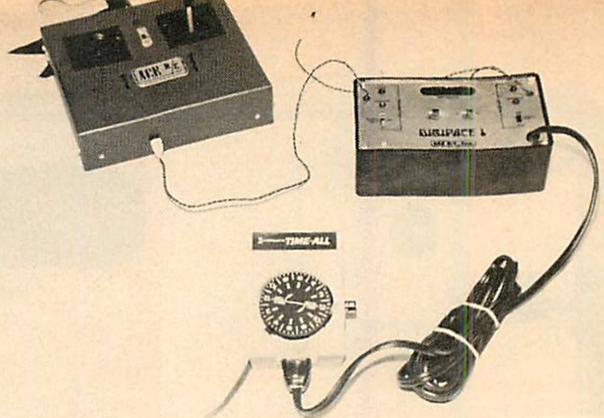
wide X 2" high. A removable, aluminum front panel, contains all the control and monitoring circuitry. Please note that the photos used in this article are of a prototype unit. The aluminum panel on my unit was not etched to a smooth finish, prior to the silk screening of the various nomenclature. My particular panel is somewhat glossy, with obviously many scratches which, of course, do not appear on the final production units. I felt it was not worth getting another Digipace strictly for a photograph. The Ace R/C

Digipace 1 (Model 34G15) sells for \$94.95, fully assembled. Admittedly this is a little on the expensive side, as compared to several other testing devices which had been marketed several years ago. However, there are some additional features in the Digipace which may fully justify the higher cost. My prototype unit was provided fully assembled. Initially Ace R/C advertised a kit version of the Digipace for \$79.95. After examining the circuitry I didn't feel the \$15.00 price differential was worth all the extra work involved. Building a Digipace would be roughly comparable to building a complex transmitter kit. I'd estimate about 10 to 15 hours of construction time, but the biggest problem for the kit builder would be the final adjustments and alignment. The most important part of any battery tester is establishing, accurately, the voltage cut-off level. Many modelers surprisingly don't own even a simple voltmeter. Without a voltmeter it would be impossible to align the Digipace. In a recent discussion with Tom Runge of Ace R/C I believe that they will most likely drop their plans to market a kit version. You might check with Tom on this direct if you were still interested in a kit.

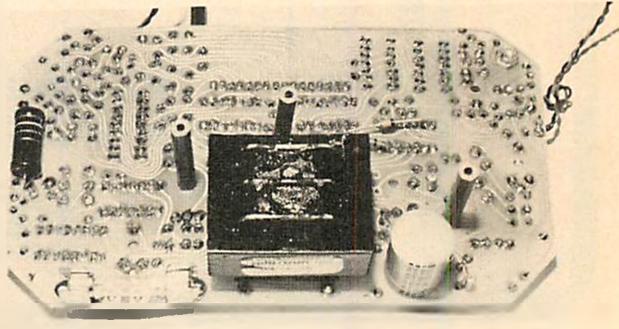
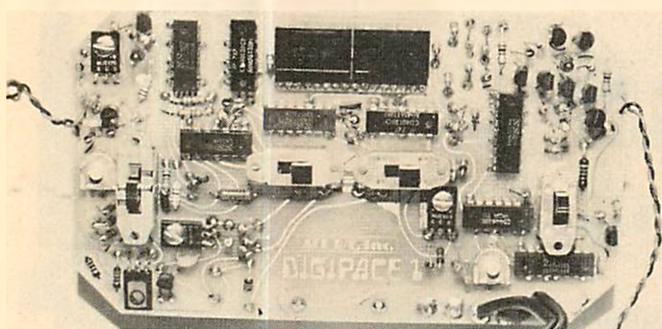
How does the Digipace check batteries? Well the basic principal is the same as employed in the original Flite-Life, Super Cycle and Power Pacer units. Receiver and transmitter battery packs (either separately or simultaneously) are connected to a resistive load. The load causes a rapid discharge of the batteries. While this discharging is taking place the voltage of the battery pack declines. When a preset voltage level is reached the test load is automatically terminated. The length of time it took to get from



Ace R/C Digipace 1 Battery Tester lists for \$94.95 in assembled form. Each modeler must supply his own type connections to match his particular system. **Below:** Close-up view of component side of the P/C board. It has solid state circuitry throughout. No relays are employed. Extremely neat.



Transmitter battery being cycled. Bob set his Intermatic 24 hour timer for a 17 hour period to cover both discharge time and recharge (16 hours at C/10). **Facing right:** Bakelite case, a single printed circuit board, aluminum panel. **Below:** Circuitry is temperature stabilized to prevent variations. Note fuse.



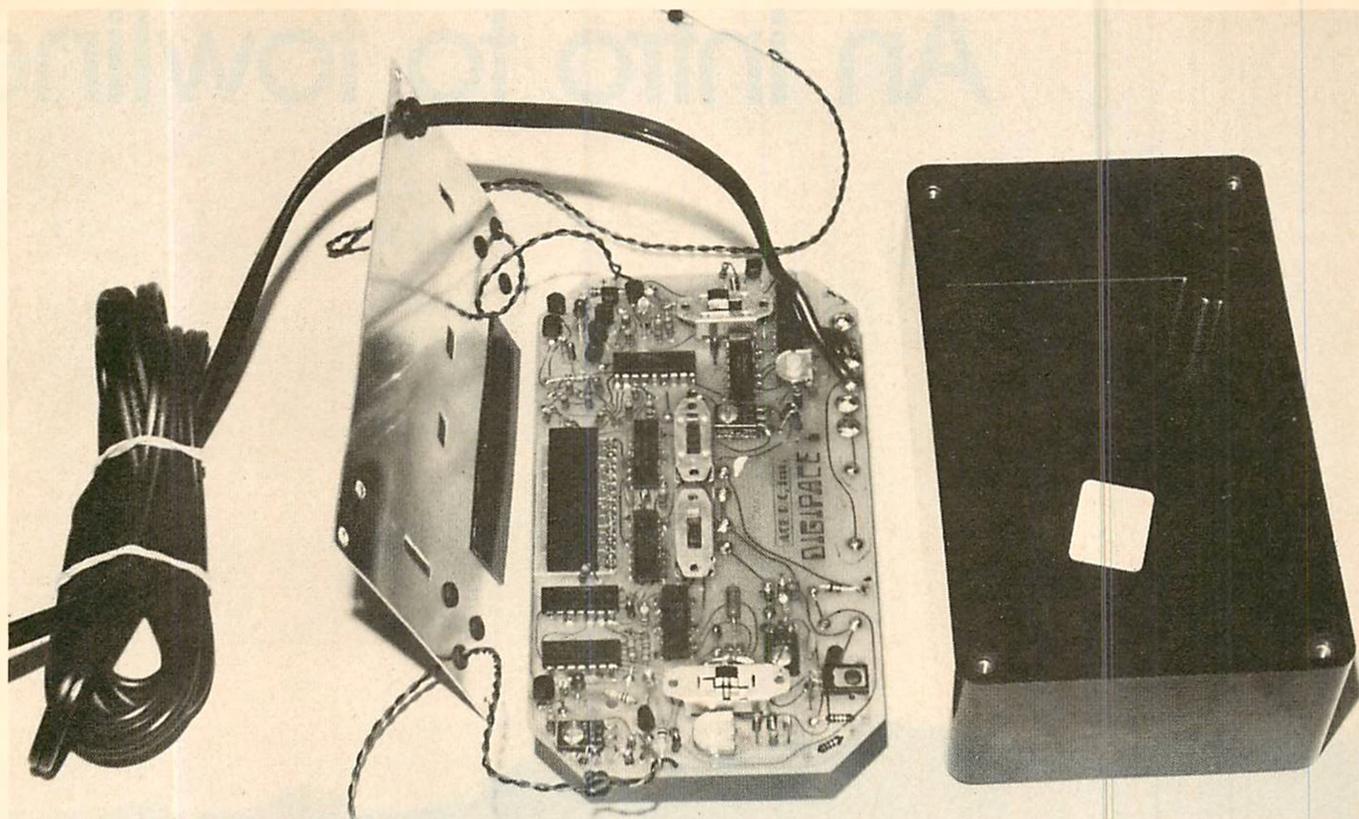
full charge to this cut-off level is then correlated to battery capacity. The longer the time the battery accepts the load the better the batteries' capacity. By the way, if it isn't obvious at this point, you can only check nickel-cadmium (rechargeable) batteries with this tester. Do not attempt to use it on alkaline batteries or even the new sealed lead acid cells.

Now let's talk about the Digipace operations in depth. The unit is shipped with output cables, but less connectors. Since the Digipace can be used with just about any R/C system it is left up to the modeler to provide the necessary connectors. In my case I soldered a Deans three pin connector to the transmitter output lead and a special old Kraft four pin connector to the receiver output. I then use a series of jumper cables to connect up to my Ace, Kraft, Futaba and Cannon radio systems. It's a good idea to keep these cables well identified. I even place a small red dot on the positive lead pin on each connector just to make sure I don't connect up a set of batteries backwards. This can happen even with positive connector keying.

With the connectors now installed I set up the Digipace to test my Ace seven channel system. I generally plug all of my system battery chargers into an Intermatic timer which has been modified to stop itself after the usual 16 hour charge period. I have found it convenient to continue using this timer in conjunction with the Digipace. In my case, therefore, the 115 vac plug of the Digipace goes to the timer output. The timer, in turn, is plugged into a 115 vac wall outlet. I generally set this timer for approximately a 17 hour period which allows for the average discharge time plus a suitable recharge period. As soon as the power is applied to the Digipace the timer face will light up displaying four $\frac{5}{16}$ " high numerals.

The numerals initially will read "000.0" This display reads to a tenth of a minute. The digit to the right of the decimal point changes every six seconds during actual use. Anytime you use the Digipace for strictly battery charging you will get a display readout of four zeros. Since I was about to test a receiver battery pack of 450 mah rating I first set the receiver charge rate at the 50 ma. level (approximately the C/10 charge rate). A convenient switch on the front panel allows you to select either a 50 ma. charge rate for the larger 400 to 550 mah batteries or a lower 20 ma. charge rate for use with the smaller 100 to 225 mah batteries. This is a definite advantage since the smaller cells can easily be overcharged using the 50 ma. rate for the usual 16 hour period. As soon as the battery pack is connected to the Digipace a red L.E.D. will light next to the word, "charge". Before starting the test cycle proceed to connect up the transmitter battery pack. You will notice on the transmitter side of the Digipace panel a switch marked, "voltage cut-off level". This is another good feature of the Digipace. With the flip of a switch you can select a cut-off level which matches your own particular brand of R/C transmitter. In this instance my Ace seven channel transmitter employs eight nickel-cadmium cells for a nominal 9.6 volts (1.2 volts per individual cell). The switch is therefore set in the center position (9.6). Plug the connector into the transmitter and the L.E.D. "charge" light, on the transmitter side of the Digipace panel, will also glow red. With both charge lights glowing, start the test cycle by momentarily pressing (actually moves side ways) the switch marked, "discharge enable". At this point both charge lights will go out and both "discharge" L.E.D.'s will begin to glow red. The dual timer circuit will also start on this same command. The timer display will only read

one function at a time, depending on the position of the "readout status" switch. The length of time of the discharge cycle will vary with both the capacity of the battery and the present state of charge. Normally you would first charge the batteries to full capacity before initiating the test cycle. On my Digipace the measured receiver load was 285 ma. and the transmitter load was 290 ma. Fortunately these load values are similar to those used on the test devices mentioned earlier in the text. This means that roughly the same discharge times should be expected. In my particular case the transmitter batteries maintained the load for approximately 75 minutes. At that point the cut off voltage level was reached and the charge cycle was automatically initiated. The cut-off level is generally established at 1.1 volts per cell. In my case the Digipace cut-off at 8.7 volts, which is slightly lower than the expected 8.8 volt level. A good 400 to 450 mah battery pack, when new, should yield around 85 minutes. My receiver pack reached it's cut-off level of 4.4 volts after 75 minutes, which is perfectly acceptable. Again the battery charge cycle was automatically initiated after the discharge was terminated. All the while the two sets of batteries are recharging the display readout will maintain both discharge times. Flip the switch to "Rx" and you will see the receiver battery discharge time. Moving the switch to the "Tx" position will give the transmitter discharge time. At any time during the charge cycle you can obtain these readings. However, when the timer I mentioned before terminates the charge cycle (after approximately 16 hours) the display reading will be lost. This may be a little inconvenient for some modelers. The presumption here is that the modeler will get a chance to note the timer readings some time during the 16 hour period. The test devices



employing mechanical timers maintain their readings until physically reset. I personally didn't find this a problem.

Just in case you wondered, you can test one set of batteries (say the receiver pack) while the transmitter batteries are simply being recharged. To do this you first initiate the discharge cycle with only the receiver pack connected to the Digipace. Then you can plug in the transmitter battery pack and it will only be on charge. Once the discharge switch is activated it can not be touched again until the test cycle is over. If you did touch it after connecting up the other set of batteries, you would lose the first portion of the timer reading since it recycles to zero each time.

Inside the Digipace I found a well laid out P/C board containing all the components (and there are many). It is transformer powered and the main line is fuse protected which is a good idea for a device which is left on for long periods of time such as this. The circuitry is exclusively solid state in design. No relays are employed. All the necessary control and sensing functions are handled by I.C.'s or transistors. As you might expect, the aluminum front panel does get quite warm during the discharge cycling. Total accuracy is stated as 1% and 1/10 of a minute. More important I found a definite pattern of repeatability during constant use. Even the slightest variation in the voltage cut-off level could seriously affect the resulting timer readings. I did not find this the case at all.

For those interested the measured charge currents on my prototype unit were as follows: transmitter = 47 ma., receiver (high) = 48 ma. and receiver (low) = 17 ma. Should you have a momentary power failure or interruption, the Digipace automatically switches to the charge cycle. The timer reading for that particular test in progress will be lost. Should you return to your test

station after several hours and find the display reading four zeros and the batteries on charge, you can assume that a power interruption occurred. In that case you would simply recharge the batteries and try another discharge test. This situation has not happened to me as yet.

As a word of caution you must also be careful about the selection of the transmitter voltage cut-off. If by chance you own several transmitters with different power pack (voltage) levels you could have a serious problem, if you got careless. For example: let's say you just finished cycling a Kraft KP-4A Sport Series transmitter which has a five cell battery pack (nominal 6.0 volts). You then went to another transmitter which has an eight cell pack (nominal 9.6 volts). If you failed to switch the cut-off level to 9.6 volts these batteries would be continued to discharge all the way down to approximately 5.5 volts (five cells times the 1.1 volt per cell cut-off level). At that point it would be a good possibility that some of the cells would be driven into reversal which could cause irreparable damage. So be alert when going from one R/C system to another. I still like this switching feature in the Digipace. With the older style battery testers you had to stick with a single transmitter voltage cut-off level. This required some modelers to buy a second complete battery tester, for use with another transmitter, which is certainly an expensive alternative.

One of the biggest problems associated with previous battery testing devices was the operating instructions which accompanied them. Interpretation of your test data (time of discharge) is most important for a full understanding of your battery power system. Years ago I heard stories of perfectly good battery packs being returned to the R/C manufacturer simply because the modeler misinterpreted his test results. Recognizing

all of these problems, Tom Runge, of Ace R/C, took up the challenge of writing an extremely comprehensive Digipace Operation Manual. It is in fact excellent. Many areas are explained in this four page write up including, the determination of safe flying time, the measuring of battery capacity, comparing measured capacity to rated capacity and some solutions to battery problems. Tom does a good job explaining the all too controversial subject of battery memory. The very best comment concerns the repeated use of any battery testing device. As Tom points out, one of the causes of permanent loss of capacity in a battery is simply use. To quote from his manual, "one can expect more life from a battery that has shallow charge/discharge cycles than a battery that has deep discharge cycles. Since the Digipace is a device to deep discharge the batteries it is recommended that it be used on a *periodic basis (once a month or so)* to check the battery condition and clear any "memory" effect. *If it is used continuously, battery life can suffer*". All I can say is amen to that statement. Cycling your batteries on a monthly basis is more than adequate. Because the Digipace Operation Manual is so meaningful I have suggested to Tom that he make it available to interested modelers. If I understand his thoughts on this subject a reprint of this manual will appear in an upcoming Ace R/C Newsletter. You can follow up on this point by writing to Tom Runge at Ace R/C Inc., Box 511, Higginsville, Missouri 64037.

I doubt if a summary is really needed at this point. Obviously I'm both impressed and very enthused with the performance of the new Ace R/C Digipace 1 battery tester. In conjunction with their excellent operations manual it provides the R/C modeler with a most meaningful piece of test equipment.

An intro to towline



Experimentation. Experimentation in all aspects of model airplane building and flight techniques. That's where the fun really is. Who knows where the ideas come from, as long as you've never seen it done and now you're going to try it. That's all that counts. Every form of competition in our hobby/sport first started as an experiment. "Let's see if it works!", and then, if it did, it became a contest. A way to see who could do it better. Experimentation has always been a part of FLYING MODELS and now we propose to try something new again, this time in the area of soaring.

What we propose is just the first step towards an all-scale soaring meet. By all-scale we mean that not only must the sailplane be scale, but that the towplane be scale also. It also means a scale tow with two pilots and a towline between the airplanes. Before we get carried away, let's remember that we said the first step. That step, obviously, is a basic contest simply to see if the idea is feasible, and not necessarily using scale airplanes. We already know that scale ships can be built, what we want to find out is, can a powered towplane pull a sailplane into the air and release it consistently enough to make a contest of this sort feasible and fun? To test our theory that the idea will work, FLYING MODELS magazine will sponsor a contest in 1979 based on it. This article is meant to be an introduction to the idea and should give all of you experimenters out there time to mull it over and come up with a winning combination of glider, towplane, towline, flying skill and release mechanisms, as well as the co-operation between the members of the two-man team entries.

Since this is to be an experimental meet, we

decided that there be a few formal rules as possible to allow for the trying out of different ideas and ways of accomplishing the prime objective, i.e. the towing aloft of an R/C glider with a line by an R/C powered model. Since there also has to be a way to win the contest, we decided that a maximum flight time by the glider after it is released should be one of the determining factors. For example: The maximum flight of the glider after release will be five minutes (or whatever time the day's weather conditions allow) to touchdown on the field. Points are counted in seconds and any time over five minutes is deducted from the max time as in any flight time under five minutes. A perfect flight therefore would be 300 points (the number of seconds in five minutes). A flight of 4:30 would result in the same score as a flight of 5:30, 270 points.

The next item of discussion is the landing. We decided that, to keep it from becoming a landing contest, the landing area or spot would be very large and no points would be awarded for landing in it but points would be deducted if you missed it. The "spot" would be determined as a circle with a radius of 100 feet and the center of the circle would be determined by the location of the final resting place of the towplane upon landing and taxiing. Remember, this is a team effort and points will be deducted for crashing landing either the towplane or the glider.

As we said earlier, formal rules for this meet will be kept to a minimum to allow for as much experimentation as possible. The rules that follow exist simply to preclude any field problems and to insure a substantial safety factor, for the airplanes involved as well as the pilots and spectators.

