

MODEL BUILDER

volume 7, number 72

\$1.50

DECEMBER 1977



How to win friends and influence people

... arrive on the flying field with MRC's new Piper Cherokee

This low wing RTF was made for the sport flier. And like its high wing sister ship, MRC's Cessna 177, it's complete in every important respect right out of the box. You'll be the envy of your flying buddies . . . they'll want to know how you gave it that smooth, clean finish. They won't believe it only took an hour to assemble . . . so why bother telling them?

This stand-off scale model comes finished and painted. All hardware is included and an MRC-ENYA .40 is mounted. The fuel tank is installed and even the four control rods are ready to go. You've got yourself a professionally built, uncommonly attractive plane . . . but that's only the beginning.

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MRC's Piper Cherokee RTF . . . great looks, great performance, a great buy, right out of the box. See your hobby dealer . . . and increase your sphere of influence.

Specifications: Wing Span: 57.5"; Wing Area: 531 sq. in.; Engine: MRC-Enya .40 with muffler; Fuselage: Fiberglass

Available with and without radio (Mark V 5 channel, or other complete MRC system)

MODEL RECTIFIER CORPORATION
2500 Woodbridge Ave., Edison, N. J. 08817





CARL GOLDBERG

ALL NEW

FLYING TIGER P-40 STUNTER

CONTROL-LINE or R/C

Easy to build—exciting to fly. The thrilling and historic P-40 Flying Tiger becomes a great control line stunt model! It even has optional wing flaps! Talk about performance — you've never seen such tight loops! Kit has huge decal sheet with authentic insignia and markings, many carefully shaped and die-cut balsa and plywood parts, adjustable threaded pushrod and quality nylon fittings, etc. Large, exceptionally complete plans show every step, every detail, and various options so you can build the P-40 control line or even R/C for 2 to 3 channel radio. Fly the Flying Tiger!



43" SPAN
.19 To .35 ENGINES
KIT G25 \$13.95

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SHOESTRING STUNTER—42" Top stunt model for .19-.35 engine G9 \$12.95



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LIL WIZARD—Shaped balsa wing, die-cut fuselage, 21" span for .049 engine. G5 \$5.95



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LIL JUMPIN' BEAN—21" span Favorite 1/2A stunt model For .049 Eng G8 \$5.50



LITTLE TOOT—Sporty Biplane, for .049 engine, all die-cut balsa G4 \$5.95



SWORDSMAN 18—Die-cut balsa 18" span, for .020-.049 engine. G3 \$5.50



P40 FLYING TIGER—18" span, all balsa pre-fab for .049 engine G11 \$5.50

1/2A BELL CRANK and HORN Nylon provides smooth 1/4" control line operation. Easy on direction lines too. BCK1 25c

ENG BRACKET for COX "200" EB1 50c

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Best handle made. Including lines, only 79c HI

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VOODOO—36" combat stunt for .19-.35 engine. Single kit G13 \$6.95. Double kit DG13 \$12.95



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LIL SATAN—19" span, 1/2A combat-stunt for .049 engine. G12 \$4.95

FREE FLIGHT



VIKING—48" span, Hi-thrust for .049-.051 engine. \$7.95



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SPIRIT OF ST. LOUIS A miniature duplicate, 21" wingspan D1 \$2.95

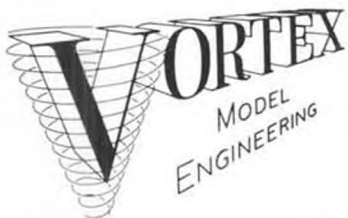
CARL GOLDBERG MODELS INC.

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I am sending 35¢ for 12 pg illustrated Catalog with Basic Explanation of R/C Equipment and Radio Control Definitions

Name _____
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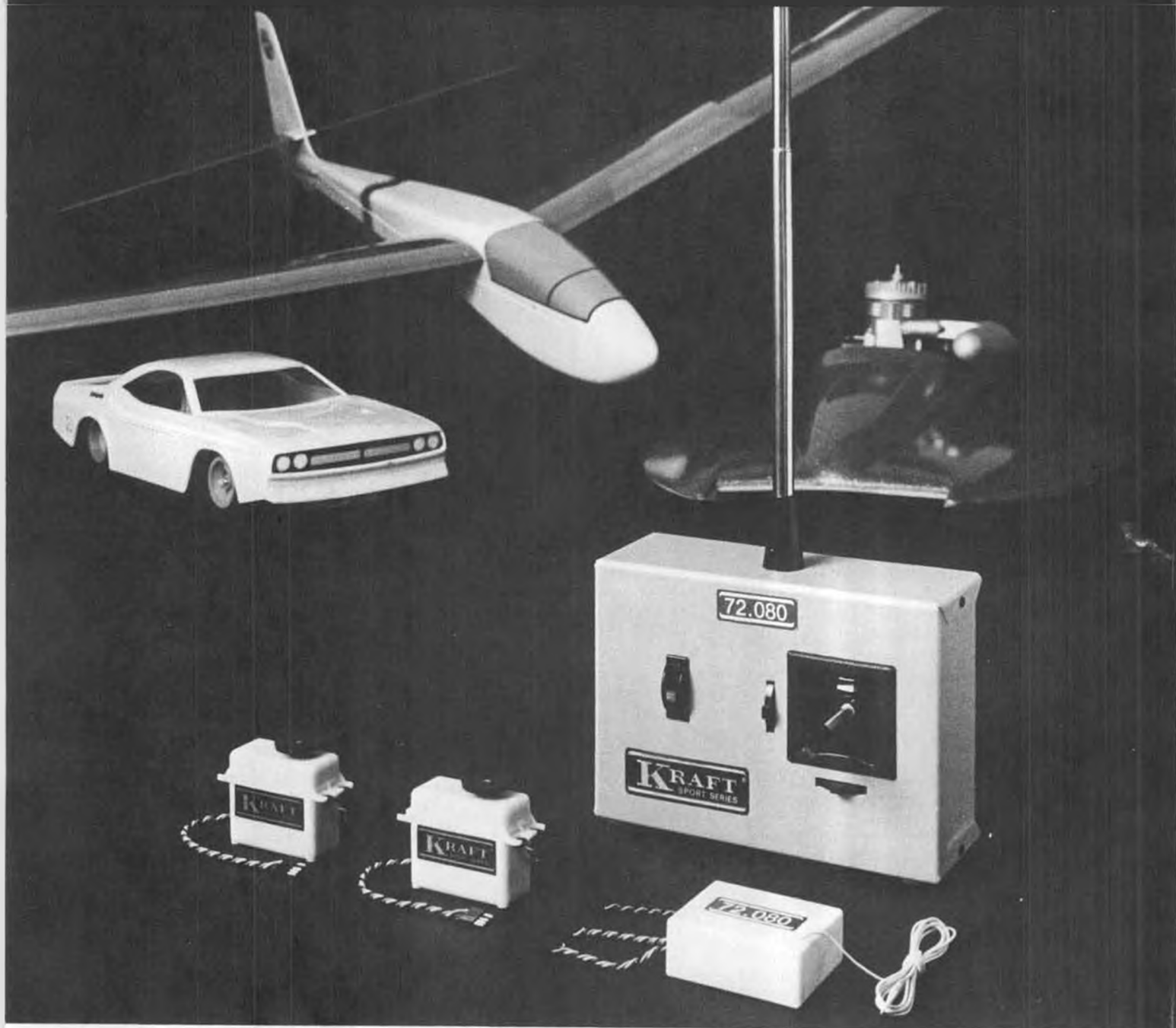


HARDWARE
and
KITS for r/c sailing

Mail order only, no dealers or distributors. For illustrated brochures describing all of our model yacht products, send \$1.00.

Vortex Model Engineering
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A New Addition!



We have a new two-channel addition to our Sport Series line! Our KP-2AS is a high quality, low cost, discrete system. It includes a new miniature two-channel receiver, two KPS-14IIA or KPS-15IIA servos, switch harness, battery case, and transmitter. It is designed to use standard pencil type alkaline batteries but can be converted to rechargeable cells when the owner desires. (Batteries not included)

The transmitter features the popular single stick configuration. The stick is of our precision open gimbal type with the vertical axis movement convertible to a positionable ratchet operation if desired. We will soon have available both two stick control (KP-2A) and wheel control KP-2AW) versions of the two channel transmitter.

The KP-2AS is perfect for model boats, cars, and gliders. It is a great system for the novice and the sport modeler.

Now that it doesn't cost any more, why not buy the best?



WRITE FOR FREE CATALOG
P.O. BOX 1268
450 WEST CALIFORNIA AVE.
VISTA, CALIFORNIA 92083
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THE RUNNING RADIALS

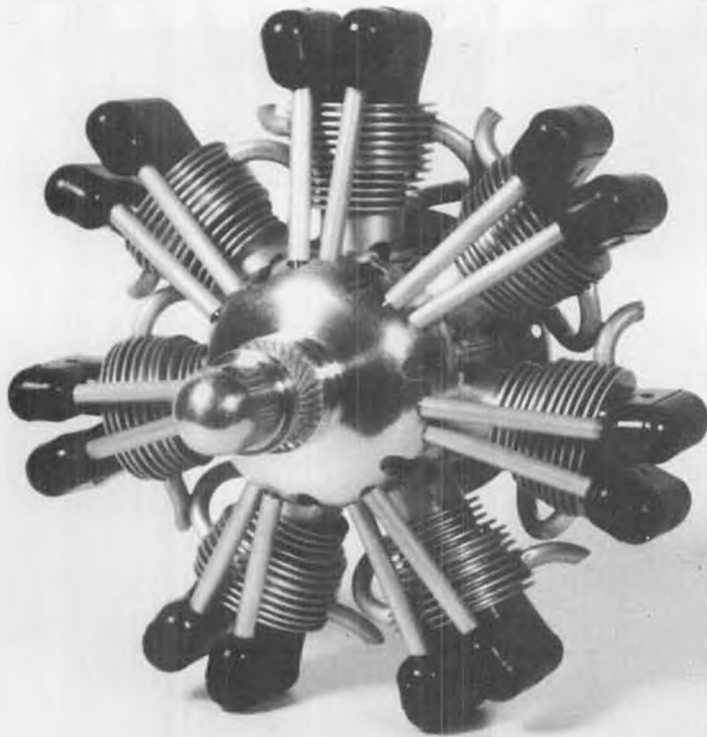
ARE

COMING!

The world's only production precision hand built radial 5 and 7 cylinder engines.

SPECIAL NOTICE!

We have just learned that because of a temporary production set-back, delivery of the 5 and 7-cylinder Hargrave Radial Engines will be delayed until early January, 1978. As these will probably continue to be the only production model radial engines available, we expect you'll be just as anxious then as you are now to own one.



7-cylinder engine
1.18 cu. in.
24 ounces

\$695.00

EN 58 stainless steel valves, phosphor bronze valve guides and seats. Nitride hardened cam discs. High carbon hardened and tempered cam followers. Nitride hardened tappets and rockers. Twin ball races, Nitride-hardened cylinders. Perry carburetor.

Each cylinder bore .625", stroke .551", displacement .169 cubic inches.

5-cylinder engine
.846 cu. in.
18 ounces

\$545.00



California residents add 6% sales tax.

MODEL BUILDER PRODUCTS

621 West Nineteenth St., Costa Mesa, California 92627

Out Of The Skies Of History Chance Vought F4U-1A

CORSAIR



Kit FS-36
Wing Span 36"

\$29.95

36" Stand-Off Scale R/C Model

About The Airplane:

The prototype XF4U-1 was first flown on March 29, 1940. The Corsair was to become the most important Naval Attack Fighter of W.W. II, and remain in production for 13 years, yet its first service trials had ended in failure in its chosen role. It did not reach maturity as a great fighting machine easily. It gave notice that it was to be flown and tested at all times like a true racing stallion, and was an airplane for inexperienced pilots to reckon with. Because it was an advanced design—and had a new and untried high horsepower engine the Corsair required many perplexing and difficult flight tests and service changes before assuming the role of the Navy's first line fighter.

The Chance Vought Corsair had a service life spanning two wars, performing every conceivable mission possible for a military flying machine. The Corsair had a 15 year life span of battle victories unequalled in the annals of aviation history. Vought ceased production of the F4U-1 Model on Feb. 2, 1945 with the delivery of the 4,996th airplane. In air-to-air combat the Corsair had destroyed 2,140 enemy aircraft with the loss of 189.

The Corsair's distinctive whistling war cry, caused by the wing-root inlets for engine air, earned it the nickname "whistling death" among the Japanese.

The Corsair's most unique feature was the bent (gull) wing which was necessitated by the most powerful engine ever installed in a piston-engined fighter, coupled with one of the largest props in the world. Thus the inverted gull-wing permitted the short, sturdy landing gear required for carrier operations.

The first combat unit to receive the Corsair was VMF-124 and the first 12 machines arrived at Henderson Field on Guadalcanal on Feb. 12, 1943. On Feb. 13, VMF-124 demonstrated their superiority over the Wildcat by escorting PB4Y-1 Liberators all the way to Bougainville. The following day they saw combat for the first time, and the inexperienced Corsair pilots were badly mauled by some 50 Zeros. Two Corsairs, two Liberators, two P-40s and four P-38s were lost in this "Saint Valentine's Day Massacre", but the Corsairs soon gained superiority over the Japanese which was never lost. VMF-124 was subsequently credited with 68 kills against a loss of four aircraft and three pilots. Within six months, all Pacific-based Marine Fighter Squadrons had been re-equipped with the Corsair and the list of aces and the airplanes legend began to grow.

About The Kit:

Designed expressly for 2 channel R/C with plenty of room for just about any R/C up to 4 channel miniature units. Maintaining top quality and simple construction, (even the inverted gull wing), all Balsa and Plywood parts are accurately die cut. Hardware Package including R/C Hardware, full-size step-by-step Plans and a flat finish Decal sheet for Major Gregory "Pappy" Boyington's Lulubelle as it appeared after the Oct. 17, 1943 raid on Kahili Airfield, Solomons. Recommended engine sizes for maximum performance .09 or .10. Minimal performance achieved with stock .049 or .051 Tee Dee. Diesel conversion of Tee Dee Engines is suggested.



STERLING MODELS • 3620 'G' ST. PHILA. PA. 19134

If no dealer available, direct orders accepted — with 10% additional charge for handling and shipping. (60¢ minimum in U.S., \$1.25 minimum outside U.S.)

- Catalog of entire line of airplane control line model kits, R/C scale and Trainer kits, boat model kits, accessories, etc. 50¢ enclosed.
 - "Secrets of Model Airplane Building" including design, construction covering, finishing, flying, adjusting, control systems, etc. 25¢ enclosed.
 - "Secrets of Control Line and Carrier Flying" including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions 25¢ enclosed.
- No checks. Only U.S. money orders or currency accepted.

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MODEL BUILDER

DECEMBER

1977

volume 7, number 72

621 West Nineteenth St., Costa Mesa, California 92627 Phone: (714) 645-8830

STAFF

EDITOR

Wm. C. Northrop, Jr.

GENERAL MANAGER

Anita Northrop

EDITORIAL ASSISTANT

Eloy Marez

ASSISTANT GENERAL MANAGER

Eddie Downs

ART DEPARTMENT

Chuck Blackburn

Al Patterson

OFFICE STAFF

Georgi Gilleran

Ron Hutto

Pat Patton

A. Valcarsel

Mike Whitney

CONTRIBUTORS

Rod Carr	Douglas Pratt
Larry Fogel	Bob Preusse
Chuck Hallum	Fernando Ramos
Bill Hannan	Larry Renger
Jim Gager	Char Rohring
Walt Mooney	Dan Rutherford
John Pond	Bob Stalick
John Tucker	

ADVERTISING REPRESENTATIVE

WEST: Bob Upton, 20626 Clarendon Ave., Woodland Hills, California 91364; (213) 884-2294

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Cover: Paul Tompkins, owner of X-Cell Hobby's, Salt Lake City, Utah built a tandem-twin engine, using two K & B 40's. Needing a suitable aircraft, with the right kind of nose, Paul blew up the Jetco Rearwin Speedster plans to a 78 inch wingspan, and came up with this beautiful result. More information in "Remotely Speaking." The 35mm transparency was taken by Jack Harsh.



**from
Bill
Northrop's
workbench**

• We really weren't all that aware of the situation until we began studying the Product Information Report, which is compiled and published by AMA after every U.S. Nationals.

The Product Information Report is made up entirely of those little nuisance-slips that every Nats trophy-winner has to fill out before he or she can claim an earned award. The form, when filled out, supplies information on many of the products used by the contestant in building and/or flying the model which won the trophy. The individual slips are rearranged into the basic F/F, R/C, C/L, and Scale categories, subdivided into events, and age classifications, and finally, assembled in the order of placing. At the top of each page of the report, you find the name of the event and the name of the trophy sponsor for that event. Incidentally, trophy sponsorship is in cash money . . . no product donations, no discount slips, and no gift certificates. The cost is a minimum of \$150, based on a 2-year commitment, which covers a couple of events. Rates per event sponsored decrease as the quantity goes up, for any one sponsor. Usually, trophies are awarded through fifth place in any event, and the sponsor's name is engraved on the plate, along with the event name and place won. Donors may select the events they wish to sponsor, giving alternates in case of conflict (first come, first served), or may leave it to AMA to make the selection.

Nats trophy sponsorship is solicited



"No, I don't want a stupid doll for Christmas. I want a subscription to MODEL BUILDER MAGAZINE!!"

by written request to all members of the model industry, including manufacturers, importers, distributors, etc. A glance at the advertisers' index in any of the current model magazines tells you who gets the requests . . . that also includes the magazines themselves.

The point of all this background information returns us to the first paragraph. We were glancing through the 1977 Nats Product Information Report for data on some of the winners, and also to find out what events we had sponsored (all sponsors receive a copy of the report). As we thumbed through the 172 pages, we continually came across "Sponsored by AMA", for many of the events. Turning to the Table of Contents, we found the list of industry sponsors . . . only 33 out of a possible 200 to 250! In other words, only 12 to 13 percent of the U.S. model industry contributed to sponsorship of the 1977 National Model Airplane Championships.

Next, using the index of events for tabulating, we made a rough calculation of the total number of events held, and of these, how many were sponsored by industry and how many by AMA. Out of 125, industry sponsored about 50, while AMA sponsored 75, plus 50 trophies for "Best Junior" or "Best Senior". The latter were awarded in combined events, where Junior, Senior, and Open members competed on an equal basis.

In our opinion, this is a sad commentary on the industry's attitude toward the modelers who keep it alive. No matter how much of its products go out to the distributors, exporters, dis-

count houses, and hobby shops, if the ultimate consumer, the modeler, doesn't fork over hard cash for the product, industry might as well close its doors. The Nationals is not the only contest in the world, and there are many other local and regional affairs to which industry contributes (though mostly through merchandise, which costs the donor a fraction of the item's retail price), but there is no nationwide contest that can match it in size, scope, and stature. Over 700 trophies were taken back to homes all over the country by modelers competing at the 1977 Nationals, and less than a third of them carry the name of an industry sponsor. (Get that 1977 Nats trophy off the mantle or out of your closet, and see who sponsored it.)

Let's get something straight right now. Many of us in the industry have some kind of a gripe with the AMA, in fact, we'd venture to say that those of us in the privately-owned business of publishing a model magazine have more of a gripe than anyone, because AMA has chosen to go in competition with us. No amount of explanation is going to convince us that "Model Aviation", with its guaranteed paid circulation, has not cut into our livelihood, and yet we are forced to support it indirectly in our support of the hobby in general. However, we should not allow our feelings toward the national organization to affect that support, because that support goes to the consumer of our products, the model hobbyist. Though some of us may be in the business to make a fast bundle and then get out while the

Continued on page 111



ANNOUNCING!



MODEL BUILDER magazine's

FOURTH ANNUAL INTERNATIONAL Parcel Post Proxy Peanut RUBBER SCALE CONTEST!



Every peanut model, from near or far, will be proxy flown, indoors, by some of the U.S.A.'s best rubber scale flyers, including Walt Mooney, Bill Hannan, Clarence Mather, Bob Peck, Fernando Ramos, Bill Warner, and many others.

Local modelers will be allowed to enter, but their planes must also be proxy flown, and no verbal or physical help will be allowed from the owner . . . only written instructions to the proxy flier, as allowed for all entries.



SPECIAL ANNOUNCEMENT

Because of the limited time available to MODEL BUILDER's staff for the purpose of properly conducting and staying on top of a world-wide postal competition, we have obtained the capable services of Chuck Conover, a local modeler and Peanut specialist, who will manage the 1978 contest. The result will be prompt processing of entries, score sheets, tabulation, prize awarding, and model return. We apologize for past delays and confusion, and assure you that it will not happen again!

Open to modelers from all parts of the world... any nationality... any age... any sex... come one, come all!

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

GRAND PEANUT of 1978!

(HIGHEST OVERALL COMBINED STATIC AND FLIGHT SCORE)

Other prizes include such items as; Peanut Scale kits and materials, Astro Flight and VL Products electric motors, Brown Jr. twin and single cylinder CO₂ engines, Uber Skiver knives and sets . . . over 50 trophy and merchandise awards altogether!

Contest Director: CARL HATRAK

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

Chief Static Judge: RUSS BARRERA

Scoring will be based on the total of each entry's static scale points (100 maximum) and flight points (100 maximum). Static judging will be according to AMA Indoor Rubber Scale rules. Flight points will be the average of the two best flights out of four official flights (10 seconds minimum, 100 seconds maximum). Ties will be broken by highest single score, or a fly-off. Number of attempts to be limited, subject to size of total entry. DO NOT SEND UNTESTED MODELS! A three-man jury will preside over all decisions.

SCHEDULE: Register by mail on or before February 1, 1978.

Models to be on hand on or before April 1, 1978.

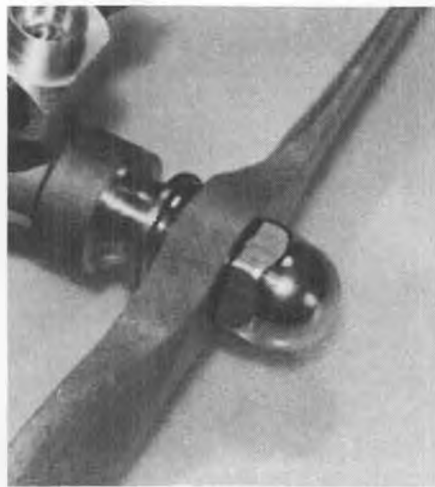
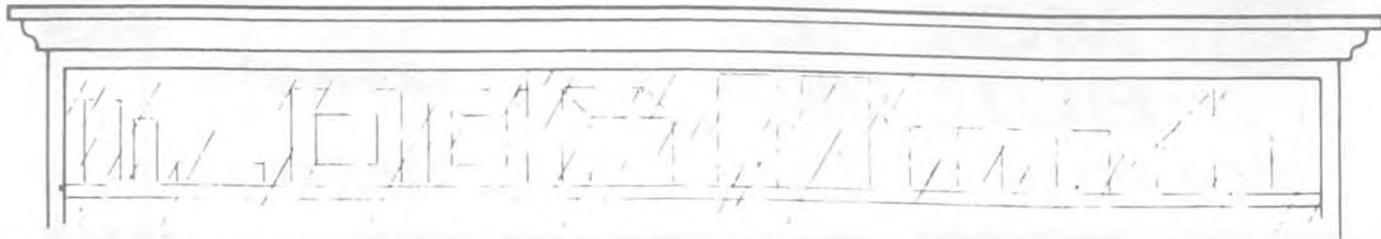
Contest to be held approximately April 15 to May 1, 1978.

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

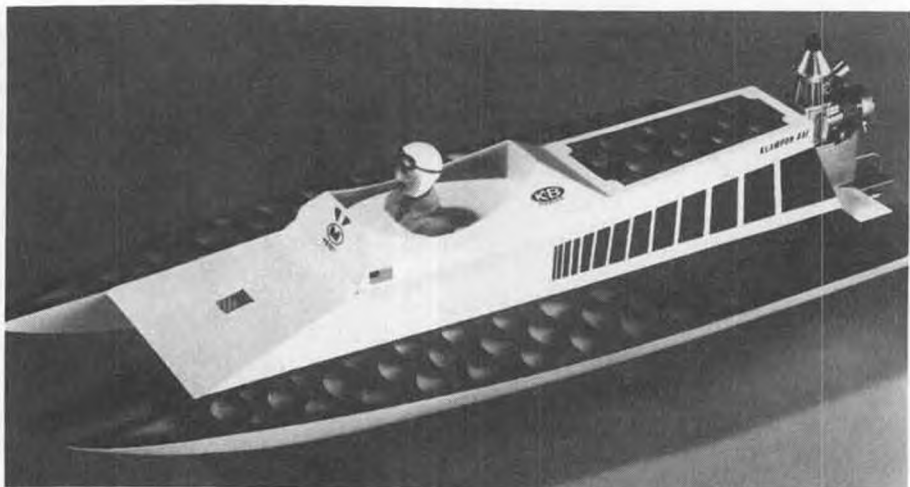
MODEL BUILDER PROXY PEANUT CONTEST
621 West Nineteenth St., Costa Mesa, California 92627 USA



OVER THE COUNTER



Blunt-nose AMA type prop nuts from Tatone Products.



"Klampon Kai", designed around the K&B 3.5cc outboard, by Midwest Products Co.

• "Coverite" is certainly living up to the name. Not only do they have material of various types for you to cover and trim your latest project, they have "Balsarite" to make it go on easier and better. And just recently, a new tool called "Trimit" has been introduced, to make your covering jobs even less painful.

This handy little tool can be used to cut and trim not only Coverite, but all the plastic films, tissues, nylon, silk, etc. It consists of a curved blade, with a guard that prevents cutting into the model's framework. As you cut, you run the edge of the guard along the

framework, leaving an 1/8 inch strip of material, just the right amount to roll over corners and curves. "Trimit" comes complete with a cover, which serves to protect you as well as the blade.

The blade is not replaceable, but since this is not a tool that you will use as much as your "Uber Skiver", and considering the low \$1.19 price, this is not a disadvantage.

Look for the "Trimit" at your favorite dealers, and for complete information on the "Coverite" line, write to them at: 2779 Philmont Ave., Huntingdon Valley, PA 19006.

"Southern Kite" has just been introduced by Southern R/C Products, Inc., Rt. 3, Box 47, Nims Lane, Pensacola, FL 32503.

The "Kite" is another in the currently popular class of large gliders, with a 144 inch wing, 1200 sq. in. area, 52-1/2 inch length, and a recommended weight of 5 to 6 pounds. It features excellent wind penetration, a wide maneuvering speed envelope, and is capable of extremely tight turns without stalling. Easy to fly and almost hands-off launches are other characteristics.

The kit includes all parts, machine-cut or sanded to shape in balsa, plywood, or spruce. Quarter-inch music wire wing pins are included, as are full size plans.

Claimed to have something for every sailplane aficionado, be he a Beginner, Sportsman, or Competitor, the



Millcott "Specialist" now available in single-stick version.



The "Mini-Bell", one-third size Senior Falcon "Liberty Bell", by Peck-Polymers.

Only \$74.95, look for it at your dealers, or check with Southern R/C in Pensacola.

* * *

What would you call a small version of the famous Goldberg Senior Falcon "Liberty Bell"? Why, the "Mini-Bell", of course! Which is exactly what the "Peanut People", Peck-Polymers is calling its 1/3 size version of this R/C favorite, designed for miniature radios and to be powered by Cox Pee Wee or TD .020 engines.

This 25-incher is stable and easy for beginners to fly, but quite aerobatic with an experienced flyer on the sticks. The kit includes die-cut balsa and plywood parts, formed landing gear, canopy, a photo illustrated booklet, and clear, easy-to-understand plans.

Sure looks like an inexpensive and fun way to relax after flying that "bomb" or in competition. Ask your local dealer for the "Mini-Bell", or order direct from Peck-Polymers, P.O. Box 2498, La Mesa, CA 92041.

* * *

Jim and Jerry's (Simpson and Krause) outfit in Ft. Worth, better known as North American Model Enterprises, Inc. (NAME, INC.), has come up with a number of interesting offerings to the R/C world. One being that most of their airplanes are available as kits, ready to cover, or ready to fly.

For example, the 1/2A Vulcan, is a delta design for 2 channels and .049 or .051 engines. The span is 28-1/2 inches, length is 20 inches (less engine length), and weight, less engine and radio, is 14 ounces. As a kit, it is priced at \$35. The ready-to-cover version is \$55, and if your time is at a real premium, you can get one ready for radio and engine installation for \$75. Try your dealer first! If he doesn't have them, you may order direct, including \$5 for handling and shipping. Complete information on the full line is also available from NAME, INC.,



Spun aluminum cowls from Tatone Products.



The "Size'r", by Hobby Products, cleans and sizes glow plug threads.

7639 Grapevine Hwy., Ft. Worth, TX 76118.

* * *

Tatone Products Corporation is again producing rounded, and blunt-end engine prop nuts, as required for AMA competition. They are individually machined from aluminum, bright finished, and made with 1/4 x 28 threads, which fit the majority of U.S. and some foreign engines. Designated as Catalog No. 14, they are

priced at \$1.89 each.

Also available from this San Francisco company are lightweight, spun-aluminum cowlings, in three sizes. They definitely add a touch that is not easily duplicated with the tools normally found in most modeler's shops. Useful for both scale and sport model applications, the sizes and prices are: 3-1/2 inch @ \$4.79; 4 inch @ \$5.17; and 4-3/4 inch @ \$5.89.

The latest Tatone products are now available in many hobby shops, or may be obtained direct from Tatone Products Corp., 1209 Geneva St., San Francisco, CA 94112.

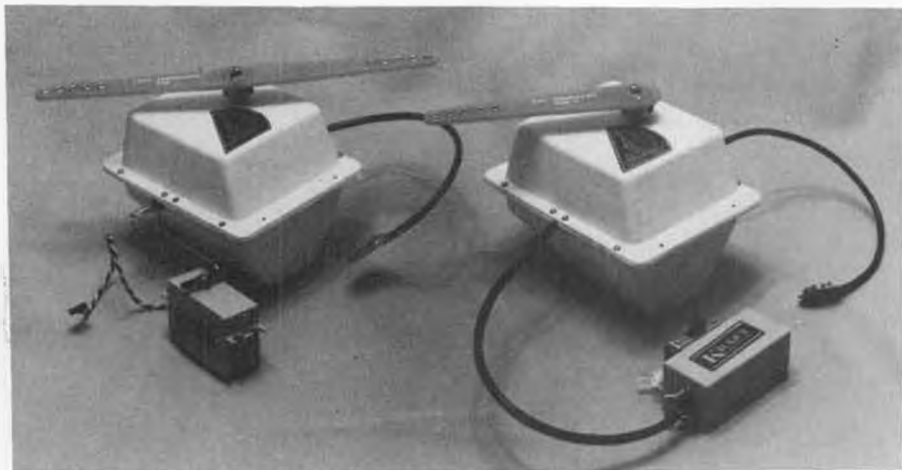
* * *

If your particular modeling uses Cox or Testors reed valve engines, and you are looking for a little more reliability and performance, possibly the new Tef-Reed is what you need. This new Teflon non-stick reed, available from Davis Diesel Development, is a direct replacement and is claimed to provide easier restarts and improved needle valve control. The Tef-Reed improves with age, and the maximum RPM will usually increase after a number of runs. Easy installation, with instructions, at 4 for \$1 including postage, or ask for them at your dealer. Davis Diesel Development, Inc. is located at Box 141, Milford, CT 06460, and will be glad to send you complete information about its diesel conversions and small engine accessories.

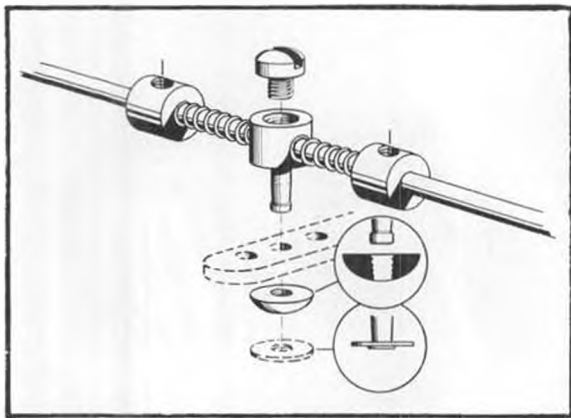
* * *

If your wife objects to your poster of Farrah on the workshop wall and you are looking for a replacement, you should consider the cover on the catalog now available from Superior Aircraft Materials, Box 8082, Long Beach, CA 90808. Well, we'll admit there are differences, but nevertheless, it is impressive, and we won't describe it so you'll have to get your own.

This is another case where beauty



Sail Engineering's sail control servos.



Servo-saving "Control Over Ride Assembly" by Du-Bro Products.



The BoLink 1977 Chevy Van, in 1/12 scale.

is not only skin deep; the inside listings of balsa sheets and sticks, and birch plywood are enough to make any scratch builder drool. All the usual sizes are listed; in addition, you can specify the desired weight of light, medium, or heavy. Listed also are the not-too-common sizes favored by Peanut-ers and rubber model builders, such as 1/20 squares, and sheet in 1/64, 1/40, 1/32, and 1/20 inch thicknesses. Lengths vary from 12 to 48 inches. The selection is too great to give you prices, but we consider them fair in today's balsa situation.

Write Mike Taibi at Superior, tell him we sent you after your own copy of his wish-list.

* * *

Having used the Robart Hinge Points in a number of models, with no ill effects whatsoever, I always felt the reputation they had of being unreliable was somewhat undeserved. Mine were installed following suggestions from a number of flyers who had previously tried them: alternate the direction of the pins (one left, one right) and be extra careful that the vertical axis is true on every hinge, so as to prevent stress and 'popping out' at extreme movements of the surfaces. As I said, no problems.

But in spite of the ease of installation, and other good features, not everyone trusts them. Well, a cure-all



The "Southern Kite", by Southern R/C Products. Span is 12 feet.

has been developed by Robart. A new Steel Pin Hinge Point has been introduced, that should withstand all but grossest installation errors. The nylon pin has been replaced with a large head metal rivet, which should not come apart under any circumstances. To install, simply push into an epoxy-filled, 1/8 inch hole.

A package of 15, the proper amount for the average airplane, is priced at \$2.49. Check your favorite store or

check with Robart, at 203 E. Illinois Ave., St. Charles, IL 60174.

* * *

Classic Models, until recently known as Plan Kit, announces that its entire line of Peanut and 1-1/2 inch scale models that they have been marketing as partial kits will now be available as complete kits. Each kit will contain contest balsa printwood and stringers, vacuum formed parts, plastic props, tissue, decals, and the exclusive Scale Documentation Booklets written and illustrated by Gene Thomas.

Though originally intended for rubber powered flight, the 1-1/2 inch scale kits have proven to be easily adaptable to R/C, using the miniature radios and small engines. They have a wingspan just under 40 inches, an ideal size for 1/2A R/C.

The Scale Documentation Booklets are available separately at \$2.00 each, as are the booklet center spreads in 11 x 17 inches at the same price.

Available now are the Church Midwing, Heath Baby Bullet, and Heath Parasol, which are also being developed as 1/4-scale versions to be available for release some time in '78.

Drop Classic Models a line at P.O. Box 681, Melville, NY 11746, for complete and current information.

* * *

It would be interesting to know



Macchi-Castoldi 202 Folgore, .60 powered Sport Scale by Ikon Northwest.



Hawker Hurricane Mk II, .60 powered Sport Scale by Ikon Northwest.



Heath "Super Parasol" by Classic Models.

what is growing faster, 1/2A R/C, or R/C boats. We certainly are seeing a steady increase in kits and equipment for both phases of our R/C hobby, and since the competition is there between the different manufacturers, let us hope that it, in turn, benefits us, the buyers, in terms of better and consistent quality. Even some of the long thought of as 'airplane only' manufacturers are entering the boat field. Or is it boat pond?

One of the latest to do so is Midwest Products Co., well-known manufacturer of many excellent kits for years. They have combined forces and experience with Charlie Pottol, late of Marine Specialties, and have come up with the "Klampon Kai", for the K&B 3.5cc outboard engine and two-channel radios.

Claimed to be an ideal starting point for the beginner, this boat has been raced successfully in competition. It features aircraft quality hardwood and plywood parts and a foam building jig for quick assembly. Overall length is 31 inches, beam is 13 inches.