The length of the towline must be at least as

long as the combined wingspans of both the glider and towplane and have a maximum length of 150 feet. It may be made from any material, or combination of materials as long as they are not metallic, and must be able to be released from either plane. This means that both planes must demonstrate the capability of releasing the towline from their respective ends via an R/C signal from the pilot flying that plane. The towline must also be fitted with a streamer or parachute. Any excess weight attached to the line cannot exceed 1/4 oz. maximum on either end. This is not a bomb drop event. Piggy-back "tows" are expressly prohibited, the space shuttle notwithstanding, unless you think that you can put the glider into orbit and return it in time for the max.

The towplane launch must be ROG but the glider may either ROG or be hand launched at the discretion of the teams. There are no limitations as to the type of planes that should be used or to their size and there will be no breakdown of sailplane classes. The relatively short max should preclude any advantage in duration capability of the larger sailplanes over the smaller ones.

The attach point of the towline at either end is up to the contestants. This will probably turn out to be one of the most important determining factors in the contest. Folks that have tried it tell us that the best point of attachment on the towplane is probably somewhere on or near the center of gravity, either on top or bottom, not on the tail as is done on the full-size airplanes due to different dynamics of models. But this is experimental and you're free to do anything that you think will work.

As long as we're making suggestions, we feel

soaring

Here's an old idea in contest form. A way to gently (we hope) mix soaring and power and have a lot of fun in the process. Hope you join us/**Bob Hoeckele**



that a high-wing, flat bottomed airfoil ship would work well. Remember that you want sufficient pulling power to haul the glider into the air, but you don't want excessive towing speed. A glider is a clean aircraft meant for relatively slow flight (if it's a thermal glider) and excessive speed will just make it hard to handle. You will also want to keep the towline out of the way of the towplane's control surfaces. The towplane should probably also have good built-in stability to help keep it level at higher altitudes. Flaps on the towplane might help it in the slow and powerful category.

One last word of caution, we have all met the beginning R/Cer who wants his first ship to be a super-scale four-engined bomber. We know that it probably won't work for him and he'll be disappointed. Don't fall into his trap here. Simple is probably better and after we've learned the lessons that this meet will teach us we'll have plenty of time to get into more scale and more sophistication. But then again, if that's the way you want to go, don't let us stop you.

As a further suggestion, you may want to read up on how the full size gliders are towed in *The Joy of Soaring* by Carle Conway. Available from the Soaring Society of America, P.O. Box 66071, Los Angeles, CA 90066.

We wish everyone of you who decides to join us in this endeavor much success and hope that we have given you sufficient time for experimentation prior to the meet. Keep an eye on FLYING MODELS for the exact date (late summer 1979) and location of the contest itself. If you have any suggestions or comments before then, please send them to me, Bob Hoeckele, FLYING MODELS, P.O. Box 700, Newton, NJ 07860. Happy experimenting and have fun. ☺

Official rules for the FLYING MODELS Prototype Tow Soaring meet

1. All entries will be in the form of two-person teams. One, a pilot for the glider and one the pilot for the towplane.
2. Any powered R/C airplane may be used as the towplane.
3. Any R/C sailplane may be used. There will be no class breakdown for the sailplanes.
4. There are no size limitations on the aircraft used.
5. The sailplane must be towed aloft by means of a line between the two ships. Piggy-back "tows" are expressly prohibited.
6. The towline must have a minimum length equal to the combined wingspans of the sailplane and towplane and a maximum length not to exceed 150 feet.
7. The towline may be made of any material or combination of materials as long as they are non-metallic except for attaching rings. Any excess weight attached to the towline cannot exceed 1/4 oz. on either end.
8. Both aircraft must demonstrate the capability of releasing the towline from their respective ends via an R/C signal from the pilot flying that plane.
9. The attach point of the towline, both on the glider and the towplane is up to the contestants.
10. The towplane must ROG.
11. The sailplane may ROG or be hand-launched.
12. Maximum climbing time will be 90 seconds from the time the towplane leaves the ground.
13. Upon release of the glider, the towplane will immediately land.
14. The max flight of the glider will be determined by the Contest Director on the day of the contest. Timing will begin upon release.
15. The glider must land exactly in the specified max time. One point per second will be deducted from the maximum score for flights either over or under the max. See text for definition.
16. The glider must land in a circle with a radius of 100 feet with the center of the circle determined by the location of the final resting place of the towplane after landing and taxiing. No extra points are awarded for hitting the spot but 50 points will be deducted if the spot is missed.
17. If either aircraft crashes on landing, i.e. sustains damage that would make it un-flyable without repair work, 50 points will be deducted from the score for each crash.
18. In case of a tie score, the teams involved will each make another attempt with the max flight time of the day being doubled.
19. As many rounds of flying as are feasible will be flown.
20. The decisions of the Contest Director and Contest Committee are final.
21. The highest total score after all rounds have been completed will be the winner.
22. Mufflers will be required for all powered towplanes.
23. An official flight will be one in which the towplane has been airborne for 15 seconds.

STARDUSTER

In working one's way up the Precision Aerobatics contest ladder you're always looking for the next step in designs. Here's one man's answer; it might be yours/**Ed Capitanelli Jr.**

I was introduced to the hobby through my son, Kevin. One afternoon he came home telling me about the model airplanes he saw flying at a field in Lincoln Park, N.J. I was curious to see what he was talking about, so the next day Kevin and I took a ride to the field. I was surprised to see these planes flying around in a circle on wires. One end of the wire was attached to the wing and the other to a handle. Kevin and I were so turned on by this that we went to our local hobby shop to ask a few questions about building one of these planes. When we left the hobby shop we had a Ringmaster kit, a McCoy engine and all the other goodies that went along with building and flying. This all happened in April of 1974. *Kevin and I were hooked.*

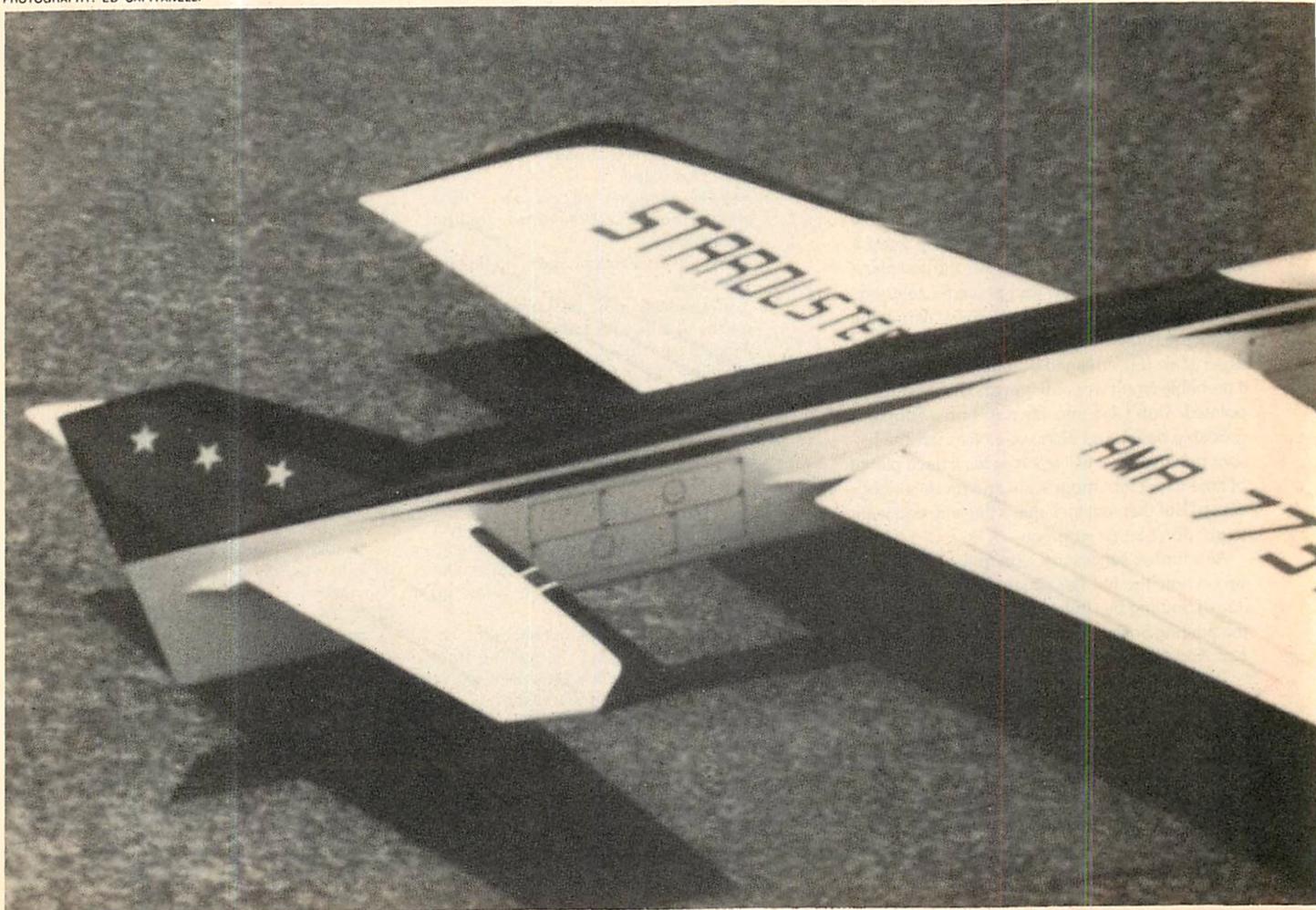
We proceeded to build the Ringmaster.

We followed the instructions to a T. When it was done we thought it was the greatest airplane around. We were really proud of this red and white beauty. We headed for the flying field and our big moment. It wasn't as easy as it looked. With a little help from some of the fellows at the field, we learned how to fly our first airplane. We came to find out that the field belonged to the Garden State Circle Burners Club. We joined the club and we learned a lot about building and flying model airplanes from some of the club members. From the Ringmaster, we went on to build a Chipmunk and a couple of Banchee's. We spend more time in our garage than we did in the house. At one point I thought my wife was going to put my bed out there. My son and I started to enter all the local contests with our planes. We started in

the beginners class. There are four classes; beginners, intermediates, advance and expert. After competing in the beginners' class for a while, we went on to the next class "intermediate" only to find the competition tough, in both men and planes. We knew our Banchees couldn't cut the mustard. We had to build something better. But what? So we turned to one of our best friends in the hobby, Bob Hunt. Bob and his Dad own Control Specialties Company. They specialize in making foam wings, stabs and elevators and a lot of other goodies for planes. Bob showed us some plans of planes that we could build and compete with the best. I picked the plans to the Stunt Machine and my son picked the plans to Bob's 35 Genesis. Using Bob's foam wings, Kevin and I started building our new stunt planes. After a few months of building, our new planes were finished. They were beautiful. We were ready for all the intermediate stunt fliers.

After winning some first and second place trophies in our local contest, Kevin decided that he wanted to fly in the '76 Nationals. We all knew he was good enough to compete.

PHOTOGRAPHY: ED CAPITANELLI



With Bob Hunt's help and Kevin's Genesis, he placed sixth at the Nats. When we got home from the Nats, we knew we would have to start flying in the advance class. We were flying .35 size airplanes for the last two years. But now I wanted something a little bigger to enter advance stunt with. So I decided to build a 46 size airplane. Again, I turned to Bob Hunt for help. Bob talked me into designing and building my own stunt plane. This is where my new stunt plane "Starduster" begins. I knew what I wanted my new stunt ship to look like, so it wasn't hard to sketch it out on paper.

The Starduster uses a foam wing, foam flaps and foam stab and elevator. You can order these components from Control Specialties Corporation, Box 268, Middlesex, New Jersey 08846, or call (201) 469-1663 and ask for Bob Hunt. All these goodies come with complete instructions.

Fuselage

When selecting the wood for the fuse sides, top and bottom blocks, etc., select only the pieces that are light, straight and

with an even grain. Start with cutting out your fuse sides and doublers. Epoxy your $\frac{1}{32}$ " doublers into position. To insure perfect wing alignment, draw reference lines on the fuselage sides and use these lines to get the necessary alignment. Cut your motor mounts from $\frac{3}{8}$ " x $\frac{1}{2}$ " hard wood, epoxy the mounts to the fuse sides as shown on the plans.

I use a special technique to make my fuselage. From the plans, cut out the top view of the fuselage, leave about 1" of paper on both sides. Tape the top view to a good straight board, next get some scrap $\frac{1}{2}$ " pieces of balsa. One side of the balsa has to be straight, and nail these pieces on the edge of the top view just touching the lines. Do this on both sides. Next take your fuselage sides and set them right inside of the top view. Make sure they are setting square to the scrape $\frac{1}{2}$ " balsa. You can't miss using this technique.

Now you can proceed to install your formers. F1A and F1B are $\frac{1}{8}$ " ply. All other formers are balsa. I also use $\frac{1}{32}$ " ply between my motor mounts for the tank compartment

and $\frac{1}{16}$ " ply for the tank floor. Drill motor mounts (using one degree offset) and install #4-40 blind nuts. Tack glue top and bottom blocks onto fuselage. Add your engine with a 2" needle nose spinner. With your engine in position and cowling hollowed out, carve and sand to proper shape. Now remove the top and bottom blocks as shown. Next comes the tricky part. With the fuselage upside down, cut out and install the wing. Check alignment very carefully. (Here's where your reference lines come into play). Before gluing, check alignment again, then epoxy it to the fuselage. Do the same with the stab and elevator.

After this is done and everything is completely dry, take some lightweight fiberglass cloth and Titebond inside the fuselage, going from one side across the top of the wing joint and up the other side. Now comes control hookup. I also use a different method here to hook up my controls. With your Dremel tool and a cutting disk, cut the $\frac{3}{32}$ " control wire in half that goes from your bellcrank to your flap horn. Do the same from your flap horn to your elevator. Now cut



The Starduster is a very clean airplane with its thin fuselage profile and jet-like appearance. With no canopy on the ship, the looks are improved by simply painting one on. No points for detail in stunt.



STARDUSTER

two pieces of brass tubing (about 1-inch in length). Slide the brass tubing over the control wire from the bellcrank to the flap horn. Center the brass tubing right over where the wire has been cut. Do the same from the flap horn to the elevator horn. With your flaps and elevator in the level position, take your soldering gun and sweat solder the brass tubing to your control wire. Let the solder cool for a few minutes. Now check to see if you have a good solder joint between the brass tubing and the control wire. Also check to see if your flaps and elevator are still in the level position. If not, you can reheat the solder and realign flaps or elevator. Glue on the top and bottom blocks and the rudder.

Finish

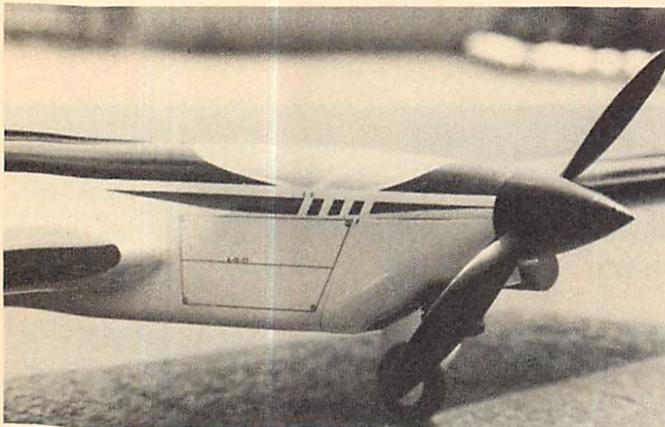
I used Hobbyproxy Formula II Glue to seal the grain. Before any finish can be applied, make sure you are satisfied with your sanding job. Be very patient here—it will pay off in the end. I mixed both tubes of glue at one time, thinned about 10% with Hobby Pox Thinner. Brush the glue on with a fairly stiff brush, do a section the size of one wing. Use

playing cards to scrape the glue off, then use paper towels to wipe excess glue off. When the whole airplane is done in this manner, let dry for 24 hours. Sand the surface smooth using #400 wet or dry sandpaper used dry. Next install your fillets. I used Sig Epoxolite. When you are satisfied with your fillets, clean the plane with prepsol. Spray on two coats of Aero Gloss Clear. It sticks best to the glue and fillets. Now we want to fill the grain. Mix one part Aero Gloss Clear Dope, one part talcum powder and one-half part dark Aero Gloss Color. Thin this mixture to spraying consistency. Apply one heavy coat. Let dry for 24 hours. Using #400 wet or dry sandpaper, wet sand off all the filler leaving only the grain filled. If the grain still isn't filled, apply a second coat of filler using the same method. When satisfied that the grain is filled, spray on one thin coat of Aero Gloss Clear to seal the filler coat. Spray on a light coat of Sig silver. Just mist it on. Silver hides any dark spots. Now spray on your base color using Sig Dope. Mask off and spray on your trim colors. Apply any ink lines, lettering, etc. at this time. Spray on two quarts of clear

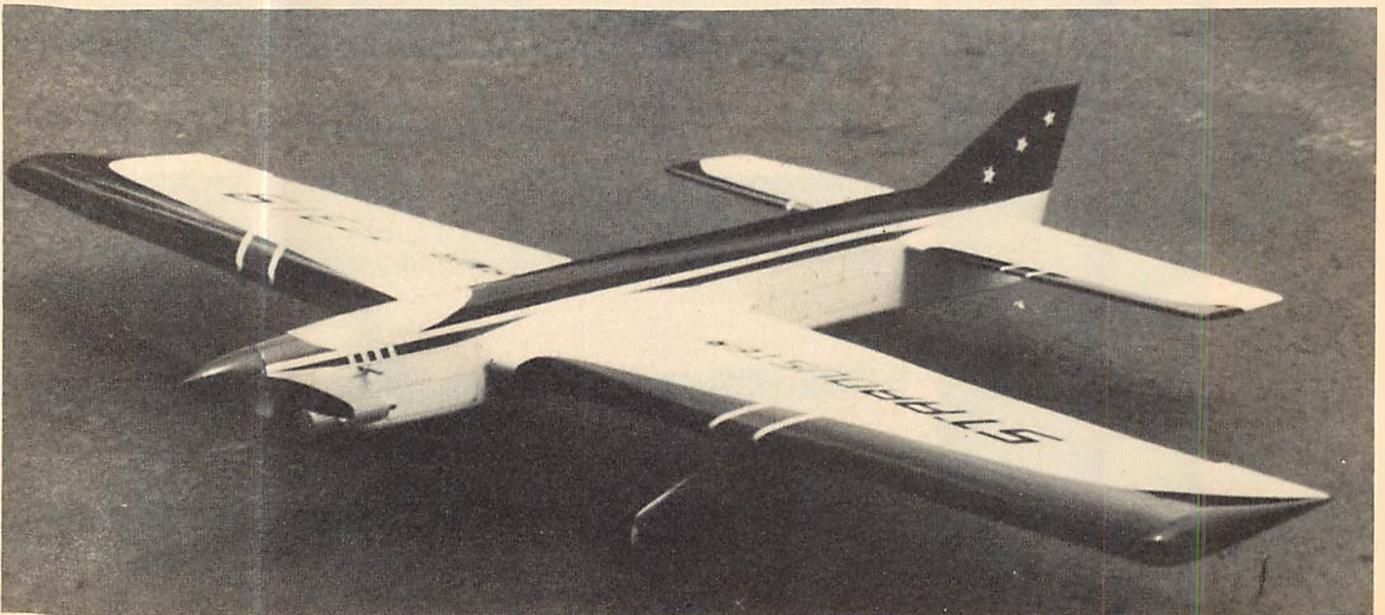
using Sig Lite Coat. I thinned this 100% - 2 quarts clear, 2 quarts thinner. Spray four coats each day, until all the clear is gone. Let the clear dry from 4 to 6 weeks. While waiting for the clear to dry, you can fly the plane. Wet sand the entire plane with #600 sandpaper to a dull finish. Then using Dupont White rubbing compound, rub entire plane to a slick finish. Then wax.

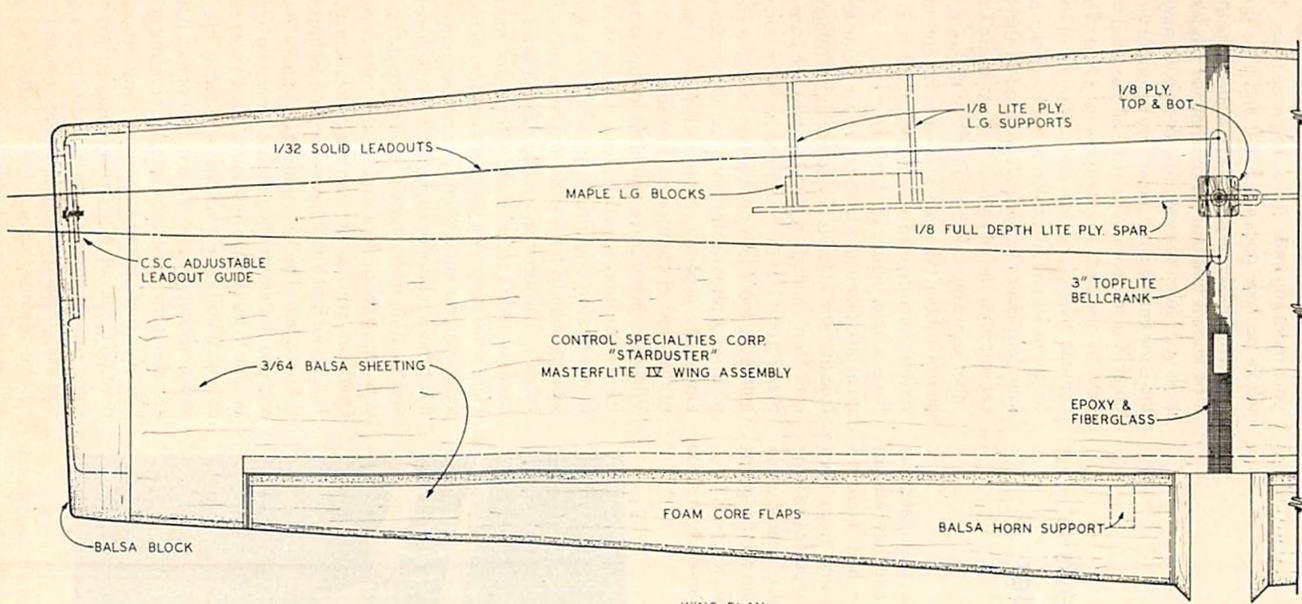
Power and trim

The Starduster is powered by an ST46 with a 12-6 rev-up prop. My plane weighs 55 ounces so if you build one, keep it around the same weight or lighter. If you set your leadouts and get the center of gravity as shown on the plans, and add enough tip weight to get the outboard wing to fly level with the lines attached, you should have a good starting point for trimming. (I use about 1/4 ounces in my ship.) Remember to change one thing at a time. If change doesn't work, put it back where you had it and try something else. Time now to brag to all your buddies on how good your "Starduster" looks and flies!!

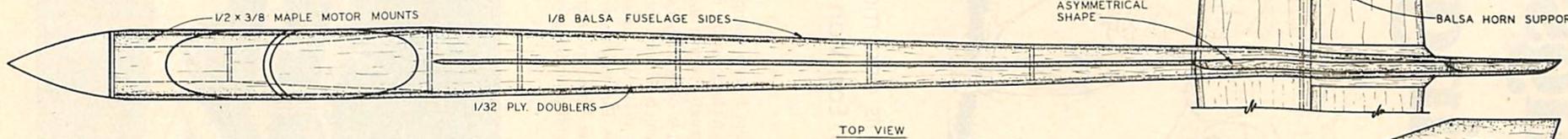
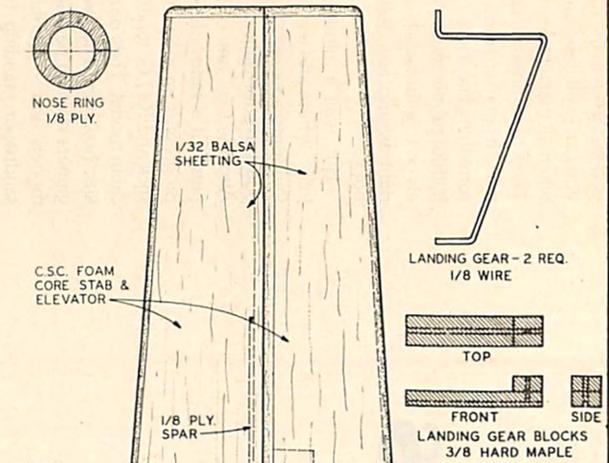
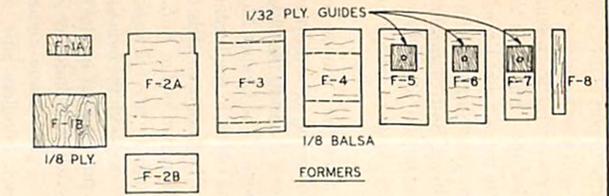


These two photographs (above and left) show the nose of the Starduster which encloses the Super Tigre .46 powerplant. The prop is a 12-6 Rev-up.

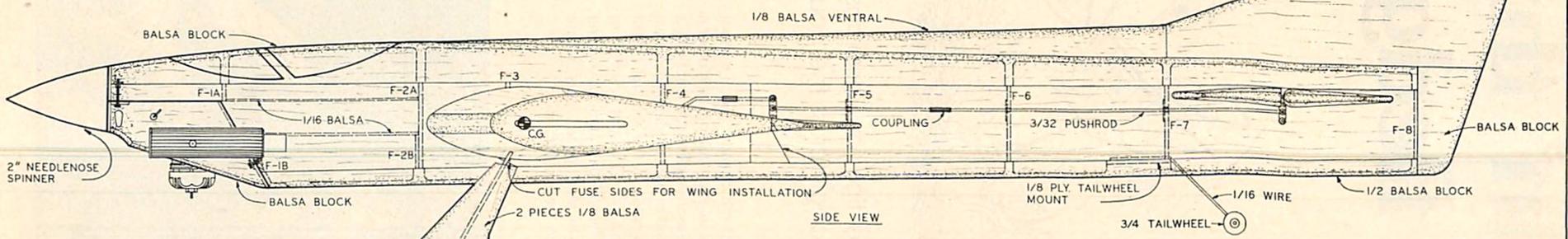




WING PLAN



TOP VIEW



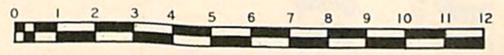
SIDE VIEW

NOTE:
HOLLOW ALL Balsa BLOCKS

1 7/8 WHEELS

STARDOUSTER

BY ED CAPITANELLI



DRAWN BY LOU WOLGAST

Flyin' things for fledglings



Here's some tips for Christmas hints and more news of our fledgling gang across the country/**Earl Van Gorder**

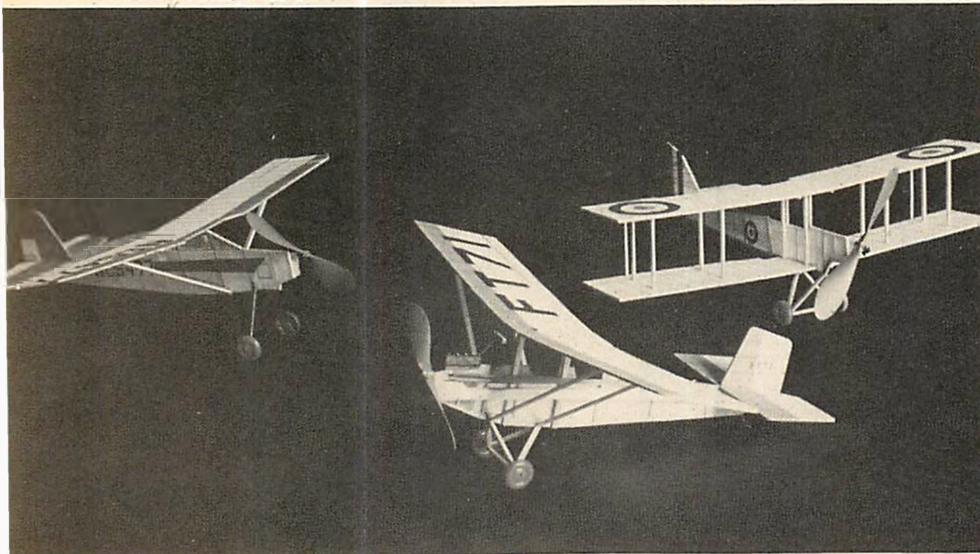
Well, gang, the old calendar says it's about time that we all start wishing each other a Happy Holiday Season and maybe just think a little about what kind of neat modeling items we want the old gentleman in the red suit to put under our trees this year. I've got a few ideas along these lines which I'll pass along to you and you can follow up by placing the "hints" where you think they'll do the most good.

Like I keep telling you, the manufacturers haven't forgotten the fledglings and there are lots of good beginner items to be had. Here's a couple of good ones to look into from Peck Polymers. This is a company that puts out a large line of kits and some really nice peanut scale types. But, they haven't forgotten the fledglings either. They have a great little stick type R.O.C. (rise off ground) that goes together easily and, for

you fledglings in the northern part of the country, you can even have fun with this one in the house when all that white stuff is coming down outside. They have another called the "Stringless Wonder". It gets its name from the fact that it's shaped something like a kite - but no string! It has the old faithful rubber motor instead. Both of these models go together easily and fly very well. Prices are right around two dollars - give or take a half a buck.

But, wait a minute, since the "season to be jolly" is here and we're all going to be dropping a few hints anyway - here's a dandy that'll keep you busy for quite a while. The Comet Model Airplane Co., one of the oldest in the business, puts out a series of four beginners models that progress from a hand-launched glider, through stick and R.O.G. types, right up to a full fuselage cabin model. They don't stop with the individual kits, however. They've put together a total beginners training package which includes all four models and - get this - glue, tissue cement, sandpaper, sanding block, modlers pins, and even a building board! Everything you'll need but your modeling knife and a long nose pliers. The whole package goes for \$7.50 and it's a good buy. The Holiday season is also a good time to let it be known that you'd like whatever modeling tools you haven't already rounded up. Or maybe this is the time to go all out and try for one of those great X-acto tool chests with all the modeling tools in one neat wooden storage chest. They come in a variety of sizes and different tool combinations so check with your hobby dealer and look 'em over. They're all pictured in the big catalog from the Sig Mfg. Co., too. There's another company called Hi-Flier that makes a big line of rubber powered scale models and they haven't forgotten the newer modeler either. They have a little thing called the "Aerobug". It's a great little flier with a triangular open frame fuselage that sort of looks like one of those "Magnificent Men" antique types. The fuselage frame is made from 1/16th dowel rod so it's a rugged little bug, too. Plans are very good with a complete set of photo instructions and all the parts are top quality, especially the propeller which is one of the most efficient props available anywhere. While I'm giving you some ideas for that gift list, there's one more idea that I want to pass on. This is mostly for you fledglings who have been working with us for a while and have built a few models. This one isn't really difficult but I certainly wouldn't recommend it for a first model. Here's the story. Are you fascinated by helicopters? Did you know there is a rubber powered flying model chopper kit available? Well, there is - and it will lift, under its own power, straight up off your living room floor and head for the ceiling. Outdoors, you can get some real altitude with it. Talk about fun! You'll have everyone asking you to fly it again. The kit is put out by Vintage Aero and goes for around five dollars. Now, you won't be able to build it in a few hours, but it's not really difficult if you take your time and follow the instructions step by step. As a matter of fact, it has just about the most complete set of instructions I've ever seen. Every step in the construction is covered in full detail. It's nicely designed and has some self-alignment features that help to keep you from making mistakes. It's different and can best be described as pure fun! So what if it does take a little longer to build? Building is half the

PHOTOGRAPHY: JACK ARNOUITS



Some great Christmas gift suggestions. From left to right are Vintage Aero's DH-6, Nesmith Cougar and Pietenpol Air Camper. All cost \$1.79 to \$2.25. They are all from the MiniProfile series of kits.

fun, and besides, you'll be improving your skills that much more. Oh, and I almost forgot to tell you - it looks like a real chopper, too. Well, gang, that should give you a few more ideas of what's available for the newer modeler, and, believe it or not, there's still plenty more great items to tell you about in future columns. And don't forget - Any one of these kits I've been telling you about for the past few months makes a great gift for you to give to that fledgling friend whom you build and fly with. That's what really makes the Holiday season a happy time.

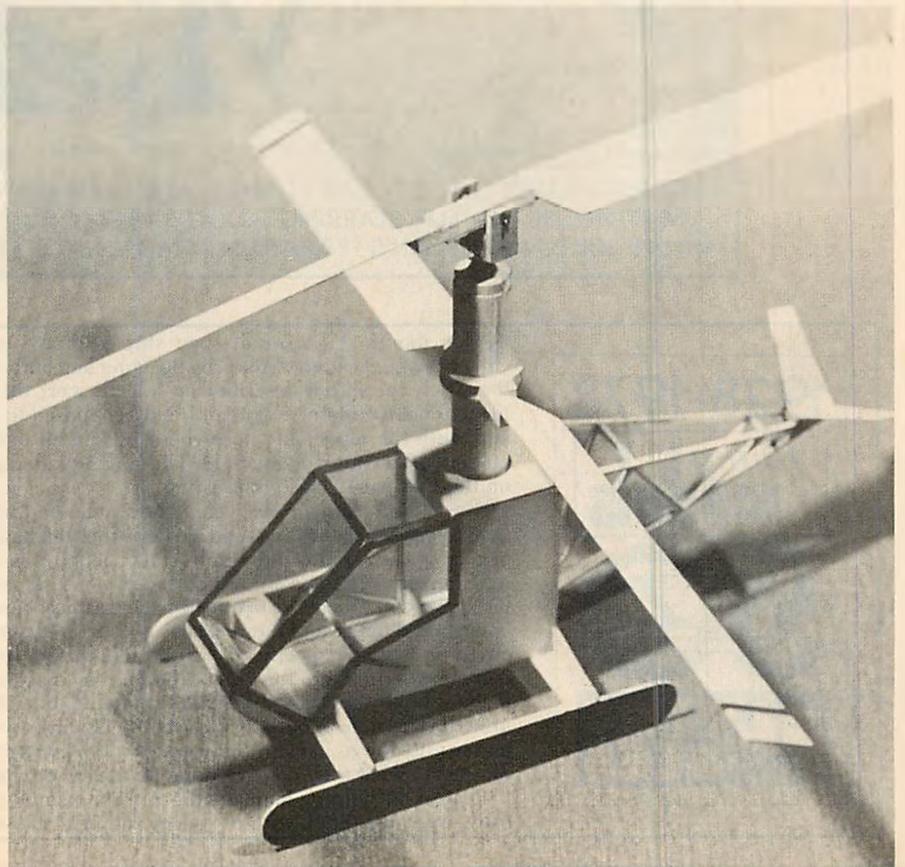
There's something else I wanted to tell you about, too. As most of you know, I try to pass on a few safety and building hints whenever I can. So, let me try to steer you clear of a mistake that some of our fledglings have been making. We all have our share of crashes - heck, it's part of learning to fly our mechanical birds. Now some of the fledglings have decided that "strengthening" their models will cut down on crash damage. What they don't realize is that, in most cases, they're not really "strengthening" - they're just adding weight! I guess most of us have learned one thing by now and that is that a modeler pays a penalty in performance for every fraction of an ounce of weight that's added. Now, it's a basic fact of physics that a heavier model has to fly faster to stay in the air. Well, heck, gang - it just follows that a model that flies faster, hits harder when it comes up against a tree, wall, or whatever. And hitting harder is what really causes the damage. A nice, light model - even though it may look a little flimsy - will usually suffer no damage at all when it comes in contact with something. It just plain doesn't hit hard enough to hurt itself. Besides, the light model will stay airborne longer on each flight and that's what wins contests and gives YOU more fun. So don't add extra wood to the frame - or heavier wire parts - and, above all (and this is a common error) don't smear a lot of extra cement on every joint! That just adds dead weight and does nothing whatsoever for the strength of your model. It's far better to take a little time and make really good glued joints. Here's the best way to make light, strong joints. First, make sure the wood parts are properly fitted with good square-cut ends. Now, the best way to get that light, strong joint is to pre-glue. Here's how. Put a thin film of cement on each of the parts to be joined. Now let it dry without putting the parts together. When it's dry - or almost dry - the glue will have made a good penetration of the wood grain. Now, just put on a bit more glue and join the parts. Your joint will be light, strong and neat. Another benefit is that the covering will go on easier and more smoothly. It's really murder to try to put covering over a whole bunch of lumpy blobs of glue! And, to go along with this idea, here's a tip from Phil Koopman, owner of, and chief designer for Vintage Aero. Lots of us use waxed paper to cover the plans when building a part. Not good, says Phil. Some of the wax can get into the joint and weaken it. Far better to use one of the plastic wraps, like Saran Wrap. The cement won't stick to it and there's no wax to penetrate the joint and weaken it. Thanks, Phil - a good tip.

Well, I guess we'll wind up this session in the old hangar by extending to all of you our best wishes for the Holiday Season - and may the New Year bring you longer flights, fewer crashes, and more flying fun. So long, now.

FLYING MODELS



A student from Bill Warner's Aeroplanes Class at the Los Angeles Museum of Science and Industry gets off a good launch (above). The Vintage Aero Fly N' Things Helicopter (below) looks like the real thing



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This month it's a 5-foot span ship with twin vertical stabilizers and a retractable nosewheel called "Mike" by designer and author Gil Shurman. In the first paragraph of the article the ship is described as "ideal", well, that's up to you to decide, but whether it's ideal or not it certainly is streamlined as opposed to the typical boxlike structures of the day and, with the retractable nosewheel, adds a bit of interest that's not normally seen at the modern Old-Timers flying field. The single-bladed prop for sport flying shown in the photo on the first page is also interesting.