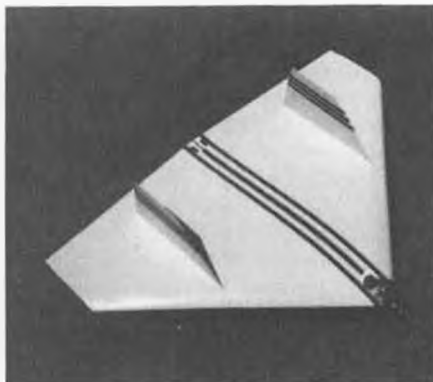
Should be at your dealers now; if not, contact Midwest Products Inc., 400 S. Indiana St., Hobart, IN 46342.

R/C Car news from BoLink! It has acquired all the tooling, inventory and assets of Mach 12 R/C Products, and effective immediately, all Mach 12 items are available.

These include four 1/12th scale bodies, for the Can Am Shadow, Midget, TI-22 (Can Am), and a wedge dragster. A BoLink/Mach 12 chassis, to be called the Mach 12 Racer is also available. It features machined, one-piece aluminum wheels, and 1-1/2 inch wide rear and 1-1/4 inch front. Strong and lightweight, it is claimed to handle like a 1/8 scale championship car. Available as a complete kit, or as separate parts, a complete catalog is available.

For van lovers, BoLink's second in that series is a 1977 Chevy Van, with side pipes and full interior. It fits all normal 1/12 scale chassis, and is molded from TUFFAK. Priced, clear, at \$11.95; painted, at \$15.95.

And to save you those valuable seconds during your pit stops, you'll need the BoLink Quick Fil. This worthwhile addition to your racing machine is only 99¢. All available from your racing dealer, or from BoLink Industries, P.O. Box 80653, Atlanta, GA



NAME, Inc. markets this 1/2A Vulcan as kit, RTC, or ERF.



Church "Mid-Wing" by Classic Models.

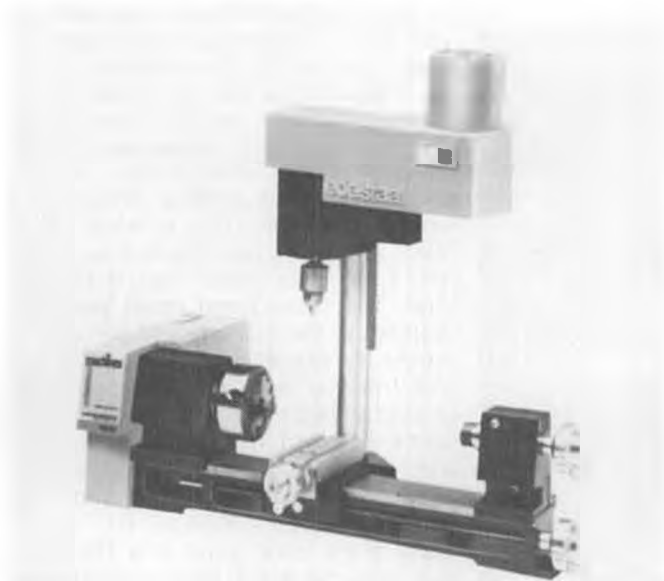
30361.

If you have begun to feel that herding that Ugly Stik around is just not as much fun as it used to be, maybe you are ready for some WW-II style dogfighting. If so, you are ready for Ikon Northwest, P.O. Box 566, Auburn, WA 98002.

It has just introduced two .60 size R/C warplanes, of seldom seen British and Italian fighters that actually met in combat back in the days of the big conflict. They are the Hawker Hurricane Mk II, and the Macchi-Castoldi 202 Folgore. Known as the "Dogfight Pair", these two model warbirds display the same characteristics as their full size counterparts did; the Folgore is faster, but the Hurricane will out-turn it.

The kits are fiberglass and foam, with molded canopies, cut out wood parts, formed landing gear, decals, hardware package, and a detailed building booklet with photos. The Hurricane has a wingspan of 65 inches; the Folgore 60 inches. Both models are scale, except for slight enlargement of the tail surfaces, but well within the Sport Scale require-

Continued on page 105



Edelstaal's MACHINEX 5-inch 2-spindle combination lathe-drill mill.



"Tote'r", compact field box by Hobby Products.



BOGUS BAKA &

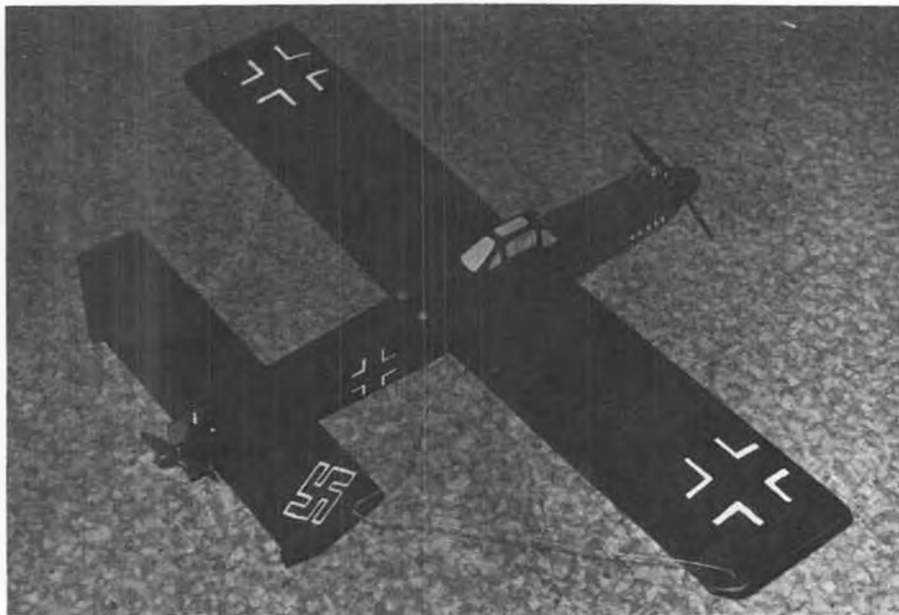
By KEN CASHION . . . A couple of World War II pseudo-scale 1/2A push-pull twins for 2-channel radio control. Ace foam wings make the construction quick and easy. That twin sound is something else!!

• Our flying group, the Picayune Aircraft Competition Team, is primarily interested in sailplanes. During the Mississippi winters, however, we do a lot of power flying, so this year I decided to build something really unusual . . . to maintain my reputation. After drawing all over two desk pads, I ended up with a design using two .049's and an Ace foam wing. I didn't want to have any power trim problems, so I put the

engines in line. I wanted the wing shoulder-mounted or higher because I hate chucking low wing aircraft almost as much as chucking pipes. Our field does not always allow for small-wheel takeoffs and, in this case, I did not want all the drag of wheels. Wheels are just an earth-bound convenience anyway.

Since I would not be using rudder control, I would be able to easily use twin-fins and gain more access

HEINEKIN HEINKEL



to the aft engine. The twin-fins also provided a lot of fin area for good yaw stability. After the outline drawings were completed, it looked . . . well . . . it looked German, and since my good flying friend from Britain is always telling me that any aircraft with crosses and swastikas could not possibly fly, I knew that I had found the alleged underground design of Professor Doktor Ernst Heinkel: the infamous HEINEKIN HEINKEL! The top-secret HEINEKIN HEINKEL was a combined high-altitude fighter and low-altitude anti-tank bomber, a real wall-buster. The fact that it appears only now, after 33 years, shows how secret it was!

As for the origin of the BOGUS BAKA, the BAKA has always been one of my favorite aircraft. It was small, specialized, both austere and technically advanced, and flown by the ultimate in courageous, dedicated patriots. Also, the post-flight procedures were not too complicated.

These are not beginner's models, but anyone who has built and flown fast 1/2A's will have no problems with them. These are sport planes designed to look and sound differently from other models, provide approximately two minutes of very fast flying, and then finish the rest of the flight with reasonably fast, stable performance. Whichever is built (if you only build one), it should be built with the intent of providing some fun on the flying field or spicing up fun-flies. Fly it a few weekends and then pull the RC gear and put the plane up for a while. There is no big investment. In a few weeks, you'll be surprised at what a pitiful excuse you will use to get it back out on the field. It is a plane that everyone will always enjoy seeing arrive at the field.

The engine selection is really a question of how easy you want to make your pre-flight activities. Using an internal tank and a TD .049 is an obvious choice for the front. Anything else and you'd have the trouble of adding fuel immediately before launch. A Black Widow .049 works well in the rear. This is what mine had, and with two black Cox 6-3's and Cox "Blue Label" fuel, it did just fine. There are some small pressure pumps on the market, and perhaps it might be practical to have a TD on the internal tank in the front with a pump feeding a rear TD from the same forward fuel tank. With this configuration, a spruce spar would have to be added to the top of the wing. The Black Widow has about 85% of the static thrust of a TD .049, but with the Black Widow operating as a pusher, the difference between the TD and Black Widow decreases.

On just Black Widow power, the aircraft will still be very maneuverable, but do not stay inverted very long or you will flame out.

There were no bad surprises during initial flight checkout. On one occasion, the clunk line came off the internal tank and, not knowing it, I launched the plane. In about one minute I heard an engine quit and just assumed that the Black Widow had quite prematurely. I did a couple of rolls, flipped up on one wing and started a 1'm-agonna-stra-fe-the-field dive, and as I came by, saw that it was the front, not the back prop that was stopped. That demonstrated good single-engine performance. On another day, I lost radio link for 15 to 20 seconds and the plane proceeded to climb and circle "free-flight" until the Radio Gods returned my control. That demonstrated good stability . . . among other things.

If you don't care for the looks of the HEINEKIN HEINKEL or the BOGUS BAKA, then use the BAKA fuselage, no canopy, the HEINKEL fins, and either wing. Paint it day-glow orange, put USAF markings on it, and now you have a drone. But don't make it into a cruise missile . . . I have that one on the drawing board now and I can't afford the competition.

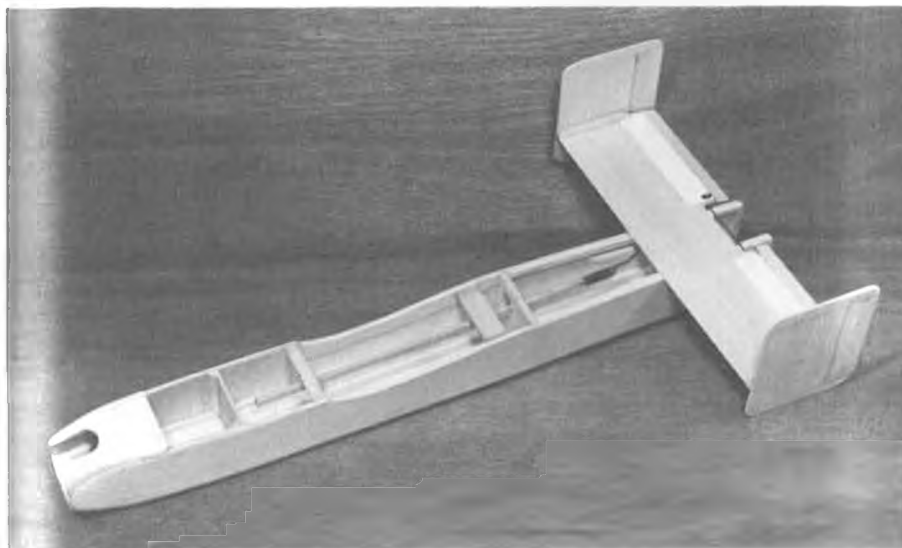
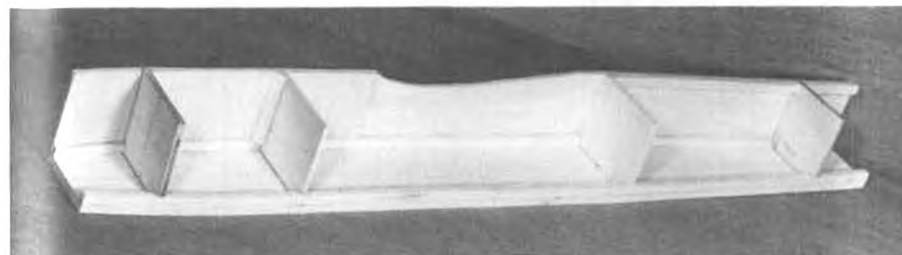
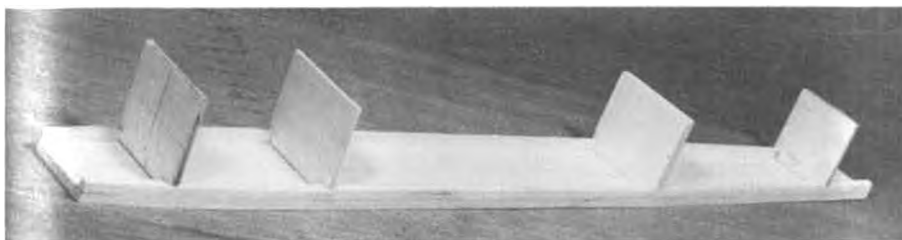
CONSTRUCTION

1. Cut out the fuselage bottom, firewalls and formers. Mark firewalls for engine location (If blind nuts are used in the firewall to secure the engine mounts, then 5/16 or 1/8 inch ply can be used for firewalls). Add 1/8 inch to the length of each end of the fuselage and cut out sides. The extra 1/8 inch permits the sides to follow the curvature of the fuselage bottom. Add the square or triangular stock to fuselage bottom and mount firewalls and formers. No offset is needed in the firewalls.

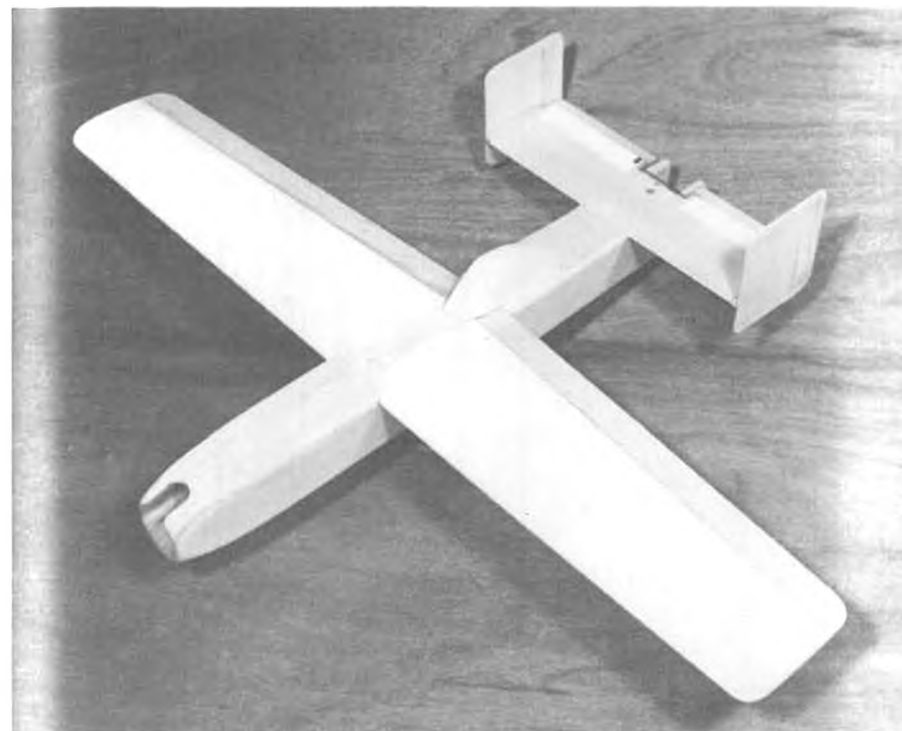
2. Add sides to fuselage bottom and add square stock on top, inside of fuselage sides. Add doublers and any other bracing shown on plans. Add hardwood mounting plates and start building up nose area to allow for the required shaping. Be sure to put a "goop" drain hole in the bottom of the front engine compartment (Sailplanes are not this messy!).

Temporarily install top nose block. Shape nose, fuselage bottom, and sand. Make bevel cut in top nose block to create fuel tank access hatch.

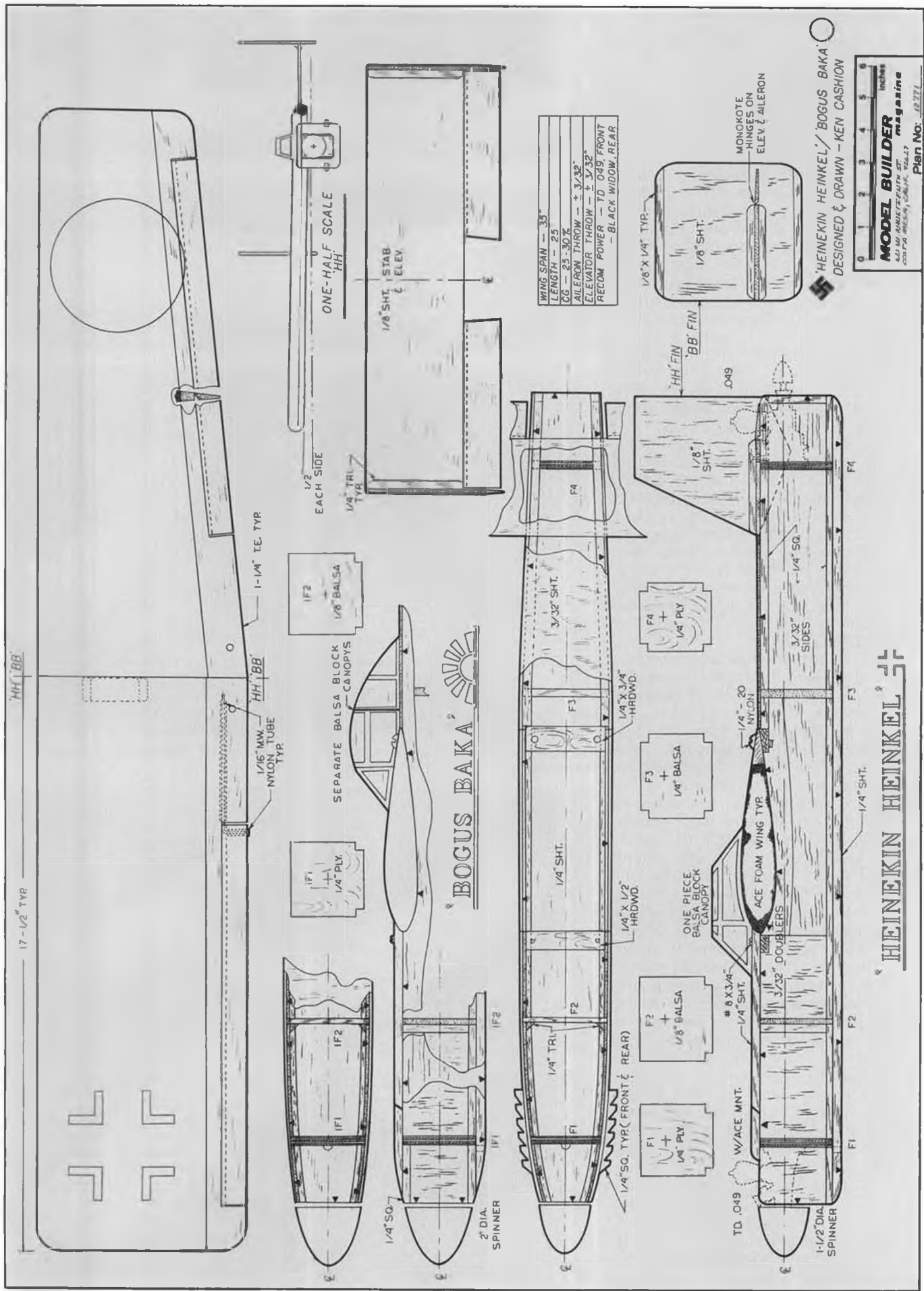
3. Cut out stab, fins and elevators from firm 1/8 inch balsa. Bevel leading edge of elevator for Monokote hinges. Monokote provides for a much more rigid horizontal tail. I do not recommend the use of a pinned hinge in this area because the wood is thin and the horizontal tail on this



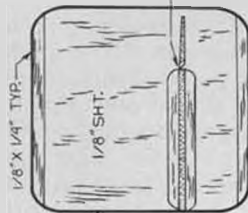
The above "step photos" illustrate the simple construction of both aircraft. In bottom photo, the elevator pushrod and linkage wire are in place.



With wing in place for "trial fit" on the "Bogus Baka", the moments look a bit out of place. Don't worry, they work fine. Ship will fly on either engine, as well as both.



WING SPAN	- 33"
LENGTH	- 25"
CG	- 25 - 30%
AILERON THROW	- + 3-32"
ELEVATOR THROW	- + 3-32"
RECUM POWER	- TD .049; FRONT - BLACK WIDOW; REAR



MONOKOTE
HINGES ON
ELEV & AILERON

HEINEKIN HEINKEL / BOGUS BAKA
DESIGNED & DRAWN - KEN CASHION

0 1 2 3 4 5 6
Inches

MODEL BUILDER
431 W. BAKER ST.
COLUMBIA, MISSISSIPPI 39202
magazine

Plan No. 42771

aircraft configuration can be exposed to some strange vibration and air loads. Shape other edges as customary.

4. Add the elevator control horns. I used Rocket City mini-control horns and clevises (clevi?). Add the dual wire pushrods and epoxy wire to a single 1/4 inch square pushrod. If you think that a dual pushrod arrangement is too much trouble and prefer a single one, a wire parallel to the stab can couple the elevators. However, do keep track of where you want your servos and their direction of rotation, etc. Install elevator pushrod(s) and mount stab to fuselage. With epoxy, fuel-proof the engine compartments, as well as the fuel tank compartment, if you have sloppy habits on the field (as I do).

5. Now is the time to build the wing. Cut the trailing edge from the Ace foam wings so that there is a good surface interface between wing and rather firm trailing edge stock. Epoxy trailing edge to wings and shape wing tips. Cut and shape wing roots for proper dihedral, as per instructions on these plans and those with the ACE wings. Lay wings on fuselage wing saddle and mark fuselage/wing interface on wing to determine aileron servo location. Cut aileron servo recess (a little under-size) in wing. Two-sided sticky tape will help secure servo in wing. Don't leave the servo mounted sloppily.

This plane will pull a few G's. The servo is on the outside of the turns and the flexing wings will be "opening" the servo recess. Cut ailerons from the wings, bevel aileron leading edges as you did the elevator, and attach ailerons to wings with Monokote. There are many ways of putting aileron mechanics in a wing, but the one shown on the plans is my preference for sport planes.



Frances Pigott, with both the HEINEKIN HEINKEL and the BOGUS BAKA, posed in front of Louis Langhurst's 7/10 scale JU-87B.

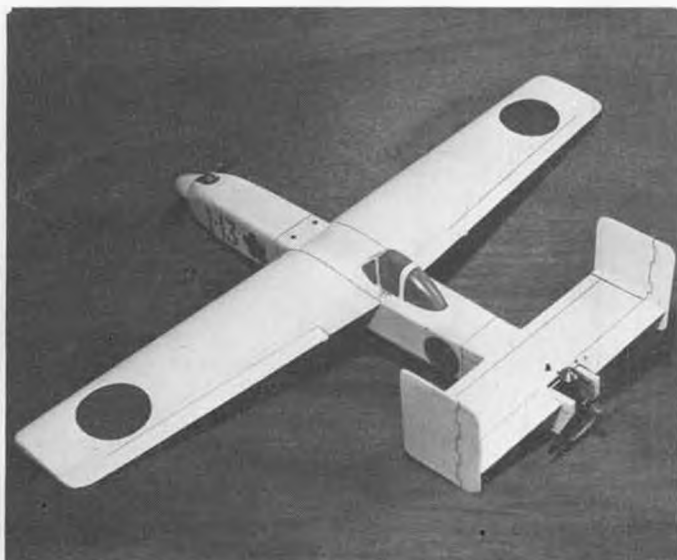
6. After the aileron mechanics are installed, lay wing on fuselage saddle again and trim saddle for proper wing/fuselage/stab alignment. Drill through the balsa trailing edge and the rear wing mounting plate and tap the mounting plate for the 1/4 x 20 nylon screws. Give the holes in the trailing edge and mounting plate a good shot of "Hot Stuff", or equivalent, to convert the area around the holes to concrete. Don't get "Hot Stuff" on the foam or the foam will convert to air. Re-tap the 1/4 x 20 hole very carefully after the "Hot Stuff" has cured. Make sure that the wing and mounting plate do not touch until all the "Hot Stuff" is cured or you will have no use for the nylon screws. Mount wing to fuselage with the nylon screws and

add, shape, and sand the rear, top fuselage sheeting. Shape the front hatch/wing interface so the hatch applies firm pressure to the wing. The front hatch is secured to the front mounting plate with 8 x 3/4 inch sheet metal screws. Rather large washers of 1/32 or 1/16 inch plywood may be used under these screws. Again, "Hot Stuff" can add tremendous strength to these areas where threads are used. Be sure that the hatch is in intimate contact with the forward bevel cut when fitting the hatch to wing. Shape, sand, and attach canopy. This would be the time to consider protecting the fuselage from skidding on your flying field. Some of the choices are celastic, glass, resins, strips of

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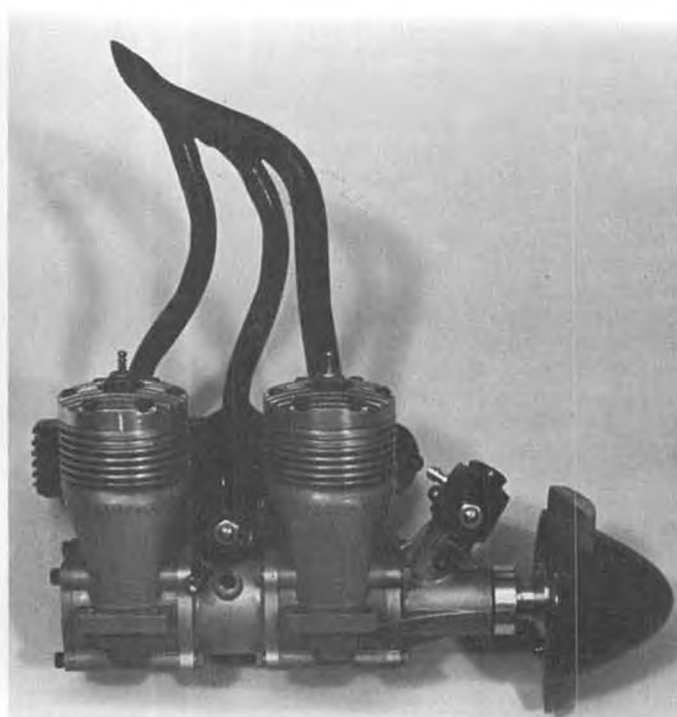
The author-designer peaks up the TD .049. Then he'll turn it around and crank up the Black Widow. Roy Welch stands by with xmitter.



Plenty of access to the Black Widow rear engine. Note needle valve protruding through stab. Remember that prop when launching!!



The Rearwin Speedster on the cover, with cowl removed to show the tandem twin K&B 40 (80) installation. Turns 16 x 6 at 7,500 rpm.



Paul Tompkins' twin completely removed from aircraft. Using a 180 degree firing order increases torque, enhances sound. More in text.

'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

THE NEW RULES

The start of another two-year rules lock-up is just about upon us. As of this moment, the R/C rules ballot is completed, except that a few items are still being cleared up. Let's take a brief look at the changes for 1978-79.

First of all, Formula I remains unchanged. This can be good or bad . . . Good if it means that everything is just right as is, or bad if it means that

general interest has dropped to the extent that no one gives a damn about it. It is said in the model railroad hobby, that when a model railroader feels that his layout is complete, he has lost interest in it, and will soon give it up. Let's hope this is not the case for Formula I.

If the comparison is true, Quarter Midget has a bright future and Half-A Pylon is exploding with enthusiasm.



Winners of 2nd annual Chicago Pylon Club/Midwest Products QM race (l to r): Tom Dudan 3rd, Dennis Bielick 1st, Lynn Stevens, 2nd, Leroy Webb 4th, Todd Leslie 5th, CD Frank Morosky.

There were 19 final proposals to consider, which amounted to 31 questions to be settled by the Contest Board on Quarter Midget. There is a new definition of acceptable engines, and new engines must be available to the modeling public for 60 days before they may be legally used in races. Any wood, fixed-pitch, two-blade prop may be used (means that modifying blades is OK), while continuous strand compression molded fiberglass props, and for that matter, anything *but* wood, continues to be disallowed.

Fuselages will remain scale-like in character (2-3/4 inches wide by 5 inches deep) and cheek cowls and canopy will have to contain at least a 1/2 inch radius on outermost cross-sections.

Idle checks before takeoff have been eliminated, but engine must be running at landing. Also, landing must be judged safe or CD can require idle demonstration. Airborne glow plug "lighter" batteries will not be allowed. Race organizer must supply, dispense, and remove fuel between heats.

Contact in the air between aircraft, even though one or both survive, will require immediate landing for safety inspection.

Contest organizers must advertise length of course, muffler requirements, and brand of fuel to be dispensed.

Half-A Pylon, just proposed as a national event, is already into the mass controversy stage, with 26 questions arising out of the original proposed rules. It is so controversial, that five of the questions have to be done over,

because of conflicts in the board voting. Some of the questions settled:

Fuel cut-off by fixed pick-up, or by rolling inverted is allowed.

Wing to be 200 sq. in. minimum, no deltas or flying wings, 7/8 inch minimum thickness at root, and only thinner if in proportion to chord taper. No taper . . . no thinner.

Weight limits, less fuel, between 20 and 32 ounces.

Anyone may hand launch airplane, including pilot.

Callers are permitted.

In soaring, the two-meter class has been adopted, with no other limits than the wingspan (78-3/4 inches).

The proposed helicopter rules have been adopted as is.

As for sport biplanes, the board voted against any acceptance of monoplanes . . . sport scale types or otherwise. Only changes will be in maneuver lists.

In pattern, items regarding starting time and reclassification to a lower level are still under discussion. Twin engines, totaling not over .80 cu. in., will be allowed. The two engines used on any plane need not be the same size, but neither engine may exceed a displacement of .61 cu. in (10cc). Other changes are as follows:

Experts will fly the Master Pattern (FAI).

Flight attempts will be defined and two attempts will be allowed.



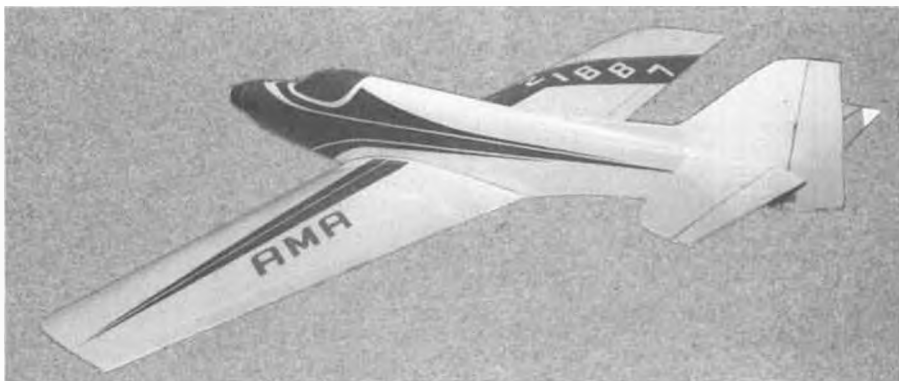
Charlie Smith's 1-3/4 inch scale OS2U-3 making a low pass.



Charlie Smith built the land version "Kingfisher" OS2U-1, and the float version OS2U-3. Both fly very well. 9.5 and 11 lbs. resp.



Cubs Three!! George Dickinson, Somerville, N.J., with his Berkeley J-3 Cub (rt) and Sig Clipped Wing Cub, pose in front of a fine sample of the real thing.



For just plain fun, or for serious pattern practice without going broke on fuel consumption, try Myers Airplane Products' .40 powered "The Sting". Area is 560 sq. in., weight 5-1/2 lbs. Glass and 1/64 ply-skinned foam construction. Complete kit with all hardware, \$89.95.

In all classes, final score will be determined by the best of 1 of 1, 1 of 2, 2 of 3, or 3 of 4 or more flights.

Novice pattern fliers will not have to call completion of Straight Flight Out or Procedure Turn.

The 2-point roll will be renamed and redefined as Straight Inverted Flight.

Advanced Class will do a Double Stall Turn in place of the Figure M.

Advanced Class will do 4-Point roll in place of 2-Point roll.

Reasons for mandatory zeros will be listed in the rule book.

The Landing will be redefined to

omit rolling to a complete stop. Take note of this one, as it is the only change that goes against the current FAI rules.

As we said at the opening, this is not a complete and clearly defined list of the accepted rules changes and additions for 1978-79 . . . just some of the available highlights. Watch "Model Aviation" for a complete run-down.

WHAT ABOUT 1980-81?

With the 1978-79 rules just about settled, we are already looking at a couple of interesting questions for the

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Land version carries U.S.S. Mississippi markings, and float version is from N.A.S. Corpus Christi. Span 63 inches, 60 powered.



Floral arrangement stands for "Club de Aeromodelismo de Jalisco, R/C".



One of many beautiful scenes around the "El Tapatio" Hotel, in Guadalajara, Mexico, where contestants stayed during the "Tenth Guadalajara R/C Contest".

THE TENTH GUADALAJARA R/C CONTEST By ELOY MAREZ . . .

• Este Septiembre, como por nueve Septiembreres pasados, se celebro . . . oops, had our IBM Selectric set on 'Spanish'! Let's start over:

This September, as for the nine Septembres past, the traditional R/C contest was held in Guadalajara, State of Jalisco, in midwestern Mexico. It is always held on the three-day weekend closest to the 16th, when Mexico celebrates the start of the revolution that eventually gave it independence from Spain.

This "Tenth Guadalajara R/C Contest" was hosted by one of the two clubs in that city, the "Club de Aeromodelismo de Jalisco, R/C". President Jose Barrios and Contest Director Armando Camacho discovered early in the game that they had their hands full, as many more contestants appeared than were expected, probably twice as many as I had seen at early contests in that city.

Due to the large number of pre-registrations received, the decision was made early in the game to break up the contest into separate glider and power events. The two club fields, which are far enough in distance from each other for non-interference operation, were put into use. This turned out to be a good idea,

as at the power field, we took all three days of daylight for our events. This arrangement did have the disadvantage that we did not spend too much time with our glider flying friends.

Actually, Mexican modelers have a problem well-known here in the U.S., the long distances from one end of the country to the other. The bulk of the activity in recent years seemed to be centered along the central plateau of the country, with Mexico City in the center and Puebla and Guadalajara on the east and west. We knew of the activity in other parts of the country, but had never seen it, nor had the pleasure of meeting any of the gang. This year, the contest had more of a Nats flavor,



Dr. Victor Coria, Formula I winner, with his son. They are from Mexico City.



Teodoro Bogarin flew his impressive twin Webra 60 powered model which resembled the Chase C-123. The 18-1/2 lb. ship flew well.



Club President Jose Barrios (left), and CD Armando Camacho with their ladies, complete with MB stickers, at the banquet.



Top 3 pattern spots were won by 'Norteamericanos' Joe "Pepé" Bridi 1st, Phil Kraft 2nd, and Tony Bonetti 3rd.



as planes and people showed up from Culiacan, Tampico, Monterrey, and even as far as Matamoros, just cross the border from Brownsville, Texas.

And in spite of all the horror stories that we hear in this country about what happens to tourists in Mexico, a number of us here did not hesitate longer than the time required to decide what airplanes to build and what airplanes to get ready when we received the invitation. By various means and routes, it seems that all roads led to Guadalajara. Tony Bonetti came from Emerson, New Jersey, to join Phil Kraft and Marty Barry, who all flew down in one of Kraft Systems' airplanes. Cliff Rausin took time from his new Exportations Ltd. business to go Hughes Air West via Phoenix, and the Marez/Root racing team had the misfortune to pick Aeromexico from Tijuana. But more about that later.

From Texas, a number of glider guiders made their way south, spear-headed by Connie Jones, of Waco. It is interesting to note that all the power flyers came from California, and gliders flyers only came from Texas. It isn't 'cause they don't have



Jose Calderon (front right), owner of La Casa del Modelista (The House of the Modeler), Guadalajara, attended the banquet with his family and friends.



"Open" race winner, Gaston Mathelin, owner of Mathelin Modelismo, Mexico City.

good power flyers in Texas, and we do have one or two fair glider competitors here on the West Coast. Coincidence? Or maybe there is some message in there somewhere, which escapes me.