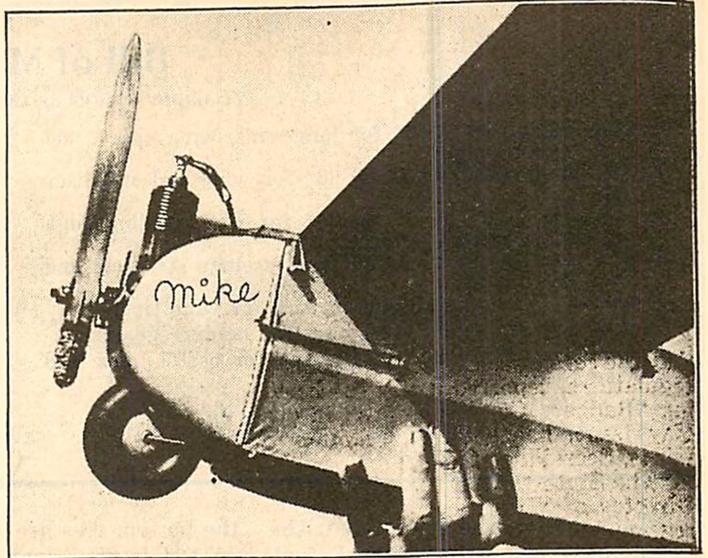
Our Fiftieth Anniversary year is now at an end with this issue of FLYING MODELS. It has been a very good one for us and we hope that you have all enjoyed it too. We've received a lot of good wishes for the future from a lot of people, many of them with requests that the FLYING ACES reprint series be continued indefinitely. It will be continued, but not on a monthly basis. We will, from time to time reprint various construction articles on gas jobs, rubber jobs and general interest in future issues of FLYING MODELS. If any of you FLYING ACES fans have anything that you specifically would like to see, let us know.

If our research into the "roots" of our own magazine has shown us anything, it has been that our hobby/sport is based on a firm foundation of eager experimenters and solid, steady growth. The state of our art is constantly moving forward through the efforts of all of us, not just an elite few as in many other endeavors. That's our advantage, a broad base of people dedicated to what they do—we hope that it never changes.

Thanks for helping us make the Fiftieth Anniversary of FLYING ACES/FLYING MODELS a truly great one. Stick with us during the next fifty.—BOB HOECKELE.

This Job's Got Everything!

Our second contest craft of the month! Yes, power fans, here's a sleek sky scooter for you that's a natural tourney taker. If you live in the city and need a ship that'll give those other guys a run for their money—then here's your meat. And if you hang your hat in the country you'll want to build this baby to cash in on her top-notch flights. Anyhow, you'll be missing a good bet if you don't listen closely while Ace-designer Gil Shurman gives you the dope on his latest petrol pretty!



"Mike" Gas Model

JUST WHAT is an "ideal" model? We'd say that in order to come under that head a ship would have to be comparatively small—about five foot span—and weigh about two pounds. Also, it must necessarily have the ability to stay up for long, flat-glide flights.

Well, builders, this month's gas job has *all* of those features! Its small size allows for easy transportation, and packing is facilitated by the removable motor unit, as well as the detachable wing and tail. And its light weight automatically assures a fast climb.

Yes, we're talking about "Mike." This little job has everything that comes under the head of "desirability"—including a retractable undercarriage!

Whereas some retraction gears for

By Gilbert Shurman

Author of "Rambler" Gasoliner"

models are difficult to keep in good working condition, the one that's incorporated into "Mike" is fool-proof. And the single wheel retracts so cleanly that parasitic resistance is cut down a great deal, thus making possible flatter and longer glides.

The general appearance of "Mike" is one of clean lines without the loss of simplicity. This one-wheeler is no more difficult to build than a "box-like" gas job, yet is streamlined enough even for the most critical builder.

Okay, boys, that's just about enough gab for now, so let's turn to the instructions and see what's what. All set? Then hold tight—because it's coming fast!

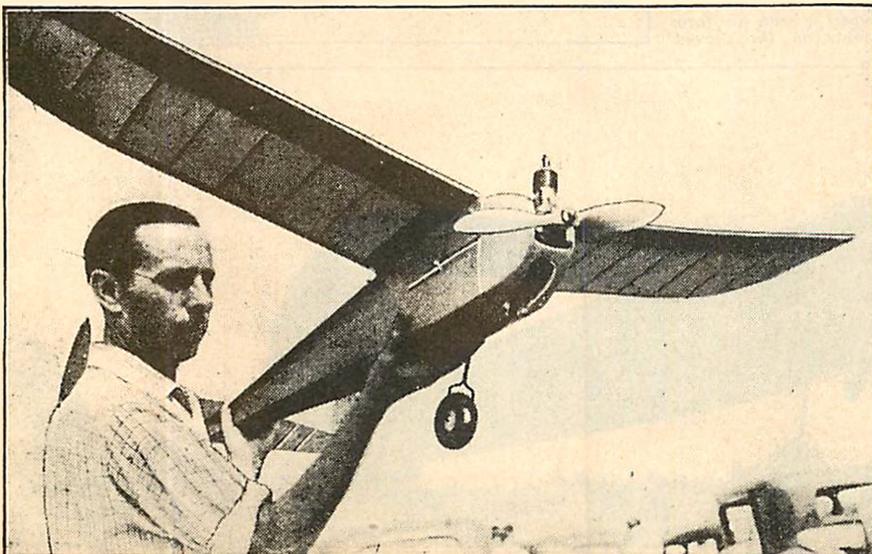
FUSELAGE AND LANDING GEAR

NOTE THAT the side view of the fuselage is symmetrical. The height of the basic rectangle at the first upright is $4\frac{1}{2}$ "; the second upright, $4\frac{3}{4}$ "; the fourth upright, 4". The widths of the basic rectangles are $3\frac{1}{2}$ ", $3\frac{1}{2}$ " and 3" respectively. From the fourth upright back, the fuselage is straight. A full size drawing, using these measurements, should be made to insure a good basic structure.

The rectangular framework of $\frac{1}{4}$ " square balsa is built directly on the plans. When finished, the $\frac{1}{8}$ " by 1" stringers are added to the top and bottom of the framework, and the $\frac{3}{16}$ " stringers to the sides. The addition of the $\frac{1}{8}$ " sheet stabilizer mount and $\frac{1}{4}$ " sheet wing mount completes the fuselage.

The landing gear should be bent accurately from $\frac{3}{32}$ " steel wire. All the soldered joints are bound first with copper wire. Tie the aluminum tubing sockets to a piece of hard $\frac{1}{4}$ " square balsa, glue this unit at its proper station, and then add the various cross braces as shown on Plate 3. Note that the bottom stringer becomes two pieces from the landing gear forward and forms a slot in which the landing leg slides.

Slight adjustments may be necessary to get the retracting system to work correctly. The weight of the



Left: "Mike" may be fitted with a two-bladed prop for contest flying, and here we see our model as snapped at a recent Long Island tourney. Under ordinary conditions that undercarriage would retract when not in contact with the ground, but the tension was removed for this photo. The "truck" is actually not a landing gear on this job, for it is used in the extended form solely for take-offs.

Bill of Materials

(Complete plans on the following pages)

Ten strips $\frac{1}{4}$ " sq. by 5' for longerons, wing spars, and wing leading edge;
Eight sheets $\frac{1}{16}$ " by 2" by 36" for wing and stabilizer ribs;
Five sheets $\frac{1}{32}$ " by 3" by 36" for wing leading edge and center section covering;
Four sheets $\frac{1}{8}$ " by 2" by 36" for fuselage stringers and stabilizer mount;
Four feet $\frac{1}{8}$ " diam. aluminum wire for wing tips;
Two feet $\frac{3}{32}$ " diam. steel wire for landing gear;
Three strips $\frac{1}{16}$ " by $\frac{1}{4}$ " bamboo for battery box and wing pegs;
Two strips $\frac{3}{16}$ " sq. by .5' for stringers;
One sheet $\frac{1}{8}$ " by 3" by 36" for rudders;

One strip $\frac{1}{8}$ " by $\frac{1}{2}$ " by 36" for stabilizer trailing edge;
One strip $\frac{3}{16}$ " by $\frac{3}{4}$ " by 5' for wing trailing edge;
One strip $\frac{1}{8}$ " by $\frac{1}{4}$ " by 36" for stabilizer leading edge;
One strip $\frac{5}{16}$ " by $\frac{1}{8}$ " by 36" for stabilizer spar;
One strip $\frac{1}{2}$ " by 12" by $\frac{3}{8}$ " pine for motor mounts;
One sheet 6" by 6" by $\frac{1}{20}$ " plywood for motor mounts;
One sheet $\frac{1}{8}$ " by 5" by 7" plywood for motor bulkhead;
One sheet $\frac{1}{4}$ " by 2" by 36" for wing mounts and back of bulkhead;
One 6" length aluminum tubing, one $\frac{1}{8}$ " diam. landing gear bearing, one pint dope, half pint cement, eight sheets tissue, yard and a half silk, 3' hook-up wire, sheet brass scraps for battery contacts, soft balsa blocks for cowling, .010 sheet aluminum tabs, one $3\frac{1}{2}$ " air wheel, bolts, nails, pins, sandpaper, etc.

model should hold the wheel out without having the job tip forward. And when the plane is lifted, the wheel should swing up under the cowling. By adjusting the tension of the rubber band and the angle of the landing gear leg, the correct balance of forces may be obtained.

MOTOR MOUNT AND HOOK-UP
PLATE 1 carries detailed views of the motor mount. The runners are made from $\frac{1}{2}$ " by $\frac{3}{8}$ " pine, and $\frac{1}{20}$ " plywood gussets are glued and nailed to these for strength. The mounts are bolted to the $\frac{1}{8}$ " plywood bulkhead with $\frac{3}{4}$ " brass bolts. The spacings shown on the plans are for a Brown engine, but any $\frac{1}{5}$ " h.p. motor may be used by simply changing the position of the bolt holes to conform with those on your power plant. The coil and condenser are mounted to the rear of the fire wall with aluminum straps and wood screws.

The battery box shown on Plate 2 is made of $\frac{1}{8}$ " hard sheet balsa. The box is made to accommodate two intermediate batteries which should prove sufficient for running your engine. Glue two brass contacts at one end of the inside of the box and cement the wire spring to the other end.

The ignition diagram is detailed on Plate 1. By using "alligator" clips in connecting the wires to the coil and condenser, the motor may be completely removed from the rest of the plane.

TAIL AND WING
THE TAIL construction used is simple, light, and strong. Start by pinning the $\frac{1}{4}$ " by $\frac{1}{2}$ " trailing edge to your full-size plans. After

the bottom ribs are in place glue the $\frac{15}{16}$ " by $\frac{1}{8}$ " spar in position and finish the stabilizer by adding the top ribs, which bend from the leading edge over the spar to the trailing edge.

Note that the center ribs, both top and bottom, are $\frac{1}{16}$ " by 2" wood to strengthen the stabilizer against the tension of the rubber bands. The $\frac{1}{8}$ " thick balsa rudders are sanded to a streamlined cross section and glued to the stabilizer after it has been covered.

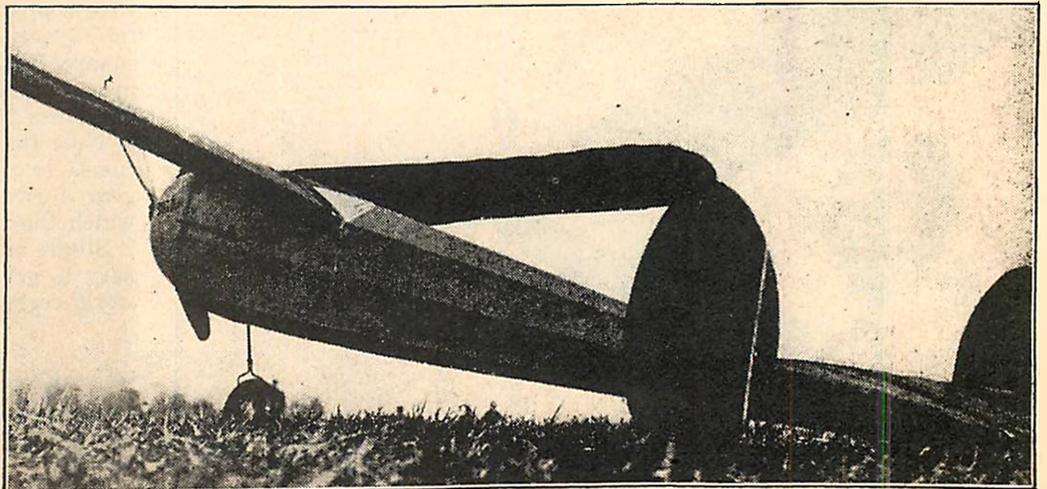
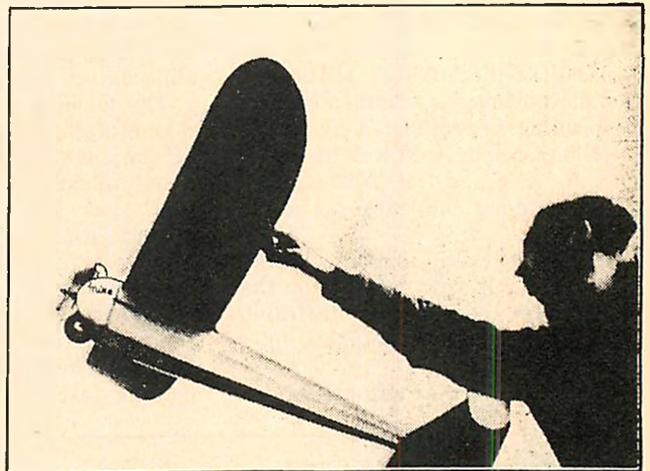
Twenty wing ribs, for which a full size template is given on Plate 2, should now be cut from $\frac{1}{16}$ " sheet balsa — "C" grain. These ribs are spaced 3" apart on the $\frac{1}{4}$ " sq. hard balsa spars.

The wing tips are made from $\frac{1}{8}$ " aluminum wire. This type wing tip

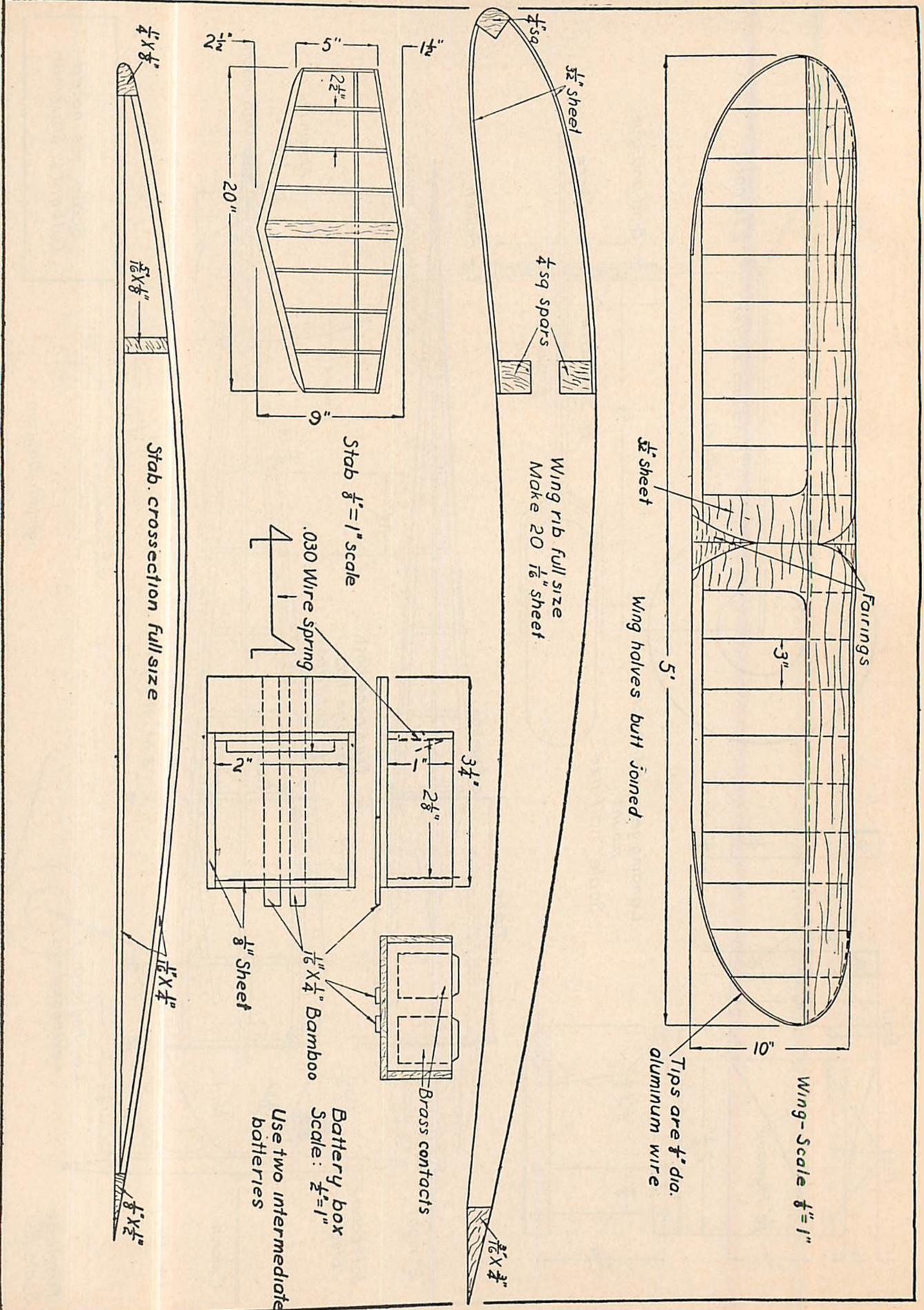
is easy to make and is also light and strong. The leading edge of the wing, both top and bottom, and the center section is covered with $\frac{1}{32}$ " sheet balsa.

COVERING AND FINISHING
ON THE original "Mike," the wing and tail were each given two coats of red-tissue. If you'd like to use the same color scheme, cover the entire structure with a first coat and spray with water. When this is dry, apply the second coat, sticking
(Continued on page 80)

Right: She's off! Under the expert supervision of one of the author's fellow modelers, "Mike" takes to the air for a roaring hop. See, her wheel's up already. Below: This three-quarter rear shot shows how stable our model is with her three set-down points on the ground.



BUILD THIS ONE WHEEL "MIKE" GAS MODEL—Plate 2



With Model Builders

by Ed Whalley

Triolo Posts 10:43 To Win At 1st Lakehurst Manhattan

What may well be a milestone in Indoor development was successfully passed at Lakehurst in August when John Triolo posted 10:43 to beat Walt Van Gorder in the first Manhattan event scheduled at the historic site. Walt flew in from Ohio to post a close 9:57.2—seconds short of the magic 10:00. From now on, we can expect Manhattans to do ten minutes.

For John, however, the ten-minute flight was not a first. He'd done his ten already when he'd posted 10:25 in Hangar 5 at a flying session on July 15th. The flight was an unofficial record and one which he broke himself with the 10:43 flight.

At the Manhattan contest, both John and Walt were in the air when the contest closed at 7:00 p.m. Each posted his best time on the last flight. John landed first; Walt, second. Characteristically, Walt was more put out by his not making 10:00 than he was by being bested by Triolo.

In what had been billed as "The Battle of the Titans," Van Gorder had been doing 9:00 or better to lead the pack all day. The billing was no misnomer: statistics show that, in addition to the 10:43 flight, seven flights of 9:00 or better were posted; and there were eleven 8:00's; fifteen 7:00's; seven 6:00's; and, two 5:00's. The rules permitted an unlimited number of official flights.