All of us out-of-towners approved the Club's selection of the contest headquarters, the "El Tapatio" Hotel. The origin of the word itself has been lost, but it is used to describe any citizen or product of Guadalajara. The hotel takes up all of a hill that must be at least a mile in circumference at the base, and at least 800 feet high. The office is at the bottom, and there is a winding road to different levels, with many separate buildings, some sunk down into the



Hugo Lopez, with his Sig Liberty Sport entry for the Scale event.

ground so the roof is level with the road, others perched on the side of the hill. The very top has the restaurants, pool complete with swim-up bar, a discotheque, and the ball-room where the banquet was held Saturday night.

The rooms themselves were huge, by U.S. standards, and had all the necessities as well as some real luxuries, such as a refrigerator completely stocked with beers, soft drinks, mixes; a bar with bottles of Chivas Regal, rum, gin, brandy and some liqueurs. The snack shelf had peanuts, cheeses, candy and other little goodies. For all this, with up to two children in the room, the rate was \$17 per day.

Continued on page 99



Youngest pattern flier, 10-year-old Gustavo Inman, Jr., with Gustavo Sr. calling.



Francisco Gonzales rounds the pylons, with Benjamin Castaneda calling the turns.



Ramon Virgilio, owner of Hobbylandia, Mexico City, enjoys a laugh with his caller.



The author with his model G-77. Georges says it's not meant to be a beauty prize winner, but has proven invaluable as a research and development aircraft. Note pushrod tubing taped to aluminum tube tail boom.

PHOTOS BY AUTHOR

MODERN AUTOGYROS

By GEORGES CHAULET . . . Filling in this month for our regular "rotor winger", John Tucker, the author, from Antony, France, discusses some of the mysteries of a relatively unknown modeling category.

• To the modeler who wants to enter the field of rotorcrafts, there are two solutions: the Helicopter and the Autogyro.

The first one, although perfected by now, remains complex and costly. The second is simple and cheap, but still in the experimental stages. Some comparison may be useful, to evaluate the main differences between the two formulas:

	HELICOPTER	AUTOGYRO
Rotor blades	articulated	no
Pitch change	yes	no
Cyclic control	yes	no
Clutch	yes	no
Reduction gear	yes	no
Transmissions	yes	no
Tail rotor	yes	no
Servos	4	2
Weight	12 lbs.	6 lbs.
Cost	\$300	\$50

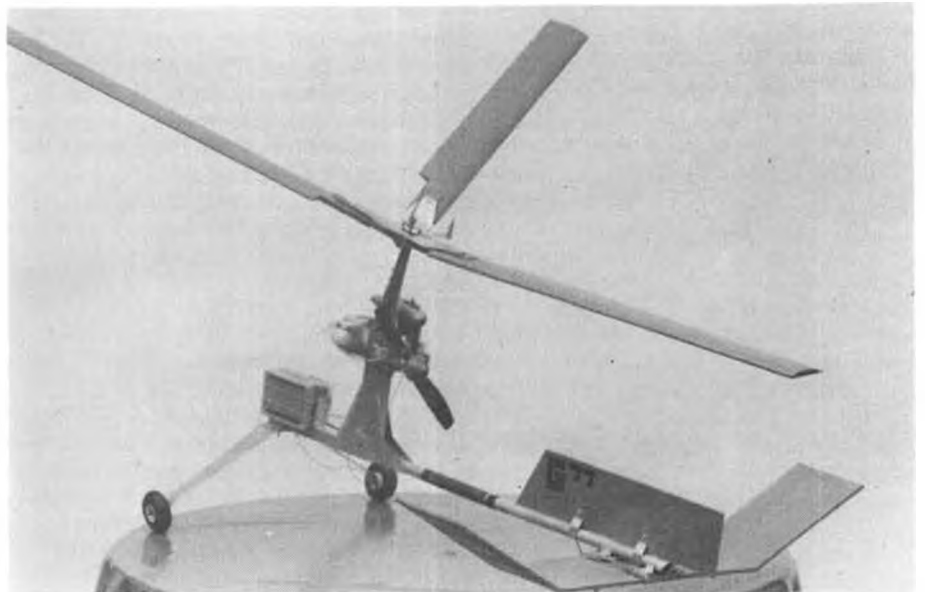
Being so simple, why does the Autogyro never appear on the fields? Because it is extremely difficult to master (A one-wheel cycle is quite simple, too, but except in the circus, who knows how to ride it?).

But let's have a look to the basic principle of the Autogyro. It is a kind of airplane in which the lift comes from a rotor. This rotor is not con-

nected to the engine; it's freewheeling, the turning of the blades depending upon *autorotation*. This is somewhat different from *windmilling*. In a windmilling rotor, the blades are adjusted to a negative angle. When you launch the rotor, it starts turning immediately. An autorotating rotor does not start by itself. It

needs an initial push, just like the Benson gyrocopters need a pre-rotator to start. (Fig. 1)

The autorotation is due to the fact that the resultant force R on the airfoil pulls forward the blade: this is exactly the same force which makes a glider go ahead, even when the wing is settled at 0° incidence.



The G-77 at an earlier stage than above. Foam cabin has not been installed, and rotor blades have dihedral (conicity) which was proved useless.

WINDMILLING

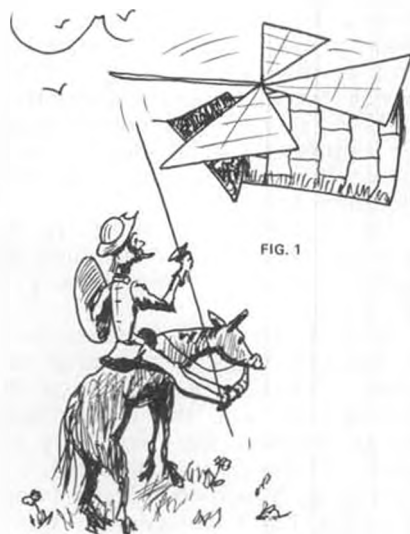


FIG. 1

(Fig. 2)

But to increase the lift, the rotor itself needs some incidence. Experiments, and the study of a model Autogyro force diagram shows that the best angle is around 12°. An increased angle would tend to make the model stall, while a smaller angle may cause a lack of lift and a dive.

THE MAIN PROBLEM . . . STABILITY

The modelers who intend to fly an Autogyro always face the same difficulties. They would start the engine, launch the model. It would then bank to the left side and go down



Close-up of GYROTOR head. Note rubber-driven prerotor. Useful for takeoffs.

very quickly to our Mother Earth. Which force tends to roll the model? This force is well-known; it's the engine torque. The propeller turns to the right, and the fuselage wants to turn in the opposite direction. On an airplane, this is cancelled by the dihedral of the wing. On a gyro, the rotor has no stabilizing effect. So, what can be done?

Is it to use a rotor with conicity, that is a dihedral of the blades? This has absolutely no effect upon instability. A better way is to place vanes or "winglets" just behind the prop, in the airflow. They counteract the torque, but don't look pretty. A large Vee tail . . . or butterfly . . . can be added. In 1973, I flew a large R/C gyro (the first successful in Europe), which featured these devices (Fig. 3). But I did not much like the huge tail, and I looked for something smaller.

And it's only after 7 years of research, several dozens of models built, and many broken blades, that I came to a solution; the Autogyro which is stable without stabilizing devices, only with a good combination of the surfaces, weights, pitches, etc.

It must be noticed that the twin lateral rotor layout provides a perfect stability, as it was used on the most remarkable FW-60 built by Skip Ruff (see **MB** April 1975). But the problem is far more complex with the monorotor.

Another idea which may come to the autogyrist is the rotor control. In theory, a cyclic pitch would allow a tilting of the rotor plane. But until now, that system has not been successful on a gyro. Nor the see-saw system, nor the Hilleromatic paddles. The commercial German Helix model autogyro features such a system, but as the rotor RPM is very low, the paddles have but poor efficiency. Eventually, the Helix is now sold with a Rogallo wing. . .

So, how can we get rid of the

AUTOROTATION

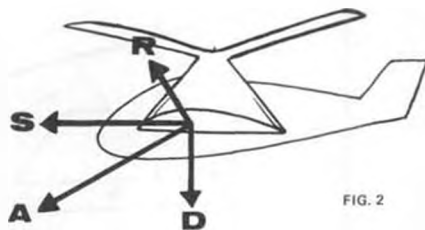


FIG. 2

D = Diving (Descent Speed)

S = Peripheral Speed

A = Relative Airflow

R = Resultant of Lift

torque? By using an equal and opposite force. And here comes the notion of the *differential lift*. One knows that in a helicopter, the advancing blade provides more lift than the retreating one (The relative airflow adds lift to the advancing blades, which rises . . . and takes away lift from the retreating, which falls). Well, here we have the difference in lateral forces which permit to cancel the torque. If the model wants to bank to the left, we just need an advancing blade on this side: the rotor must turn clockwise.

But is the torque well balanced by this difference in lift? Yes. of course, the engine torque varies more or less according to the RPM, and the differential lift varies with the speed of the model. But wholly, the problem is solved. We just have to add a few adjustments with the lateral surfaces, to improve that precious stability.

GENERAL LAYOUT

Although I tried innumerable designs (tandem, twin-boom fuselage, contra-rotating rotors, rocket propulsion, tail-pusher prop, and so on. . .) I went back to the classical layouts, that is the Cierva configuration, with a tractive prop, and the Bensen, with



FIG. 3

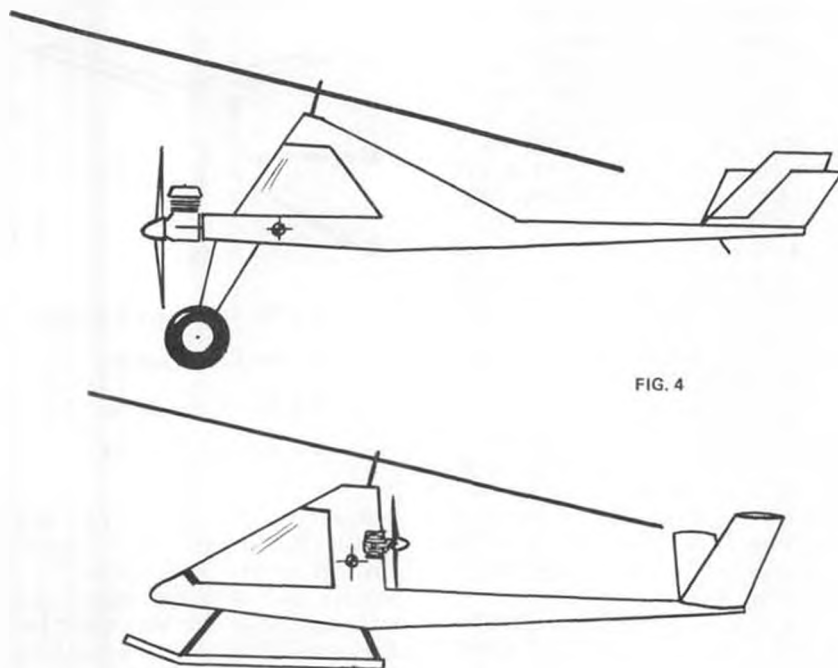


FIG. 4

a pushing prop just behind the rotor mast. (Fig. 4)

The Spanish engineer, Juan de la Cierva, is the inventor of the Autogyro (from the Greek words which mean self-turning). As the letter Y did not exist in Spanish, this was written Autogiro, which is a trademark. Around 1920, he was looking for a flying machine which would avoid the stall. (In fact, the Autogyro does not avoid the danger of stall, but in case of engine failure, it comes gently down to the ground, which is of course a great factor of safety.)

The Cierva autogyro was but a classical airplane, to which a rotor had been added. During the first years of the gyro tests and flights, the machine was unstable (the roll effect we have seen), and wings were

necessary. Then a tilting rotor was fitted, and the wings removed. We can thus consider that a *true* autogyro does not need wings to obtain its stability.

Nevertheless, a model can hardly conform to a full size machine, because it needs a longer tail, out of the rotor disc. With a scale fuselage, the model would have a tendency to stall. The tailplane provides some lift, which maintains the model level. So, a near-to-scale Cierva, Kellett or Pitcairn model should have a small rotor in front of the rudders, instead of a large one above.

The Bensen layout is the one to which I have stuck with most persistence. Many times, after looking at the grass scattered with broken blades, I had the desire to let these

damned rotating machines *aller au Diable!* (Go the the Devil!) But the next week, the device had a new rotor, a new prop, a new tailplane and a new undercarriage. Every wreck brought more information, and the "secrets" of a correct layout are surprisingly small. But it is well-known that it's very difficult to make the things simple!

Now, to sum up, here are the general rules which may guide the modeler who may intend the gyro adventure:

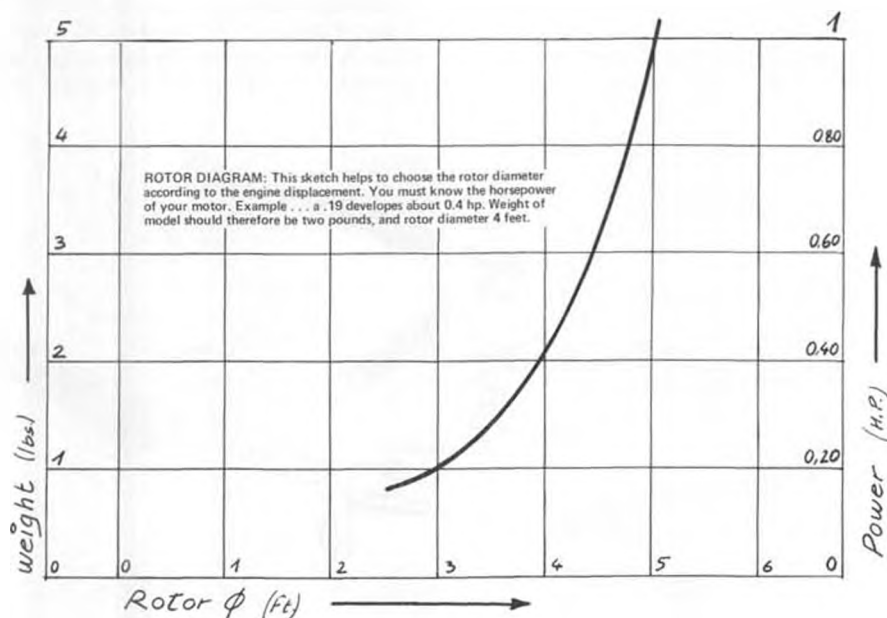
ROTOR: Use 3 or 4 blades, *never* 2. Aerofoil: Clark Y or similar (flat underside). Of course, I tried the symmetrical and the underchambered aerofoils, but eventually the Clark Y is the simplest to make. Use light balsa. A hardwood leading edge is useful, but not necessary. Cover with Monokote, or similar. Blades are fitted at 0°, which means that the whole rotor is flat. Axis is 12° backward. (The whole rotor is inclined at 12° positive. Individual blades have 0° incidence to the plane of rotation.)

FUSELAGE: A metallic fuselage made of dural is useful, if you wish to make adjustments . . . or if it is your first autogyro. It is able to stand hard shocks. But when you gain some skill, you may turn to a classical balsa structure. Take care that the tail must be kept light (this is true for ALL flying machines). The yaw stability is better if there is some lateral surface in front of the rotor. So, a helicopter-like cabin is quite adequate. Landing skis can be fitted, because taking off the grass is almost impossible: I always hand launch my models. If you have the use of a concrete runway, then you may have the chance to see your model run quickly enough to take off.

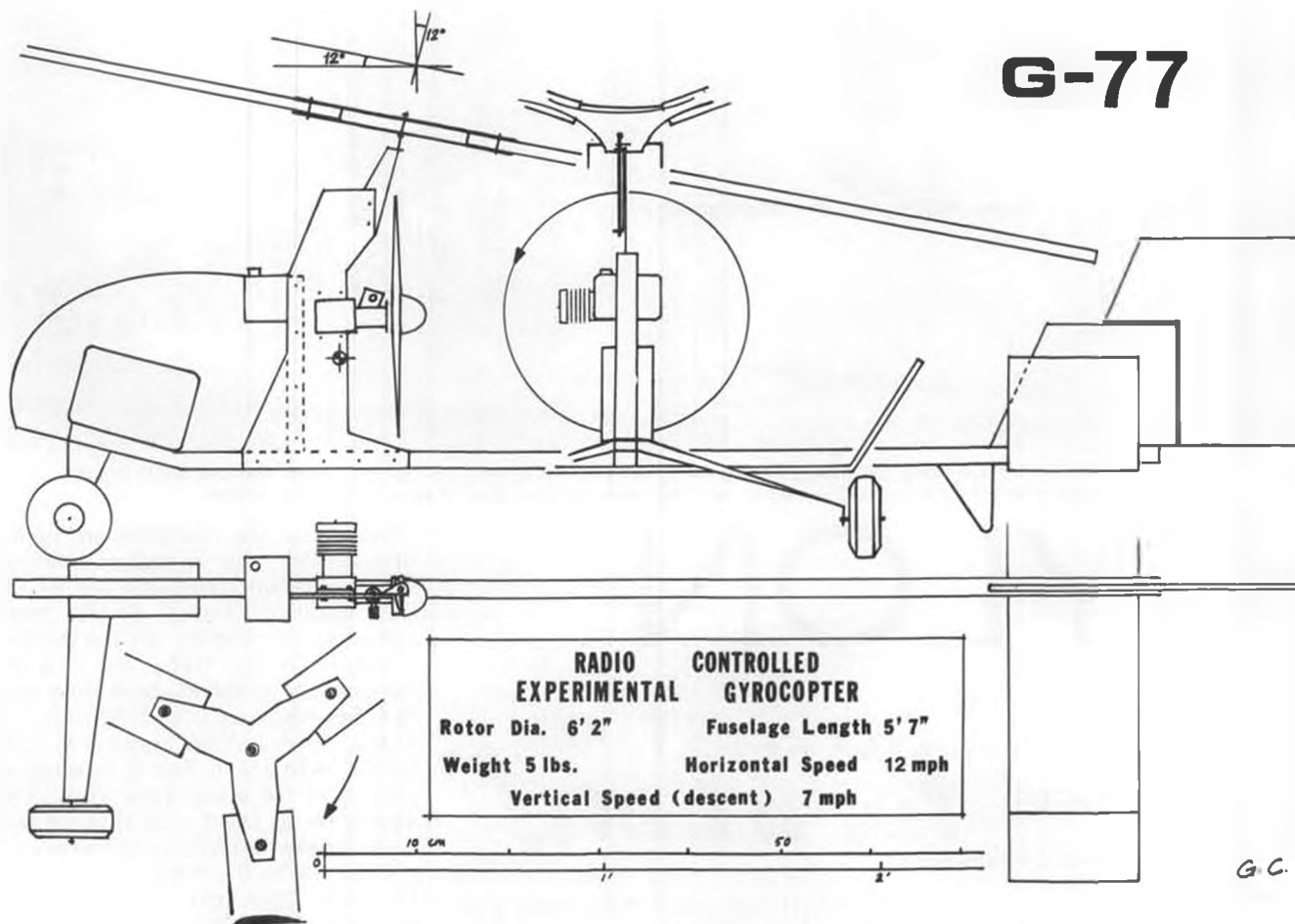
TAILPLANE: A butterfly tailplane is quite good, or the design used in the Gyrotor, with inclined fins. Aerofoil is flat or symmetrical, NOT CURVED! (Such a profile could bring longitudinal instability.)

ENGINE: The drag of a rotor is extremely high (3 to 4 times that of a wing), so a powerful engine is necessary. Use a prop with low pitch.

CG LOCATION: This is the point which caused the most perspiration (but, as Edison said, "It's 99% of the genius, with 1% inspiration." I sweated so much, that I'm now certainly a genius!!!). In fact, the answer was extremely simple; the Center of Gravity is located on the rotor axis. This means that when you hold the model by the rotor head, *the rotor is horizontal, and the fuselage is 12° nose-down.* You may even add one ounce or two in front of the cabin, to add stability. But the CG must



G-77



NEVER be aft of the rotor axis. The propeller axis is slightly over the CG, but not under. In the case of the Cierva layout, it may happen that the prop axis tends to be under the CG. The remedy will then be a nose-down tilting of the engine.

CONTROLS: Just the motor and the rudder. Why not fit an elevator? It is not necessary. I consider it as an extra feature, an optional gadget. You may put one if you wish. . .

Of course, an elevator would be necessary for the one who would intend to do aerobatics with a gyro. But for me, NO! I spent too much time trying to stabilize this kind of model. Now I don't want it to roll over, even willingly. . .

FLIGHTS: Calm day, or windy. If the air is still, you kick the rotor to start it turning, then run for 15 or 20 yards and you can throw the model. If there is some wind, you start the rotor and you don't even need to run. The model will fly by itself. But if the wind is strong, you had better take no chance and keep the gyro home. Just like a blimp, it does not like the high winds. When the engine is out of gas, you have nothing to do but observe the model descend gently. An engine cut can be catastrophic on a 'copter, but on a gyro, it has absolutely no im-

portance. (Provided it stops when the gyro is over an unobstructed area. Once in auto-rotation, you have no control over direction. The only direction is straight down! wcn)

From the basic airframe made of 3/64 wall thickness dural tubes used on the GYROTOR, many alterations were made. The model was fitted with several cabins, wheels, rotors and tailplanes. The engine has not changed; it's a .60 ENYA classic, running a Tornado 12 x 4, on which the tips are slightly cut. The prop is a normal tractor, but the engine is running reverse. This is obtained by turning the front crankcase cover 90°. Thus, the cylinder is horizontal to the right side, and the air intake is vertical. The silencer was tapped in front, and a hole was made in the aft part. The motor is bolted to a triangular frame made of 1/16 dural. Fuel supply is from a 100cc tank.

The receiver, servos and battery are sheltered in a plastic box. Over this box is a profile foam cabin (not very nice, but easy to change after a shock!). The big wheels are located in front of the model to bring the C.G. forward. All fittings, except a few bolts, are made with pop rivets.

The blades are cut from 7/16 thick balsa, reinforced at the root with plywood, and bolted to the dural rotor

head. Shaft is 5/32 steel, with a flat ball bearing on top. You can refer to the photos of the GYROTOR as well as the G-77 for the rotor head, because they are the same.

The tailplane is made of soft 11/32 balsa, as well as the rudder.

This surface is set at 0° incidence, as well as the thrust line. You will notice, too, that the engine has no lateral tilt. It is exactly pushing along the fuselage line. All the researches I did these last years tended to reach these simple trimmings.

This description of the G-77 may appear exceptionally simple. My wish is not that any modeler builds exactly the same model, but, that the one who has some Spirit of Research have some basic elements to draw his own scrap Autogyro, with reasonable chances of success. You have an expression which is "to debug", or "debugging". I suppose this means something like "clearing the things". Right? Well, I hope I did something to debug the Autogyro problems, and avoid you to break several hundreds of rotor blades. (In fact, I started to build helicopters in 1949, and I broke several THOUSANDS of blades.)

(Fortunately we have been able to talk Georges into a complete construction

Continued on page 82



Start of a Formula I race at the 1977 Nationals. Kent Nagy has just launched Bob (alias "Tom") Brogdon's Bandit, and Bob Smith is just letting go of NMPRA President Ron Schorr's model. Tight safety security prevented the taking of very many action photos.

PYLON



**"GO FAST AND
Turn Left!"**

By JIM GAGER

PHOTOS BY AUTHOR UNLESS NOTED

Hi again,

Hope you didn't think I deserted you last month, but on the last day of the Nats I suffered a ruptured cervical disc in the spine and had to be hospitalized for surgery. For two weeks before the surgery, my left arm was partially paralyzed and would have remained so if the operation was not a success. Funny the things that run through one's mind at times like this, but I found myself wondering how hard it would be to learn to fly single stick (I now fly Mode I). Such dedication . . . on my bed of pain, using every last shred of my waning strength to agonize over my future in racing. Wonder why my wife kept messing with the traction

weights? One good thing came from the whole episode, and that's when the neurosurgeon who worked on me said that part of my recovery depended on an exercise program to bring back the strength and coordination to the arm muscles. I suggested building model airplanes . . . and he said that was the best medicine. Who said there's no justice? So, by the time you read this, I should be back to flying and would like to thank those of you who wrote to wish me a speedy recovery. It sure helped brighten my days.

We've received the Prather Products Q-M "Little Toni" kit and hope to have a building review for the next issue. For now, just be

advised that the materials are of the first quality, the fiberglass fuselage finish and workmanship are of the best quality, and it is the most complete kit currently on the market.

While at the Nats, we had the opportunity to spend some time with Bob Seigelkoff, of C.B. Enterprises, at 21658 Cloud Way, Hayward, California 94545, and Bob is sending us one of his 1/4 scale "Little Toni" kits. We hope to bring you that kit and flight review the following month.

Now, on to the Nats. . .
Riverside, California
August 6-14, 1977:

Our early arrival on Saturday, August 6, gave us the opportunity to test out our airplanes at one of the local fields that had been designated as a testing site. The winds and dust were the first preview of some of the disasters that were to befall many of the racing people this week.

The Chamber of Commerce went all out to welcome the Nats, and did much to smooth the way by providing small tokens of welcome to everyone and providing many maps and guides to various restaurants and sights to see. It's too bad the turnout of competitors wasn't better so as to make their efforts more worthwhile.



Bob Violet with his "Polcat". Had fastest time (1:15.6) and "Best Form I" trophy.



Tom Christopher and his Prather Toni. Had same paint job on Quarter Midget version.



Mel Santmyers and his Li'l Cobra placed 11th in QM. Ship is R/C Etc. kit.



Jim Jensen and his Prather Toni placed 19th. Also voted No. 1 in handicapping judging.

However, they were surely appreciated by those who did attend.

Riverside itself is a super town with very beautiful architecture and landscaping; the only thing we missed was green grass. The one thing Riverside has an excess of is SMOG . . . it apparently blows out from L.A. and is trapped in by the picturesque mountains that surround Riverside. By the 4th day there, we were very aware of the denseness of the smog and the effects it has on one's lungs and breathing ability.

We've mentioned the low competitor turnout, which we understand as unofficially pegged at approximately 2400 individual event entrants. Comparing that to the 1976 Nats at Dayton, Ohio, which had in excess of 14,000 individual event entrants, it almost seemed like a big weekend contest. The fact that free flight and R/C sailplanes were being flown at a San Jacinto Valley site 12 miles away, and indoor free flight was being flown even farther away at Norton Air Base, made the main Nats site seem even less well attended. The low entries carried over into our racing categories, with only 48 entrants showing up for Q-M in an area that is supposed to be the hotbed of pylon racing. Admittedly almost no one from the Northeast section of the country showed up, a few fliers from the Southeast came, and only a few from the Midwest came. Seems it must be farther for the people East of the Mississippi to head out West than it is for the people West of the Mississippi to head to the Midwest or East.

Q-M racing got off to a bad start when it became apparent at the pre-race pilots' meeting that the C.D., Mike Atzei, hadn't read the rule book on Q-M racing, and was apparently not going to accept any suggestions or criticisms of the way he intended to run the races. Please don't con-



Bob Smith, 5th place Formula I, with his Jeff "The Mouth" Bertken Minnow.



Bill Pries was one of few from Mid-West to race. Placed 9th with Prather Toni.

sider this an attack on Mike, as originally he was not to be the Q-M C.D. . . . the original man to be C.D. couldn't or wouldn't attend the contest. Many other competent C.D.'s were contacted and asked to work the Nats, but all refused for various reasons. Mike, in an effort to be a nice guy and make things run smoothly, volunteered to C.D. the whole pylon racing activity. It's too

bad it almost backfired on him. Again, this isn't an attack on Mike, but aimed at those who are responsible for filling these very important jobs with competent people to perform these jobs and refused to do so. Remember, if you get something out of this sport you're going to have to put as much or more back into it or you're not carrying your share of the burden. In case you don't read any



(From l to r): Kent Nogy, Eloy Marez, Don Rice, and Gordon Van Tighen start engines for a Quarter Midget heat. Hard hats required in QM, but not in Form I . . . Weird!!



The "Four-Way Fly-Off" gang (l to r top): Clay/Moncrief team, Dave Pearce, Jim Moorehead. (l to r btm.): Bob Smith, Whit Stockwell, Dave Shadel, and Jim Shinohara.



Dave Shadel, 8th, with, yes, another Prather Toni, also Prather-treated power.



Wow! It's not a Prather Toni!! It's Bob Root and his original "Stinger". May be kitted.



BOB Brogdon, Marietta, Ga., with his "Bandit" No. 1 at Bakersfield, 16th at Nats.



Frank Szekula kept things moving and organized in the ready area for 6 full days. Cool.



Jim Moorhead, Atlanta, Ga., with his 3rd place Pro Model Prods. Toni by Weesner.

further, let us say that Mike did a fine job of running Formula 1, an event in which he participates, and with which he is very familiar.

The first several heats set the tone for the next couple of days of racing. In the second heat of the day, Fred Reese crashed when his radio failed, Bill Bell cut out and Mike Helsel chased George Parks across the finish line. Fortunately there weren't an overabundance of crashes . . . just enough over the two days to keep

what few spectators that were there interested to see which airplane would be next. Three rounds were flown each day, and at the end of the first day, Dave Robertson and Terry Prather were tied for first with 11-1/2 points each. Gail Jacobson and Jim Moorehead each had 11 points and Lee Helsel was close behind with 10. Scattered closely behind were many others within easy striking range, with 9-1/2 or 9 points each.

On the second day of racing, an idle

check round was held, and it proved the undoing of many of the contestants. So much so that if it had been possible to hold a legal vote on dropping the idle rule, I'm sure it would have been voted out.

The idle check round had passed out a number of zeroes, and flame-outs and crashes contributed to the standings after 6 full rounds of racing. Jim Moorehead and George Parks were now tied in 1st place with 22 points each; Prather was close behind with 21 points and Lee Helsel had 20. Dave Robertson had dropped back with only 19-1/2, Bob Root was still in contention with 19 and Mel Santmyers was still in the picture with 18-1/2 pts.

The third and final day of Q-M racing saw many changes take place, again due to flame-outs and poorly idling engines. Flyoffs were necessary to resolve many of the final placings. Yours truly flew off against Charles Gastott for 16th place, and promptly cut out within 6 laps; Dave Pearce and Bill Hager flew off for 14th place, and Pearce was in the lead from lap one and received a cut, thereby giving the race to Hager. The flyoff for 6th place

Continued on page 98



Some of the key "figures" who juggled key figures for six days (l to r): Karen Baptist, Sharon Henderson, and Janet Gilman. Thanks, gals!!



The Clay/Moncrief team come on from Ft. Worth, Texas to place 7th. Prather Toni with Terry Tigre for power.



This .020 Replica "Guff", by Jerry Wagaman, Falls Church, Virginia, is a great flier. Think there's enough prop clearance?



PLUG SPARKS

By JOHN POND

• Howdja like to go to a contest where the temperature is in the upper seventies, there's a gentle sea breeze, and beautiful wood scenery is all about? Yer dern tooting (with apologies to Gabby Hayes) ya would!

The Santa Cruz Redwood Flyers put on a beautiful contest in a large paved area completely surrounded by 80 ft. trees. Surprisingly, only one model got hung up in a tree, and that was a single Channel .020 powered Comet Clipper belonging to "Buffalo Roy" Edwards. Roy has the system for landing off the field!

This is the kind of contest the writer thoroughly enjoys. Take a flight, snap some pictures, take another flight, have lunch, take another flight, have a beer . . . in short, this was one of the most relaxing contests, although six official flights were taken.

Full credit for a well run contest should go to Whitey Pritchard (Santa Cruz R/C Bees glider fame) and to Bill Brenchly, for excellent organization. The trophies, at sixty bucks apiece, were the most novel the columnist has seen in years. Mounted on a pedestal were beautiful stainless steel frameworks of a Gladiator,

Record Hound, and Thermal Thumber. These were absolutely spectacular for workmanship.

With such excellent trophies, the Santa Cruz boys only lost \$30.00 despite the terrific outlay of money. For their first O/T contest, they serve notice that their meets are well worth attending.

One of the highlights of the day was the loss of the full floating

stabilizers on Ted Kafer's Flamingo, when it looped in the sun. Shades of Pond's Scram as the tails slowly fluttered to the ground, the Flamingo promptly flew inverted and glided all the way down. Just as it seemed it was going to land safely in a large bush, the model struck the antenna of a nearby RV vehicle, which neatly chopped the wing in half. Model has since been repaired and once again flies and glides something terrific!

Ed Solenberger made it well worth his 100 mile plus trip from Santa Rosa by winning two events. Don Bekins and son, Lawrence, made things interesting for Ed by crowding him for first.

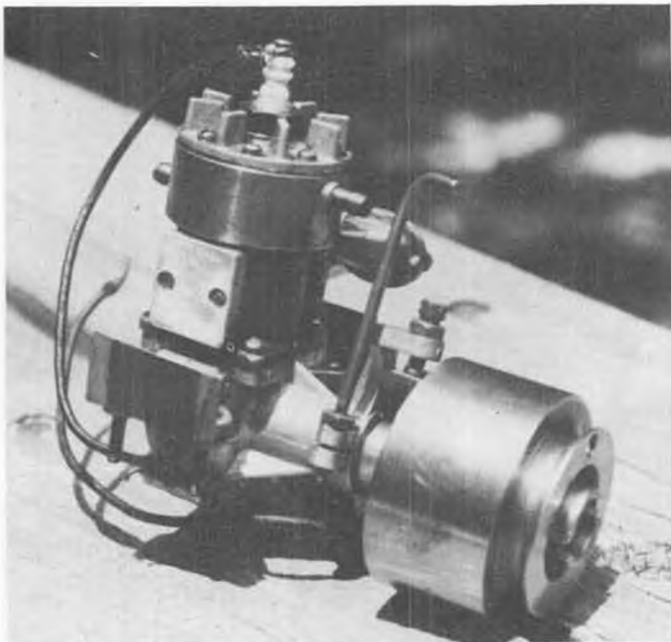
Results looked something like this:

LIMITED ENGINE RUN

1. Ed Solenberger 892 (Challenger)



Jack Hill, Yonkers, New York, is building a Shereshaw XP-3 (Jan. '77 MB, \$8.00). Nice little weekend project!! Photo by Mark Wallach.



Now we've seen everything! Water-cooled GHQ, by Frank Clayton. Operated in a boat built by Dick Padgham, Ft. Worth, Texas.



Bob Knutson, Austin, Minn., stretched Sailplane main wing, clipped Zipper front wing, retract gear, parachute DT, flew great in 1942.

2. Lawrence Bekins 733 (Playboy)
3. Don Bekins 700 (Playboy)
4. Karl Tulp 477 (Playboy)
5. Paul Forrette 405 (Long)
6. John Pond 387 (Bombshell)

TEXACO

1. Don Bekins 11:20 (Lanzo)
2. Loren Schmidt 8:33 (Dallaire)
3. R. Von Kinsky 8:22 (Ehling)
4. B. Brenchly 6:35 (Cloud Cruiser)
5. John Pond 6:27 (Lanzo Stick)
6. T. Myers 3:37 (Long)

.020 REPLICAS

1. Ed Solenberger (Challenger)
2. Don Bekins (Playboy)

ENGINE OF THE MONTH

When the Comet Model Airplane Co. came out with the Comet 35 engine to complement its Zipper, Fred Megow was not to be outdone and introduced a new engine called the Megow 199, made specially for use in his Megow Ranger.

When the writer was the first on his block to procure one of these engines, he received a definite shock on opening the box. The Megow en-

gine appeared to be quite lightly made, giving the appearance of weakness throughout the cylinder and crankcase.

Fred Megow really took on some tough competition with his engine, as there were already two well-entrenched .19 motors: Bantam and Ohlsson. After the initial sales, that found the modelers comparing performances, the engine was quickly abandoned as sales dropped to a small trickle.

The initial impression one gets of the Megow 19 is that every corner that could be cut, was done in the interests of a cheap engine. The exhaust port was simply milled in the side of the cylinder and no exhaust stack provided. The needle valve, reminiscent of the Brown Jr. Model D "nail valve", was also lacking in fine control.

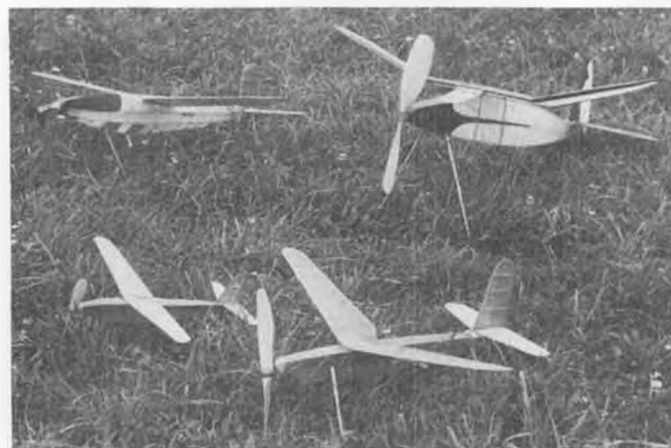
On the plus side of things, the timer was enclosed ala Bantam/Ohlsson style. This was surprising to the new owner, as exposed type timer

points could be made for less. The bypass was a simple bulge, welded to cylinder to provide for full transfer from the crankcase.

The original brochures of the engine claimed speeds of 2,000 to 10,000, but the writer was never able to realize better than 8,000 rpm. The engine was extremely light, weighing only 3 ounces bare. A very light-weight Ranger could be built with this motor. However, the engine was never that reliable in starting characteristics.

For those interested in the technical details of the motor, the overall height was 3 inches with a 1-3/4 inch width and length of 3-3/4 inches. A transparent plastic tank was provided, along with an extra-long spark advance arm, made, of course, from stamped metal.

Specifications of the engine revealed a bore of 5/8 inch (seems like everyone used this size!) with a stroke of 5/8. The recommended propeller was a 9 inch dia. by 3 inch



Group of rubber oldies by Ove Pettersson, Sweden. Clockwise from the Korda, it's an original, a Triumph, and a Merlu.



Walt Parker, Salinas, California, with his Zipper, at Taft, California.

pitch. Not counting the propeller, the entire engine weighed 6-1/2 ounces. Stripped of the tank, bare weight was three ounces, as mentioned previously.

In summary, one could say, here was an attempt to produce a light-weight, cheap engine; but the quality featured in competing engines was entirely missing in this engine. For that reason, Megow 199 engines have turned out to be quite a collector's item.

ROUND-ROBIN AT LAST!

With interest constantly growing in California (especially the northern section), it was no great surprise to the columnist that the predicted round-robin has come to pass.

With SAM 21 (San Francisco Bay Area), SAM 27 (Marin County), and SAM 30 (Sacramento Valley) joining forces, a definite full schedule of old-timer contests is to be pro-rated between the three clubs.

Now, instead of a monthly contest, each club can sponsor a quarterly meet with the knowledge that a good turnout from all clubs will be available to defray the expenses of trophies and merchandise.

As it stands now in 1977, there were just too many small contests. This should rectify the situation and allow other clubs, such as the PCC and the Santa Cruz Flyers, to schedule around these meets, or better yet, integrate into the schedule.

(Interesting . . . that the old-timers should be the first to realize, and also attempt a solution, to the growing problem . . . too many closely spaced contests killing overall attendance. wcn)

This round-robin type of competition will allow for the establishment of more perpetual trophies and club awards. As it stands now, only one perpetual trophy, the SAM 21 .020 Replica, will be awarded this year. However, lucky winners will win lotsa prizes, including a first place Cannon set. Only goes to prove what can be done with a concerted cooperative action!

WEST COAST SAM CHAMPS

Well, it could happen, as it all started between talks with Otto Bernhardt and the columnist about staging a two- or three-day meet between all the present O/T R/C clubs in California; SAM 21 (San Francisco Bay Area), SAM 26 (Santa Maria), SAM 27 (Santa Rosa), SAM 30 (Marysville), and the new Los Angeles Club, SAM 49.

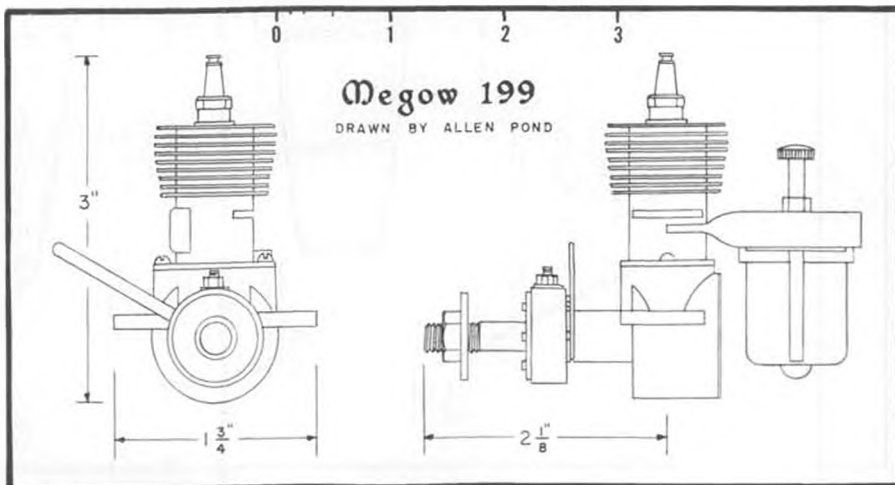
During recent talks at the big Fresno F/F Annual, Bernhardt further proposed we make the big meet even bigger by staging free flight events, and making it a California, or better yet, a West Coast SAM Champs, as the regular SAM Champs will not be back for four years, according to



Our own John "Daddy Warbucks" Pond, with his much-flown Lanzo R/C Stick. Power is a Merco 60 converted to ignition.



Paul Cherubini's son, Jon, holds a rare but clean looking "Snipe" from Flying Aces magazine.





The famous "it's going thataway" photo as originally published in *Flying Aces* magazine. All pics are new prints of original negatives.

OLD TIMER Model of the Month

Designed by: Earl Stahl
 Drawn by: Al Patterson
 Text by: Bill Northrop

● Several months ago, we ran a picture of a couple of Earl Stahl "Hurricanes," and mentioned that we would publish the plans in a future issue. A short time later, we received a letter from Earl, in which he enclosed new prints from the original photos taken for the construction article first published in the July 1940 issue of *Flying Aces* magazine. One is that famous shot of Earl, seemingly pointing in the direction the Hurricane will fly, as he launches it.

Earl Stahl is primarily known for his extremely well designed and built rubber powered scale ships. Flyline Models has just recently started to kit some of these. However, his sport designs, the "Hi-Climber," published in August 1939 *Flying Aces*, and the



Earl Stahl's HURRICANE

PHOTOS BY EARL STAHL

"Hurricane," have been outstandingly popular over the years.

When we built ours, back in early 1941, we chose to keep the complete fuselage, including the small tail

piece, in one unit, leaving the bottom panel just ahead of the rear dowel open, for access to the rubber motor. Earl cut the tail piece off, using rubber

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rotation.

The possibility of using the Fresno field, which seems to be centrally located from all clubs, was discussed with the local Fresno GMA leaders. It appears that an O/T F/F Radio Control meet is a very definite possibility for the three-day Memorial Day holiday, as none of their activities interfere with the U.S. Free Flight Champs at Taft.

If it is desired to stage an O/T free flight meet, it would appear another date would have to be worked up. Looks like a big business meeting coming up at the Pond Commemorative in Santa Maria.

BROWN JR. ONLY CONTEST

Just received the latest news from J.G. "Bud" McNorgan, former SAM Director, who is again getting very active in old-time modeling. His latest idea, models powered with Brown Jr. motors only, is a novel approach to a Texaco-type event.

McNorgan, who is a real promoter, has commitments from Bill Northrop for three trophies, Brodbeck for a "paint finish" trophy, three kits from Gene Wallock of P&W, and the columnist can feel the bite coming now!

The event will be held in conjunction with the SCAMPS Texaco Contest, which now runs only in the early morning hours. According to

that, this event would start sometime after 9 a.m.

Rules for this interesting contest shape up something like this:

(1) 1/8 ounce fuel per pound of airplane.

(2) Design cutoff date must be pre-1939.

(3) All flights ROG.

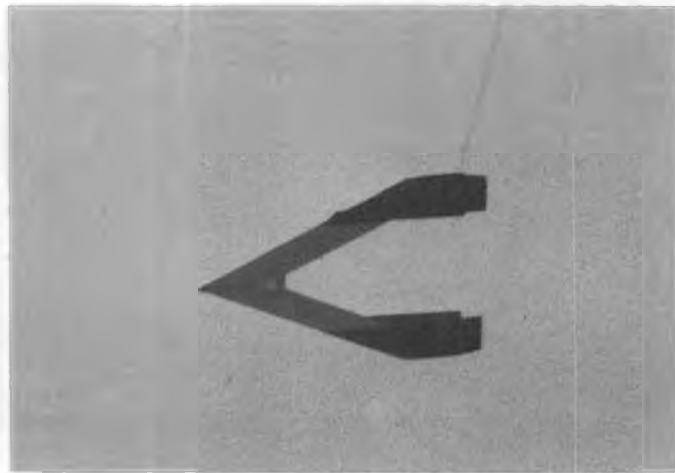
(4) Three-flight total. No flight time limits. One minute or less type flight will be considered a delayed flight.

(5) *Fly by rounds.* Contestants' names are drawn from a box for position and *fly when called.* No thermal picking.

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Dan Kreigh, Riverside, Calif., built this from left-over Gryphon wings. V-tail is for pitch only, ailerons handle the turns.



Unusual 45 degree sweep on this wing produced a flying "V" by Chet Herbert, Anaheim, Calif. Separate servo for each elevon.

R/C SOARING

by Dr. LARRY FOGEL.

PHOTOS BY AUTHOR

• Sure, I enjoy the challenge of competition and the thrill of trying for every point in whatever the assigned task may be. But nowadays, our contests are becoming too popular. There are so many contestants that each round takes three or four hours. You get to fly three or four times a day and spend 95 percent of your time helping others or simply watching the action.

For example, 162 pilots signed up for the recent AMA/NSS Nats. Last week, I attended the Los Angeles portion of the LSF contest. There I matched my skill against 96 other contestants. I guess I'm more oriented to participator than spectator sports. Simply stated, I love to fly; so after realizing the delays involved in this "local meet," I decided to drop out.

I drove some 20 miles to Estancia High School, where there's a good

flying field. (In Costa Mesa, about 2 miles from MB's office wcn) There, the local traffic was heavier than usual. Police were guarding the parking lot and I had to do some fast talking to get in. It seems a major bicycle race was being held at the high school. Those interested in that sport had come from all over. A carnival atmosphere prevailed. My ticket of admission was showing my sailplane and convincing the cop that this was not a disguised bicycle.

I went over to the grassy field north of the school where I found a few other "non-competitors" setting up an electric winch. I added my Legionair and Windlord to the array of an Aquila XL, a Super Quester, and some original designs. They all looked good to me.

Surveying the scene before launch, I noted a full-scale hot air balloon rising on tether about 100 yards

downwind. The sign on its side said, "Del Taco" . . . an advertising gimmick, no doubt. The propane burner would light up for awhile to provide just enough heat to maintain buoyancy and overcome the loss of hot air, which is continually lost by such a balloon.

Hey, there's a man-made thermal!

On my first flight, I slipped off the winch and headed directly toward the balloon. There was some lift while going downwind, probably due to the low school building and many parked cars, then there it was . . . you could circle in it and go up, up, up . . . leveling off only when you got sufficiently bored with the circling. At that height, you can cruise the horizon in a great circle, just to explore what's happening in the air. You then return to the man-made thermal for another lift. I'm sorry that only a few of us were there to share this unusual experience.

At midday, the wind came up (as expected). First our thermal was bent downwind. Then it became less trustworthy, and finally turned into turbulence. I was told that this same wind would provide good ridge lift at another soaring site only about a half a mile away. No point in taking a chance on two planes attempting to share the same frequency, so we shut down operations.

I returned to the LSF meet to watch the proceedings. The Dominguez Hill College provides a large grassy field bordered on two sides by high-tension wires. On one side they are supported by 100-foot towers, while on the other they are lower . . . only 50 to 60 feet high, and much closer to the landing circles. There's a real challenge here.

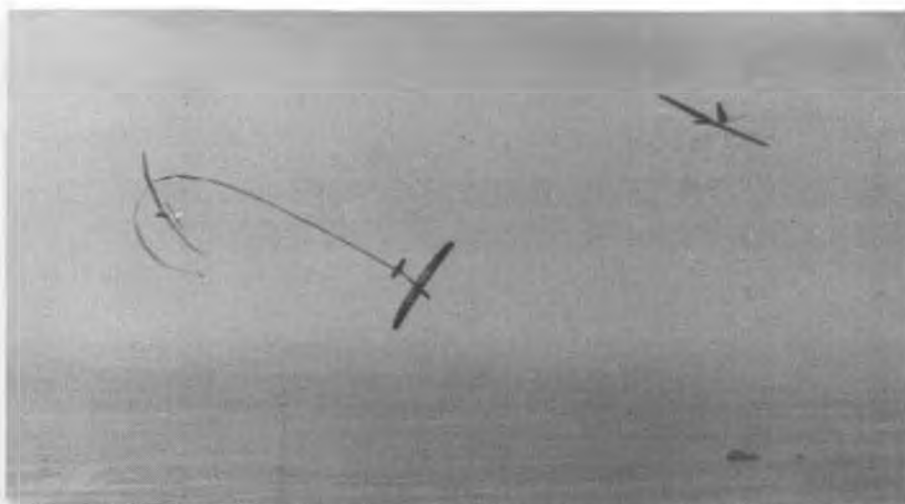
You find a thermal and track it



Chet Herbert and his "flying carpenter's square". No mixer is used, and xmitter is rotated 45 degrees . . . Huh?



Al Bendatt modified his Wanderer for increased maneuverability.



Kreigh's V-tail and an unidentified polyhedral glider mix it up with Frank Cox's Hawk, which is towing the ribbon. Scene is at Torrey Pines, just north of San Diego, Calif.

downwind. Finally, you leave this "security" to return to the landing circles on the seven minutes. That's when the wires appear larger than life. There's a steeplechase. Some pilots go over, others go under the wires. Some are caught. Luckily there's a fire station nearby. That afternoon they performed the service of retrieving an entrapped plane "free of charge."

Another "penetration" deserves more detailed description. Howard Sears was flying an Olympic fuselage coupled to a Winddrifter wing. Returning toward the launch his plane "landed" on one of the lower wires . . . about 20 feet above ground. The plane then slipped off and dropped nose first. A van was parked at the curb, so the plane disappeared as it plunged toward the pavement. I listened for the crunch but to my surprise there was no sound. In an instant the plane reappeared after a remarkable pull-out. It climbed just high enough to get over the 12-foot chain-link fence and entered the landing area. Unfortunately, it didn't have quite

enough energy to thread through the maze of tents and personnel between the fence and the landing circle. There was a scramble to get out of its way and protect it from impacting destructive stationary objects. It touched down on exactly seven minutes; perfect timing but without landing points. I take my hat off to Howard for a fantastic recovery. I was tempted to ask him to do it again, but refrained.

As noted, RC soaring is increasing in popularity. We can therefore expect greater participation in the contest circuit. Is there a way to cut the size of these meets? Sure — let's disperse contests just as LSF did this year. You don't get to fly against all your buddies, but at least you get to fly. The National Soaring Society Excellence Award Program offers a means for scoring events held in different places at different times. The method currently used is the best Frank Deis could come up with after much soul-searching and statistical analysis. Perhaps there's an even better normalizing technique, but in any case, here's a way to encourage

greater participation across the nation in contests that bring us closer to one another. At the local level, these may seem less prestigious, but overall you can compete with your fellow fliers from all across the nation. A number of pilots chose to use the Nats and the LSF contests as part of their entry into the NSS Excellence Award Program. That's a way to take a positive view and benefit our future flying activities.

May I take my hat off to Pat Potega. Of his 13 years in RC, seven have been in soaring. This time he walked away with the top score in unlimited class at the AMA/NSS Nats. There he flew a 12-foot span Paragon, as designed by Ed Slobod, and kitted by the Pierce Aero Company. Here is a conventional looking bird that really performs when put to the test. Without ballast it weighs 37 ounces, but believe it or not, it can carry five extra pounds. Pat lightened the aircraft in various ways to allow minimal sink rate under low lift conditions. When the wind came up during the afternoons at the Nats,

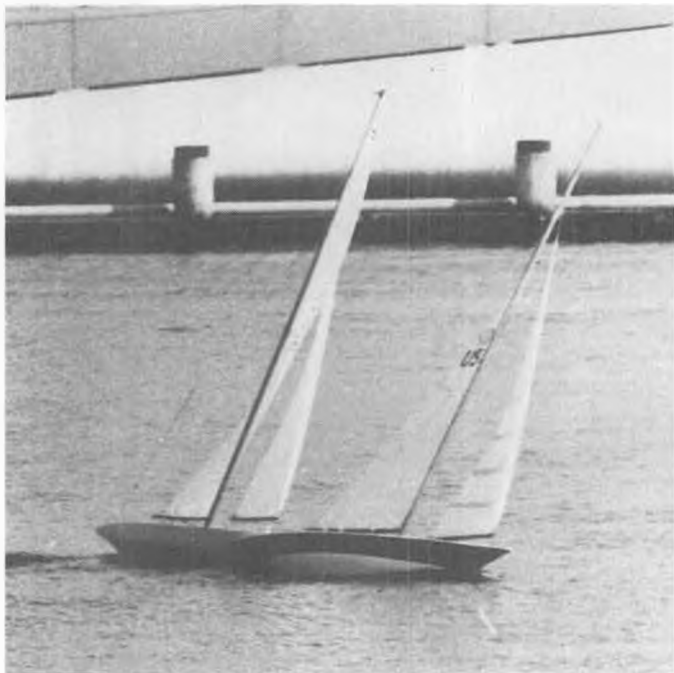
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Pat Potega and his Pierce Aero Co. "Paragon" were winners of the Unlimited Class at the AMA Nationals in Riverside.



Dr. Stan Pfost, Orlando, Florida, is new president of the National Soaring Society.



This month's trim analysis. Trailing boat has too much mainsail twist. Needs more mainsheet tension. Lead boat could tighten jib sheet a bit.



The author fiddles with TRACER's backstay prior to an early-morning launch at Marsh Creek, Pennsylvania.

STRICTLY SAIL

By ROD CARR



• A quick review of the last 3 years of columns showed that I have been able to remain anonymous and continue to go unrecognized at regattas. Since I admit to liking a mental picture of a writer in my head while I'm reading his words it seemed only fair to provide you good readers with that too. Rather than just a face, we start out with a somewhat unflattering shot of me bending over TRACER'S transom, readying her for her first racing date. The other shot introduces Angus Scott-Fleming, who is serving as Treasurer of MYRAA (Model Yacht Racing Association of America). Angus is a well-known skipper in A-class racing circles, and we were comparing notes on design concepts that were worthy of following up.

A recent letter from TRACER's designer has paved the way for all of you who would like to take a crack at building a modern A-boat designed specifically for radio control. All you need do to obtain the hull lines is send an International Postal Money Order for \$15.00 to Adrian, requesting the lines for his MACH II design. His address is: Adrian Brewer, 6 Queens Square, Sandringham, Victoria, AUSTRALIA 3191. Tell him that you read about it in **MODEL BUILDER**. While you are waiting for the lines to return by airmail, you can start gathering the 28 odd pounds of lead that you'll need

for her keel bulb.

Adrian has asked me what I think of some sort of a Challenge Cup for A-class boats sailed with R/C. I'm naturally in favor of any sort of well organized racing, but will have to defer on the politics involved to those better in the know on how AMYA skippers will be worked into the IMYRU sanctioned competition. Seems to me that it is just about time to assert the size and the progressiveness of AMYA. Certainly no reason that an administrative quirk in this country should prevent skippers who want to race, from doing it. My latest information is that our AMYA is bigger than any other country's organization, and may be bigger than all IMYRU-sanctioned national authorities in total.



MYRAA Treasurer Angus Scott-Fleming and the author discuss A-class developments.

An international competition of sorts was just wrapped up at Newport, Rhode Island, just prior to the America's Cup finals. AMYA organized the first international Mini-America's Cup. All skipper were AMYA members, yet skippers from the U.S., England, and Australia took part. Two sets of eliminations culminated in a best-of-seven series between Bob Harris, of Springfield, Va. and Neil Bennell, of Australia. Bob prevailed to the tune of 4-1, and now spends his evenings polishing the Mini-America's Cup. At the same time, a regatta was held for the remaining skippers, and Ron Stephans, of Alexandria, Va., turned up the winner of that. All the reports that I've heard have lauded the excellent job of the Narragansett MYC and the likes of John and Al Hemmellin, and Dennis Ryan, who worked so hard to bring it all off.

HOW TO IMPROVE SAILING SKILLS

I'm often asked how one goes about becoming a better sailor. Usually it's in the context of wanting to do a better job of racing. But good racing technique means that you are working your boat with more efficiency, and I suppose that even if you are a cruising skipper, more efficiency is a goal worth striving for. There are many things you can do on your own to improve, but finally you have to get out and compare the results of your experiments against other skippers and other boats. No invention, made in your workshop, is a guarantee of a first place finish in any race. For once you have won with it, others will borrow it, modify it, and improve upon it, and you are right back where you started. I break down a self-

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Bill Brown's 1/8 scale "Redman" unlimited has a mirror finish.



The author's Pay n Pack, a very competitive hydro built from a Dumas kit.

R/C POWER BOATS

By BOB PREUSSE



• During the past two years R/C model power boating has grown dramatically. Each year, more and more new faces appear at contests all over the country. Each beginner has numerous questions to ask. He or she simply needs a source for good information. Now, there are several good sources as we have discussed in the past, such as the local club, IMPBA, NAMBA, manufacturers, distributors, etc. I wonder how many people never really get acquainted with our hobby because they don't know how to get help.

We at **Model Builder** want to try to help answer not only the beginner's questions, but all questions, because really, there is always some phase of the hobby in which we are all classed a beginner. Several months ago, we asked for letters from our readers regarding any comments or questions about R/C model power boating. We want to help you select the right prop, install a radio, or just express your point of view. Periodically, we will compose an

article with several letters, including a response from the boating editor. We will also display your photos from time to time (send black and white, 3x5 or larger prints).

So, here we go, with our first letters to the Boating Clinic. Remember, this is your chance to respond to the boating articles in **MB**, and to get all the material we may be lacking.

Dear Sir,

*In reading your article in the March issue of **Model Builder**, you mentioned you could help in scale engine detail. I have an Atlas Van Lines .40 from Dumas with a K & B .40 engine (rear rotor). The addition of an exact scale engine would be just what I need to take up space between the cowl and the cockpit.*

I try to read as much as possible about this sport since I'm very new to it. If you have any helpful hints, they will be appreciated.

Any information you can give me on my particular model will be greatly appreciated, too.

I would like to run an expansion chamber but would like to keep the looks close to original. Please advise me on how I should vent the gases from the end of the chamber out through the cockpit tail section.

I will be checking your article each month and will be looking forward to enjoying my boat this year.

Sincerely,
Stephen Paul
New Memphis, Illinois

Dear Stephen:

Thanks for your letter regarding your Dumas "Atlas Van Lines .40".

I have enclosed a set of plans for the Rolls Royce engine we use in our 1/8 scale unlimited class. You will have to scale down the plans to 1-3/32" = 1', as your boat is a different scale. The Dumas boat kit is 36 inches long and the prototype was 32 feet long.

You could run a tuned pipe attached to the deck, or you may want to try a muffled exhaust system. Semco Model Engineering Co., 60 Felton

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Proper way to launch a deep-V. Hit the deep water, away from the mud and rocks.



Pit area at the Gar Wood Trophy Race, shows "Sunny Jim" getting a pre-race day overhaul. Look at that chunk of engine in the foreground!!



The super driver's stand at the 1977 ROAR Nats. Lap counters and officials are on the top level. Looks a little like the stage setting for "Hollywood Squares", the TV celebrity quizz show.

PHOTOS BY AUTHOR

R/C AUTO NEWS

By CHUCK HALLUM

● This report on the 1/8 scale 1977 ROAR NATS is going to be a little difficult because of the luck I had . . . all bad!! Everything seemed to go wrong. Usually you have some bad and some good so it balances out. Maybe this means I'll have all good luck next year . . . HA!!

I arrived in Seattle Sunday, July 24, in time to see the end of the 1/12 scale oval races. Good old "Dirty Dan" Rutherford was there racing. Dan has a report on all the 1/12 scale racing, so I luckily don't have to cover that. *(Published last month. wcn)*

Monday morning the sun was out bright and early. In fact, the weather had been tremendous all the way up, and would remain so through the whole schedule, except for a half-hour sprinkle on Thursday which delayed racing for only about an hour. Temperature was usually 80°-85°F., and humidity around 50%. Sometimes it was a little cloudy or very high overcast, keeping temperature down to the 80°F. mark. The 1/12 scale drag races were run in the morning and 1/8 scale in the late afternoon.

Originally, the drag strip was the front straight of the tri-oval layout. Bumps and rough sections caused the drivers to request a change in strip location, and the strip was

moved to the rear of the drivers' stand. I don't think it was any better. There was only a center lane divider and timing light protection boards.

After all the 1/12 scale races were over, the 1/8 scale Rail Dragsters hit the track. WOW! When Harold McCoy first ran his rail down the strip he got about a 2.85 sec. practice run . . . quite straight, but half the time the car was airborne, and half the time that it wasn't, only one rear wheel was on the ground. How the car got down the strip straight or so fast I don't know.

Anyhow, after all competitors practiced, the rail eliminations began. Harold McCoy was by far the fastest, with a 2.73 sec. run (Bill Steel got a 2.86 run with McCoy's backup rail for second fastest) and Gary Kyes the most consistent, but running about 3.0 sec. The final was McCoy against Kyes. The Christmas tree started on the light sequence, and as the green came on, Kyes was gone, putting about a 5 to 10 ft. hole shot on McCoy. McCoy was coming on strong at the end and we had to wait for the signal before we knew that Kyes had defeated McCoy. But I believe Harold McCoy's qualifying time of 2.73 sec. is a National record.

Now the Funny Cars came out. Everybody was worried about the

traction . . . and it was soon evident that their worries were well founded. The Funny Cars were going all over the place from the start line . . . under cars bordering the track, over the divider rail, into cement weights (for the MRP canopy), and elsewhere. The only cars that looked reasonably good under full power were Jerry Thompson's and Bill

HI! CHARLIE,
WHY SO SOLEMN?

Jianas' cars. On one full bore run, Harold McCoy lost it toward the end, hit the timing light protective rails at the end of the strip and went sailing through the air . . . denting the fender of a car bordering the track and luckily not hitting a spectator. Safety and spectator control was so poor that McCoy decided not to run his Funny Car again and withdrew from the program. *(An example that should be followed by more competitors, in airplane, boat, and car contests with doubtful safety measures. wcn)*

During one of the eliminations, Jianas really splattered one of the cement blocks toward the end of the strip. Many parts went flying. The parts were collected and Jianas, Husting, Newlin and I started rebuilding the car. It was well down in the elimination, so Jianas only had about 10 minutes. The biggest problem was that the steering servo had

been knocked loose. After several minutes, Jianas said he was ready.

In the meantime, Reba Steele and Jerry Thompson raced for third and fourth, with Thompson getting third place, and all that was left was Jianas and Kyes in the 1/8 Funny final. Lo and behold, Jianas' car ran straight and super-fast to beat Kyes and set fast Funny Car time of 3.18 sec. What a race! It was almost a destruction derby, and I had expected the last car running to win.

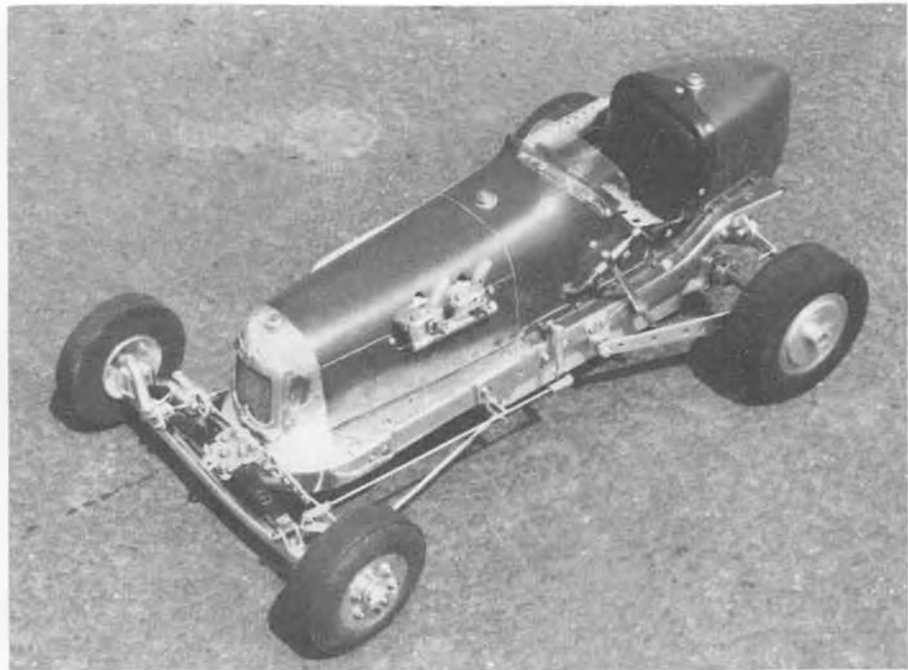
Tuesday, the road racing started with the G.T. Superstocks. Bob Stevens' timing equipment, which had been sent a week earlier hadn't arrived, so all timing was to be done with stopwatches. The fuel to be used was Dukes Fuel. Many racers didn't get fuel for practice because it hadn't been announced, so the race committee decided to provide fuel for practice.

The G.T. Superstocks were the first cars on the 1/8 road course. It seemed to be pretty slippery everywhere. The way the schedule was set up, the Novices practiced and ran their heat before the Amateurs, who completed racing before the Experts started. Even so, the track was also slippery for the Experts that first day. Lots of people were having some heating and leaning-out problems that first day. The fuel didn't run as cool as I had heard. During the Expert heats, there was a police radar unit on the back straight and guess whose car was fastest down the back straight . . . yep, it was mine. But during my qualifying heat, the engine leaned-out and died, causing a poor time. I continued to richen the needle setting, but the engine kept going lean . . . running hotter than a

I'M THINKING!

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pistol. I don't know who had quick Expert time that day, but everybody else must have had problems too, 'cause I had about 6th fastest time



Jim Aubry's latest sprint car, an early 30's Fronty Ford (Model T). Suspension front and rear, hand-formed rails from sheet aluminum.

with the flameout.

The reason my car was faster down the back straight was 5:1 gearing vs. 5.8:1 on the rest of the racers. My low speed acceleration was good when the needle setting was right and about equal to the rest of the guys because of the crank timing and clutch set-up. All I did to last year's engine was change the crank timing and packing and tapering of the crank bore, just as I said I would in last year's superstock engine article. I don't think I did wrong. The first day of racing got through early, so there was open practice for awhile and the announcement was made that racing would start an hour later the next day.

The schedule for the second day of G.T. Superstock was practice, qualifying heat, and main for each of the three classes. But somebody in the last heat might have to repair a car for the main, so there would be a half-hour break between qualifying and the main. A suggestion was

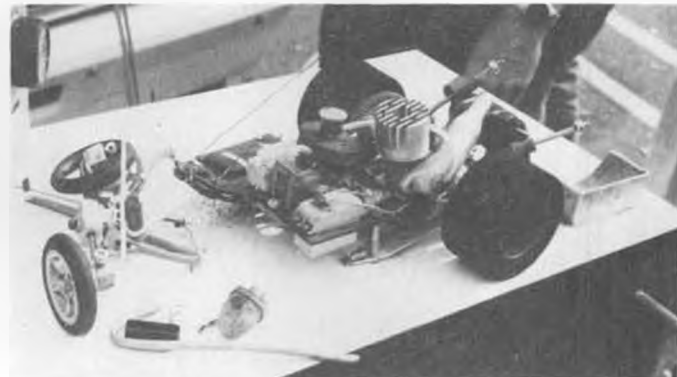
made to start practice and qualifying of the next class during these breaks, to save time. So the race committee said OK, we'll let the Novices vote for what they prefer (amateurs and experts couldn't vote because they would be deciding for the novices). The novices wanted the 1/2 hour delay so they could get out of there. The amateurs, after their qualifying, decided in favor of the 1/2 hr. delay also. So the experts didn't even get to have a say in the matter, and you guessed it . . . the experts got to run in the dark again. An hour would have made all the difference in the world.

In one novice heat there was a problem . . . seems several racers were really cooking engines. It turned out somebody had put a fuel can out with paint thinner in it. Several engines were destroyed . . . worn out completely. The rods would come off the crank pin without even taking out the liner. This happened to Del Barnhart, and Jim

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The funny-car 1/8 drag final, with Bill Jianas on the right winning over Gary Kyes. Note light tower.



Yeuch!! Here's what happened to Jerry Thompson's funny-car when it hit an immovable object. Tubular rail chassis didn't make it.



"AND THIS IS KNOWN AS CONTROL LINE COMBAT!!"

Control line

By "DIRTY DAN" RUTHERFORD
PHOTOS BY AUTHOR UNLESS NOTED

BLADDER GRABBER '77

This past weekend we held the second Bladder Grabber Combat Meet. In case you didn't hear about the first B/G, you are probably having great difficulty in making any sense out of the name "Bladder Grabber" itself. Don't worry about it too much,

the important thing is that Bladder Grabber has come to represent an annual Combat meet held here in the Seattle area. And not just your average Combat meet, my friend. When the field of entries has names like Brasher, McFadden, Stevens, Granderson, Scoones, Pape, Rush, White, Frogg, Dirty, Carver and Thomas spread through it, you know the competition will be super-tough. Add to the preceding list of names a large group of

fliers who, while not well-known outside of the N.W., are very competitive and capable of winning any contest in any area of the country, and the level of competition present at the B/G's begins to be fully realized.

With Mark Saterlee handling the CD chores, there is no problem with officiating. You may have a reputation for having CD's for breakfast, but that just means you haven't yet bucked heads with Mark.



Once more for the East Coast . . . THIS is Rich 'von' Lopez, at the '77 Nats . . . NOT Dirty Dan.



John Ballard (lt), with ever-present unlit cigarette, and Vic Garner, '77 Nats Racing Director . . . reacting to: having been flipped off, Ballard's bad breath, or news of another protest . . . choose.



Dick Lambert, the young one in the famous father/son Lambert Racing Team.



Harold Lambert, senior member of the team. Nosed out of Badyear at Nats by 1/10 second.



Al Kelly maker of widely known Kelly glass props. They're green, natch! Note pit arm.

With the kind of competition the B/G's enjoy, to give away your usual "bowling trophies" would be a bit much, as would incidental modeling accessories. So with the help of Bob Carver, founder and president of Phase Linear, absolutely top-notch stereo equipment is given out for first and second places, with a token cash award of \$50.00 going to third place. For the '77 B/G, first place was worth a set of Phase Linear III Speakers, a Model No. 200 power amplifier, and a Model No. 2000 preamp. You don't have to call Local Stereo to check out the retail on these numbers, I'll tell ya that the package is worth over \$2,000.00. Diggitt.

For second place, a Model No. 200 power amplifier, worth over \$400.00 was offered. Healthy giveaways, right?

When Cash Combat (flying for money) or prizes like the ones featured at the B/G's is brought up, there are always those who say it can't work. And they usually have some horror story about the time they flew for money and it was so bloodthirsty the contest was blown. In some areas of the country, that may very well be true. But it does not apply here in the N.W., and B/G '77 proved it once again, with very clean flying and no use of the rulebook loopholes to gain an advantage. At a B/G you have to fly in every round to get to the top, and if you expect to win, it requires scoring a kill in almost every single match you fly.

At the '77 version of the B/G, Rich Brasher was virtually untouchable. I've seen fliers be "on" for a contest, but do not recall any Combat meet being so totally in control of one individual. Every time Brasher flew he was in control of the match, moving in tight when he wanted a cut or kill,

staying away when trying to figure out the opponent and his plane's abilities. Many of Rich's matches were ended with a very quick, clean kill, including the final match against Howard Rush, when Rich got a kill in the last two seconds of the match.

For myself, I was convinced that Brasher would win the meet by about the 5th round . . . when I flew him. In our match, both Rich and I were flying fast and turning tight for about the first 20 seconds, with Rich being up on me by a cut (I think). Then my motor went cough and ran rich for the rest of the match that counted. My plane was still turning tight, and I was expecting the motor to burp itself clean at any second, so I kept on maneuvering and trying for cuts. Besides, you *do not* fly level against Brasher . . . I don't care how low you can fly.

Even when faced with this set of circumstances, Brasher was able to stay away for a bit, wait for me to do



Joe Klause, Racing Advisory Comm. chmn. No wonder he spells it "Kustom Kraftsmanship"!!

a bad thing, and come in for a super clean kill.