Ed Whitten, AMA's Junior man, sponsored the contest and provided trophies to fifth place. Frank Haynes came third with 8:30.2; Pete Andrews, fourth, with 8:22; and, Dick Whitten, fifth, with 8:02.1. Ron

Williams, Bill Tyler, Ed Whitten, Joe Nuszer, Sr., and Manny Radoff trailed in that order. Incidentally, at the same meet, Mark Drela set an unofficial World Record of 26:22.7 with a 35 cm model. The old mark was held by Laurie Barr of Endland.

Triolo's ship was a typical streamlined box of twenty inches length. The wing had a chord of four inches and a flat span of twenty. The polyhedral was added to the ten-inch flat center-section via two four-inch and two one-inch upturns approximating an elliptical curve. The prop was a 14 x 22 thin-sheet affair turned by a single loop of brown Pirelli into which John packed 1800 turns. The ship weighed four grams.

Just for the record, Van Gorder took Manhattan at the THNIRT in West Baden with 9:13 (he did an unofficial 9:19). This mark bettered Jim Miller's old time of 8:15. The eleven flights of 8:00 or better at the Lakehurst meet give a good indication of how far Manhattan has progressed in about a year's time.

U.S. Sweeps Stunt at WC's

The U.S. Precision Aerobatics Team swept four out of five places in World Championship competition at RAF Woodvale, England, over August 7-9. Bob Hunt, who placed first, became the fourth American to win the event. His team mates, Al Rabe, Les McDonald and Bob Gieseke finished second, fourth and fifth, respectively. Italy's Luciano Compostella was third.

The fine showing of the U.S. Team gave them an easy first in the overall national standings. In the scoring, it was a comparatively tight race between Hunt and Rabe for first place. Hunt's best of two was 5918; Rabe's, 5903. Compostella, the veteran Italian contender, squeaked by Les McDonald, the defending Champ, 5858 to 5853. And Bob Gieseke, the '74 Champ, posted a 5797 to bring the team score to 17623. Italy was second with 17298; France, third, with 16369. England was fourth; West Germany, fifth. The close race between Hunt and Rabe underscores the overall quality of the U.S. Team. This was Rabe's first appearance at a World Champs.

In other World Championships flying, England's M. Tiernan and D. Wood took top honors in Combat to help cinch first-place for their Team. West Germany, Belgium and

"Mike" Gas Model

(Continued)

the paper only to the edges, spray again, and apply two or three coats of dope. The fuselage is covered with silk, and this, as well as the exposed wood parts, is painted silver.

FLYING THE MODEL

IN ALL test flights with "Mike," a one bladed prop should be used. By clamping the prop to the crankshaft in the right position, it will be possible to get the weighted end pointing down when the engine stops. This prevents any damage to the engine in landings. A two bladed prop, however, may be used in contest flying.

To fly "Mike" have an assistant hold the plane while you start the en-

gine. When the plant starts, pull out the wheel and set the model on the ground with the engine still running. Set the timer for the desired motor run, and let the model take off, guiding it by the wing tip.

In landing, the protruding wheel takes the shock. Occasionally, in a more severe landing, the motor unit may pull out. This is okay, though, for it can be slipped into place again. The idea of holding the nose of the ship in with rubber bands reduces the chances of injury occurring to the engine, as well as allowing the separation of the motor from the rest of plane.

That's all. She's now yours, boys!



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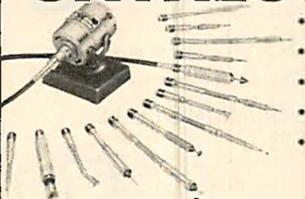
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A helpful hint from your FM Staff.

France tied for second; the U.S.A., Canada and Italy, for fifth. U.S. Teamsters Chuck Rudner and Gary Frost tied for ninth-place honors, and George Cleveland tied for 17th with an assortment of other nationals. The story is told simply by Charlie Johnson in Patty's Pinkie:

"No one had better equipment, pit crewing or ability than us—we just lost. We were plagued with bladder trouble the day Gary lost (five of 'em broke), so we're going to go to pacifiers. All the Team used Fox BB's, just as fast as Rossi's in the air and much less trouble to set. Typical fuel was a rather nasty 50% Aldrich or Fox blend. George dropped to 30% for what he thought was going to be an easy match and got outflown and out-horsepowered."

The U.S. TR Team finished sixth in the national standings. England was first, followed by Australia, Holland, Italy and Sweden. The Dutch team of Metkemyer/Metkemyer earned a first via a best heat of 3:44 and a final of 7:32.5. Our boys, Dodge/Nelson and Albritton/Joy finished thirteenth and fourteenth. And Jolly/Kusik finished twenty-second.

The U.S. Speed Team, Bob Spahr, Chuck Lieber and Chuck Schuette finished eighth in a race won by France. Our men finished third, fifth, and thirty-eighth, respectively. J. Lenzen, W. Germany was the winner with 255.5 km/h.

Californians Win Nats Stunt

It was a close race, but Bob Whitely managed to outpoint fellow-Californian Ted Fancher to take the Nats and the Walker Cup, 1050.83 to 1048.17. Bill Werwage, Norm Whittell and Wynn Paul followed with 1040.17, 1025.33 and 1018.84 respectively. In the Walker Cup flyoffs, Whitely topped Senior Champ David Fitzgerald of San Mateo 1012.83 to 971.67. Junior Champ Andy Harissiadis of Pompton Plains, N.J., trailed with 849.34.

In winning Senior Stunt, Fitzgerald copped his third straight Championship; he was also Senior Champ last year and Junior Champ in '76. Junior Champ Andy Harissiadis pulled an upset in beating California's Dan McClellan. Andy had flights of 415.67 and 445; Dan, 417.33 and 373.67. Texas Tom Fluker of Gainesville was third with 367.67 and 345. Fitzgerald had clear sailing as he bested Kevin Capitanelli and Randy Kauk. His best score was 468.67. There were six entries in Senior; nine, in Junior. Open, in contrast, had 48 entries.

Half-A Stunt had five Open entries, one Senior entry, and three Junior entries. Last year's winners, Whitely, Fitzgerald and Dan McClellan were on hand and won again. The entry was down from last year, but the flying was of a high order. Whitely posted a 407.67 to win over Bill Howe with 392.

Whitely's Open winner was his Derringer design with a foam wing and ST-46 up front. Perhaps as a result of the resurgence of Scale in Texas, Ron Harding won the Concours d'Elegance with P-40 B semi-scale stunter which looked more realistic than most of the Scale entries. Event Directors Arlie Preszler and Lanny Shorts did a great job of organizing operations and lining-up an efficient crew. And the fifth annual PAMPA banquet came off on Saturday night without a hitch with Arlie doing the MC'ing. Stan Powell of Moore, S.C., was named Rookie of the Year and was presented the Roger Barrett Award.

Trash Movers Mark T-Bugs' 32nd Annual at Taft

SHOCman Bob Vinson was both a winner and a loser at the T-Bugs' thirty-second Annual. Bob beat out the USFFC's Grand Champ, Paul Stober, to take D-Gas with 22:14, the best time of the meet. He also posted a win in Nite Flite. But the following day one of those famous "trash movers" came along and picked his model box right off the ground. It threw the box into the side of a truck and sucked out all of his ships—demolishing most of them.

Stober proved his Champ status by posting wins in A and B as well as his second in D. His best time was 20:00 in A Gas. The 20:00 mark was also posted by Parker McQuown in 1/2A and Joe Norcross in C—both were winners. Hulan Mathies took FAI Power.

In the non-power events, Greg Sussex had firsts in HLG and A/1. Lee Hines beat Matt Gewain in A/2, 18:00 to 16.12. Bob White won in Mulvihill with 21:00 and had seconds in P-30 and Coupe. Bob Piserchio took Wakefield with 20:03, and Len Kendy posted his first win in a long time when he took the Coupe/Rocket event. Norcross and White were tops in Sweeps with Joe amassing 434 points to Bob's 371.

McClellan Wins BMA Contest

Dan McClellan, a member of the 049ers, a WAM club, won first place and a \$1500 scholarship in the Boeing Management Association's 1978 competition. McClellan who has been making his mark in Stunt circles, joins the roster of other WAM notables who have done well at the Boeing meet. In second place was Ted Stalick of Oregon's Willamette Valley, a Free-Flighter. Third place went to Kevin Delaney; fourth, to Cindy Wallace; and, fifth, to Sean Bartel. The total number of entrants was down from previous years and the meet was hit by cool and windy conditions.

The scholarship competition required entrants to fly in specific events within designated and very short time periods. This caused them to make some hard choices about which events they would enter. McClellan had a win in Indoor HLG, a second in Peanut Scale, and a fourth in Outdoor HLG. By way of contrast, Stalick had a win in EZ-B, seconds in both Indoor and Outdoor HLG, another second in Mulvihill Rubber, and a third in Towline. Delaney had a third in EZ-B, seconds in Towline and 1/2A, and another third in Outdoor HLG. Miss Wallace had a first in Towline, a third in Mulvihill, and a fourth in 1/2A. Bartel was the winner in Mulvihill.

In the BMA Open competition, Marc Nagasawa did 9:00 in EZ-B to win. Phil Haner took Outdoor HLG; Dale Segle, Indoor. Phil Barber took 1/2A; Will Broughton, Towline. And Tom Cashman took Cd'H. Maxes were held to 2:00 due to wind, and Coupe replaced Unlimited because of site limitations. We have no data on Controline events, if any.

OI' Timer Notes

• The SCAMPS ran a fun contest at Mile Square in August, and the thing went off so well that they scheduled another for the same events at the same site in October. Events included Commercial Rubber, OT Rubber Scale, OT .02 Replica, Twin Pusher (Endurance) and Twin Pusher (Distance).

Jim Adams and, we suspect, Jim Dean were the instigators.

Believe it or not, times were as high in Twin Pusher as they were in Commercial. Ray Berens took the latter with a Schumacher in 7:14; Hal Cover, the former, with 7:18—high time for the day. Brad Levine did 7:02 with a Hi Climber and Hugo Lung did 6:52 with an Albatross to trail Berens. Jim Adams posted 5:21 to finish second in Twin Endurance. Cover also won in Scale with a Puss Moth which did 4:08, and Jim McDermont took Replica with a Strato Streak in 6:51. While actual distances weren't measured, Jim Adams covered the most ground in the Twin Distance event.

- The gang out at Salt Lake hit pay dirt on their last meet. They drew twenty entrants from six states. Big deal, you say! Well, it's the best turnout they've had yet for an out-and-out Ol' Timer meet. And what they lacked in quantity was more than made up for in quality. Bob Sugden took the O&R event with a fine 6:05.5. Bill Cohen did 15:01.0 to win the Brown Junior Gas Allotment event. Jon Zeisloft won the .02 Pylon Replica event with 9:00 even, and Clarence Bull took .02 Cabin. Mark Fechner did 11:02.8 in C Pylon and 6:56.1 in Cabin to take both events. Wally Leiper beat Jay Jackson by seven seconds in Combined Rubber, but Jay won in AB Cabin with a fine 7:53.0. Other winners included: Kit Taft, HLG; Bob Sugden, AB Pylon; and, Mark Fechner, Antique.

- Lin Haslam reports that the SAM Champs will definitely be held in Salt Lake in the summer of '79. Most details will be ironed out before the end of this year. In the works are a number of special events in keeping with the ideas of SAM's founders. One is an event for "slag" motors—an unloving term applied to aluminum-bore and aluminum-piston mills.

- The Region 4 Collectogether at the Haslam's menage attracted buffs from California, Texas, Oregon and Arizona in addition to the locals. Tim Dannels came up from Colorado to take first with his "Slagtree" display. Mark Fechner entered a second-place display of 60 N.I.B. engines called "The Way They Were." Carter Watts copped a third with a nice display of diesels. And Tom Dennard of Euless, Texas, won the Long Distance award. Lin and Peggy provided an excellent buffet.

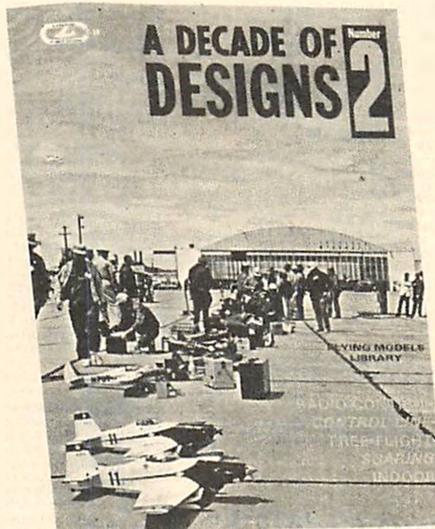
- The details of those California Pusher events, in case you'd like to try one, run like so (courtesy of Jim Adams): In general, the design must be pre-war, e.g., Old Timer. Props must be the same as on the original. Either two or three flying surfaces allowed. Ship must be rubber-powered with a min. weight of one ounce per 50 squares of "wing" area. Builder provides proof of authenticity. In Endurance, you get six attempts to make three officials (40 sec.), and the max is 4:00. In Distance, you are allowed three flights with the longest single flight counting. Flights must stay within pre-set bounds and distance is measured straight-line from launch to touchdown. (In case you've never built a pusher, they do everything quite well under power; but, once the prop stops, they come in like a brick.)

Beltsville Winners Told

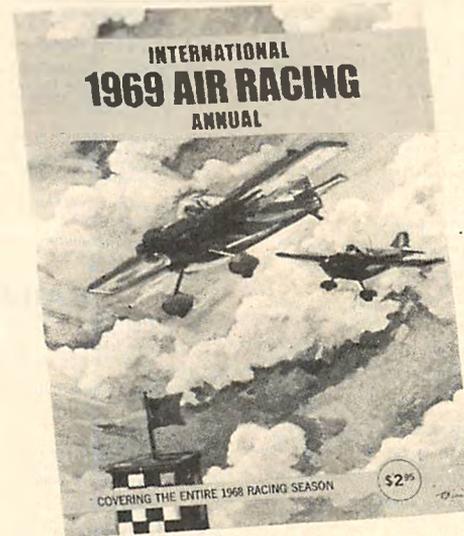
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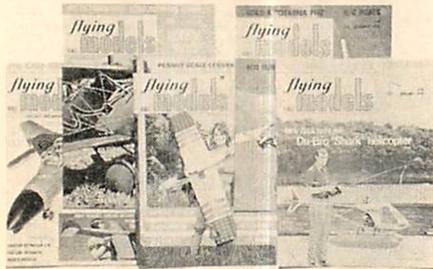
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able meet. CD Andy Finizio put together a good crew composed of both old pros and "new guys" which has become gung-ho. Look for a bigger and better meet next year.

In the Pattern events, J. Caporaletti beat George Preston and Chuck Long to take Novice. Tom Kirk outscored Bob Snyder in Advanced. Steve Striker beat L.J. Green and P. Sibille to take Expert, and Tony Bonnetti topped Wayne Abernathy and G. Hill to take Master. Scale winners included Bob Violett, Mike Grady and Don Srull. Violett and Grady who placed one-two both had A-4's entered. Violett's was in Blue Angels' decor; Grady's in Israeli AF colors complete with weathering and smoke stains. Srull entered his BE2-E. Other ships entered included a Spitfire, a Brown B-2 racer, and a Chipmunk.

Walt Linthicum and a staff of ladies handled things at the administration table while a large group of "ground crewmen" did most of the legwork. Claire Finizio presented the awards to the winners.

Bits 'n Pieces

• A lot of guys who've flown Lakehurst have fond memories of the old Malibu Hotel in Lakewood. For years it has been a haven for Indoor flyers. In recent years it had become a retreat house for some religious order or other. Now, it is no more. A recent fire wiped it all out—bar, ping-pong tables, pool—it's all gone.

• One of the outstanding performances at the THNIRT's was Jim Richmond's 36:21.4 in HL Stick. It set a new national record and a new FAI Unlimited mark. Jim was just getting his old record back. Last year, Bucky Servaites took it away from him with a flight of 35:08.4.

Jim and Bucky both flew Baby ROG's this year and both broke the Cat. II record with identical times—right down to the last tenth of a second. Subsequently, Jim pushed his mark up to 17:40 for another new record. And how about Al Rohrbaugh? 16:30 in Easy-B—whoop-te-do! Other winners, according to early reports include: Chuck Sotich (Indoor Scale) and Greg Thomas (Peanut Scale).

• Bill Mathews' *FFFliar* of the mythical Alabama *FFFlyers* is rapidly bridging a communications gap which developed in recent years between flyers in the southern half of the country. It was the first to break with the Nats FF results, and it's full of news of local meets which we thought had died. Send Bill a couple of bucks (for postage) and start making inputs to him at 311 Poinciana Drive, Birmingham, Ala. 35209.

• Judging by Nats entries, the trend away from Gas events observed in the USFFC's and on the Coast might be a local phenomenon. Despite FF entries being well down from last year, all the Gas events held their own or slightly exceeded last year's entry. Half-A, A, and B continue to attract the most entries.

• And how about those Rubber Speed freaks? Chris Matsuno did 54.76 mph to win. Terry Rimert was second with 49.05, and Jim Lewis hit 47.68 for third. Try that on your gumband machine.

• Sign of the times: You'll be able to pay your AMA dues with a credit card next year. Headquarters is gearing-up to handle it.

• The San Jose WAM Homecoming Meet on July 4th proved to be only a tune-up for Natschamp Dave Fitzgerald. His record: 1st in 1/2A Stunt, A (Expert), and second (to Ted Fancher) in BC Expert. Dan McClellan

picked-up a couple of thirds at the same meet. The WAM system pays off.

• Rich Jackson continues to send us the SCRAM bulletin, and he usually manages to include something extra. This month, it is a bumper sticker with a "crying" cartoon and the legend, "R/C Flying Is Fun?" The item is in red and white and comes from the FWP Hobby Corner in Summerville. FWP is Fred W. Peters. These things are a good way to identify fellow hobbyists.

• The Birmingham R/C club is out for new members. Part of the deal is a static display at Western Hills Mall. They meet at the Alabama Gas Co., 1918 1st Ave. No., on the first Thursday of each month at 7:30 p.m. Drop in!

• Arlie Preszler ran the following in *Headwind* after he got back from the Nats: "I don't suppose the dumb rivalry between R/C types and C/L and F/F will ever end, but I sure wish it would. While we in Lodi seem to have a good mutual understanding, I frequently read about R/C being the most complex and sophisticated event. I have, also, been often asked, 'How come you prefer Controline to R/C?' My answer is that I don't. What I, personally, prefer in the world of model aeronautics is competitive C/L Precision Aerobatics. If my choice was between C/L Combat and R/C Scale, I would, personally, choose R/C Scale. If it was between R/C Helicopter and FAI Free-Flight, I would, personally, choose the FF event. But these are personal choices, and I am not knocking anyone whose selection would be different. If your selection is Sport R/C, then do it and enjoy it; but, honest guys, it is no harder to install an R/C servo than it is a C/L bellcrank or F/F timer. If you got involved in ukie Combat, you'd soon be overwhelmed at the degree of sophistication incorporated in those simple machines. One of these years, I'd like to be able to stop defending everyone to everybody else—it is the public to whom we should be directing our efforts."