Reading back over that last account, I feel you may not get the point, or get the false impression that if my motor hadn't coughed things might have turned out differently. So . . . in the first of the match, Brasher had maybe 10 mph on me in speed, an advantage he seems to have over everybody. But my plane will turn with his, maybe even a bit tighter, and Rich is not used to flying against planes that can turn with him on an equal basis. After following me for no more than two maneuvers, Rich decided it best to wait for another shot, and split for another part of the circle. We went back and forth like this until my motor slowed things down about 25 mph. For a bit it was kind of a standoff, then my plane slowed even more, and still Rich came ripping through, taking my string away. Any experienced Combat flier knows how hard it is to score a kill when the opponent is noticeably slower, but in this case, my plane was changing speed all of the time, going through a range of at least 40 mph. Still, Rich was in control throughout the match, and I found that to be quite amazing. I have not been beaten that badly in a very long time.

As a further indication of the control Brasher had on things, he flew in 8 or 9 rounds, yet only broke 1 plane. Not only that, but he never did suffer a loss all day, and of course you can lose one match and still win the contest, with the Condor Legion method of double elimination used at all major N.W. Combat meets.

All of the above is not meant to take anything from Howard Rush, who flew out from Virginia for this contest and was flying at his best. Rush was

Continued on page 91



A Great Lakes Trainer 2T-1A coming in for a landing. School airplanes were often fitted with skids at the wingtips. Photo from John Underwood collection.

Great Lakes Trainer 2T-1A

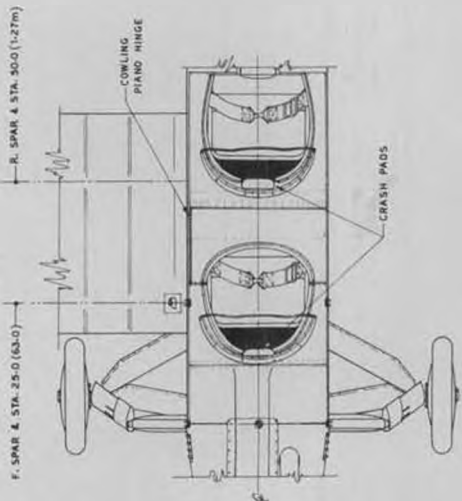
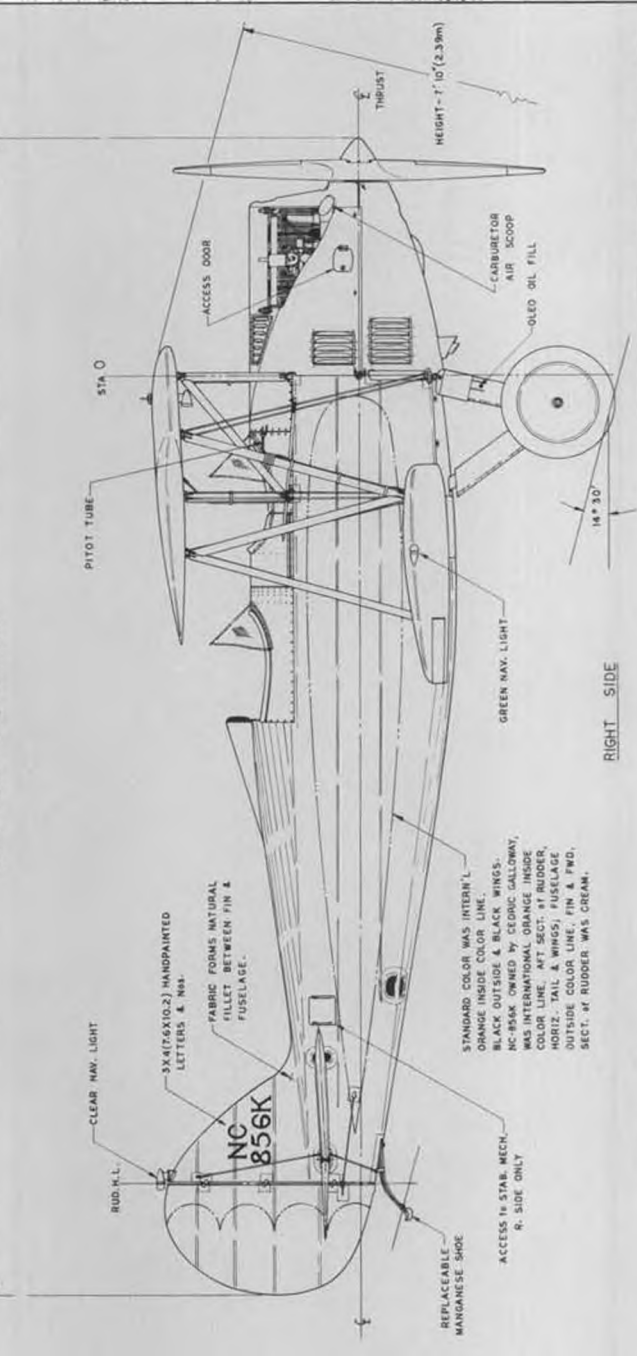
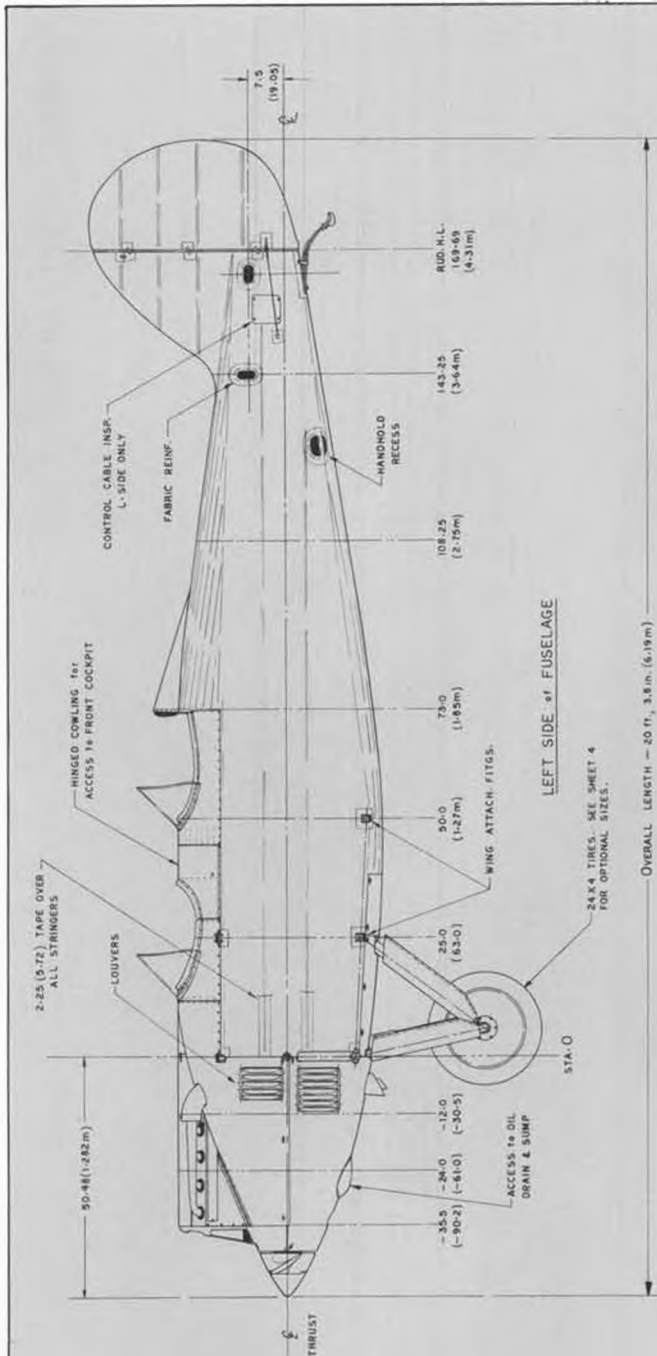
by **PETER
WESTBURG**

PART ONE

• But for a miscalculation, the famous Great Lakes Trainer with a bent wing, might have remained an ordinary biplane with a straight wing, and average performance to go with its average looks. It is hard to realize, in this age of super-sophisticated engineering, that many commercial airplanes of the 1920's and '30's were



Ced Galloway (C.G. Enterprises) built this 1/10 scale electric powered free flight model of the GLT he used to own. He used Westburg's plans. Power is a VL-101 electric motor. Model came out a little heavy for this unit.



TOP of FUSELAGE UNDER WING

PERFORMANCE - ST-1

MAX. SPEED	119 MPH (180 KPH)
CRUISING SPEED	117 MPH (186 KPH)
LANDING SPEED	15 MPH (24 KPH)
CLIMB	160 FT. (49 M)
SERVICE CEILING	5000 FT. (1524 M)
CRUISING RANGE	32,000 FT. (9800 M)
	157 MI. (253 KM)

CHARACTERISTICS

SPAN, BOTH WINGS	26 FT. 8 IN. (8.128 M)
WING LENGTH	20 FT. 3.8 IN. (6.19 M)
TOTAL WING AREA	171.0 SQ. FT. (15.83 SQ. M)
WING AREA	18.5 SQ. FT. (1.71 SQ. M)
MAP of ROOT RIB	58.0 (1.678 M)
STAIGER of OTB. SECT.	23.0 (6.35)
INCIDENCE of ACTUAL UPPER	2° 40'
LOWER	0°
LEFT LIFT AREA	13.48 SQ. FT. (1.25 SQ. M)
RIGHT LIFT AREA	9.5 SQ. FT. (.88 SQ. M)
FIN AREA	5.5 SQ. FT. (.51 SQ. M)
RUD. AREA	5.78 SQ. FT. (.53 SQ. M)
WT. EMPTY	207 LBS. (94.4 KG)
USEFUL LOAD	81.5 LBS. (36.9 KG)
GROSS WT.	1260 LBS. (571.7 KG)

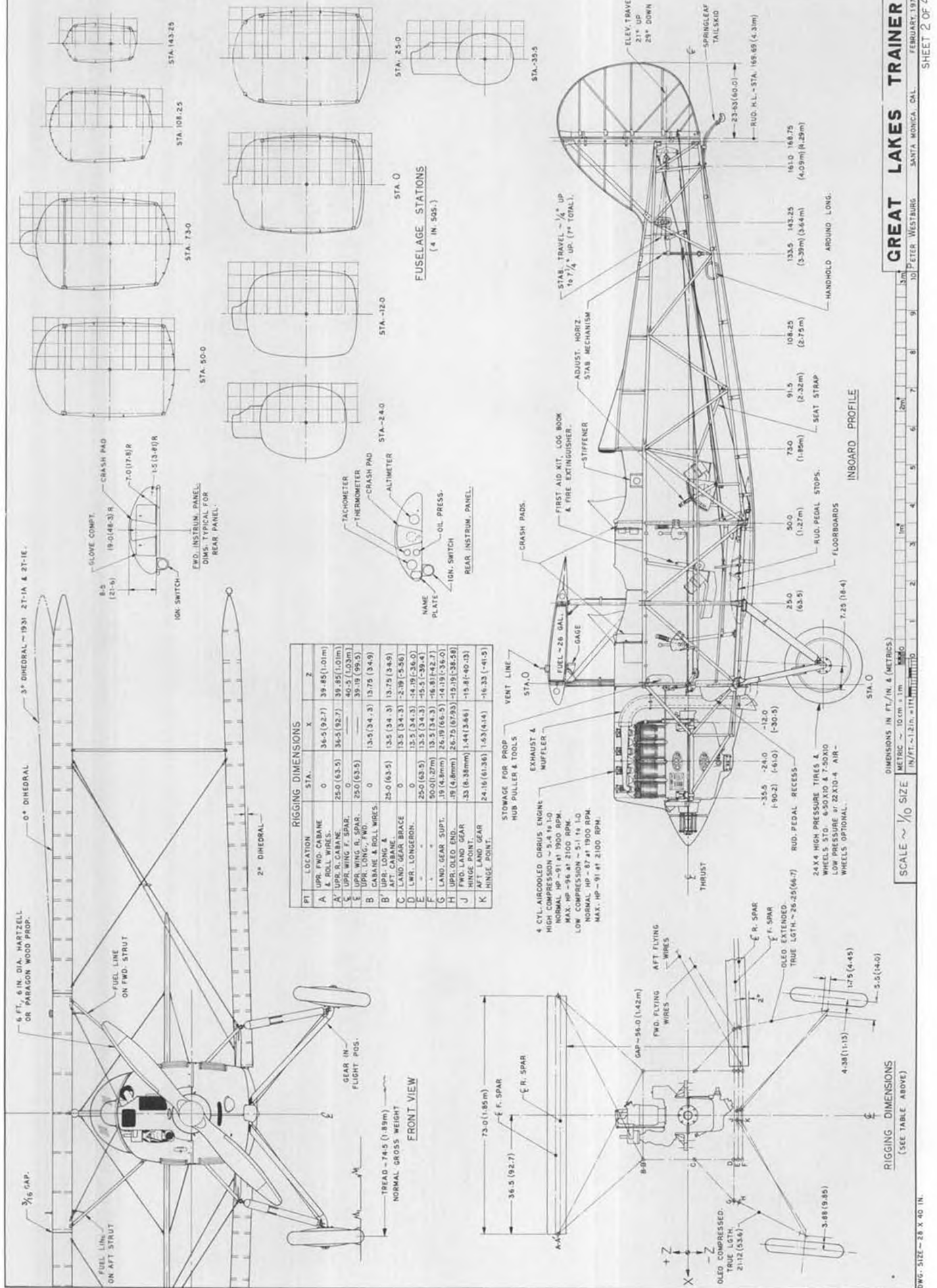
ORIGINAL TRADEMARK
BROWN WINGED FIGURE
HOLDING A BLUE SWIFTER
ON A BLACK SQUARE WITH
RED LETTERS. BROWN OVAL
AND BLACK LAKES.



DATA SOURCES: ORIGINAL DRAWINGS FROM GREAT LAKES AIRC. CO., WICHITA, KAN.; PHOTOS & INFORMATION FROM CEDRIC GALLOWAY, PES-PEMA, CAL.; RICK KAMSTERS, GARDENVILLE, CAL.; JOHN WINDWOOD, GLENDALE, CAL.; WALT HOUSE, WICHITA, KAN.; CEDRIC ENGINEERING, BOON-TOWN, OHIO; HARTFIELD, AMERICAN HALL of AVIATION HISTORY.

SCALE ~ 1/10 SIZE
DIMENSIONS IN FT./IN. & (METRICS)
METRIC ~ 10.16 x 10.16 mm. MEMO
IN/FT. - 1.25 x 10.16 mm

OVERALL LENGTH - 20 FT., 3.8 m. (6.19 m)



6 FT., 6 IN. DIA. HARTZELL OR PARAGON WOOD PROP.
 FUEL LINE ON AFT STRUT
 FUEL LINE ON FWD STRUT
 0° DIEDRAL
 3° DIEDRAL - 1931 27-1A & 27-1E
 2° DIEDRAL
 1/16 GAP
 TREAD - 74.5 (1.89m)
 NORMAL GROSS WEIGHT
 FRONT VIEW
 GEAR IN FLIGHT POS.
 73.0 (1.89m) F. SPAR
 36.5 (92.7) F. SPAR
 GAP - 56.0 (1.42m)
 FWD FLYING WIRES
 AFT FLYING WIRES
 OLEO COMPRESSED TRUE LGTH 2112 (538)
 OLEO EXTENDED TRUE LGTH - 26.25 (66.7)
 RUD. PEDAL RECESS
 24 X 4 HIGH PRESSURE TIRES & WHEELS STD. - 6-50X10 & 7-50X10
 WHEELS OPTIONAL - 8-24X10 AIR - WHEELS OPTIONAL.

PT LOCATION STA. X Z
 A UPR. FWD CABANE & ROLL WIRES 0 36.5 (92.7) 39.85 (1.01m)
 B UPR. R. CABANE 25.0 (63.5) 36.5 (92.7) 39.85 (1.01m)
 C UPR. WING F. SPAR 25.0 (63.5) 40.5 (1.02m) 39.19 (99.5)
 D CABANE & ROLL WIRES 0 36.5 (92.7) 39.85 (1.01m)
 E UPR. LONG A. BRACE 25.0 (63.5) 35.5 (91.3) 13.75 (34.9)
 F LWR. LONGERON 0 35.5 (91.3) 13.75 (34.9)
 G LAND. GEAR SUPT. 19.4 (48mm) 26.19 (66.5) 16.81 (42.7)
 H UPR. OLEO END. 19.4 (48mm) 26.75 (67.93) 15.19 (38.58)
 I UPR. OLEO END. 19.4 (48mm) 26.75 (67.93) 15.19 (38.58)
 J UPR. OLEO END. 19.4 (48mm) 26.75 (67.93) 15.19 (38.58)
 K AFT LAND GEAR HINGE POINT 24.16 (61.56) 16.33 (41.5)

4 CYL. AIR-COOLED CIRRIUS ENGINE
 HIGH COMPRESSION - 5.4 to 1.0
 NORMAL HP - 87 at 1900 RPM.
 LOW COMPRESSION - 5.1 to 1.0
 NORMAL HP - 87 at 1900 RPM.
 MAX. HP - 91 at 2100 RPM.

STOWAGE FOR PROP HUB PULLER & TOOLS
 EXHAUST & MUFFLER
 VENT LINE
 STA. 0
 FUEL - 26 GAL. GAGE
 CRASH PADS
 FIRST AID KIT, LOG BOOK & FIRE EXTINGUISHER.
 STIFFENER
 ADJUST. HORIZ. STAB MECHANISM
 STAB. TRAVEL - 1/4" UP 16 7/8" UR (7" TOTAL).
 ELEV. TRAVEL 21" UP 28" DOWN
 SPRINGLEAF TAILSKID
 RUD. H.L. - STA. 169.65 (4.31m) 23-63 (60.0)
 161.0 (16.75) 108.25 (27.5m) 91.5 (23.22m) 73.0 (1.86m) 50.0 (1.27m) 22.0 (55.5) 7.15 (18.4)
 SEAT STRAP
 RUD. PEDAL STOPS.
 FLOORBOARDS
 HANDHOLD AROUND LONG.

INBOARD PROFILE
 STA. 0
 DIMENSIONS IN FT./IN. & (METERS)
 METRIC ~ 10cm ~ 1mm
 IN/FT. ~ 1/2in. ~ 12mm
 SCALE ~ 1/10 SIZE
 RIGGING DIMENSIONS (SEE TABLE ABOVE)
 DWG. SIZE - 28 X 40 IN.

STA. 143.75
 STA. 108.25
 STA. 73.0
 STA. 50.0
 STA. 25.0
 STA. 0
 STA. -12.0
 STA. -24.0
 STA. -35.5
 FUSELAGE STATIONS
 (4 IN 505.)

10K SWITCH
 SLOW COMP. (21-6)
 19-0 (48.3) R
 7-0 (17.8) R
 1-5 (3.8) R
 CRASH PAD
 TACHOMETER
 THERMOMETER
 CRASH PAD
 ALTIMETER
 OIL PRESS.
 ION. SWITCH
 NAME PLATE
 REAR INSTRUM. PANEL
 FWD INSTRUM. PANEL
 DIMS. TYPICAL FOR REAR PANEL.

GREAT LAKES TRAINER
 FEBRUARY, 1937
 SANTA MONICA, CAL.
 PETER WESTBURG

10 9 8 7 6 5 4 3 2 1
 INBOARD PROFILE

10 9 8 7 6 5 4 3 2 1
 DIMENSIONS IN FT./IN. & (METERS)
 METRIC ~ 10cm ~ 1mm
 IN/FT. ~ 1/2in. ~ 12mm

SCALE ~ 1/10 SIZE
 RIGGING DIMENSIONS (SEE TABLE ABOVE)

DWG. SIZE - 28 X 40 IN.



The first Trainer off the production line had a straight wing. Though shown at the Detroit Air Show in March 1929, and heavily advertised, it was found to be tail heavy and went back to the shop for redesign. Upper wing panels were then swept back 9.2 degrees, lining center of lift with CG.

designed on brown wrapping paper with No. 2 yellow pencils, and that few hours were spent on stress and balance calculations. So it was with the Great Lakes Trainer.

The Great Lakes made its first appearance at the Detroit Air Show in March of 1929, and the advertising campaign was well underway when the shocking discovery was made that the center of lift didn't line up with the center of gravity. Two aircraft had already been assembled and two more were being put together, in the old Glen Martin plant in Cleveland, Ohio, when after some agonizing soul-searching, the decision was made to change the design. The short fuselage

Continued on page 80



Stock GLT flown by Tex Rankin from Vancouver, Canada, non-stop 1350 miles to Agua Caliente, Mexico. Trip used 75 gallons of gas and took 13 hours, 17 minutes. Galloway photo.



Ced Galloway's GLT, which he owned from 1934 to 1936. Front cockpit was covered until Galloway had his 50 hours and Limited Commercial license. He flew 239 passengers and accumulated 150 hours in the two-year period, then sold ship to airshow pilot Clem Whittenbeck. C.G. photo.

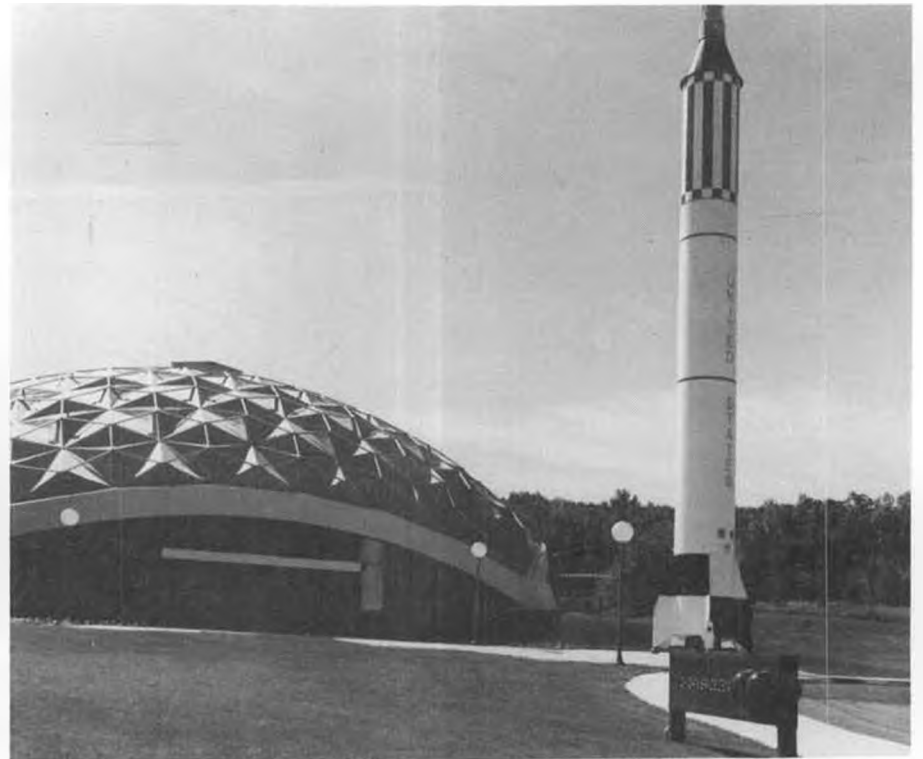


MODEL ROCKETRY

By DOUGLAS PRATT

● NAR WARS? Well, I saw some T-shirts to that effect at NARAM-19 (brilliantly done, in fact), but upon consideration, I can see that the NAR is indeed involved in a war that has lasted through its 20-year history. Some of us old vets, myself included, had assumed that the war was won, but it seems that there's a lot more fighting to do before we can rest on our collective laurels.

I refer not to the occasional in-fighting and petty personality con-



The Michigan Space Center, Jackson, Michigan, home of the GLAR's Aerospace exhibit. GLAR photo.

flicts that plague any association, especially one made up of intelligent individualists. The real NAR WAR is the battle to be accepted by the public as something more than a bunch of barely-sane pyromaniacs. Reading the newspaper coverage of NARAM, I realized that the types of articles I described last month are not funny at all. No one likes to have anyone look down their nose at his efforts, and that's exactly what the "Look at the toy rockets" article does. This is merely annoying (merely?), however. The "Look at the nuts" attitude is downright dangerous.

We lost a battle of the NAR WARS when St. Paul Fire and Marine cancelled the AMA insurance, and the new insurer, besides socking AMA with a hellacious rate increase, turned down an NAR rider. No insurance, when weeks before, we were covered up to a million bucks. Why?

"Because rockets are dangerous, that's why. They're like fireworks. They blow up. You can't tell us different . . . rocketry is a bad risk."

Continued on page 97



Harry Neuman and son Shawn, with the Excalibur Interceptor . . . Sheer Imagination scale.



John McDaniel and Mike Zienkewitz judging Sheer Imagination Scale. All GLAR photos.



Flight of the Excalibur Interceptor . . . poetry in motion.



Example of the finishing work described herein . . . the author's Li'l Cobra Quarter Midget Racer, No. 2 airplane. Five Cobras finished in top 20 at Nats.

PHOTOS BY AUTHOR



Some more of the author's fine finishing work, Judi Marez, with his No.1 QM racer.

FINISHING

TECHNIQUES

By ELOY MAREZ . . . Getting a model all glued together and sanded out is only half the battle. Whether appearance counts toward the final outcome or not, it's still a nice way to cap off the building of any type model.

• Wanna start an argument? Just get a bunch of R/C flyers together, and start a conversation about downwind turns. Or why they pull left on takeoff. Or the rules for ANY racing event. And to a lesser degree, gross weight of a given model for a specific use. The glider gang actually plays with changing gross weight much more than do the power fliers, depending on the event and conditions being flown, and they have found that in some cases, heavy is beautiful. But not so in racing aircraft, and come what may, we must all agree that after the minimum weight is there to assure airframe integrity, we can really do without the rest of it. If needed, it can be added, but if it is built in and painted over, it can't be easily shed.

The following million or so words will attempt to describe how it is done in Southern California's Quarter Midget Racing Club circles. This information is offered in the hopes that it will help you get it on fast, but keep it light so you can FLY fast. Of

course, some of the techniques described can be applied to any type of airplane that you build.

Since we have to start somewhere . . . let's get the commercial out of the way, since it has some bearing on the actual start. The plane in the pictures is the P-63 "Li'l Cobra" Quarter Midget, available directly from R/C Etc, Box 127, Costa Mesa, CA. The airplane placed 1st, 3rd and 5th in QMRC racing in 1976, and has been electronically timed at 116 mph over a closed course, in racing configuration. Locally, there have been some QMRC races that were referred to as "Li'l Cobra" races; the airplane is well established as a competitive racer.

After that false start, we are off again. First, remember that if it is going to be light when you get it out on the runway, it has to be light before you start. In the case of QM racers, there is no way that it is still going to weigh the 2-1/2 pound minimum when it is completed if the raw materials, less

engine and radio, weigh 2-1/2 pounds. Whatever the airplane of your choice, look carefully at the kit to see if any dead weight has been built in. A good place to start is the fiberglass fuselage. This one weighs 4-1/4 ounces, and comes sanded and ready to prime. It is probably the lightest QM fuselage around.

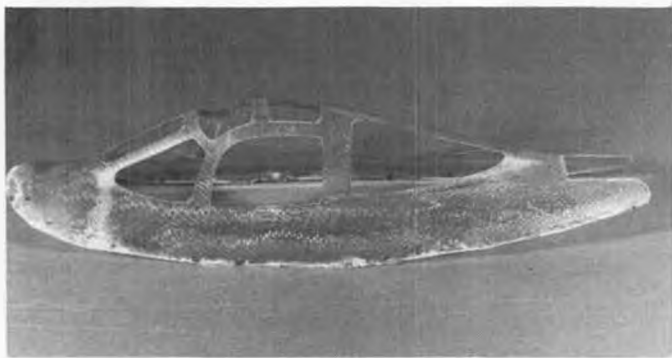
In comparing fiberglass fuselages, look for the ones without puddles of resin here and there. It should be slick on the outside, but down to the cloth weave inside. After the cloth is saturated, any buildup of resin doesn't really contribute to the strength, only to the weight. It takes a lot longer to sop up all that excess resin during the lay-up, but fortunately, there are some manufacturers that take the time. Other examples of really fine fiberglass work are the fuselages available from Prather Products, in which you seldom find an excess drop of resin. I haven't seen them all, but there must be others. Everything else being equal, while you are deciding on which kit to



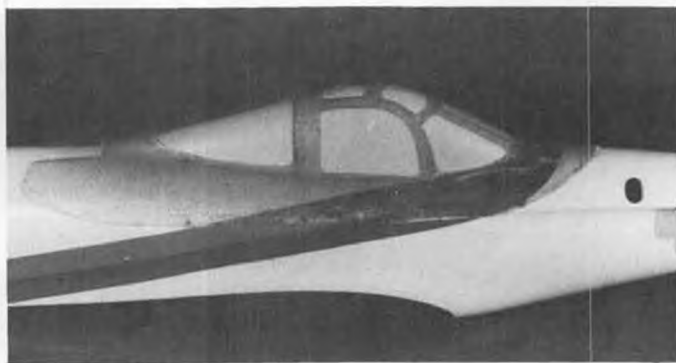
Fuselage painting jig provides a means of painting entire piece without having to touch the surface.



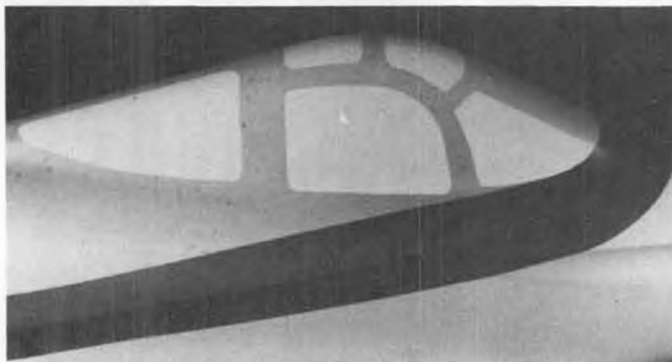
Use of Fliteglas Liquid Masking Film is described in text. Bass airbrush unit, available through MB Products, used for all applications.



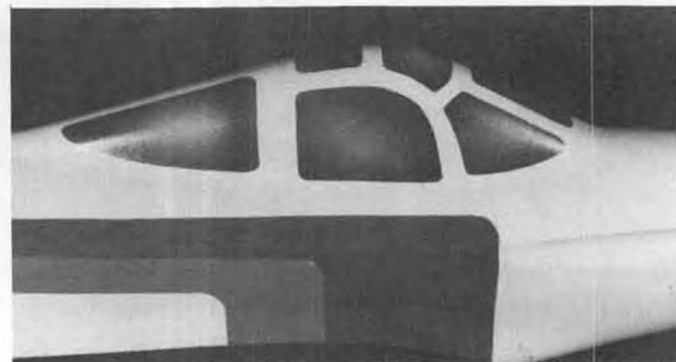
Canopy outline mask, as described in text. Handy if you're going to paint more than one of a kind.



Mask in position over Liquid Masking Film.



Canopy area after Liquid Masking Film has been cut and areas to be painted have been exposed.



Completed canopy painting.

buy, pick one with a light fuselage. If you have a choice of fuselages for a given kit, weigh them and take the lightest.

The rest of the kit should also be smoked over for excess weight. Rock hard balsa is good in some places, but isn't necessary everywhere. If the kit you chose for other reasons includes wood that is on the weighty side, in places where it isn't really needed, be prepared to replace it with lighter stock. If the fiberglass fuselage of your choice is of the gel-coated type, carefully consider the options. Gel-coat can be a time saver, as the surface is generally superior to plain 'glass; and can be primed and painted as received. However, since it is basically a resin material, it contributes little to the structural strength, only to the weight. Also, due to the opaque nature of the material, it very effectively hides air bubbles that cause weak spots, that in some cases will break open when subject to normal strains and stresses. Since you won't run into this until you are flying your finished and painted airplane, this can be quite upsetting. If you do opt for a gel-coated fuselage, we recommend dropping a strong light inside and inspecting it for air bubbles and other flaws. If any are found, dig them open and fill with a resin and micro-balloon mixture. Whenever possible, do an undercut to help lock in the filler.

But when it comes to lower weight only, the good quality fiberglass fuselage with minimum filling and well

sanded primer will almost always weigh less than the equivalent with gel-coat added.

The "Li'l Cobras" shown in the pictures weigh 2 pounds, 8-1/4 ounces, ready to fuel, yet are strong enough to withstand the rigors of competition racing. Many of these racers have survived mid-air and crashes that would have done in less strongly built airplanes. So the combinations presented here work.

In addition to wood and fiberglass, the combination includes Monokote, and Super Pox, though obviously, other plastic coverings and similar paints will also work. The fuselage requires only minor installation work prior to shooting primer on it. This involves bonding in the firewall and servo mounts, both of which were done with a mixture of K & B polyester resin, and ground glass. This is a glass-fiber filler available at all fiberglass suppliers and some hobby shops. The Formula One crowd is using silicon rubber to hold in servo mounts. It apparently works well, and must offer some resistance to vibration and shock.

Micro-balloons and resin can be used, but we have found the strength-to-weight ratio of glass-fibers and resin to be superior. It is mixed to tooth-paste consistency, and used as a glue and fillet material between the wood and the fiberglass. Use only enough for a fillet that extends no more than 3/16 inch along each side. Any more is adding more weight than the re-



Vari-gold trim for striping and race numbers, by J.L. Wittman Co.

quired strength.

Whatever your choice of bonding agent, clean the fuselage in the area that is to be glued with a stiff-bristled brush and acetone or alcohol.

The tail pieces are secured to themselves with epoxy, and to the fuselage with the same glass-fiber and resin mixture. Be especially careful not to overdo the application back there, as the object is not a tail heavy airplane, but one that will not shed its tail in flight.

If fillets are desired on the tail, make them as thin as possible. A method that works well for me, and requires little or no sanding, makes use of a 'runny' micro-balloon and resin mixture. With the airplane supported so that the chord of the sur-

Continued on page 73



PHOTOS BY AUTHOR

DE HAVILLAND "HAWK MOTH"

By BILL NOONAN . . . Rubber-powered free flight scale is where all of our diverse interests in model aircraft began. Here is an exceptionally fine sample of that original art form. Placed 5th at the 1977 AMA Nationals.

• If you had to pick a name as being synonymous with the development of British aviation, de Havilland would likely be the first choice.

Geoff de Havilland the man, fit perfectly the image of the innovative and resourceful pilot/designer of the Golden Years of flight. Born in 1883, his influence on aircraft design was felt for more than half a century. The last aircraft bearing his distinguished name was the D.H. 121 Trident. The company was absorbed into Hawker-Siddeley in 1961.

Not all of de Havilland's designs enjoyed the spot in history which characterized the D.H. 4, the Gipsy Moth, or the Mosquito. Archives contain many interesting designs relegated to obscurity, the Hawk Moth, designated model 75, being one of them.

We blew the dust off a February, 1929 copy of the highly-regarded British publication "Flight", and revealed an interesting and comprehensive analysis of our subject. It provided good three-view drawings

and sufficient structural details for proof-of-scale documentation.

The Hawk Moth is a straightforward design, nicely proportioned and simple, but with enough distinctive character to set it apart from its contemporaries. The wide (10 foot) landing gear tread is unique for a plane of the Hawk Moth's size, the wingspan being 44 feet.

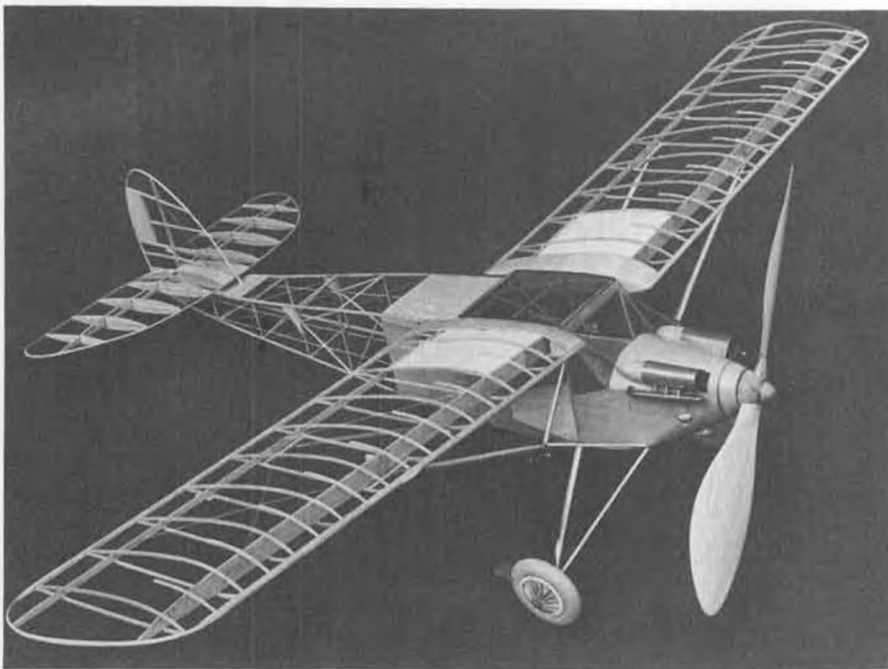
Our model, which incorporates folding wings, deviates from scale only in landing gear length and slight enlargement of the stabilizer.

It is virtually vice-free when it comes to flying. Originally powered with 8 strands of 3/16 rubber, which gave ho-hum performance, the motor was increased to 10 strands for the 1977 Nationals at March AFB. It took fifth place in outdoor rubber scale.

FUSELAGE CONSTRUCTION

Fuselage construction follows conventional practice. Lay 3/32 square hard balsa longerons over plans which have been covered with wax paper or Saran wrap to prevent surplus cement from adhering. All upright and diagonal members are 1/16 square. Cement these in their respective places, noting the 1/32 difference from the longeron thickness. This "detent" accommodates the sheet balsa which surrounds the cabin, and the two 1/32 square basswood stringers. Repeat the same procedure for the right side, taking care to reverse the "detent", otherwise you will have two left sides.

When the two sides are thoroughly dry, cement them together, starting



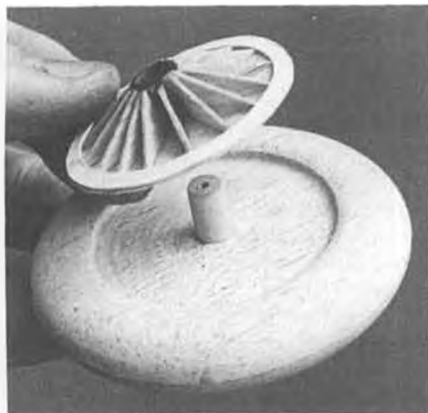
This project is an exercise in light construction techniques. Even if you don't build this particular aircraft, the methods described should come in handy for your own model.



Wing ribs are individual laminated strips, for light, durable construction. Stab, slightly enlarged, and also with a thicker-than-scale airfoil, is the only deviation from scale dimensions. The model is completely stable. Prop is built up of ply and balsa laminations.



Rough-cut wheel blank, ready to be chucked in lathe or mounted hand-drill for shaping.



Completed wheel and tire, with separate spoke disk. Disk will be covered before installation.

at the rear of the fuselage, which has an unusual boat-tail shape. Hold fuselage sides together with clamp or clothespin. Check for alignment. Add widest (cabin) cross pieces, and work aft, checking to be sure cross-section is square. Finish this operation by pinching nose longerons together and

inserting cross pieces. This can be a little scary, so take care. You may find it necessary to wedge the nose between two heavy, vertical objects like books, while the cement dries.

When this basic frame is dry, add the four plywood ribs (R1) which form the cabin roof/wing root. The bottom

of these ribs parallel the bottom of the top longerons. Fill in between these with 3/32 sheet balsa, between the front and back spar stations. Carefully cut and fit 1/32 medium sheet balsa sides and bottom (cabin floor). Cement in place. These should be flush with longeron sides, having been "let in" the 1/32 detent. Note that 1/16 square door frames are on starboard (right) side only. After the sheet siding is dry, carefully cut between door and fuselage frames. Remove doors and add hinges, which may be made of fine silk. Take care not to allow surplus cement to enter door-jamb, or the pilot won't be able to get in. Door latches may be made of small diameter wire and installed after covering.

Add the 1/32 basswood stringers. Their bearing surfaces should be on the same plane as longeron sides.

WHAT ARE YOU TRYING TO FIGURE OUT?

Add 1/32 plywood gussets for rubber anchor tube, which is 3/16 O.D. aluminum. It should fit snug in holes drilled in position in gussets shown on plans.

The nose is formed from block balsa, hollowed out to about 1/4 inch wall thickness. The balsa should be carefully contoured to make the transition from the flat fuselage sides and bottom to the oval 1/32 plywood bulk-head (A). There are two of these, one being cemented to the back of the removable prop assembly. The one



Upon removal of inverted U-shaped wire retainer at front spar, wing may be folded as on full-size aircraft. Rear retainer can also be pulled, for complete removal of wing panels.



The one and only deHavilland Model 75 "Hawk Moth" in flight, 1929. Photo comes from Flight International Picture Library, London, England. Wingspan was 44 feet (Curtiss Robin was 41 feet), and landing gear had a generous 10 foot tread.



Stab is hinged for easy incidence adjustment during trim flights.

cemented to the fuselage has a square aperture which receives the 1/4 inch thick indexing plug cemented to the back of the prop assembly.

If you intend to incorporate folding wings on your model, it will be necessary to cement 1/32 I.D. aluminum tubes in place inside fuselage uprights immediately below spar stations. These act as hinge bases, and receive hinge pin saddle (W1). The front one is withdrawn to fold wings, the back one remaining in place unless you want to completely remove the wing

aileron control horns.

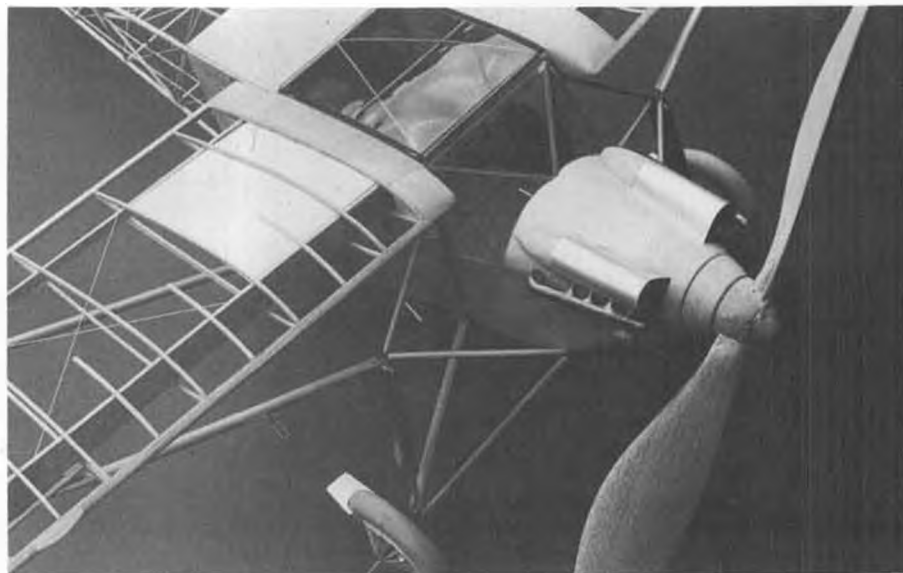
Wing struts are made of plastic soda straws, slightly flattened to

streamline shape, and plugged at each end with hard balsa. A 1/32 dia. wire is epoxied in the balsa. The wire engages tubing in the wing to effect attachment. At the base of the front strut, a hook-shape wire engages an "eye" soldered at the apex of the landing gear strutting. The bottom of the rear strut utilizes an aluminum "tongue" with a hole drilled in it to receive the pin which locks it to the aluminum anchor set in the fuselage. This allows strut to swing when wing folds.

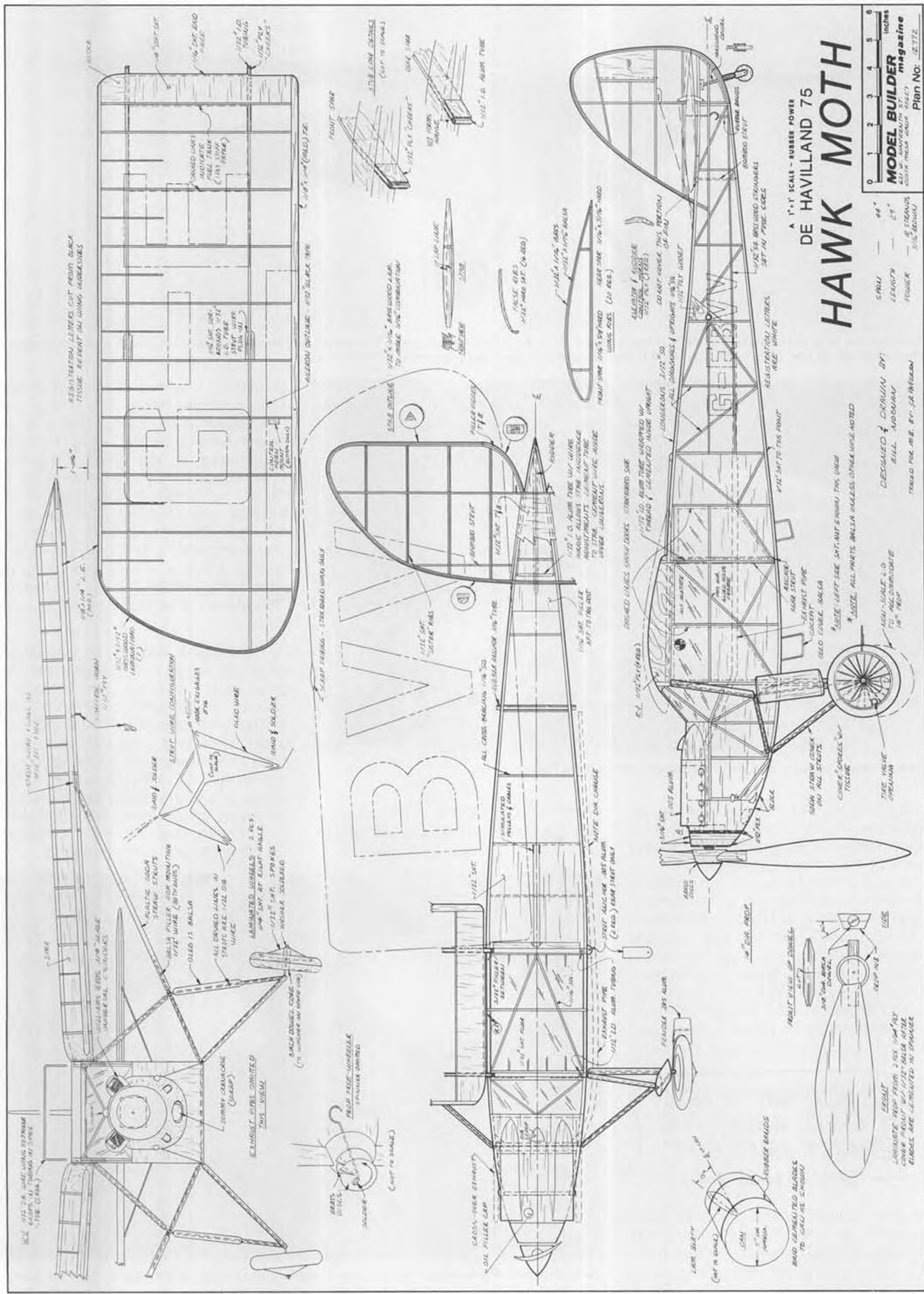
The easiest way to set dihedral is to attach wings to fuselage with wire pins, prop up wings, attach struts at bottom and establish dihedral with temporary support, slip tubing over upper wire ends and carefully apply epoxy to tubing. Press tubing to spar underside in correct position. When epoxy is set, the entire assembly may be taken apart. Note that the tubing in the wing has a balsa "surround" to allow tissue to be cemented.

**THE BEST WAY TO TELL
THE GIRL'S ABOUT THE
PERFECT XMAS GIFT.
— TURN TO PAGE 62 —**

panels. Folded wings are kept from swinging by a short piece of wire that bridges the gap between the two trailing edges and plugs into tubing set in trailing edges immediately aft of



Close-up of nose framework. Pilot had good visibility in all directions except straight aft. Exhaust from right bank of engine was carried across fuselage ahead of the firewall, to join left.



A 1" = 1" SCALE - RUBBER POWER DE HAVILLAND 75 HAWK MOTH

0 1 2 3 4 5 6
inches
MODEL BUILDER
magazine
GLEN MILLS GROUP, INC.
GLEN MILLS, PENNSYLVANIA

DESIGNED BY: DE HAVILLAND
BUILT BY: GLEN MILLS
TRAILED POL. REG. BY: SA. BRIDGES
SPRUE: #4
LENGTH: 24"
FINISH: 1/8" STAINLESS
DUE: BROWN

DESIGNED & DRAWN BY:
BILL ANDERSON
TRAILED POL. REG. BY: SA. BRIDGES

DESIGNED BY: DE HAVILLAND
BUILT BY: GLEN MILLS
TRAILED POL. REG. BY: SA. BRIDGES

DESIGNED BY: DE HAVILLAND
BUILT BY: GLEN MILLS
TRAILED POL. REG. BY: SA. BRIDGES

The cabin is glazed with .005 clear acetate. The top "skylight" has structural support under the glazing. Four strips of 1/32 silver tape are applied on the plastic (running fore and aft) to simulate separations.

The cylinder covers on the real Hawk Moth had the appearance of being bent by hand. This may be the case, as there was only one prototype made. On our model, these are bent from thin aluminum. A 3/4 inch diameter dowel serves as a form. The rear part of these is teardrop shaped, made of soft balsa. The Ghost engine was a V8, but only the front cylinders are visible through the scoop-like cowling front. Make these from Williams Brothers 3/4 inch scale universal cylinders, on which are added four cooling fins and simulated rocker arms. Cement these in place before attaching cowling covers. Note that cowling covers have four circular cut-outs on the sides which allow passage of simulated exhaust collectors to main pipe.

The exhaust pipes are made from (yep) soda straws. Bent portions are from balsa or reed. The pipe on the starboard side bends behind the engine, across what would be the firewall, and into the main pipe. Note that diameter of the main pipe is reduced about halfway back. An authentic appearance can be had by spraying all pipes with silver enamel, and while still wet, spraying lightly with black. The two colors become mottled. You can further enhance the worn metal look of both exhaust pipes and engine cylinders by rubbing with powdered graphite. Attach exhaust pipe with three wire brackets cemented to fuselage side after covering and doping.

Bend landing gear components from 1/32 diameter music wire. Bind joints with fine brass wire and solder. All struts except oleo have (yep, again) soda straw "sleeves" pressed to streamlined shape, to bring them to more nearly correct scale appearance. Balsa may be substituted if you don't



Close-up of front of model. Soda straws used for wing struts. Landing gear slightly lengthened to accommodate large flying prop.



The author's son, David, holds model while Bill winds the 10-strand 3/16 rubber motor the easy way, with a converted Black & Decker battery-powered drill, complete with counter!!

drink soda.

Wheels on the DH 75 had rather distinct appearance, having a somewhat exaggerated angle to the outer spokes. The main wheels are turned from laminated balsa discs. A recess

on the outer side receives the spoke assembly, fabricated separately. It is made of a 1/32 balsa disc on which spokes are glued.

Cement two pieces of medium-hard 1/4 inch thick balsa together. Grain should run at right angles. It is well to cut wheels to a rough 2-3/4 inch diameter. Cement a 2 inch length of 1/4 inch diameter birch dowel in center, letting about a 1/4 inch protrude. Chuck the long end of the dowel into a drill motor or lathe chuck. Turn down the wheel to correct diameter (2-1/2 inch) and contour with progressively fine sandpaper. Cut off portion of dowel that served as handle. Fabricate spoke assembly. When complete, slip this over the 1/4 inch remaining dowel to form outer part of wheel. The spoke assembly has a thin card stock rim to act as a rim to which the tissue covering is cemented. It is easier and neater to cover this before slipping it onto main wheel.



Bill does some test-gliding. We agree with his philosophy . . . a model that looks "right" will fly "right". The Hawk Moth is no exception to this . It placed 5th at the 1977 Nats.

Continued on page 88



Bill "Getting Started in Scale Gas" Warner about to launch . . . a rubber scale Bleriot!



Thompson Trophy fliers. Standing (l to r): Clarence Mather, Tom Laurie, Fernando Ramos, Granger Williams, Bill Warner. Kneeling (l to r): Bob Haight, Don Srull, Bill Hannan.

FREE FLIGHT SCALE

By FERNANDO RAMOS

• This month I have to start with some kind of explanation. Those of you who read this column may wonder why there is an occasional omission of Scale F/F from the pages of **MB** magazine. With my hectic schedule, I seem to miss those deadlines that magazine editors dearly try to make. I'm hoping that I can do a couple in a month to give me some kind of buffer, but as yet, I have not had the time to do this. At any rate, I will try to make those dreaded deadlines in time so as not to miss any more issues.

My next remarks will be made with tongue in cheek! An interesting development has arisen during the week of the Nats. Bob Underwood, of R/C Scale fame, scheduled a meeting on Thursday evening during the week of the Nats, for anyone who was interested in starting a National

Scale Organization. At dinner that same evening, about fifteen F/F scale modelers got together and hashed over some of our ideas and opinions. Many items were covered, which I will detail a bit later. When we finished eating, we adjourned to attend the other scheduled meeting. I don't know how many modelers there were in attendance, but there were quite a few, with the majority of them being R/C. However, F/F was very well represented. Bob had asked a representative from each category of scale modeling, F/F, C/L, and R/C to more or less explain what is exactly involved in each one. The individual representing C/L was not present. Unfortunately, I did not catch the name of the one representing R/C, but Bill Hannan did an outstanding job selling our point of view. John Worth and Johnny Clemens each gave

their support to having an organization of this sort started.

Many different ideas were presented and discussed. In a nutshell, the following is what eventually took place. It was unanimously decreed that a National Scale Organization be started, and now. The contingency of modelers appointed Bob Underwood to become acting President. Then it was decided that there should be a Vice-President for each separate category, and that each would more or less be independent of the others, as well as it should be. Granger Williams was appointed to be VP for R/C, which I feel was an excellent choice. Bill Boss was selected for C/L, and I for F/F. A Secretary/Treasurer was also appointed, but again I was unable to get his name. (Noel Allison. wcn)

Many of you are probably thinking, hey, what about this guy? Here I



Tom Laurie winds his Chester "Jeep" as Bert Pond holds. Anyone care to guess how many years Bert has been in modeling?



Granger Williams preps his Howard Ike (Mike?) as Bob Wisniewski holds. Granger is one of Williams Bros. firm in San Marcos, Calif.



Bob Peck's CO₂ powered Baby Ace overhead.



Don Srull's Waterman going for altitude.



Ken Hannan's CO₂ Farman Moustique was winner of Jr/Sr Scale Gas.

wanted a scale organization exclusive of the AMA without the R/C'ers and C/L'iners. What's up? Well, I have given much thought to this decision, and I've concluded that in order for us to accomplish some of the goals, we need some help. Let me just ramble on for a bit and see if I can't make some sense.

One comment that John Worth made at the meeting, that has stayed with me, is that the AMA works in a negative way. That is, someone decides that he wants a rule change. He goes about it in the proper method, going through channels, and the next thing you know it's in the rule book. When the rest of the membership finds out, all the griping begins. This is so true. Why not try and change this? It could probably be very easy for the F/F scale portion of this organization to monitor any rule proposal relative to F/F. If the majority of the membership decides that it is *not* a good rule, then it does not pass. This way, one individual can't push through something which affects us all for two years.

(Apparently John Worth was being kind to his audience. The truth is that all official proposals are published well in advance of the voting periods. During this time, when the membership should be griping . . . when it will do some good . . . they're off building and flying, paying no attention to what the volunteer contest boards are trying to do. There is no secrecy. The membership "finds out" when it gets hit between the eyes with a new rule. The duty of the National Association is to swing the two-by-four that gets the attention of the membership so it will "discover" new proposals in time to react to them, when it will do some good! wcn)

One of the biggest problems, as far as I'm concerned, about rule making for F/F scale, is that most all of the AMA district scale representatives are R/C'ers. They don't know for sure what we want, and since it is typical for them to receive little input from the modelers, they let a rule proposal go

through, good or bad. So, at any rate, I think that we can remedy that.

Another thing that I definitely want to see occur, is to have F/F Scale become an International event, like R/C and C/L. There was no opposition to this idea from Worth or Clemens, but realistically, we cannot do this without the aid of the AMA and its affiliation with the FAI. So, it is up to us to get the wheels in motion so we can become part of the International competition. We would have to decide whether or not it would be feasible to have indoor scale as part of that competition. What I mean by that is, that to locate an indoor facility wherever the site is chosen may be a difficult task. I'm sure that cost will enter into the picture regardless of what direction we take. At least for starters, we could have events for gas and rubber scale. I hope that I'm giving you food for thought. Certainly, we will need much input from all of you F/F scalers out there! Through this column I can at least, hopefully, keep you informed.

One aspect of this scale organization that Bob Underwood thought would be good is to have some kind of dispersal for scale documentation. A modeler needing to have information on a particular aircraft would write to the scale organization, which

in turn would send out the data available. Sound good? I suppose, if you are lazy. My personal feeling about this, is that half of the fun of scale modeling is doing the research. While looking for information about one particular aircraft, you usually run into other more exciting designs, etc. It is also kind of a challenge to see just exactly how much info you can find on some obscure aircraft. I would hate to see this made so easy that any initiative would be taken away from the modelers. I just can't imagine being the one responsible for gathering or distributing the information.

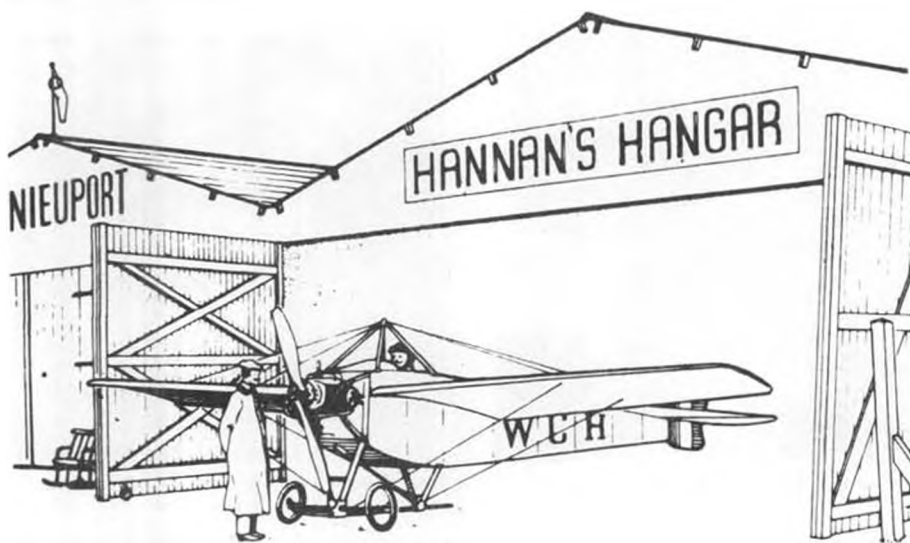
To summarize, I think that it would be a good idea to get behind this scale organization so that we may further our personal cause for F/F Scale. This would be to provide a sensible rule-making body, and to provide an equitable method to select a team for international competition. One thing I did forget to mention . . . There should be a newsletter which would give us an opportunity for input. Give it some thought, and let me know how you feel.

I would like to briefly give you a bird's-eye view of what I saw of F/F Scale at the Nats. Once again, I had an opportunity to be a scale judge for indoor peanut, F/F gas, and AMA R/C

Continued on page 77



Ced Galloway's Great Lakes Trainer, also seen on page 40.



"Don't speak of what you are going to do . . . Do it!"

• Our lead-in quote this month is from a fortune cookie that was, according to the reverse side, "PRINTED IN JAPAN". We think the advice is especially apt for model builders, who TALK of their projects, but seldom accomplish as much as they might, with a little extra effort!

NEW NIEUPORT

According to Leonard Opdycke, Editor of "World War I Aeroplanes," a full-size reproduction of a 1910 Nieuport monoplane similar to the one in our "Hangar" masthead drawing, is now under construction in Florida. We'll try to pass on additional project information as it becomes available.

ACHOO!

We see in the September Aero-modeller magazine that Laurie Barr had his veteran microfilm model destroyed in a most unusual and spectacular manner. Seems he was steering it with a helium balloon, which burst, wiping the model out completely. Perhaps the first time in history an aircraft was shot down by rubber shrapnel!

HANDY HINT

Richard Castle, of the San Diego

based Scale Staffel' club, uses dress pattern paper to cover vintage models. The color is just right to simulate old varnished fabric.

BEGINNER'S LUCK?

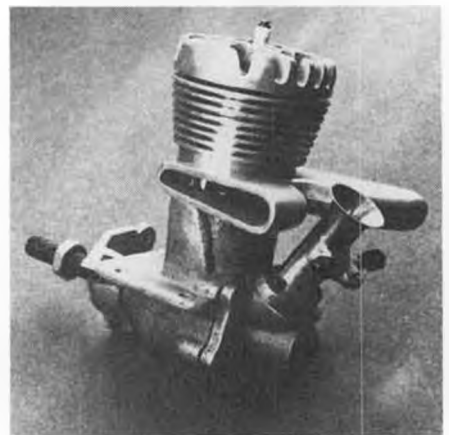
Speaking of the Scale Staffel, which was only recently formed, club officers Bob Peck and Bill Pardoe report that members of the 28-man club returned with 25 Nationals trophies!

WHAT'S IN A NAME?

The semi-controversy as to whether model aeroplaning is a "hobby" or a "sport" rages on. We wonder, in the light of the audience-attracting capabilities demonstrated at Old Rhinebeck and Morgan Hill, if it shouldn't be considered a branch of SHOW BUSINESS!

NEW PRODUCTS DEPARTMENT

Ced Galloway has announced the availability of a catalog of his full-scale aircraft photographs. Suitable for model builders and collectors, these prints span a period of many years, and cover such subjects as antiques, classics, homebuilts, racers, military and commercial aircraft. One dollar will bring you a catalog, half of which may be applied to your



Very rare Batzloff ignition engine, similar in appearance to Ira Hassad designs. See text.

first order, from: C.G. Enterprises, P.O. Box 651, Hesperia, CA 92345.

In addition to his fine book on indoor scale flying models, Fred Hall is now offering model construction plans. First release is "M-BRYO", an original 15 inch span rubber-powered endurance model. The Embro Endurance class was originated by the Connecticut Flying Aces Club, and has proven quite popular on the East Coast. The event was flown for the first time in the West, during the Nationals, and attracted much favorable comment.

Sort of an outdoor version of "Manhattan Formula", the event offers bonus points for realistic features, and encourages original designs, including unconventional types. All models must r.o.g. from an ordinary card-table. Additional rules appear on the "M-BRYO" descriptive flyer, available from: Major Fred Hall, 29 Sunrise Terrace, Westville, NJ 03892.

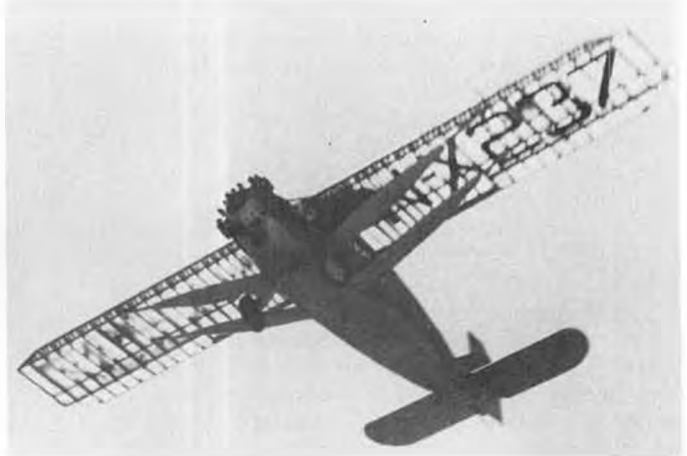
WHOA THERE!

We got a chuckle out of Russ Brown's referral in the Cleveland "CROSSWINDS" club newsletter, to the U.S. Post Office as "The Federal Bureau of Pony Express"!

Continued on page 92



Paul Poberezny, E.A.A. President, delivering lecture in front of homebuilt "Spirit". Continental radial. See text for more info.



Bill Warner took photo of Bob Haight's Columbia Bellanca which placed 4th at Nats in scale gas. Pendulum ailerons did the job.



CORSAIR BENT-WING



PHOTOS BY AUTHOR

By MARK DRELA . . . The author/designer of last month's "Rivets" bring us the currently most popular aircraft to be modeled. Everybody's doing it, so why not a Peanut version? Corsairs forever!!!

• The F4U Corsair was one of the finest all-round airplanes of WW II. It could be used as a fighter, dive bomber, level bomber, ground-attack machine, or as a reconnaissance aircraft. Superior to every enemy aircraft it encountered, the Corsair overcame the introduction of operational jets, and lived to see the end of the Korean War, where it was used as a ground-support aircraft.

The Peanut has the markings of a Corsair from the carrier USS Bunker Hill. The plans do not show every little detail. For these, look up the three-view in Profile No. 47. However, except for an enlarged stab, the configuration is faithfully reproduced.

Although the fuselage of the model

is of conventional half-shell construction, the wings are somewhat out of the ordinary, and I will describe their construction in detail.

The two wings are built separately. Start by making two identical spars. Assemble the outer panels first. Shim up the leading edge 1/32 inch at the outboard dihedral break (no shim at tip). This upsweep makes the model more docile and gives a more realistic airfoil. After ribs W3 through W6 are in place, glue down the spar, and finally the tip.

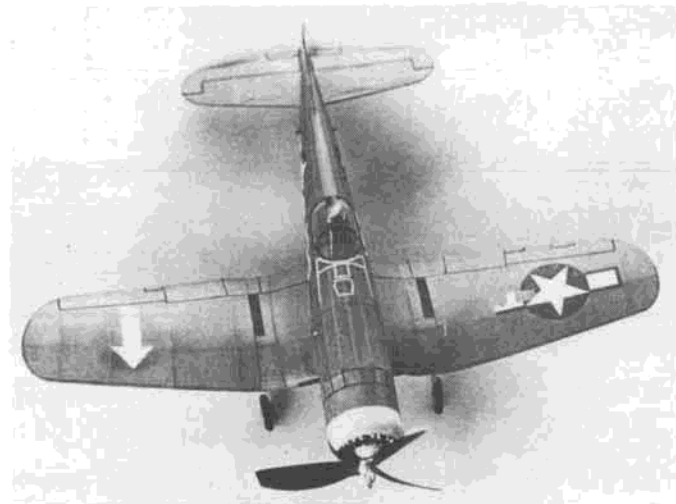
When dry, crack the leading and trailing edges at the dihedral breaks. Raise the outer panel 3/4 of an inch at the tip, while keeping the rest of the wing flat. Maintain a 1/32 shim

under the leading edge. The W1 and W2 dihedral ribs are now slid under the spar and cemented in place. W1 is tilted as shown on the plan. The L.G. support plate is now cut for a perfect fit and glued flush with the bottom surface. Apply thinned-out Titebond to the cracks in the L.E. and T.E. It penetrates and sets the joint permanently. The super-glues are good in this respect also.

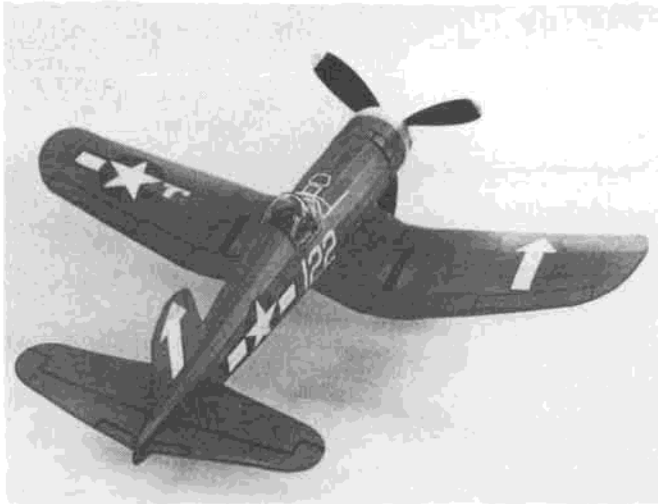
When dry, raise the wingtip 2-1/4 inches and install the remaining W1 rib in the inner panel. The scoops and sliced ribs will be put in later.

When joining the wing halves, pin down the narrow center panels flat

Continued on page 81



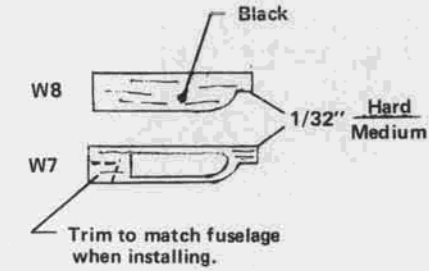
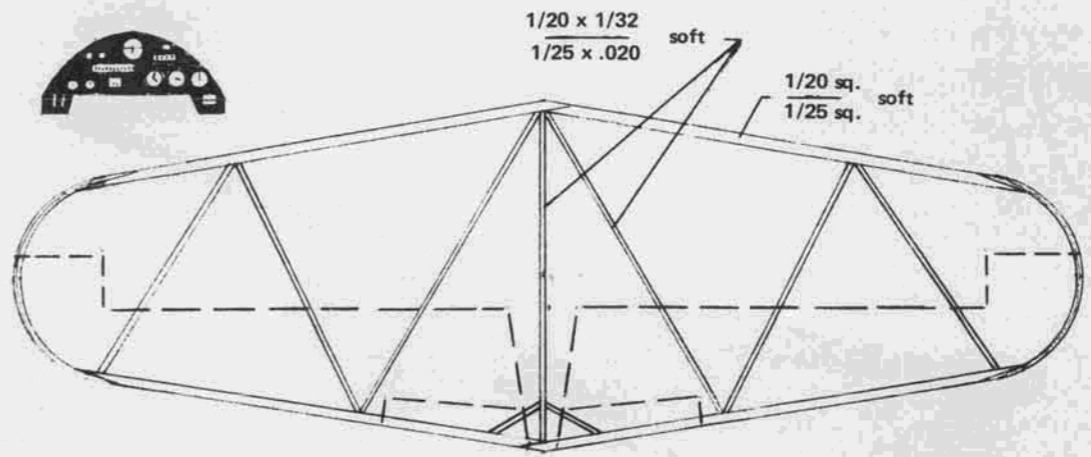
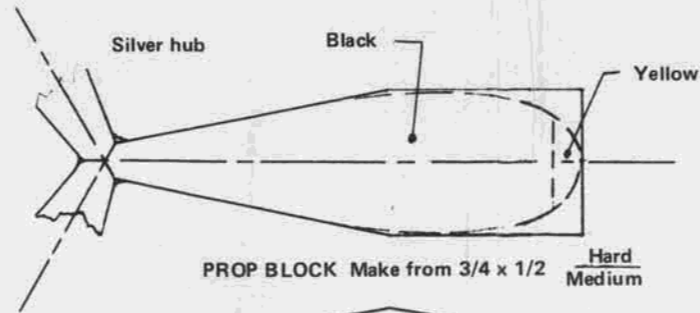
Enlarged stabilizer is only concession to flying ability from scale. For even better flying, build it with landing gear "retracted".