• Pylon Racing is going strang in the Northeast at this writing. Tom Catellano took home the Best Time trophy for the July 15-16 meet (Formula 1) and set a new field record with his 1:18.1. Other fast times were posted by Mike Helsen (1:19) and Ed Weitock (1:22.1). And at the Q-500's at Pleasant Valley, N.Y., the first three places in both classes went to the following: Bob Wallace, Ron Rushneck and Arnie Wile/Rob Wallace, Tony Giovanti and Art Simonds. Bee Williams, who sends us the results, tied with Simonds for third. Looks like all that flying in the NE is paying off.

• The Illinois Valley boys are having trouble with the Corn Farmer again. Although they fly off public land, there have been a couple of unfortunate incidents in recent months in which ships have been downed in the corn. In one case, the plane was shot down by interference. After seeing what a bunch of trail bikers have done to some local fields, I can understand the farmer's protective attitude. In a crowded world, it gets harder and harder to be just left alone. In this case, the Illini are bending every effort to avoid incidents of this sort, and recent editorials in Chord and Span have laid it all out in black-and-white: "Take off, make your turn, and get the heck out of the area. Don't fly south of the fence line."

• Bob Hatschek and a few others are plugging for an intermediate FAI Power event to serve as a steppingstone to WC's competition. The idea is for a Half-A event to FAI

spec's with a relaxation of the area requirement to permit better performance in the smaller size. Heck, why relax any of the spec's? Just start an "under-12" event and permit the use of any commercial fuel on the open market so that the small mills can poop-out what they were designed to produce. We used to see some pretty good .09 Power ships, and Uncle Eddie always used to start his design sequences with an .02 size. You might just as well get the newcomers used to working within the established parameters as far as the airframe is concerned. Call the event "American Power."

• Big Goodyear is alive and kicking on the Southwest Controline Association circuit. At the top of the current Top Ten is Mike Gale with a best time of 7:30.4. Right behind him is Les Pardue with 7:49 and Bill Melton with 7:58.4. Others on the roster include: Jed Kusk, Fred Malone, Rod Onder, Pat Millay, Darrell Albert, Gene McClung, and then a tenth-place tie between Jim Lueken and Bob Smedley. Oddly enough, Gale made it to the top with completely "stock" equipment while many of his competitors resorted to "super" engines, exotic fuels, handmade props, etc.

• Big Goodyear in California has been flown under the SWCLA rules ever since they were announced. But now things are changing. At the T-Birds' Memorial Day 500, a group of Californians from the SCCA got together and changed the rules to suit local conditions. Changes include: 1. Limiting legal kits to the "Big Four"—Ringmaster, Buster, Shoestring, and Cosmic Wind. 2. Removing all restrictions on engines other than max displacement (.36) and no pressure or exhaust extensions. 3. Reducing the Max fuel capacity to one ounce. 4. Removing restrictions on props. 5. Permitting shut-offs (but not making them mandatory). The idea is to remove all misapprehensions about Big Goodyear's being a "beginner's event" only.

• We note that Bill Northrop and Joe Boyle have stepped down as chairmen (RC and FF) of the Contest Board. Johnny Clemens, AMA prexy, has appointed Joe Friend and Chris Matsuno to replace them. Chris is from St. Ann, Mo., and will take over the FF slot. Friend is from Freehold, N.J., and takes over RC. The appointments come at a good time, the start of the rules-review period.

• You could have predicted it. P-30 has also been put up for official status. The idea is for it to be a "steppingstone" or "lead-in" type for Cd'H. Heck, why give credence to that lead-in philosophy? If a thing is good enough to make it on its own, it deserves to be accepted for itself—not as the adopted child of a supposedly higher-order event. If there were any truth in the theory, all Rubber events would lead in an ascending order to Wakefield. In truth, Wake is slipping fast in popularity as reflected in the number of participants. If I were plugging any event, I'd stress *fun*, not status.

• Got something you want to see plugged? Send the details to Ed Whalley, 89 Lakeview Avenue, Bellingham, Mass. 02019. Remember, we work on a 90-day deadline (figured from the first of the month). This means that if what you're interested in is coming off on the fifteenth of the month, I have to get word three months ahead of the first of that month. Otherwise, I can't do you much good. Anyhow, your comments and news on any issue will get an airing.

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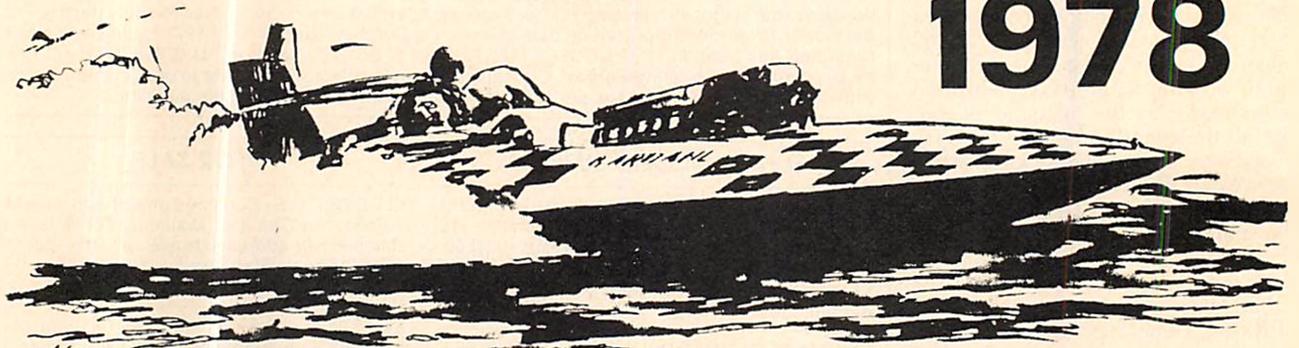
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1st 7-11 Westchester Offshore Race

PHOTOGRAPHY: TIM MYERS

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It's the first of many/**George Myers**

One enters Tibbets Brook Park through columns of substantial elms, oaks and other varieties of lovely shade trees. The site of the 1st 7-11 Westchester Offshore Classic is a natural amphitheater which seems designed especially for presenting R/C boat races: A shallow lake, about 100 yards wide and 1000 yards long, surrounded by a sloped lawn well furnished with the aforementioned shade trees. Parking, picnic tables, firepits, park benches and comfort stations are strategically located among them. Contestants and spectators alike can view the proceedings in the kind of comfort that they prefer. We chose a vinyl blanket on the lawn under a tall elm and offered thanks to Mr. Steve Kubascek, supervisor of Westchester County Parks and Recreation. We also thanked God for the salubrious weather.

Since this team of reporters were totally new to R/C boat racing, we first presented ourselves to our hosts - the Empire Racing Association. They had a motor home and awning set up for the registration table. Vern Randolph, president and contest director, introduced us to his crew of officials, which included Fred M. Coleman and John G. Aibel at the registration table and Pete Liard, Bill Dieckmann, Mike Friedman and

Steve van Sprundel in the lake. I must mention that all of their wives were present and working in some capacity, and that particular thanks were due to Mrs. Sue Aibel for her help in securing the sponsorship of 7-11 Food Stores, Southland Corporation, through the good offices of Mr. Gene DeFalco.

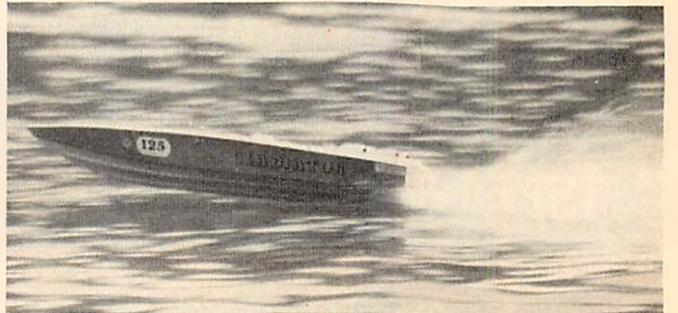
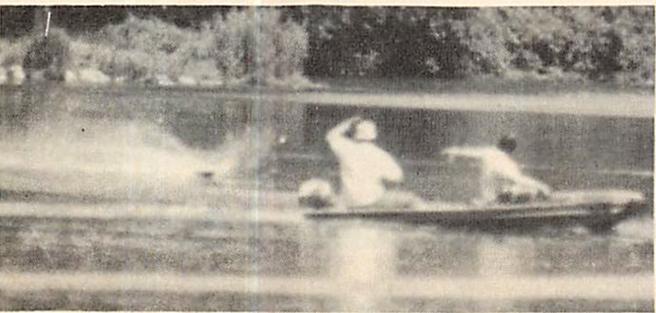
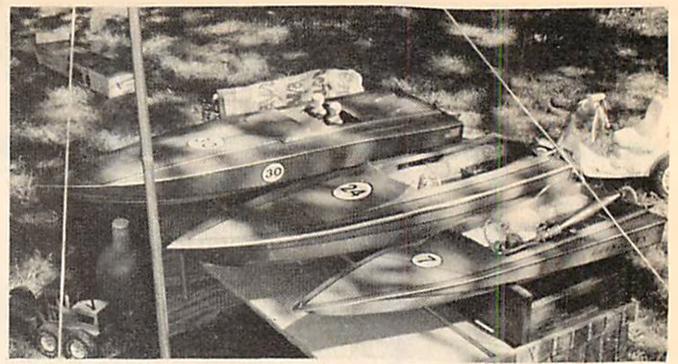
We were most graciously received by the officials and the contestants. Having been duly identified as members of the working press, Tim Myers and Bill Hare took off to photograph the contestants and their boats, and to get the correct spellings and other details on paper. Meanwhile, Old Dad began to ask the questions you might have asked, had you been there.

We learned that this was to be an "offshore" competition for boats in classes A, B and C, sanctioned by NAMBA and run on a regulation oval course. A LeMans Start was used, which means that the races began with all boats silent on the beach. At the sound of a horn, timing commenced and the contestants were at liberty to start their engines, launch boats and commence racing clockwise about the course. 25 contestants appeared with 67 boats.

Each boat in every class had 4 races on the

course. During a race the contestants tried to complete as many laps as possible before another horn sounded, ending the race. Scorekeepers recorded laps and quarters of laps completed. Up to five boats were allowed on the course at one time, all in the same class. Class A includes boats powered by engines of up to .21 cubic inches displacement, Class B .22 to .45 and Class C from .46 to .67. Some K&B 3.5cc outboards ran in class A. The rest of the boats used inboard-mounted engines, driving the propellers directly by means of either flexible shafts or by rigid shafts fitted with universal joints. All of the winners used rigid shafts, but many of the runners-up used flexible shafts, so the issue is apparently still in question as to which is best. We heard arguments from supporters of both types.

All hulls were of "Deep Vee" design, which means that the bottom is formed by two flat planes, intersecting with an included angle between 148° and 124°. Fiberglass 3D, WARDCRAFT and Dumas boats seemed most common, though there were some wooden boats, particularly in the scale category. We were somewhat surprised to learn that scale and non-scale boats raced together without any benefit accruing



Doc Corpus (top left) with his authentic and detailed "Benihana" and "Spirit". John Aubel carried the sponsor's emblem (above middle) to victory in Class A. Bill Dieckman (above) seems to be saying "Look out" as a boat heads towards the retrieve boat. Larry Monterulo at the tiller is blessing himself.

Bill Dieckman's "Lady Luck" (top right) #7 had some bad luck in the 6-lap runoff for 3rd place in Class C. Bill brought her in for a needle valve tweak and the relaunch torpedoed the boat. These folks kept fishing all through the races (above middle). Les Horrock's Gladiator at speed.

to the scale boats because of their appearance. We were also told that scale judging, when conducted, was a separate event with its own prizes. There was no scale judging.

It might be nice to give you a running commentary on the changes of position as the heats progressed, but we simply couldn't follow what was going on! However, it was soon abundantly clear that speed alone doesn't win races. A slow, steady boat that ground around the course like an electric train on tracks obviously completed more laps than a faster boat that flipped on somebody's wake, and had to be retrieved for a restart.

When a model boat was stopped in the water, an outboard-powered rowboat manned by two race officials would pick it out of the water, dump water out of it, run back to the pits and return the boat to its crew. The drill in the pits was: remove the glow plug, hook up the starter, pump water out of the engine, put back the glow plug, restart the engine, check the rudder to see if the radio was still working, wade out in the lake, launch the boat and enter the race once again. Radio systems in racing boats are

stowed in watertight boxes. They have to be. Every boat went through this drill at least twice; some many more times than that.

These boats move fast, but we didn't expect to see the crazy ways that they upset themselves. Running in a straight line, on smooth water, we saw many boats point their nose in the air, pirouette on the propeller and take off in the opposite direction - all in the blink of an eye. That sure scattered the flock!

Other boats would start rocking, swap ends, jump up in the air and flop back on the water upside down. One boat went into a dance that ended with a dive under the water, just like a torpedo dropped from a plane. Several boats ran onto the boater's equivalent of a sand trap; a tiny point of land covered with tall grass that projected slightly into the backstretch. Two racers jumped right into the retrieve boat! Those guys should carry shields, like the Vikings of old. Hard hats and safety glasses might be a good idea, too.

A prize for the most spectacular show of the day should go to Bob Hay and Doc Corpus. Doc's scale "Spirit" was having a little

rudder trouble, with the result that it went wide on the fourth turn and ran rather close to the pit shore. Close behind was Bob's "Centurian". Suddenly "Spirit" zigged right and "Centurian" turned left to cross behind it. A rock at the water's edge flipped "Centurian" skyward, and it cartwheeled down the pit beach and into a conveniently-placed large bush. Damage? Chipped gel-coat where it hit the rock.

Now, all the races did not include such spectacular gymnastics. Most of the 10+ hours of racing time were spent routinely grinding out laps to complete the four heats provided in each of the three classes. Offshore racing places a premium on pre-race preparation and equipment durability. The boat, engine, running gear and radio must withstand hundreds of thousands of vibrations without failing. Natural selection breeds a noticeable uniformity in the choice of equipment and NAMBA rules specifying hull design extend this trend. The boats look alike and run alike. Driver preparation, skill and some luck determines who will win.

As we walked about this perfect setting, we found some who had settled down to



Pete Liard, the winner of B, C, and High Point trophies seems to be quite happy (above at left) and is enjoying the approval of the other contestants. Pete Latek (top left) brought his Disco Duck into 5th place in Class B. Bob Hay (left) shows us his boat "Centurian" which figured in the most spectacular upset of the day (see text). His engine developed splits in the crankcase above both mounting lugs later in the day.

Frequency utilization at the 7-11 Westchester Offshore race

26.995 (10)	6 meters (0)	72.160 (32)
27.045 (9)		72.320 (30)
27.095 (20)		72.960 (21)
27.145 (7)		
27.195 (0)		

Results of the 1st 7-11 Westchester Offshore Race

Class A

1. John Aubel	Scottglass	OPS .20	Futaba
2. Pete Latak	Dumas	OPS .20	Futaba
3. Larry Zybkoyski	Homebuilt	K&B .21	Futaba
4. Bill Dieckman	3-D	OPS .20	Futaba
5. Ed Amos	SHG	K&B .21	Futaba

Class B

1. Pete Liard	Wardcraft	OPS .40	Kraft
2. Doc Corpus	Dumas	OPS .40	Kraft
3. Bob Van Houlen	Homebuilt	OPS .40	Futaba
4. Glen Simpson	3-D	OPS .40	Kraft
5. Pete Latak	Dumas	(?)	Futaba

Class C

1. Pete Liard	Dumas	OPS .65	Kraft
2. Ken Young	Dumas	OPS .60	Futaba
3. James Watson	Dumas	ST .60	Futaba
4. Jerry Gaudette	Dumas	OPS .60	Futaba
5. Rob Triggs	Homebuilt	ST .60	Futaba

watch the show while others paid no attention at all. When we asked a few for their impressions of the show, the consensus was, "I wish I knew what was going on!" It seemed to us that when one shares public park space in this way (where the usual members of the public are essentially invited to become non-participating spectators) the organizer is obliged to tell the public what's happening. This could be done in one or more of the usual ways: a handout explaining racing in general and this race in particular (with a list of the competitors and identifications for their boats), a talker behind the pits who could explain some of the inside workings of the event, and/or a big scoreboard so the public could know the results of the race and follow the shifts in performance. The important point is to involve the public in a way that makes them want you to come back. This setup is too good to lose!

On the same theme, the worst thing that can be done is to be offensive. The folks who came to race were, without exception, very friendly to us, and willing to take time to explain anything we showed an interest in.

Most had set up sun-shades, and had their equipment spread out for all to see. I didn't hear a single "Keep Out" or "Don't Touch" while I was there. But I did hear the monotonous, endless drone of the engines. One thing in particular was very offensive. A boat was running some kind of witches' brew whose exhaust smoke came across the lake to where we were sitting, and it irritated our eyes and throat and left a metallic taste in our mouths. It's easy to imagine how it effected the folks behind us who were trying to eat their picnic lunches!

Overall, we enjoyed the park and the weather. We met some folks who we hadn't met before, and hopefully made a few new friends. We can see where R/C boat racing can be interesting. We were allowed to drive Pete Liard's boat for a few minutes and saw that it takes some skill to do it right. (Even though Tim & George can fly successfully most any type of R/C airplane, the boats take some additional learning). The racing was interesting to watch when 4 boats were on the course, because there was plenty of action. It was dull with only 1 or 2 boats running. We didn't see any boats registered

with a radio on the 6-meter Ham band. Perhaps it's time for some boaters to earn an amateur radio Technician's license. This would permit them to identify some frequencies for boats, as AMA did for planes, which would eliminate some of the frequency congestion making 2-boat heats necessary. Contact the American Radio Relay League clubs in your area for information.

Who won? It's listed in the box along with this article, but not to keep you in suspense: Pete Liard won most of the marbles, taking both B and C class first places, as well as the High Point trophy. How he did it, after spending most of the time on the lake in the retrieve boat, can only be explained by the fact that he's young, yet. We also noticed that he was one of the few who consistently slowed down for the 3rd turn, which was downwind, down-current and tighter than the others by a small amount. Those who didn't found themselves going very wide into the pit straight.

We plan to be at the second Westchester Offshore Classes with a boat of our own. Will we meet you there?

A DRY DOCK REVIEW:

MRC's Cobra Jet



It probably won't win Mono at either of the Nationals but it's ready to go for the beginner and a ball to race against other Cobra Jets at the local pond/**Bob Finley**

PHOTOGRAPHY: BOB FINLEY

When Bob Hoecke, the managing editor, talked with me about this product review he was a bit apprehensive because of my dyed in the wool racing attitude. I'm here to tell you, I was thrilled because I've been interested in jet drive a long time. I did some research through *Powerboat* magazine and saw the fantastic speeds the drag boat guys were getting, plus the number of hulls available with it for normal utility or ski boat duty.

The option of backing a boat up to a dock seemed like a fun idea also. I suppose the biggest things in order of importance in relation to a new boater would be safety first and the completeness of construction the hull is in when you get it.

Both a Cobra Jet Speed Boat and a Marine Pleasure Yacht are available from Model Rectifier Corp., 2500 Woodbride Ave., Edison, NJ 08817, at \$270.00 and \$260.00. The differences are that the Cobra Jet has a .40 size engine in it, while the Yacht (which is a cabin cruiser) has a .35 size engine. Sounds high, but if you bought a complete .40 engine ready for marine R/C use, you will pay over \$100.00 for it. The jet drive retails for about \$60.00, and any good fiberglass hull runs near \$70.00, so you have \$230.00 invested before you purchase adhesive, paint,

all the needed extras, plus time and the gas it takes to go get the stuff. And you then need to put it all together—correctly.

This very complete ARR (almost ready to run) kit features a well finished color gel-coated fiberglass hull, Turbo Trol hydro jet system installed with a radio box in the boat, complete tank, control rods, starter belt and even a glow plug (unusual, in that the Enya engines never come with a glow plug - don't knock it, a good R/C plug costs about \$1.25).

I selected the Cobra Jet hull which is a spin-off of the Ed Fisher Northwind design which has been a record holding mono hull for years. Already there have been some changes in the package that will be better for the consumer; a smaller radio box which fits lower in the hull and will allow you to change the fuel tank forward, the hull is only slightly larger (don't know why), the exhaust hole at the transom fits tightly around the Neoprene exhaust tube so water won't come in when backing up.

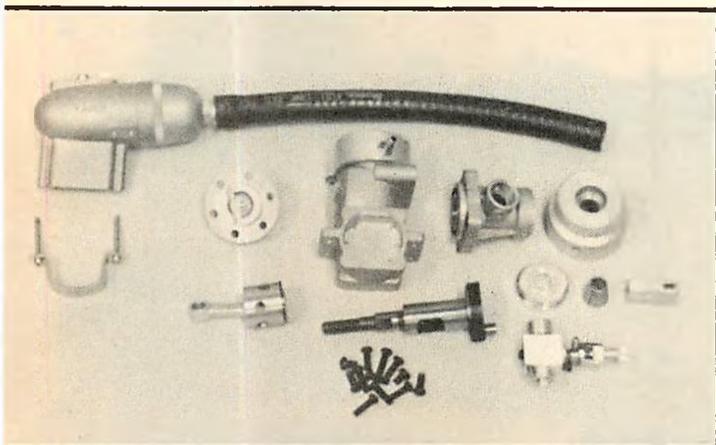
When I talked with Frank Ritota at MRC he was very positive on this venture and they want to provide a well thought-out and planned product for the market. Most R/C airplane people know that MRC was one of the pioneers of the ARF airplane. Like the Cobra Jet, MRC has available stand-off scale

airplanes that need little if any building.

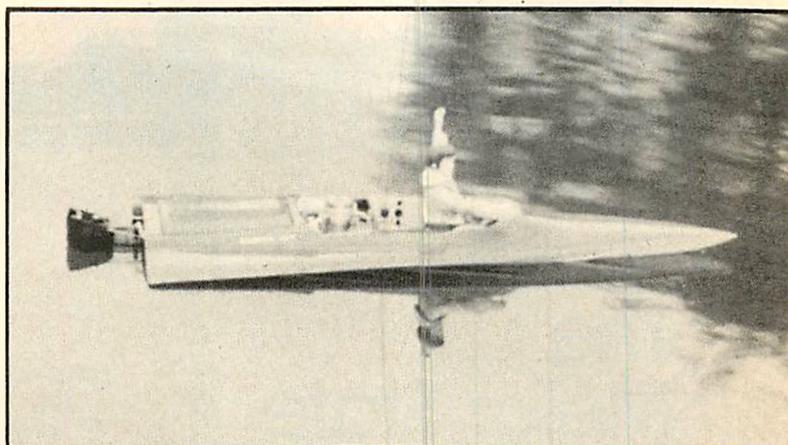
From a safety aspect, there is no prop for the fingers to get tangled up in, no sharp turn fin or knife blade rudder hanging down.

The propulsion unit, which is available separately, is molded of glass fiber-filled nylon. It is very durable, yet flexible, but firm and not brittle. It works simply by sucking water through the flat bottom of the hull and "jetting" out the rear. The housing has an engine driven impeller in it that creates the suction for the flow. A drive shaft is hooked up between the prop and the engine by a U-joint and runs in sealed bearings that need little, if any lubrication. The water intake openings are too small for even the smallest fingers to get into. A water pick-up is molded into the housing that provides water to the engine. The excellent steering is due to a high volume of water passing through two directional guide vanes which are connected to the steering servo. A clam shell apparatus is connected to another servo which enables you to blast the water forward and under the hull for backing up, if so desired. You should engage this only when the throttle is at idle and use only the needed power to back up.

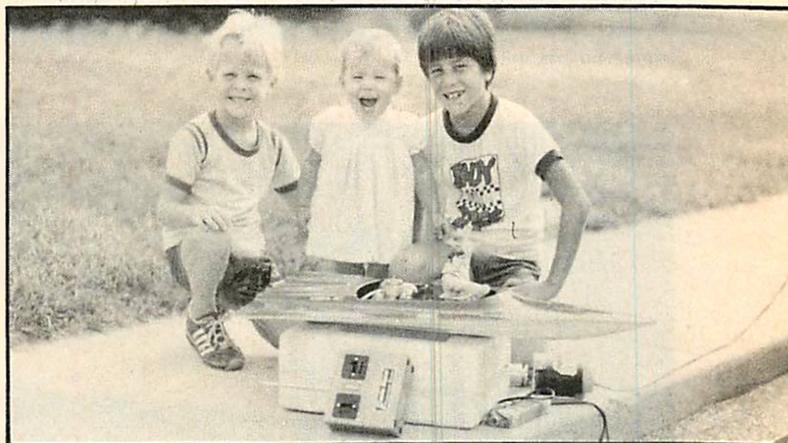
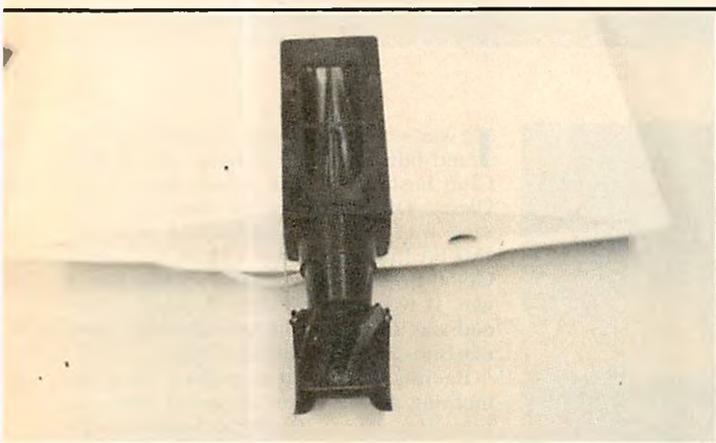
Speedy it's not, but fun it is! This is a great hull for that small pond close to the house.



The Enya 40TV is a beefy engine with excellent starting, idling and running characteristics. The big crank and through the piston porting give it the power of most schneurles (above). The keel side of the hull shows the jet entrance with the protective grade. ¼-inch slots keep fingers out.



This pretty red speed demon looks the part with a driver added (above). The newest Finley racing team (below). L to R, Mike 6 years old launches. Elizabeth 14 months old, tries to grab the driver and save him from a watery grave. Rob, 8, drives. Electric starter is essential for starting.



Top speed may be near 25 m.p.h.

The engine selected is the MRC-Enya 40TV Marine. Basically it's a front intake, cross flow scavenged engine with twin ball bearings holding the crankshaft in the removable front housing. The crankshaft is the largest of any front induction engine anywhere, as is the gas passage. The shaft O.D. is 15 MM which is common in a .60 size engine, while an I.D. of 11.5 MM is larger than even most .60s. This feature provides the .40 size engine the power of most schneurle ported engines and gives added strength where it's needed for a marine engine - the front end. The casting, as in all Enya engines, is an excellent pressure cast style, a water jacket cools the liner portion of the engine rather than the head, which is smart for a ringed engine.

It's conservatively timed; intakes 194° total, bypass 118° total and exhaust 138° total. This power plant has excellent wide passages internally, plus good blow down numbers for excellent torque for a rather low .9 h.p. The piston is bar stock machined with a small straight baffle on top, dykes ring added and intake passage holes that match those in the liner. The wrist pin is free floating and proportioned well for a .40 also, while the forged rod is bushed at both ends

with oil holes for lubrication.

The carburetor is a rotating barrel type with an almost 7MM opening, again common to most .60s. It exhibits excellent idle characteristics and pulls good through the mid range.

Being a ringed engine, I would recommend 20% oil in your fuel and a rich sloppy needle for the first thirty minutes of running and check the water exit hole so not to overheat the engine early. The engine can be happy with nitro all the way to 60% but any good R/C sport fuel such as K&B 100 or 500 is an excellent choice.

The Enya muffler provided proved to do the job also and with the exit at the transom there is very little mess in the boat after running. Just get a paint brush, roll of paper towels and Fantastic to clean up at the end of the day. Always run WD-40 through the engine after the clean-up, in the carb and in the plug hole. Then spin the engine with the starter belt. Using this method you can have your Cobra Jet around a long time.

I installed a new 2-channel radio I recently purchased. This took about an hour. I put the servos in the snap-in trays and then used servo tape to affix them at the bottom of the radio box. With a good water-tight seal on the plexiglass cover this system can be

considered permanent. I did move the steering pushrod closer to center line because the servo would have to have been changed in directional throw to operate the control where it was located.

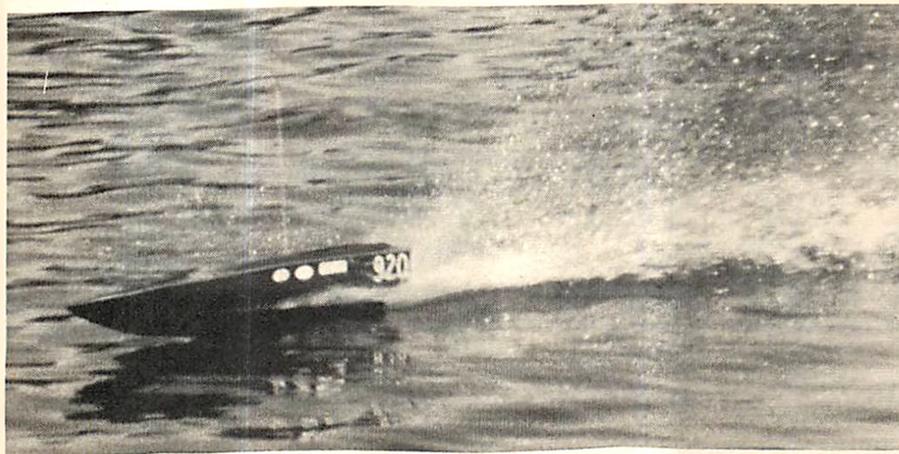
In our neighborhood we have several small lakes which are surrounded by some beautiful homes. I have run outboards here before but never any of the all-out racing hulls because of the size of the lake and the noise factor. The Cobra Jet with muffler did not seem to offend anyone, and actually drew quite a crowd. Several people tried the sticks and had a ball. The engine fired off immediately with only a few drops of fuel in the carb. Steering was quick and positive. The tank gave about twelve minutes.

In summary, this hull offers several things to the consumer; a fast, easy and safe entry into model boating. It offers a good opportunity to learn radio control operation because it is durable, slow but responsive enough to teach left from right, plus the use of the throttle. With a third channel, even more fun could be had. Two or three of them could make a nice race in a small pond, but the idea behind the project wasn't geared for that market. All in all the overall impression was a positive one and I feel MRC will have a winner in their ARR's.

The Motor State Deep Vee Classic

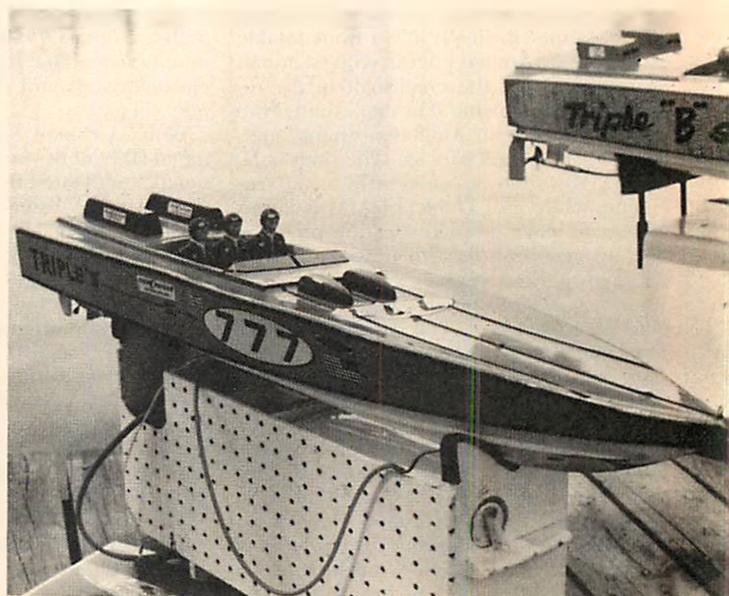
It was the Deep Vee part of the IMPBA Internats/Rob Sandera

PHOTOGRAPHY: KIRK HARRIS



It was a beautiful weekend on August 5th and 6th when the Lansing Model Boat Club hosted the 2nd annual Motor State Classic Offshore Race for deep vees. The race was held in conjunction with the IMPBA Internats at River Front Park on the Grand River in downtown Lansing, Michigan. It was sponsored by Tuff-kote Dinol and was supported by several hobby manufactures and local hobby shops.

Racing started at 9 o'clock Saturday morning as the boats screamed down the river. Heats were 10 minutes long using a le mans start. Racers had a countdown to start their engines and get the boats in the water. Spectators gathered to watch model boaters from all over the country compete for the IMPBA National Offshore Championship.



Steve Babin's .40 class boat (above). Boats lined up on the drivers platform for scale judging. Mike Perzyk won. Glen Simpson's boat in action (above left). Racing action on the front straightaway is shown (above).



The trophy winners (above) are: front row L to R, Dale Lienhart, Roger Schneider, Bruce Sandera, Paul Beckman. Back row L to R, Dale Sandera, Mike Clumb, Mike Perzyk, Kevin Kaler, Charles Kaler, Glen Simpson, Steve Babin, Paul Beckman (bottom left) is driving his very fast 3-D hull.

Something that was new to me that really kept everyone in suspense was the fast boat dash, where the fastest boats on each frequency would run one five minute heat after each round. This was boat racing at its best when 8 of the fastest boats tried their hardest to come in 1st place to win a trophy or prize.

The Baltimore bunch seemed to do their usual even though their secret weapon (Fred Gimbel) had to stay home and work, Keven Kaler walked off with three nice silver cups and one Dumas 40 boat for winning the fast boat dash. Paul Beckman also did very well and took first place in the 40 class. I am proud to say the Michigan bunch showed they can compete, Dale and Bruce Sandera took 1st and 2nd in 20 class and 2nd and 3rd in 60 class. Bruce also won a \$65.00

gift certificate from 3D Models for winning the fast boat dash. (We all know it was my fantastic lunch that did it.) Right Bruce!

Some of us more unfortunate people experienced a few minor problems. Dale Lienharts 20 boat sank Saturday apparently, because of the extra tanks for this race, it didn't have enough bouancy. This is something to consider when running in long heat races. I myself had a slight problem when my radio box cracked and my boat hit the bank wide open and blew the rod in my OPS 3.5.

OPS seemed to be the engine at this race, 81% of all engines were theirs, along with 63% Futaba radios, and 64% 3D hulls. I'd say that says a lot for these manufactures and we are all glad they support this hobby the

way they do. I have heard rumors of a new K&B.65 marine, I hope we will see this engine in the near future.

I would like to thank the following manufactures, Tower Hobbys, Fox Mfg., Astro Flight Inc., Wardcraft Marine, International Products, Fibre Glass Evercoat, Dumas Boats, GLG Enterprizes, Tom Daniels of 3D Models, Hughey Boats, and Title Hobbies. These people supplied merchandise which was drawn for and given away to the contestants of this race. I would also like to thank Riders Hobby Shop of Lansing for having parts on hand at the site, and the Lansing Model Boaters for putting on a fine race, including a Kentucky Fried Chicken dinner Saturday night. I hope to see all of you again next year.



Results of the 2nd annual Motor State Offshore Race

Winners	Laps	Hull	Engine	Radio	State
20 class					
1. Dale Sandera	83½	3D	OPS	Futaba	Michigan
2. Bruce Sandera	68	3D	OPS	Futaba	Michigan
3. Kevin Kaler	65	3D	OPS	Kraft	Maryland
4. Glenn Simpson	64½	3D	K&B	Kraft	Mass.
5. Paul Beckman	62	3D	OPS	Kraft	Maryland
6. Steve Babin	61½	Dumas	OPS	Futaba	Ohio
7. Charles Kaler	61½	3D	OPS	Kraft	Maryland
40 class					
1. Paul Beckman	106½	3D	OPS	Kraft	Maryland
2. Kevin Kaler	100½	3D	OPS	Kraft	Maryland
3. Rodger Schneider	94½	E-z vee	OS	Futaba	Michigan
4. Mike Crumb	82	own	OPS	Futaba	Michigan
5. Glenn Simpson	77½	3D	OPS	Kraft	Mass.
6. Charles Kaler	76½	3D	OPS	Kraft	Maryland
7. Frank David Sr	68	3D	OPS	Futaba	Michigan
60 class					
1. Kevin Kaler	104	3D	OPS	Kraft	Maryland
2. Dale Sandera	96	3D	OPS	Futaba	Michigan
3. Bruce Sandera	92	3D	OS	Futaba	Michigan
4. Charles Kaler	90½	3D	OPS	Kraft	Maryland
5. Mike Perzyk	90½	3D	OPS	Futaba	Michigan
6. Dale Lienhart	89	3D	OPS	MRC	Michigan
7. Glenn Simpson	87	3D	OPS	Kraft	Mass.

Fast boat dash winners
Glenn Simpson Kevin Kaler
Bruce Sandera Frank Davis Jr.

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BUCKEYE 880/1978

The running site of the Buckeye 880 shows the trailers, vans and motor homes in the background, while the Super 60 Crapshooter of E/F Hydro winner Ken Brunck rips through the rough water on Sunday



Jim Danbury from Williamsburg, Ohio, with his first trophy, second place in B Mono. This new boater and daughter bring a lot to our hobby, a real family atmosphere in boat racing.

For over three years the Cleveland Model Boat Club has held this event which follows the Indy Unlimited. Always on the second week-end in June, this race is held at Clare-Mar Lakes camp grounds near Wellington, Ohio. There is plenty to do for the members of the family who would rather not watch a super boat race, such as swimming, fishing, sail boating, horseback riding, golf or just plain relaxing. (There is a giant 50 foot slide in the swimming lake for the brave.) Our Indy bunch usually brings about ten families each year, and we recommend it.