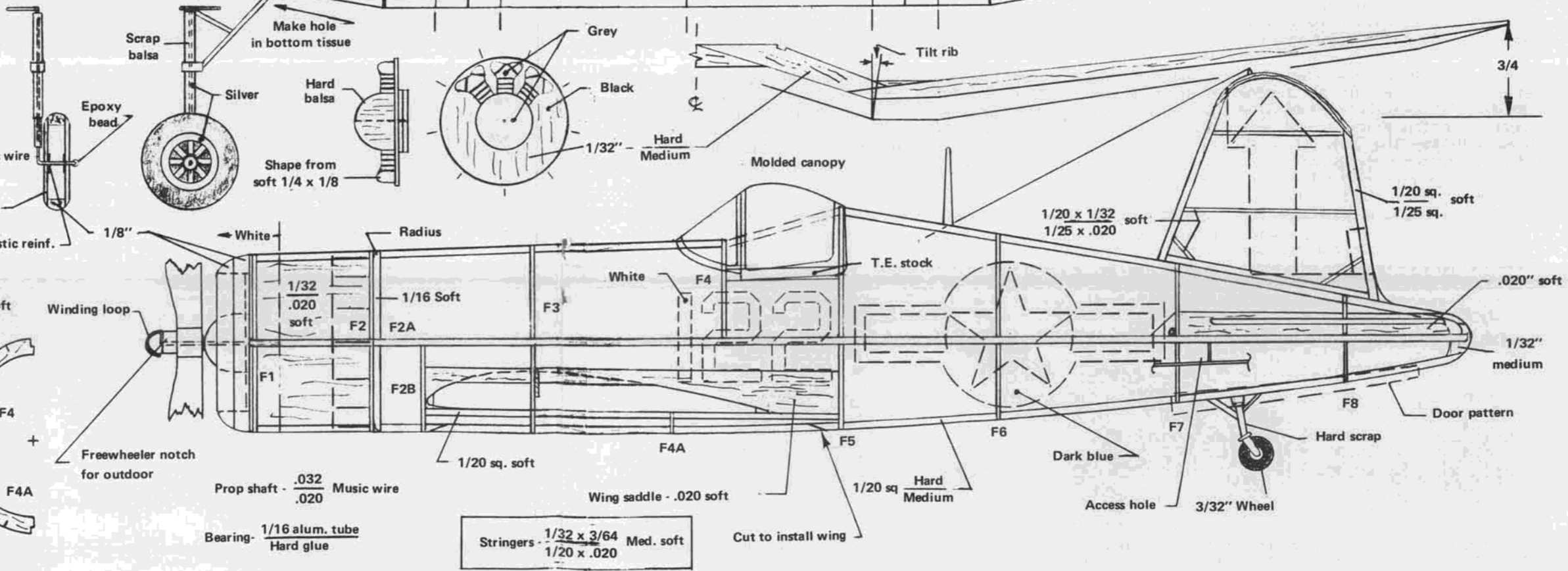
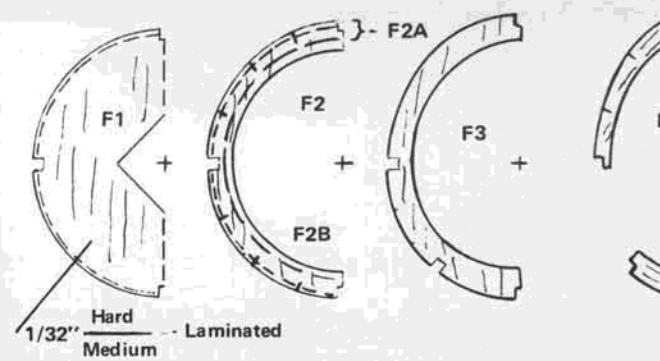
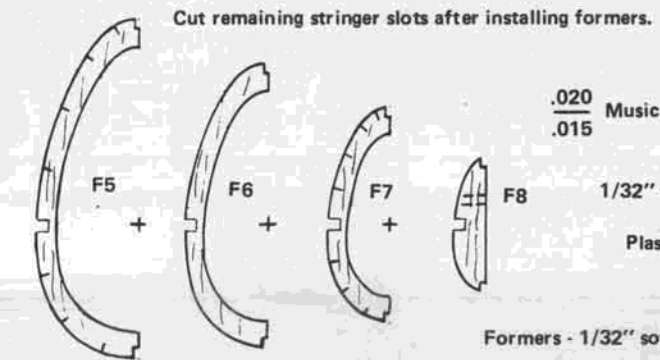
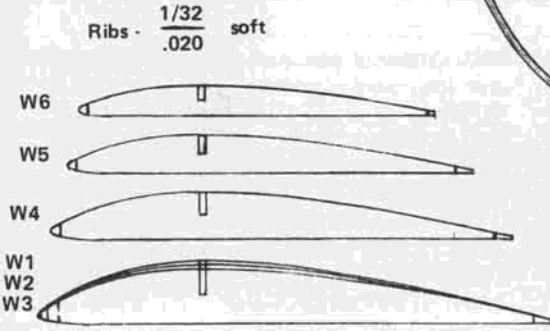
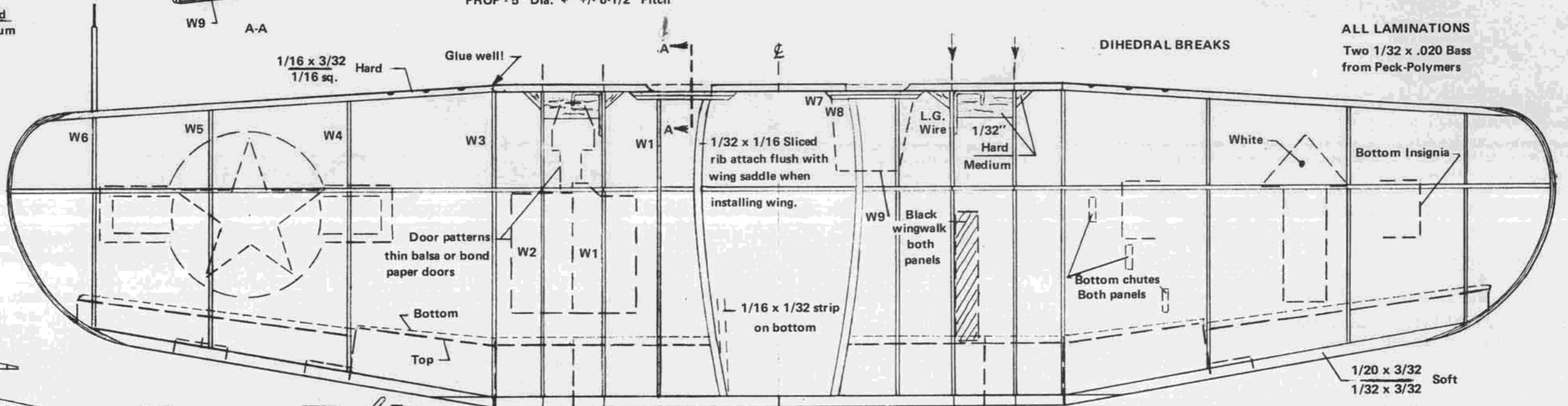
Building that bent wing is a little tricky, but it sure seems worth it once it's finished and in place.

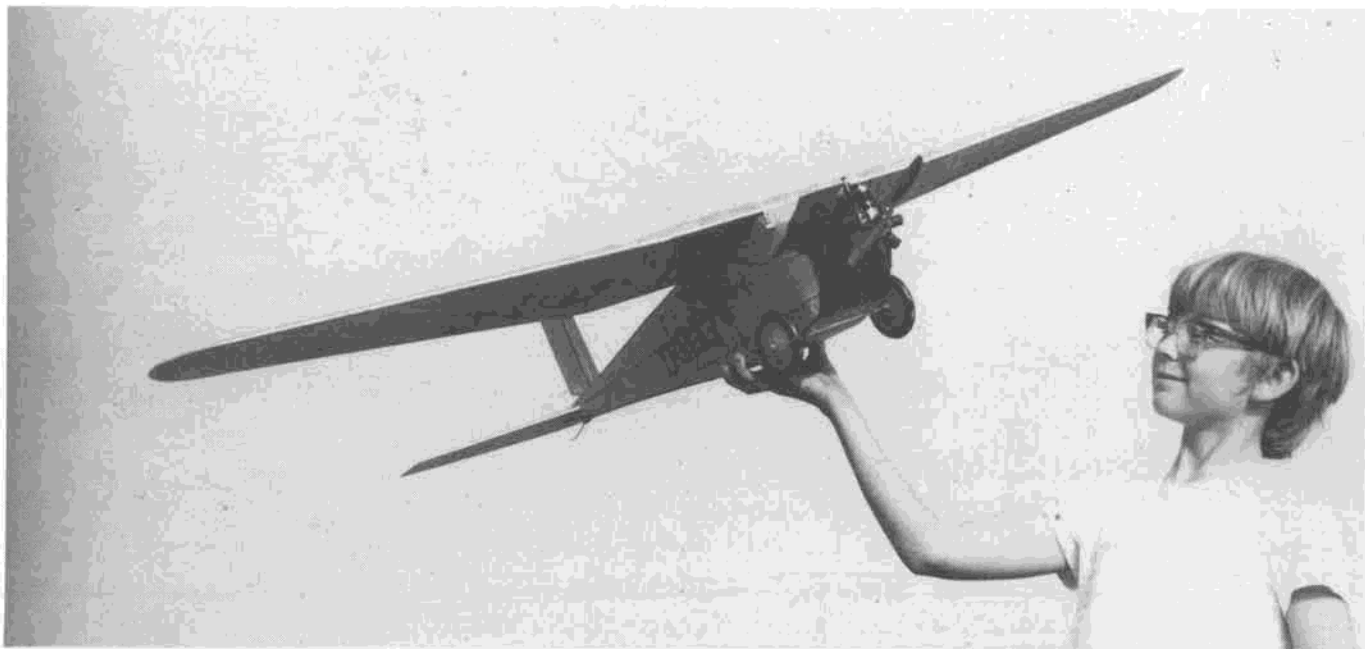
F4U-1 CORSAIR
PEANUT SCALE
 11-25-76
 DESIGNED BY MARK DRELA

Entire airplane is covered with sea-blue Japanese tissue, except for nose, which is white.



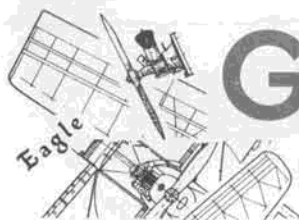
Wood Sizes	Outdoor	Indoor
W6	1/16 x 3/32	1/16 sq.
W5	1/16 x 3/32	1/16 sq.
W4	1/16 x 3/32	1/16 sq.
W3	1/16 x 3/32	1/16 sq.
W2	1/16 x 3/32	1/16 sq.
W1	1/16 x 3/32	1/16 sq.
W6	1/20 x 3/32	1/32 x 3/32
W5	1/20 x 3/32	1/32 x 3/32
W4	1/20 x 3/32	1/32 x 3/32
W3	1/20 x 3/32	1/32 x 3/32
W2	1/20 x 3/32	1/32 x 3/32
W1	1/20 x 3/32	1/32 x 3/32





Messerschmitt M-18, built from plans in French magazine, *Modele Reduit d'Avion*, about seven years ago, by Jim Warner (then 13 years old). Fine choice for scale, with square fuselage, simple wing attachment, single wire landing gear, and generous surfaces. Babe Bee .049 power.

PHOTOS BY AUTHOR



GETTING STARTED

in F/F GAS SCALE



By **BILL WARNER** . . . Take it from someone who knows . . . scale free flight gas (or CO₂, or electric) can be a very satisfying specialty in our hobby, if you go at it in the right way. The author tells it as it should be.

● Scenario: Uncle Charlie, on a business trip, decides to bring home a model aeroplane to his favorite nephew. He chooses a magnificent kit, resplendent with color photo or painting of the real aeroplane, all nicely done up in plastic wrap so no one will lose parts (or get a peek inside). The plans show a motorized version even though the original never flew with one. The parts are neatly die-cut (sometimes not-so-neatly) from Japanese bog wood or Philippine mahogany, due to the fact that good contest-grade balsa is expensive. The pre-molded plastic parts are beautiful, if heavy. The plan appears to have been designed by someone who was a

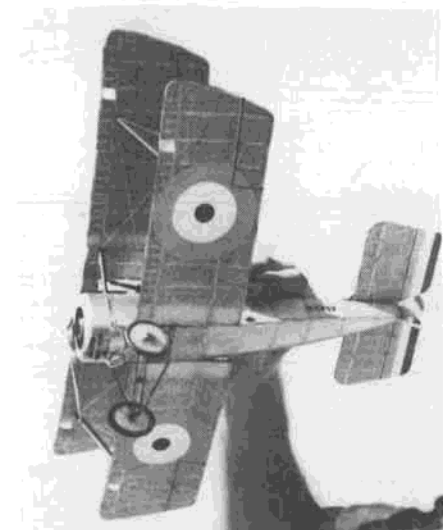
former solid modeler and finding it hard to break old habits. The eight-year-old recipient of this thoughtful gift will probably find something less than a graceful, floating flying machine resulting from his efforts. It will probably fly like a gopher, returning itself to kit form at the earliest opportunity. The nephew takes up skateboarding or collecting matchbook covers.

Just in case you think the above is rather farfetched, I have the testimony of a rather highly-placed sales representative for a major scale model firm a few years ago confirming my worst suspicions that most of the models then being kitted were never

expected to fly. The profit motive was the prime consideration, and quality balsa and quality design counted for little, as long as the kits were moving in quantity. In the last few years, a great deal of progress has been made in this area, with many really promising and exciting kits now being available. The efforts of people like Bob Peck, Hurst Bowers, Gene Thomas, and many new entries into the scale model field, are encouraging.



"Miss Los Angeles" F/F Scale Gas by the author, 1-1/2 inch scale, powered by Doonside .75cc Mills diesel, 29 inch span. Wings flex to dihedral position in flight. Cowled in engines are sticky.



Not a beginner's model! Bill Stroman's Sopwith Pup with Brown CO₂ power.



The late "Brick" Brickner's fine Piper illustrates how a simple plane with some well-executed details can win in national competition.



Fernando Ramos with his Sopwith Baby on floats. Merlin .049 diesel couldn't overcome suction of flat-bottom floats. Flew hand launched.



Diesel powered World War I bipes are popular in England, such as this BE-2c.



Tiny Train Monoplane . . . Bill Hannan's answer to the Japanese tissue shortage! Brown CO₂ gets it off the water and wins contests. Tail hook indicates it might also be rubber powered.

Even though there are "beginner's" scale kits available, my personal feeling is that one should not even think about FF scale until one has spent some time learning basic aeronautics with Sleek-Streaks, Jasco X-18's, and simple R.O.G. models. Getting a feel of what makes a model climb, dive, loop, glide well, etc., is much easier on an expendable trainer than on something in which you have an ego-investment. When you're ready to get out of the stick-fuselage category of rubber-powered planes, a Sig Cabin-aire or similar flat-sided, box-fuselage model with a tissue-covered wing, will make a good transition subject. When you finally do build your first "scale" ship, there are a number of very important considerations if you want it to be successful. The main problem is to build something which combines all of the flying capabilities of the aforementioned "fliers" and an interesting design. Many scale ships which are great fliers are about as visually exciting as a 97-year-old topless dancer!

HALF THE FIGHT IS GETTING STARTED

Making up your mind on the ship

you want to build is really one of the hardest, and most fun parts of scale modeling. You want something to fly, but your taste in planes runs to things like Lear Jets or B-29's. If you don't have an extensive reference library of your own, as do many of the long-time scale nuts, perhaps your public library may have some books or model magazines which will help. Making a list of all of the planes which you like and then systematically putting

them in a priority order is a good idea, even if you have never heard of some of the planes and just *know* you'll never find a plan, kit, or anything on it. You'd be amazed at what is available! Joining a club like Flightmasters which specializes in flying scale is a great start. Subscribing to one or two quality model magazines and scrounging around in second-hand bookstores for old model mags will help build up the plan file. Getting



Sterling Models' Aeronca C-3 is simple, stable, and flies on anything. Tony Naccarato's, seen here at the 1973 Oshkosh Nats, has done 5 minutes on an electric motor!



The author's Desoutter monoplane is powered by a VL HyTork planetary-gear electric motor. Span is 3 ft., weight 4-1/2 oz., has won 3 contests so far. Built from plans by E. Fillon, France.



Bill Warner lost this diesel powered BE-2e in a thermal (!) at Taft in 1971. During another contest a year or two later, it was found by modeler looking for another lost plane. Engine was OK.

a stock of catalogs from Sig, Peck-Polymers, or other sources of plans and kits, will also give you a wider choice.

If you choose to build a kit, you are probably going to be limited to what is available at your local hobby store, or what you can order from sources known to you. Building from plans gives you a much greater selection, if you have, or have a friend, who has a collection of model magazines. Plans can be ordered from magazines or from other sources, such

as John Pond, but unless you have seen the particular plan you are ordering, you might get a real pig-in-a-poke. The same thing applies to sealed-up model kits. A third possibility is to make your own plans. This *really* opens up many great subject aircraft to you, but has the disadvantage of putting the burden of finding out many little tricks of construction and flying that hopefully the kit or published plan designer has already worked out. Once in a while, a plan will be published of a model which has never

flown, but editors of model magazines usually spot these. Plans of planes which have won in contests frequently are good bets. Let's have a brief look at all three sources of supply.

BUILDING FROM A KIT

One of the main advantages of a good kit is that much of the work has been done for you by way of wood selection, flight testing of the design, and in many cases, even a three-view drawing (a must if you ever want to try the fun of flying in a contest). As I have not built many kits during the last ten years myself, I got in touch with Tony Naccarato of T and A Hobby Lobby, in Burbank. Being an active flier himself, as well as a dealer who sells a large volume of free-flight scale kits, I figured that he would get a lot of feedback on their relative merits.

As I suspected, many of the successful kits Tony recommended were high-wing monoplanes which could be flown either with small (.010 or .020) glow engines, small diesels such as the .036 DC Dart, electric motors such as the VL or Astro-Flight, or CO₂'s, like the Brown or Telco. CO₂ motors such as the Telco, Shark, or Brown twin seem to work well with large tanks in the medium-size rubber models, if they are built light, while the small Brown is well adapted to the smaller kits. The VL Hytork 48 electric motor will swing a large prop, as it is planetary-gear, and may be better for models with large radial cowls. The Astro .020 electric has more power and turns a smaller prop, great for models with shorter landing gear and smaller frontal areas.

Kits to steer clear of are ones which are "overbuilt", or have more construction in them than the original plane (such as making a simple box fuselage on a Fokker D-8 in half-shells with several stringers, when a more accurate and lighter design would seem to make sense). Certain model plans seem to have a heavy, cluttered



Chuck West's CO₂ powered Taube is a show-stopper every time he brings it out to fly . . . which it does.



Lonnie Cope's Macchi MC-72 with Cox Pee Wee .020. Flies well off water. Photo at Lake Elsinore by Tynee Vidal.



Bill Warner's 33 inch span, Rebell .06 diesel powered Waco YKS-6 won first at the 1972 Nationals and the 1972 Flightmasters Annual. Not for beginners. Construction article published in June 1973 Model Builder. Plans available at \$3.50 a set.

look about them which generally triggers a feeling that "it ain't never gonna fly" in most builders. A light, airy structure with a minimum of heavy plastic molded parts gives me a good feeling about a kit. The larger the plane, providing better wing loadings, the better chance you have of success. Exceptions to this would be an overbuilt large plane or a small plane with light, quality balsa. Heft the printwood or die-cut sheets and compare them with a sheet of SIG contest balsa from your dealer's bin. Super-heavy or warped parts are going to make even the best plane turn out to be a turkey.

If the landing gear, engine-mounting firewall, or wing attachment areas are flimsy, don't hesitate to add your own reinforcement here, even if the design is a proven one. I have seen many perfectly good models miss a day's flying just because the motor, gear, or wing knocked off on a test

flight.

BUILDING FROM PLANS

Despite the obvious hardship of having to hunt up the right size and weight of wood, wheels, wire, etc., you are generally better off with a plan than a kit. The great advantage is that you can select the finest materials and still come out with a savings over the price of a kit by 50% or more. Also you have many more plans than kits available. The extra trouble you take to copy parts onto your own wood by pinprick or carbon paper will pay off in parts which will be cut out cleanly and without heavy printing all over them.

Another route in the plan venture is to enlarge a small rubber plan to the size you want, either photographically or with proportional dividers. A nifty trick is to shoot a magazine page with a 35mm camera and then project the slide on a large sheet of paper on the wall. Tracing it just takes a few min-

utes. Even U/control or R/C plan outlines can be used if you do your own construction changes to really lighten it up with a "rubber-model" type construction.

DRAWING YOUR OWN PLANS

The above enlargement procedure is a good step into doing your own plans. Many excellent 3-view drawings are available and can be blown up with an opaque projector (shows the image on the wall directly out of a book or magazine) or with a slide projector. Before tracing, be sure your projector is aimed directly at the paper you are tracing onto to prevent "keystoning" distortion. Put in your own construction. I think that even a beginner in FF "gas" scale could do a simple plan of a homebuilt in this fashion, adding features from model plans to make it work out, such as a Clark "Y" airfoil, possibly an en-

Continued on page 85



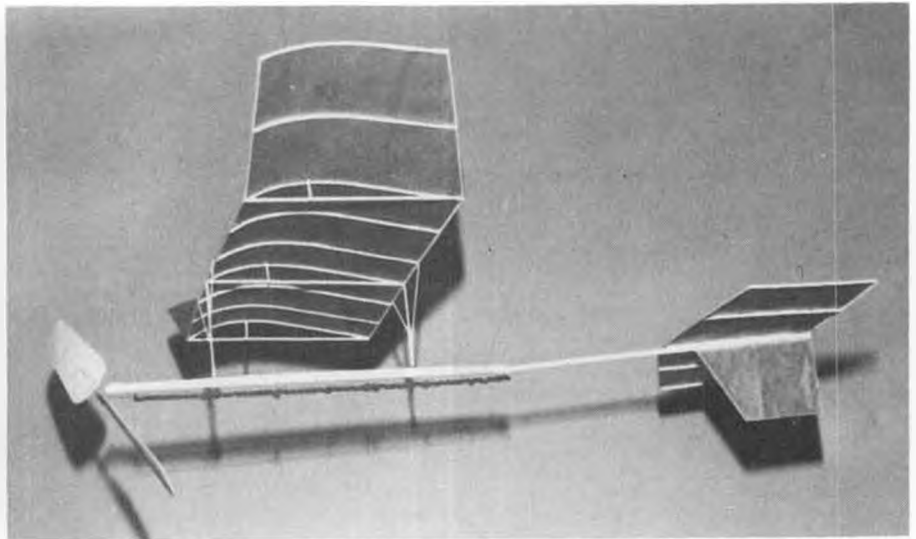
Joe Tschirgi always goes for the unusual, such as this DuFaux biplane, which is Mattel electric motor powered. Photo by Tynee Vidal.



Tony Naccarato, Burbank, Calif. hobby dealer, with Astro Flight electric motor powered Taylorcraft. He's a pioneer in electric scale.



Susan Murphy with her father's Scout's Penny. An excellent introduction to indoor flying.



Model must weigh not less than a new U.S. penny, or 0.109 ounce (3.10 grams). Beginner's Pennyplanes usually come out around 7 grams, but still fly very well. Prototype is 5.2 grams.

PHOTOS BY AUTHOR

the SCOUT'S PENNY PLANE

By JERRY MURPHY . . . If you've ever been tempted to take a shot at indoor rubber modeling, but couldn't find a reasonable yet uncomplicated design to build, now is the time, and here is the ship you're looking for.

- This model is an ideal starting place for someone who is interested in flying indoor rubber. The basic construction used in the Scout's Penny is typical of that used in record-setting models. This model fulfills the requirements called out in the AMA Rulebook for the Novice Class of Pennyplane.

The Pennyplane gets its name from its unique minimum weight requirement. The total airplane less rubber must have a minimum weight that is equal to that of a freshly minted U.S. penny. That weight is 0.109 ounces, or 3.10 grams, if you want to think metric.

The Scout's Penny was designed as a special project for Colorado Springs Explorer Post No. 267. None of these boys had even seen an indoor model

before I flew my paper stick model at one of their meetings. Their enthusiasm and desire to try it themselves, resulted in this project. At a second meeting, materials and plans were given to the boys and a contest was scheduled. Would you believe that all the models flew? Well they did and very well. In a 20 foot high gym with the heaters on full blast (remember it's cold here in Colorado). The top time turned in by the boys was 161 seconds.

If you want to join in the fun of pennyplane flying you will need to visit the local hobby shop and pickup the items listed in the bill of materials at the end of this article.

If this is to be your first indoor model, don't worry too much about

weight. The models built by the Scouts weighed in at about 7 grams. My prototype weighs 5.2 grams, and it is an outstanding flyer. If you build your model in the 4 to 6 gram weight range, you will have a model that will fly very well and will be very easy to handle. As you become more accustomed to flying indoor then lighter models can be built. The only way to get down to the 3.10 gram minimum weight is to use selected indoor materials.

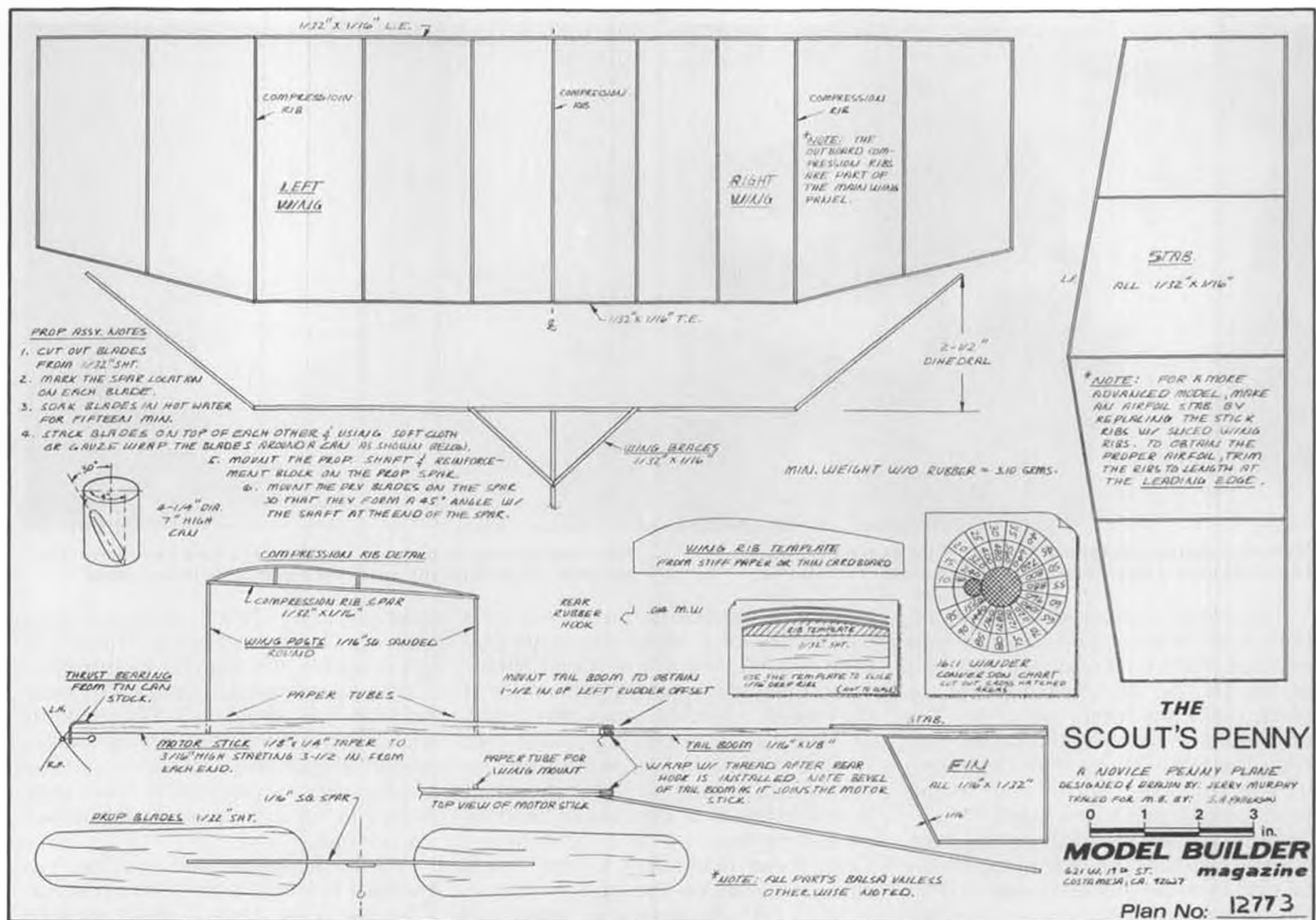
WHY NOT JUST COME OUT AND SAY IT ?



The winner!! (l to r): Al Wiksom, 2nd, 103 seconds; Mark Cardon, 1st, 161 seconds; and Cris Harrison, 3rd, 101 seconds.

Now that you have rounded up all the needed materials, let's start building your Scout's Penny. A good starting place is the motor stick. Carefully draw the taper as shown on the plans, using a very sharp pencil and straight edge. Then cut the motor stick to shape. Now cut the tail boom to length and bevel the tail boom where it joins the body stick as shown in detail A on the plans. Now glue the tail boom to the motor stick. While this joint is drying, make the rear rubber hook from 0.014 music wire. Insert the hook into the motor stick and wrap the hook/tail boom joint with thread and apply a coat of glue over this joint.

Make a thrust bearing from tin can stock. Don't use an aluminum drink can, as it is too soft. Use a large



THE SCOUT'S PENNY
 A NOVICE PENNY PLANE
 DESIGNED & DRAWN BY: JERRY MURPHY
 TRIMMED FOR M.B. BY: J.A. PHOENIX
MODEL BUILDER
 magazine
 631 W. 19th ST.
 COSTA MESA, CA 92627
 Plan No: 12773

sewing needle to make the hole for the prop shaft. Glue the thrust bearing to the motor stick and wrap the joint with thread. Apply a coat of glue over this joint. Now for the part that separates first-place models from the pack. Grab the sandpaper and round all the edges of this assembly and lightly sand the whole thing.

TAIL
 Take a good ruler and very carefully lay out 1/16 inch marks across the sheet of 1/32 balsa. Now with a new single edge razor blade, using a ruler as a guide, cut twelve 1/16 x 1/32 sticks. The longest stick you will need for your Scout's Penny is 12 inches long (30.48cm if you want to keep up with the metric thing).
 Now look through your stack of sticks and select the lightest ones for the tail, and the two that are slightly oversize and the heaviest, to be the wing main spars.

Cover the plans with plastic film and carefully lay out the stab. The sticks are placed down on the plans thin side up. Do not stick pins through the wood, but form an X over the sticks as shown in the photos. Use a toothpick to apply the glue to each joint. Using scrap from the stab, lay out the fin. To make the covering easier, you can lay out the fin with the thick (1/16) side of the sticks down on the plans.

Once the glue has dried, carefully

remove the stab and fin from the plans and trim off any excess glue.

WING
 Cut the wing rib template out of the plans and glue it to a piece of heavy paper or thin cardboard. I used the cardboard from the back of writing tablets or a file folder to make rib templates.

Now with a sharp knife, cut a rectangle from your 1/32 sheet of balsa that is 5 inches long (with the grain) and 1-1/2 inches wide. Using your ruler, carefully lay out 1/16 inch marks along both 1-1/2 inch lengths of this rectangle. Using a very sharp modeling knife, such as **Model Builder's** Uber Skiver with the No. 11 blade, cut out at least 14 ribs. Why 14 when there are only 11 ribs in the Scout's

**GOOD IDEA, LADIES
 LOOK FOR POW-MITE
 ON PAGE 99**

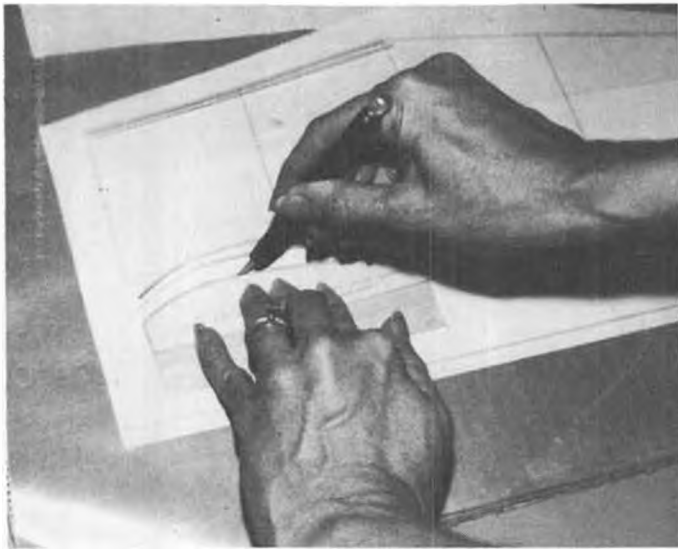
Penny, you ask? Well, everybody breaks at least two ribs, so why not have an extra?

Find those two sticks that you put aside and lay out the wing leading and trailing edges. Go ahead and cut the LE at the dihedral breaks. Glue 1/16 x 1/32 sticks thin side up to the main panel LE and TE to form the cross

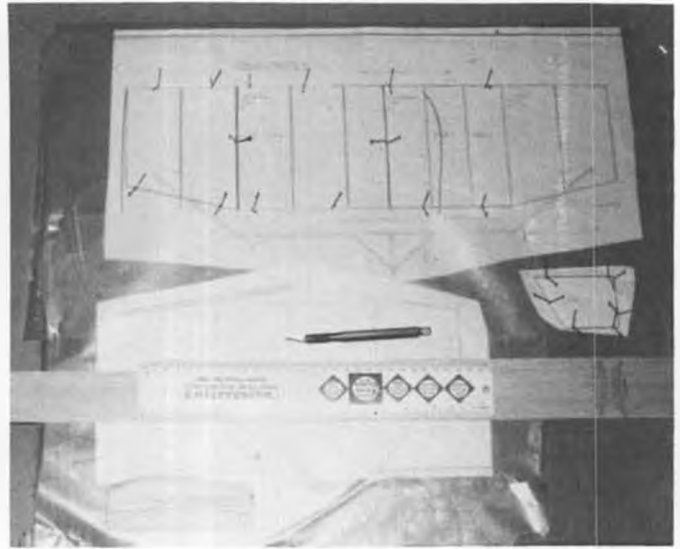
member of the compression ribs. Remember, don't stick pins through the wood. Now place the ribs on the plans and trim them to length at the trailing edge. This means you put the leading edge of the rib up against the leading edge spar and trim the rib to fit by cutting it to length at its trailing edge.

After the glue is dry, carefully remove the tip panels from the plans. Bevel the spars as shown on the plans and glue the tips to the main panel with the 2-1/2 inch of dihedral required. Make sure that both the LE and TE of the tip rib are 2-1/2 inches off of the building board. After all the glue has had time to dry, remove the finished wing from the plans and carefully remove any excess glue with a very sharp knife.

COVERING
 Take the finished wing and tail and use them as patterns to cut out the tissue. Cut the tissue slightly oversize and the grain of the tissue should be running span-wise, that is to say, from tip-to-tip of the wing and stab. Use your small brush to apply a coat of clear dope to the outline of the fin. Lay the tissue over the fin and carefully press the tissue down over the outline of the fin. Now cover the stab in the same way. Don't try to pull the tissue very tight as that will warp the structure. Don't water-shrink it either, just leave it as it is.



Method of cutting ribs from 1/32 sheet. Trim from trailing edge to fit between spars. Uber Skiver with No. 11 blade does this fine.



Note how pins are crossed over wood strips to hold them down. Do not stick 'em through the wood. We prefer Saran to wax paper.

The wing is covered in three sections, first the main panel and then the two tips. Put a coat of dope on the top of the LE and TE spars and the top of the outboard compression ribs. Lay on the tissue like you did on the tail. After the tissue is dry, trim the excess off the compression ribs with a new, never before used razor blade.

Now comes the only tricky part, covering the tips. Lay the tissue on the tip and trim the inboard edge so it fits the compression rib. Now apply a coat of dope to the outline of the tip and carefully press on the tissue. After all the dope is dry, take your new razor blade and trim off all the excess tissue. As you do this trimming, you will find places where the tissue isn't stuck to the wood. Just take your brush and apply additional dope to those spots and press the tissue down.

ASSEMBLY

Cut the wing posts to length from 1/16 sq. balsa and sand them round. This is easily done by rolling the wood between your fingers while applying light pressure with the sandpaper.

After the posts are round, let's make the tissue tubes that are used to mount the wing to the motor stick. Cut a piece

of scrap tissue approximately 1/2 inch x 4 inches long. Wrap the tissue one time around one of the round sticks, then smear glue over the remainder of the tissue. Quickly wrap this tissue around the post, forming a tube that is a 1/2 inch high. Before the glue can dry, slide this tube off the post and let it dry. After it is dry, cut it in half, producing two 1/4 inch long tubes. Glue these two tubes to the motor stick as shown on the plans.

Now take the two wing posts and glue them to the wing. Note that the left wing is longer. After the posts are dry, make the wing braces as shown and glue them in place.

Glue the stab and fin to the tail boom and you have something that looks like an indoor model.

PROP

The heart of any rubber model is its prop. This is the one component that controls how well your model will fly. A super airframe won't fly very well if it is coupled to a poorly built prop. The prop should be light and true, to be good.

Cut the blade outline out of the plans and glue it to heavy paper or cardboard, to make a template like

your wing rib. Now cut two blades from the 1/32 sheet balsa. The wood grain should run parallel to the spar. Take a few minutes to sand each blade so that it is about 1/3 thinner than the original thickness of the balsa. Mark the spar position on the sanded blades with a sharp pencil. Now soak both blades in hot water for about 15 minutes.

While the blades are soaking, cut the spar to length from 1/16 sq. balsa. Glue the reinforcing 1/16 sq. stick to the center of the spar and sand the rest of the spar round. Install the prop shaft which has been formed from 0.014 music wire. Take a 4-1/4 inch diameter, 7 inch high can (10.8cm x 17.8cm for you metric fans) and draw a vertical line on it with a felt-tip pen. Now measure around the top of the can from where your vertical line stopped, four inches, and mark the can there. Now draw a line connecting this mark with the one on the bottom of your vertical line. This line will be the center line of your blades when you lay them on the can to form their airfoil and twist.