There were over 113 boats entered this year, coming from New York, Michigan, Kentucky, Indiana, Ohio and Canada. All IMPBA classes were run, including out-board and scale. The CMBC members ran a low pressure three-heat race, completing almost two rounds on Saturday and finishing early Sunday to allow plenty of time to pack



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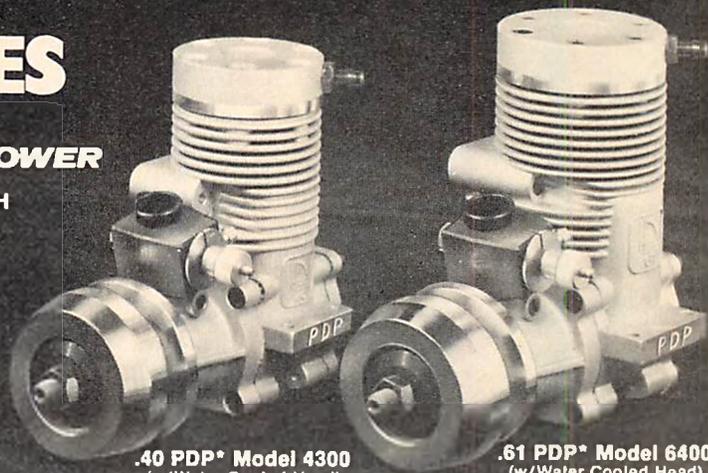
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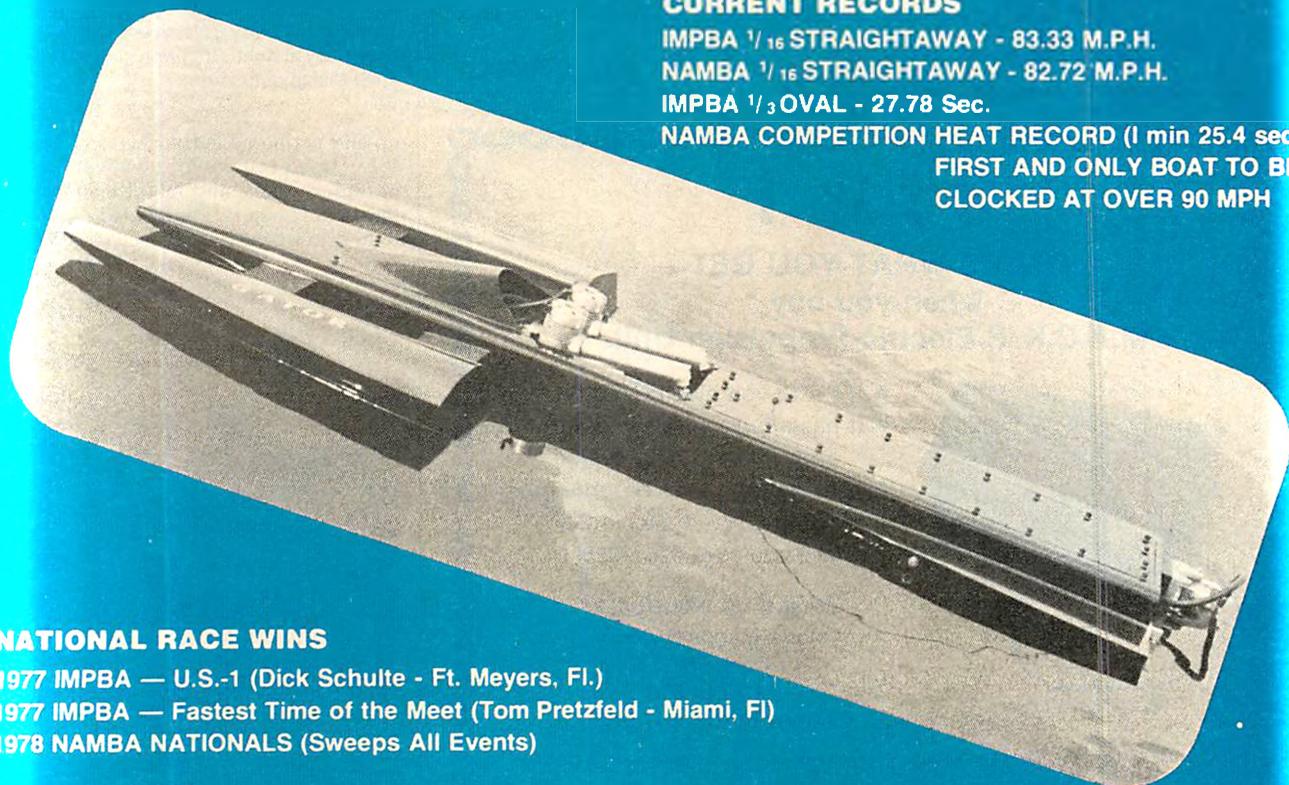
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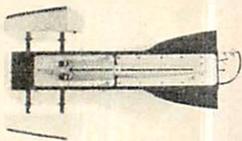
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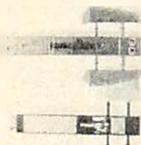
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up and get home early.

Enclosed is a photo showing the number of trailers, vans, and motor homes used by the model boaters. Model boating itself isn't that expensive, it's those \$40,000 motor



E/F Hydro on deck with Big Daddy Fred McBroom ready to drive. Note the roped-off pit area for safety. There were no problems this year as the CMBC did an excellent job keeping spectators out of the dangerous areas of the race site.



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The scale winner was Ralph Hoffman of Caral Fulton, Ohio, with his Natural Light, Super Tigre-powered boat with an Octura 1465 prop.

homes that's tough to come up with. The parties around the old camp fires Saturday night made it all worth it. Boaters from all over have pitch-in dinners and picnics as well as sing-a-longs and flashlight tag for the kids. I know Ken Brunck must have set a world record with a 150 yard frisbee toss. Saturday night was cold for those in tents, as the temperature dropped in the 40s, although the days were sunny and in the low to mid 80s. Sunday was another day with wind gusts to 30 MPH. The clock was eventually moved to the shore line as it weather cocked and would not stay anchored.

The outboard class had almost ten entries, while a very disappointing three entries showed up for scale, two of which were on the same frequency. The most entries were in D (40) hydro class and there were three or four twin hydros.

This event is a super model boat race, but the togetherness of family and friends makes this a unique event. From all of us who participated, thanks to Ken Piorkowski, Mike Bokulick and the CMBC—BOB FINLEY.

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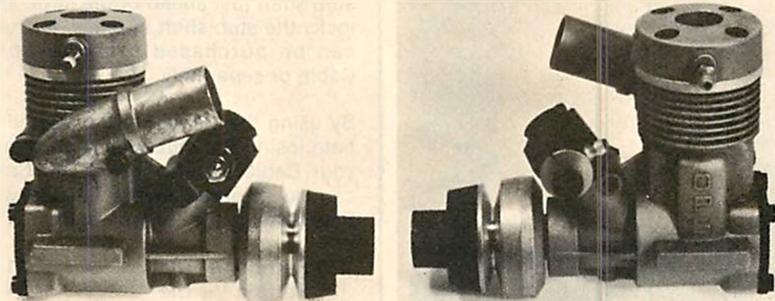
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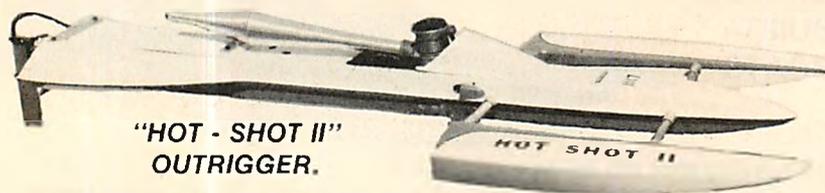
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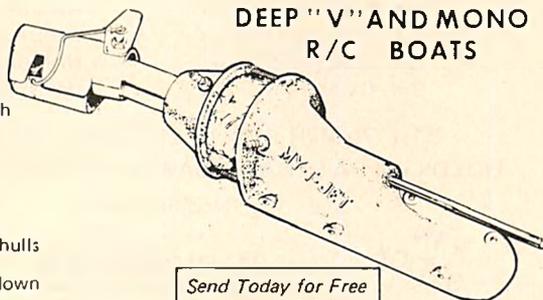
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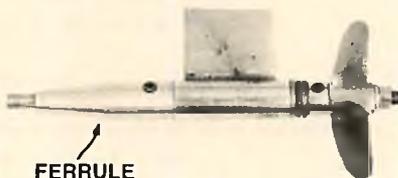


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fittings. Their letter to us did not mention prices, but they said to write to them for more information at the above address.



L. R. TAYLOR & CO., 20831 $\frac{1}{2}$ Roscoe Blvd., Canoga Park, CA 91306, has released Multi Charger, a new nicad charger that provides a safe convenient method of charging up to two R/C transmitters and receivers individually or simultaneously thus eliminating the inconvenience of finding sufficient outlets to plug in individual charger for each of your R/C systems, or buying extra chargers for additional receiver packs. L. R. Taylor & Co., the manufacturers, who also manufacture Power Pacer, recommend a full 14 to 16 hour charge, pointing out that the low 45 to 55 MA charge rates are safe rates that could be left on considerably longer with no damage to your batteries.

Multi Charger is compact and has long leads permitting charging your battery packs in your R/C aircraft or boats. Red LED's monitor charging action and show you when the unit is operating, or if a battery has failed and refuses to take a charge. Multi Charger works with nearly all R/C radio systems on the market and at \$24.95 Multi Charger is an economical, convenient, and safe source for charging your R/C systems. Each Multi Charger is shipped with operating instructions and carries manufacturer's warranties for 90 days.

IMPBA Roostertail

At the recent IMPBA Internats the Sightler Deep Vee hull was inspected and measured and is approved as a legal Mono and Deep Vee.

While on the subject of Monos, the new Mono rules which were published in the IMPBA 1st Quarterly Report were accepted and will be included in the 1979 rule book. The rule has changed considerably in verbiage and will help to open the class up and simplify the definition of a mono. A copy of the new rules is being sent to NAMBA for possible inclusion in their rule book. A considerable amount of time and effort has gone into developing the new rules and a great amount of deserved credit belongs to Glen Cupit and the IMPBA members who were involved in their development. Thank you.

All race sanction requests for inclusion into the 1979 race schedule must be in to the IMPBA office no later than December 1, 1978. They must be coordinated and approved by your District Director. All clubs must also submit their registration to the IMPBA along with their new officers list by December 1, 1978 in order to be included in the 1979 rule book.

I would like to stipulate that the following paragraphs devoted to noise restriction and fuel are only my opinions and are not necessarily the position of the IMPBA membership. I have realized that the problem of

noise is becoming more severe with time. It can also become the cause for the loss of race sites which we presently are using. Policies have been established at some of these sites to limit the entries to boats which produce less than 95 db's of noise. As modelers who wish to continue competing at our present race sites without the burden of a rule which enforces noise restriction, I am personally encouraging the use of tuned pipes (preferably silencer types) and muffling devices on our model engines. I am also encouraging the engine manufacturers to produce engines which will perform better with silencing devices than without. The availability of these engines will automatically encourage their use. It is also a well known fact that extending cowlings a considerable distance beyond the exhaust exit helps to muffle the sound. In addition, pointing the exhaust away from the shore line aids in quieting the noise. Present rules and restrictions have been stipulated in terms of the number of db's of noise being emitted. My opinion is that this is in error and is difficult to police. It is well known that the noise level of cars on an expressway, lawnmowers, chainsaws, air conditioners, etc. emit noise levels above 90db without any serious objection. It is the frequency of the noise produced by an engine running at above 20,000 r.p.m. The techniques of measuring noise and the actual value are affected considerably by reflections off of water, air density, wind direction, etc. The calibration of the measuring devices is also critical with respect to the actual value obtained. It is my opinion that it would be much simpler to stipulate that a tuned pipe or muffler must be used as opposed to trying to measure the sound level. Perhaps a list of commercially available devices could be generated which would form the basis for acceptable devices. This, it would seem, would eliminate the whole question of properly measuring the db level and would place everyone on the same basis as far as engine configuration. The whole moral is that we should individually make efforts to try to use muffling devices so that

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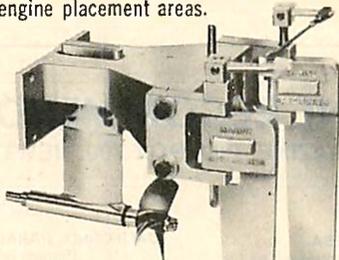


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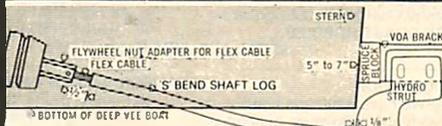


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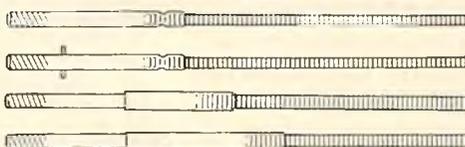


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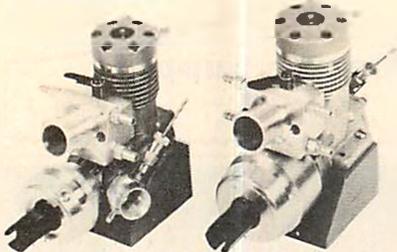
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rule legislation will not be required, make them simple so they can be enforced and apply equally to all engines. Another thing which would help would be to publish articles on "How to set up an engine for a tuned pipe" which would apply to engines which are presently available without a pipe.

The time is also drawing near in the U.S.A. when we are going to have to restrict the use of nitromethane in our fuels. The price is increasing at such a rate that only the rich will be able to compete in model boat racing, it is time to figure out a technique for enforcing the use of FAI fuel (methanol and oil) and time for the engine manufacturers to develop engines which perform better with FAI fuel as opposed to fuel with 50% nitromethane. I have been told that nitro in Europe sells for about \$200.00 a gallon. Would you race or be able to afford racing at that price? Think about it and better yet, let's start discussing the alternatives before blind legislation gets us.

One of the IMPBA awards which was given at the 1978 Internats was the Manufacturers award. A well deserving Tom Perentka from Octura Models received it. The award is for the manufacturer who has greatly contributed to the advancement of model boating. Tom has supplied the model boating people with propellers, rudders, universals, flywheels, Kool Klamps and on and on for the past few decades. Through our inputs, his attendance at races and his design skills, he has been able to supply products to the competitive boaters at a reasonable cost. Congratulations Tom, we appreciate your support of our hobby and organization. Time to go, see you at New Orleans—LEONARD SKWIERA, *President IMPBA*.

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Ace R/C, Inc.	20
Aircraft Model Products	51
America's Hobby Center	13, 14, 15
Applied Design Corp.	20
Bavarian Precision Products	66
Boynton & Associates	17
C&H Sales Co.	52
Cannon Electronics	4
Carstens Flying Plans	54, 55
Carstens Publications	21, 53
Cleveland Model & Supply Co.	52
DGM Industries	51
Du-Bro Products	5
Dumas Boats	Cover II
Eastern Diesel Supply	51
Ekim	69
Empire Model Marine Supply	71
Flying Models Magazine	10, 16, 18, 20, 56
Flyline Models, Inc.	16
Fordam Electric Co.	12
Fourmost Racing Products	17
Fudpucker World Airlines	52
Futaba	Cover III
G&M Models	66
Grish Brothers	5
Guillows	6
Heath Company	7
Hilbig Industries	70
Hughes Boats	69
Indy R/C Sales	10
International Products	72
Jomac Products	8
JV S Products	71
K&B Manufacturing	71
M.A.C.K. Products	68
Model Rectifier Corp.	Cover IV
Norco Marinecraft	70
Octura Models	68
Pactra	4
Peck Polymers	6
Pica Products	5, 7
Pinckert Custom Boats	67
Precision Boat Mfg.	68
Repla-Tech International, Inc.	51
Satellite City	12
Shamrock Competition Imports	69
Sid Morgan Plans	16
Sig Mfg. Co., Inc.	11
Sterling Models	9, 19
Steve Muck's R/C Model Boat Supplies	69
Three D Models	70
Twinn-K	6
VL Products	12
Verdell Instrument Sales Co.	16
Vortex Model Engineering	70
Wardcraft Marine	66
Wen Products, Inc.	12
Windspiel Models	16
Winternationals 1978	58

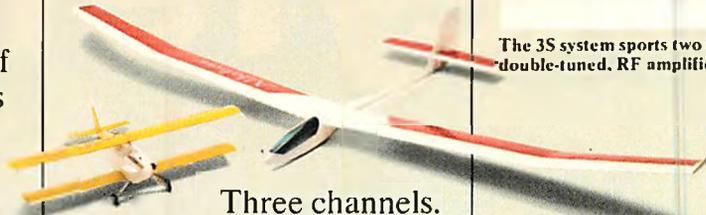


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RC glider and 1/2A pilots rejoice. The long anticipated single-stick version of our popular dual-stick 2E is now available. Plus, we've added something extra... a third channel. That makes our new FP-3S system ideal for additional throttle, flap or spoiler control.

And each 3S system

includes a matched set of our incredible S20's, the micro-mini servos that proved good things (and high performance) come in very small packages.



Three channels. Dual S20's. Single-stick. And just \$149.95. The FP-3S. It's our formula for soaring.



The 3S system sports two tiny S20 servos and a double-tuned, RF amplified 3 channel receiver.

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The FP-3S. Worth the wait.



Toys they're not.

MRC-TAMIYA'S PRECISION ENGINEERED R/C CAR KITS FOR THE HOBBYIST

These aren't toy R/C cars you're looking at. We don't make any. Our scale radio controlled cars come in kit form so you can get the satisfaction hobbyists enjoy assembling a sophisticated, precisely engineered model. And once you've built one, you'll have an R/C car with the power, control and performance that separates the men from the boys . . . MRC-Tamiya hobby cars from the toys. Here are just a few of the features that prove MRC/Tamiya doesn't toy around with R/C cars.

- 1.** Two forward speeds and two reverse speeds.
- 2.** Rear end operating differential for sure grip on tight turns.
- 3.** Proportional steering that's sharp and accurate.
- 4.** Easily adjustable gear ratios to match your course needs inside or out:

Tyrrell P34 Ford Six Wheeler: 1 to 5.8, 1 to 7.1, 1 to 19.4, 1 to 23,
 Martini Porsche 935 Turbo: 1 to 4.7, 1 to 5.8, 1 to 15.5, 1 to 19.4,
 FMC XR311 Combat Vehicle: 1 to 9.3, 1 to 16.1, 1 to 21.

5. Operating double wishbone independent suspension on all four wheels of the XR311 for excellent off-the-road capability; operating front suspension on the Tyrrell and operating rear suspension on the Porsche.

6. Big output electric motor with power-to-spares for quiet running indoors or out.

7. Semi-pneumatic rubber tires grip and hold on just about any surface.

8. FMC Combat Vehicle and Martini Porsche in precise 1/12 scale . . . Tyrrell 6-wheeler in 1/10 scale. An excellent size for on the road realism . . . the Tyrrell for instance, measures over 17" in length.

9. Rugged ABS plastic bodies and long lasting Delrin gears will keep you on the road with minimum pit stops.

10. Run a rally, obstacle course, drag race or put them through their paces indoors. Set up a Grand Prix, or take the FMC XR311 out in the field. There's a big enough selection to do just about anything.

11. MRC-Tamiya detailing gives scale appearances with deft accuracy in all areas, including interior cockpit, prototypical striping, decals, air foils, racing mirrors, right down to the nylon lock nut that keeps the wheels in place.

12. Accommodates dry cells or rechargeable nickel cadmium batteries, 2-channel radio recommended. (Batteries and radio not included).

To get the complete run down, see your hobby dealer. Then take to the road, track or field with a precision engineered MRC-Tamiya R/C car designed to satisfy the hobbyist.



MODEL RECTIFIER CORPORATION
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