Take the two wet blades and place

Continued on page 80



A few of the items needed for flying; strip rubber (of course), oil, rubber lube, and a winder. A means of counting turns is helpful.



Post 267 advisor Blair Harrison puts some stored energy into the rubber on Mark Cardon's Pennyplane for its winning flight.



Hobby Shack has this sporty R/C hot rod "The Lazer". Features planked foam wing, fiberglass fuse. Fast, smooth, maneuverable.



"Hobby Commander" sport trainer from Model Merchant. Features ARF construction of plastic and foam.

The 1/2-A SCENE

By LARRY RENGER

• I received a long and impassioned letter from Emmett Fry, of Murfreesboro, Arkansas. He reminded me of something which I should have kept very prominent in my thinking. The meat of the letter was the message that most 1/2A flyers are kids and beginners flying their first or second airplane at the local school yard. He pointed out that this column tends to be aimed at the more advanced flyer, be he in FF, CL, or RC.

Emmett is quite right, and in order to correct the situation, I am beginning a section of this column which will be called "Beginners Workshop". The aim of this new segment is to present one or more basic techniques as needed by the raw novice.

BEGINNERS WORKSHOP

Let's start with the engine! A model aircraft engine is a simple device. It has a piston which slides in a cylinder coupled to a crankshaft. The fuel/air mix explodes and drives the piston down. The connecting rod from piston to crankshaft drives the shaft and the propeller.

At the bottom of the piston travel, the prop acts like a flywheel and pushes the piston back to the top of the cylinder again. The conversion of straight back and forth action of the piston to rotating motion of the crankshaft gives it the name "reciprocating engine". The fact that the explosion takes place inside the cylinder between the head and the piston is the basis for this type engine being called "internal combustion".

The rest of the engine is con-

structed to solve a few problems: first, you must get that charge of fuel and air into the cylinder; second, it is necessary to clear out the burned gases; third, light off the explosion at the right time; fourth, a technique for drawing the fuel to the engine and mixing it thoroughly with air is required.

All 1/2A engines run on what is called a "2-stroke" cycle. That means that every time the piston

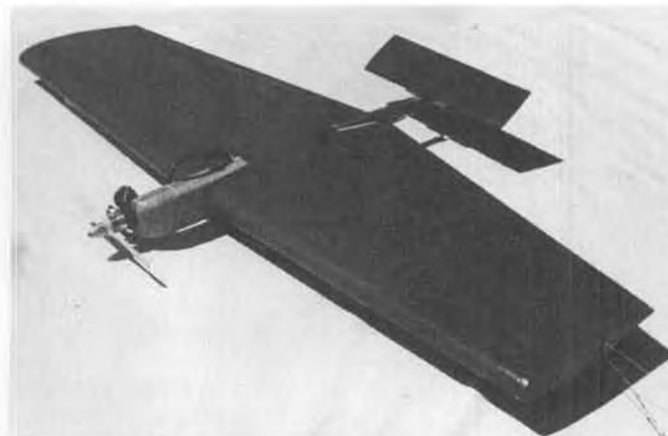
Continued on page 94



House of Balsa's ME-109 for 2-channel radio, is a real smooth flyer. Needs a strong engine, so figure on a large tank, high nitro (40%), and a drilled venturi with pressure fuel supply.



Hobby Lobby's "Shoestring". Discontinued, it has been revived as the Rickey Rat, by Model Merchant.



Sonny Butler designed this foam wing combat ship. Highly competitive, light, and rugged. Also, foam less expensive than balsa.



Ted Stalick holds his dad's Dragmaster during a round at Harts Lake Prairie. Bob went on to qualify for finals in the event.



Roles reversed, Bob launches Ted's Simplex A/2 (MB May '76). Ted bested his dad by one second during entire 8-round meet.

FREE FLIGHT

By BOB STALICK

• This must be the time of year to put away the old gas ships and prepare to procrastinate on your winter building plans. There's the new 1/2A to build and a new Nordic or two. Don't forget the FAI Power ship, and how about the new unlimited rubber model for your next year's assault on the Mulvihill trophy. Probably, if your list of models to build is anything like mine, you won't get to more than one of them. While you're deciding which one, there's next week's indoor contest to get ready for, so head on down to the hobby shop and pick up a Peanut Scale kit so at least you don't stand around looking gawky. If you put off building it for a couple of days, you can probably finish it the night before the meet and get complimented on how well the tissue trim looks hanging off the wing like it does. Sound familiar? I think this kind of thing goes on in most free flighter's homes all of the time.

While you're thinking about it, you might consider what to hint about for Santa's visit later this month. To give you a bit of assistance, I compiled a list of goodies to consider. That list appears close to the tail end of this month's column. While waiting to see the list, let's get on with the business at hand.

DECEMBER THREE VIEW...

Thomas Koster's "Square Cream"

Not too much information yet on Koster's FAI World Championship Power Model, "Speed Cream." This ship is slightly different than the three-view this month, in at least the airfoil... which is a 6% flat bottomed section on the World Champ. The Square Cream design has been around the contest circuit for awhile now, but it is very much an advanced state-of-the-art model. As with most of Koster's power models, this one I have been told, is just a bit on the marginal side in regard to directional stability.

The model tends to almost dutch-roll during the climb, which is very quick. Glide is so-so, but acceptable, considering the altitude of the model at the end of the seven-second power run. If you are into FAI Power, this is a model worth study.

There is speculation now, since Koster has won both Wakefield and Power, that he might consider going after the A/2 event to see if he could become the first triple-crown winner in free flight.

DARNED GOOD AIRFOIL...

Koster 66

Since we are featuring Koster's Power Model this month, it seems only fitting that we also feature the airfoil which was used on his World Championship winning Wakefield back in the 1960's. This airfoil was featured in the 1974 issue of the NFFS Symposium report in an article entitled, "The Flying Chicken Story," a report of a 1974 Symposium held in



"Wild Bill" Gaiser at Harts Lake Prairie during Wakefield day. Bill is first alternate to the finals from the Northwest.



Jerry "Scout's Pennyplane" Murphy preps his Class C "Pearl Truck-er" at the '77 Nats. Photo by Pete Young.

Attention:
Dear Bill:

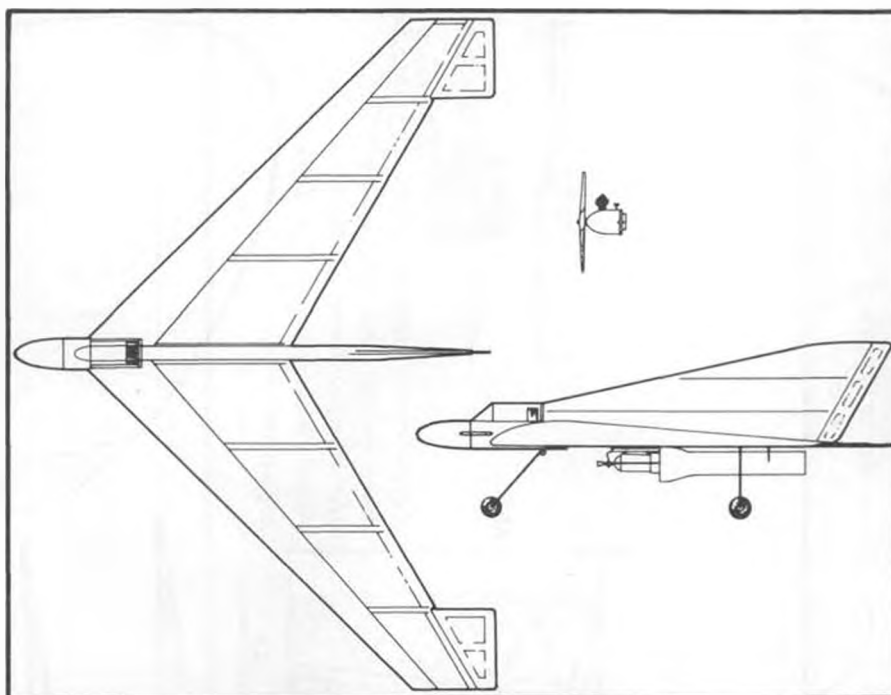
Since I "volunteered" to be the chairman of the Ten Models of the Year selection committee for the National Free Flight Society, I would appreciate it very much if you would include in the December issue of Model Builder a request for nominations for the 1978 Model of the Year awards.

I am requesting nominations for FAI Power, Wakefield, Nordic, Outdoor Rubber, Small AMA Class, Large AMA Class, Indoor Rubber, Indoor/Outdoor HL Glider, and any special awards nominations.

Please send nominations to:

Anthony J. Italiano
1655 Revere Drive
Brookfield, WI 53005
Home Phone: 414/782-6256
Ofc. Phone: 414/762-7000, Ext. 2376

Sincerely,
Tony



DECEMBER'S MYSTERY MODEL

Malmö. In attendance were the Wakefield specialists of Sweden and Denmark. Their aim was to design the best Wakefield in the world. Among the 3 airfoils favored for this design was Koster's. It was promoted because it has a very sharp leading edge, combined with a turbulator that allows it to control the movement of the separation point. This, in turn, would allow the wing to be effective regardless of the angle of attack, which would, in turn, add to its stability. Two other airfoils were promoted, the Niestoj and the CS 6356. These two sections will be detailed in the January and February issues of **Model Builder**.

So, stick around for the next two foils in line, or go ahead and use Koster's on that new rubber model you're planning to build. It's hard to go wrong with a two-time winner.

MYSTERY MODEL FOR DECEMBER

I have this penchant for flying wings, see! Even better is a flying wing that allows for interchangeable power plants, such as a Jetex motor and a Pee Wee .020. If that becomes tiresome, you could have used both to get this contraption into the air. Top it off with the fact that the model is a Payload ship and you get the distinct impression that either it, or you, or me is/are a first class weirdo.

Anyhow, if you think you know what the thing is, then you have the opportunity to earn yourself a free

subscription to **Model Builder** magazine, just by sending in your correct identification, with the earliest postmark, to Bill Northrop, editor of this here piece of literature. Give it a try.

Dean McGinnes, Lakeland, Florida, had the earliest postmarked correct answer to the August Mystery Model, the "Space Rod," by Vic Cunnyingham, Sr.

The first of many to identify Paul Gilliam's "Civy Boy" in the September issue (see "Three if by Air" in the November issue) was Terry Rimert, Baldwin, Florida.

Newt Stansfield, Milwaukee, Wisconsin, was first to identify Norm Getzlaff's unusual FAI design "Amen" in the October issue. He'll win a subscription, but so will Koei Tsuda, a Japanese modeler who is now located in Jakarta, Indonesia. Koei's answer, considering the long distance, arrived in very good time. Rather than try to figure out the handicap, we'll just consider it a tie!

A TRIBUTE TO A GOOD HOBBY SHOP

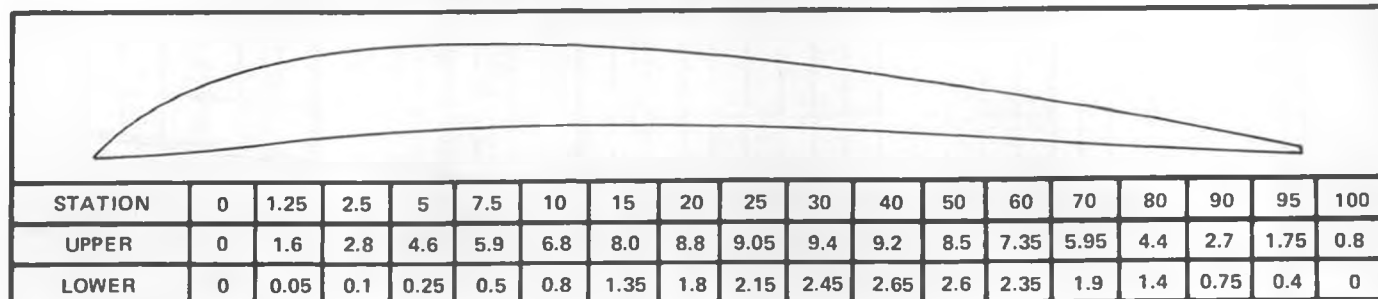
I've been reading off and on for the past several months, those letters that folks have been sending in to Bill

N. about hobby shop dealers who don't give a damn about their customers; those mail order houses that are just interested in sell, sell, sell; and all of the pros and cons about both. No mincing of words in many of the letters. Seems we have strong feelings about this hobby of ours. Well, now it seems that there is a hobby shop and a hobby dealer who really works at making the hobby more enjoyable, according to a letter recently received from Bob Hunter. Here's what Bob says:

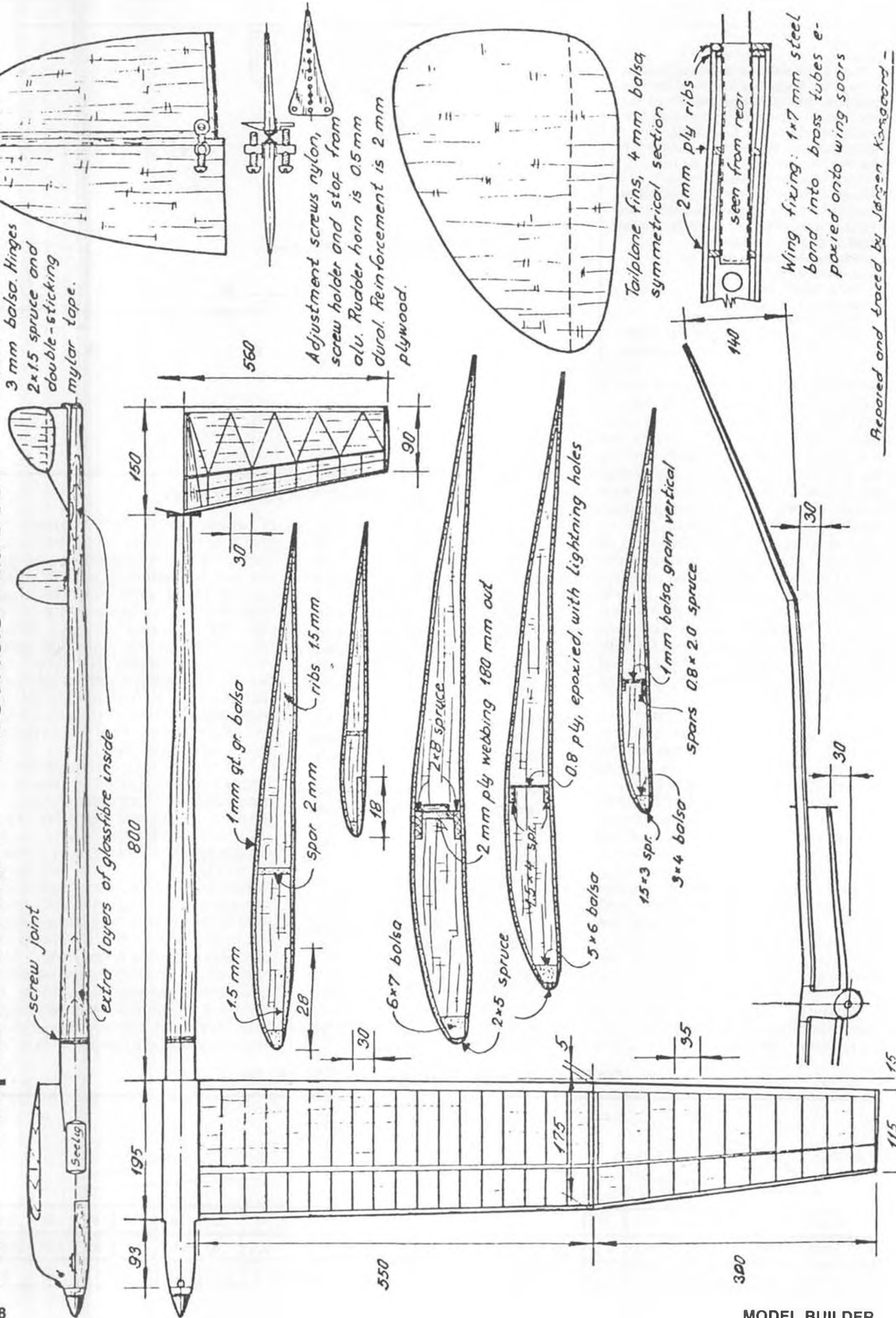
"I'm writing about Tony and Addie's Hobby Lobby in Burbank . . . one of the most successful hobby shops in the Los Angeles area for over twenty-five years.

"Tony's latest effort was to secure Hangar No. 23 from Lockheed Burbank for Sunday, July 24, all day, so that all indoor enthusiasts in the area could come in and test their ships prior to the Nats in this huge hangar. Sound easy? Not by any means! Several weeks of foot dragging and many phone calls to AMA for the insurance confirmation needed by Lockheed, three trips to Lockheed for person-to-person talks and demonstrations (Lockheed was very cooperative), finally resulted in success. I'm sure the

DARNED GOOD AIRFOIL — KOSTER 66



F1C »Square Cream« Thomas Køster



Repaired and traced by Jørgen Kjøgaard -



Pretty Satellite 300 by Guntis Sietens. Neatly tissue trimmed. Cox Tee Dee .049, natch.



Auto-stab kicker used on Wayne Drake's A/2. Releases after line disconnects for glide trim.



Don Zipoy sneaks some time off from CD job. Cox powered (Mk. II) FAI Power model.

trials were much appreciated.

"Tony and his mother, Addie, also hold flying sessions each Monday, all day, to instruct F.F., U.C., and R/C flyers who wish to have help. They also hold indoor meets each month in Burbank, at either a high school gym or in the Burbank Armory. Their shop is extremely well stocked with every type of kit, engine, balsa wood, engine parts (in a special 400 drawer cabinet in the center of the store) and all necessary accessories. They do not discount and yet do an excellent gross business at all times, because the modeler knows he can get what he needs at T and A . . . whether it's materials or assistance."

Nice to read about these kinds of success stories. I wish Tony and Addie's well for the next 25 years in this hobby.

SANTA SAYS

Got the old pencil handy? Here's a list of some out-of-the-rut kinds of goodies you can drop hints about around the house for placement under the Christmas tree. Cost varies, but the thought is there.

NFFS Symposium Report for 1977. Chock full of good information about the current state of the art. Includes a good section on the Ten Models of the Year. Cost is \$8.00 plus 75¢ postage. Order from Jack Brown, NFFS Publications, 20267 Northbrook Sq., Cupertino, CA 95014.

Spotting Scope. Sears, Roebuck and Co. lists a spotting scope (Cat. 3AV4401C) which zooms from 10 to 30 power, and it can be mounted on any camera tripod. With some rigging and a compass, it could be used to get a line on some of those ships which just seem to want to fly away. Lists for \$16.98. Also available in the new Christmas catalog, but the price is \$3.00 more.

FAI Power Model Short Kit. The Zingo, FAI Power model, by Tom Hutchinson, is available in a short kit from RM Enterprises, 3255 N.W. Crocker Lane, Albany, OR 97321. The sum of \$8.50 will buy you a complete set of ribs, curved parts, pylon, and a three-view of the model. Plans have to be purchased from Flying

Models.

Rubber winder. Just like the one that Sears used to make (actually a hand-drill, converted by modelers. wcn) until all of the rubber modelers out there stopped buying them and Sears stopped selling them (I bought mine for \$4.95 back when). Well, they are

Continued on page 102



Out of the washing machine comes Tom Hutchinson's hand . . . not with a box of soap . . . it's his kitted Half-A "Maverick"!!



Marc Nagasawa, with his Sa-Hal-Lee A/2, featured as MB 3-view in recent FF column. Aced out of 1st place by Ron Davis at HLP.



More of Tom Hutchinson comes out of the washing machine! And so does the Maverick. See his address in text.

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little Aeronca in the background strikes a cord.

Bob (who now lives in Hellertown, PA), as a boy, used to stay with his uncle and grandmother in Fleetwood. Incidentally, Fleetwood is the home of Fleetwood Cadillac bodies. Fleetwood is approximately fourteen miles from Reading, and the uncle and grandmother often drove to Reading to visit friends and relatives. This was a real treat for Bob in those days. The real highlight of those trips was passing a small airport on the outskirts of Reading, where many of those old rare birds of the Golden Age were housed.

Bob recalls airplanes like OX-5 Waco, New Day Standard, Stinson Jr., and the little Aeronca that was used for flight instruction. He recalls vividly the sign at the airport reading, "Learn to Fly — \$50.00". Bob had two rides in the New Day Standard. For those who don't recall this airplane, it was a large biplane with seating for four in the front cockpit, with the pilot in the usual rear cockpit. The first ride was from a cow pasture, while the others were more classy, rising from the Reading Airport.

Bob Neulin concludes by asking if the photo was taken at the Reading Airport. He also wants Charley Roth's address (which we didn't keep, unfortunately). A request is made for Charley to contact Bob Neulin at 1410 Wassergass Road, Hellertown, PA 18055 for a full-size gas session on the "good old days", which included modeling and full-size aircraft. Go gettum Charley! (Just to make sure, we've got Charley's address, and will get word to him. wcn) ENGLISH TIDBITS

Bill Daniels, of Wolverhampton Hobbies, England, writes to say that between him and Tim Shelley, they have 17 old-time models, complete, ready to fly. Whew!

They generally fly three- or four-channel, using the old filter unit Grundig radio which appears to be excellent for ignition, as they haven't missed a signal in 8 years. Quite a record!

Bill sez they like long motor runs of ten minutes before starting the glide. Longest flight to date has been 38 minutes. Most models employ an Anderson Spitfire engine with a Honda (50cc type) coil. When the coils are stripped down and an iron core put in, the coils are quite light.

For covering, they still utilize nylon, which they have found is extremely durable, with some models registering over 300 flights!

With air wheels practically non-existent, Daniels and his boys make wheels from 3- or 4-inch Japanese toy plastic balls. The plastic inflater,

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say we didn't tell you about it! We'll get the firmed-up date by the next issue, so get to building that big one for Taft!

HINTS & KINKS DEPT.

What the heck, everybody else has something like this in their column, so why be different?

In our discussions on the use of acetate sheathe for covering, Doug Wilkey of Denver, Colorado, says that a heat gun will shrink the acetate without the use of dope. You can save weight here! (Now if you just didn't have to seal it . . . wcn)

In that same line, Doug has also found out that Rit dye (Tintex will also do) will color the acetate nicely. Look-a-there, you're saving weight and money every minute!

Also, if you have some connections (the writer hasn't made any yet), Japanese Oregoni paper is very nice for covering those rubber powered models. We'll have to look into this!

FREE PLUG DEPARTMENT

Bob Ellington, of 2913 Edwards Street, Bakersfield, CA 93306, under the name of United Modelers, announces he is going into the dope supply business. The new nitrate dope will be known as "Slo-Kote", sold in quarts only at \$3.75 each, with the thinner being cheaper. The dope will be unique in that it will already have the dope plasticizer in it. This will eliminate that "by guess" process of adding castor oil to your dope to prevent exorbitant warps. Bob sez try it, you'll like it!

Rudy Carlotti, of 1945 - 11th Avenue, San Francisco, CA 94116, writes to say he is loaded with white Japanese tissue. He is selling sheets at 30¢ each or four for \$1.00. For you guys who have been hollering for tissue, here is your chance! 30 YEARS AGO

That recent photo of the Reading, PA gang really roused Bob Neulin into writing about the boys. He fails to recognize any more of the fellows already identified, but does say the

Plug Sparks . . . Continued from page 31

(6) Brown Jr. engine for power only. Standard coil and condenser ignition. No transistorized systems permitted.

(7) Gas and oil, with SAE 70 wt. oil being the only lubricant.

(8) Pre-registration required. Send your entries to J.G. McNorgan, 11421 Salinaz Drive, Garden Grove, CA 92640.

As a co-originator of the meet, Herb Wahl, of Herb's Motors, is donating a brand new Wahl-Brown engine for the lucky winner. Don't

about 1/2 inch long protruding into the ball, is sealed off. A 1/32 hole is drilled at right angles and some of the valve rubber forced over. This will now allow you to pump up the ball with a bicycle pump. Four steel washers (about 1/16 thick and 1 inch dia.) are used for the centers. The washers are drilled for 1/4 inch tubing. This tubing is threaded on both ends and also reamed to clear the landing gear being used.

With two nuts on each side of the tubing, the nuts are tightened against the washers until the ball is forced into the shape of a tire (they spell it tyre over there).

The tire (ball) is centered up by placing a sharpened rod upright in the vise and the ball spun until it runs true. When the center is found, a 3/4 inch hole is made on either side of the ball and the inside washers forced through giving a washer inside and out. As a rule, the balls are generally of some bright color, so the English boys dye them black to resemble tires. How about that for air wheels?

MORE KINKS

Denis Hentzy, of Tucson, Arizona, writes to say that if you want to make your own three-volt spark coils, here's how:

(This goes for rewinding old coils, too!) By using a small bait-casting fishing reel, the right diameter and length wire is first wound on the reel. If you are short on wire, get some old auto coils and cannibalize the wire. The iron center of some of these coils can be modified. The iron core is then spun in a drill press and the wire fed on by the reel guide. When complete, the coil is then dipped in epoxy for protection.

This idea sounds great, but you have to know approximately how many turns the secondary and primary coils take. Someone out there must have the dope. Let us hear from you.

FLORIDA FLASHES

Just received the most interesting clippings on the Fiesta of Five Flags sports events, from John P. Roberts of Cantonment, Florida. John sez it was an excellent contest (he was a scale judge) with trophies and merchandise galore. Being an official, John didn't compete himself, so did get to see quite a bit of the flying at Spencer Field.

This was the 19th Model Airplane meet that featured all free flight events, with four of the events being old-timers. Incidentally, for added spice, Old Time F/F with radio events were also added to the schedule.

Probably the most pleasant surprise on the field occurred when District Vice President Jim McNeill presented Tom McLaughlan with an

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AMA Distinguished Service Award. Well deserved!

Incidentally, it was well worth noting in the results, that Jim McNeill won the Unlimited Rubber event over George Perryman. Jim is not only an able administrator, but a first class free flight modeler! How about that!

Terry Rimert (what a good man!) also reports from Florida that the "Econo-Meet" staged by the Daytona Club was able to scrounge up a bunch of trophies and refurbish them for a first class contest.

Bryton Barron showed the boys the way again, after slipping to a second at Pensacola. Both Carney and Barron fly Playboys, so the competition between the two is extremely keen. About the only difference between the two was the number of "downers" each model encountered. To show his luck was no fluke, Bryton promptly won Old Timer Glow Power, beating Tibbs, who turned around and won .020 Replica. Everyone gets a piece of the action!

Terry also reports that the Florida Modelers Association is in a bind for free flight sites (what else is new?). Big problem is staging all events (f/f, R/C, and control line) in one big contest, such as the KOI, at one flying site. The sites as used by Jack Bolton seem to be out, inasmuch as Jack is no longer around to push model aviation in the Pensacola area. I said we'd miss that boy!
HAPPY BIRTHDAY TO YOU!

And we do mean you, Frank Zaic. A goodly number of modelers assembled at Hal Cover's home in Thousand Oaks on July 30, to honor Frank Zaic on his 65th birthday. A thoroughly good time was had by all!

SAL TAIBI CONTEST

Al Payne kindly reported that the Sal Taibi contest came off real great, even though the entries were down a bit. Four events were staged, with two old-timer events featuring the contest. Wouldn't you know it, the

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Brooklyn Dodger design won the Ignition and the .020 Replica Events. Powerhouses in both events ran second. Even Al had a Dodger that he didn't have time to finish!

In the Modern events, Classes 1/2A-A, Class B-C, all contestants used Stardusters. The writer thought sure a Spacer might turn up. A little tricky to trim, but a good flyer. Anyway, the main thing was to pay homage to a master, and the idea didn't misfire!

TAIBI CONTEST

That's just about what this columnist would call the Bakersfield Annual staged at Taft. The old master outdid himself this time, with the

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Just to rub it in real good, Larry Boyer took the rest of the prizes, with two firsts, three seconds, and one third. In the Modern events, Sal Taibi won Class 1/2A, Class B, Class C, Night Flying, and third in Class A. (Where did he find all that time!) Wonder what the poor people were doing? In any respect, Chris Christensen and his crew are to be congratulated on running a real smooth contest.

HAGGART-BOWDEN CONTEST

Originally started by John Haggart, of England, as a postal contest, before his unfortunate demise, the contest has been carried on by the SCAMPS.

The most interesting aspect of this precision type contest (two minute target time) is that whenever possible, all entrants were directed to launch at the same time. This was possible because of the small entry and a bonus number of timers. However, regardless of the number of contestants, the columnist feels this could be done with any size group, as one would simply break them into groups required to launch during a restricted time frame.

Jimmy Dean reports he was a timer of Al Heinrick's Spook 48. After several false starts, including the throwing of the propeller and prop nut, he launched the model right into a thermal. As Jim sez, this is truly indicative of the fickleness of weather, as the model remained aloft over five minutes, wherein a precision events calls for only two. With more "max" flights posted during the day than at a regular free flight competition meet, in this case, Al was facing the fact he had just scored a zero flight! Man! That Lake El-

sinore sand and weeds (foxtails) must have seemed deeper and more annoying with every step!

Incidentally, the SCAMPS did stage three events that day, with Bob Ferguson winning the Haggart-Bowden Precision Event with a Brown Jr. powered Thor, on a minute lead over Don Lumbert's Powerhouse. A precision rubber scale event was also held, with Abe Gallas using an Interstate Cadet that was only off seven seconds in a three flight total!

DOPE BUCKET

Latest info from the Salt Lake Antique Modelers (SLAM) indicates they did hold their Old Timer Annual despite the stormy weekend. According to the Dope Bucket (Utah State Aeromodeller Newsletter) each event was sponsored by a member of the club. Unique! This is a dandy idea particularly if the club treasury is in bad shape. You can have all sorts of people hawking their particular event.

Results show Mark Fechner and Lin Haslan taking five first and three seconds, leaving a few crumbs for Jay Jackson and Dick Williamson. As Lin pointed out, the rain showers gave the contestant a little rest or time to repair his model. That's positive thinking!

OHIO ECHOES

Been a long time since this columnist has heard from the Cleveland Free Flight Society, which is extremely active. Karl Emde reports the NOFFA O/T Contest run by C.D. Bob Reuter was real great for weather and contestants. The field was small, necessitating short, 12-second engine runs with two-minute flights.

Noticed in the results was Rudy Kluiber, with first in Class A and Class C, and a third in B. Tough competitor. Young Bill Reuter won .020 Replica, and copped a second in Class A and B. Some guys got it, some ain't!

CIA

No, it's not the notorious undercover agency, but the Central Indiana Association which is now producing a newsletter, "The Informer" as ably written and produced by Harry Murphy, alias "Murf", alias "Dirty Harry". We haven't got enough space this time, but next issue, we will carry a few of the doings, their ideas, and in general, what they are doing in their backyard... old-timer-wise, that is.

THE WRAPUP

We have been talking in this column about Ron Sharpton and how he likes FOO-2-U designs. Matter of fact, we featured him with the plan article in **Model Builder**. Anyway, it appears that Ron has been corresponding with Bill Hale (the 1976 SAM Contest Manager at

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Wright Patterson AFB) to the extent that Bill finally built an .020 version. Upon trimming it out, he took it to the Canadian Nationals.

Well, wouldn't you know it, the event was not for .020 Replica, but just plain modern .020 F/F. Undismayed, Hale entered the model among the many snickers of the hot modern free flight fliers. It didn't take long for the snickers to disappear, as Hale's .020 Replica FOO-2-U-2 promptly gave the boys a lesson in flying, and to rub it in good, done quite easily!

Like I've been telling you men, there is something in this old-timer game that should appeal to any modeler. The only problem is that we have to introduce them to the fun! How about it? When is the last time you got someone interested in this great phase of modeling? Like the old bull said to the young bull, "Let's go out and gettum all!". Don't forget it!

Finish Continued from page 46
faces is level, and the surfaces themselves are at 45% to the perpendicular, flow in enough of the mixture to form the desired thickness of fillet. It will level itself out into a slightly curved fillet.

Always keep in mind that the higher the resin-to-micro-balloon ratio, the heavier the mixture is. Also, for those of you who have not yet discovered the fact, the micro-balloon mixture, as does plain resin, has a point determined by the amount of catalyst added, during which it has set but not cured completely . . . at which time it works as easily as balsa. It can be cut, sanded and shaped in no time. One hour later, when it has cured more, it takes lots more work to get the same results.

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The tail surfaces should be Monokoted and hinged prior to installation. The covering should extend to within a 1/4 inch of the fiberglass on the stab bottom, and the same distance at the juncture of the horizontal and vertical stabs. When the primer is applied, mask so as to allow 1/16 overlap on the covering. When painted, this overlap helps to seal the Monokote joint from future fuel seepage problems.

Before priming, cut the engine access hole, and ALL the openings, so that primer and paint will also go on the edges. This improves the appearance, and also helps prevent chipping and peeling later on.

Before painting, figure out how you will support the fuselage during the spraying and drying. I build simple jigs; a piece of 1/4 inch ply cut to the length of the chord, to which a piece of dowel is glued and nailed at right angles for a handle. The plywood has holes drilled at the proper places for screws to go into the wing holding nuts.

The K & B primer, mixed per its instructions, is sprayed on. This chore,



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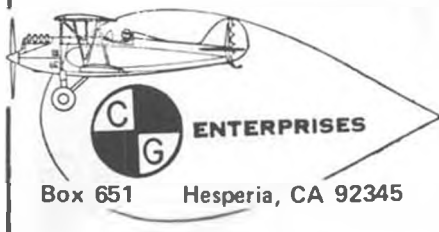
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that you have gone to all that trouble to get it on, take it off! Use nothing rougher than 400 grade paper, wet. Used 400 is best. Go slow and wipe off the residue often enough so you can keep track of the results. When the primer gets thin enough that you can see patches of dark under it, you have arrived. You may have gone completely through here and there, but as long as you don't get to bare cloth, or over too large an area, the paint doesn't seem to care.

If yours is a balsa fuselage, you can put on an acceptable base without adding too much weight by brushing on one coat of primer to which micro-balloons have been added in a 10 to 1 ratio, by weight. Naturally, a well sanded and filled fuselage is important before application of this mixture. It is best sanded with white, non-clogging paper, dry. You will probably sand through quite a bit on the first round. Re-primer only the raw spots, and feather the patches in carefully with your sandpaper.

Little cracks and 'dings', that did not have the courtesy to show before application of the primer, can be filled in with automotive spot putty. Be sparing with it, it is heavy. Since it is usually green or gray, you will have to spot primer over it, otherwise it may

show through the finish paint.

The different colors of paint should be butt-jointed to each other, no thick build-up of different colors for us. Vacuum the fuselage, wipe it down with alcohol or thinner, and mask off all areas that are not to be painted with the color that is due to go on during this step. Vinyl tape works good for the edges, regular masking tape can then be used to protect the rest of the areas, or to hold on paper if the area is large.

The subject of mixing various paints and how to apply them is too long to be covered here, and is not the intent. Follow instructions from the manufacturer, you can't go wrong. Suffice to say that the Bass Air Brush will do a job of a caliber limited only by your experience and patience. It does not take long at all to acquire the skill necessary to take you out of the whisk broom category.

Since it can not be mentioned enough, I will mention it again. Be sure the model is clean before painting. Vacuum it again after masking. Just prior to spraying, wipe it down with a clean lint-free rag, with a small amount of whatever thinner is recommended for your paint. Apply only enough color to cover, it is HEAVY!

The wings are also Monokoted; we

have found this to be the lightest way to a reasonably good-looking overall finish. Using clear, paintable Monokote in small doses lets you do two or three-color schemes using paints that match or complement the basic colors.

Frankly, I have never been so happy with my Monokote jobs . . . everyone else's look so much better. Yes, I have a teflon-coated iron, and a heat gun, and sharp Uber Skiver blades, and good lighting, and patience . . . and I still end up with Monokote coverings, compared to which, everybody else's look better. Amongst other things, my covering didn't seem to stick as well as it should have, which no amount of adjusting the temperature seemed to cure. On the last one, I tried "Balsarite" a new base material available from "Coverite", recommended for use on wood which is to be plastic film covered. It works! This covering adhered better, much more evenly, and with lots less air bubbles. In general, I was pleased. So if you feel that your Monokote coverings leave something to be desired, maybe "Balsarite" will give you that needed help.

Caution! Balsarite attacks foam, so don't use it on uncovered foam wings that you plan to cover with any of the plastics. And if your wood covering over foam has big cracks and holes that you expect to hide under the Monokote, shame on you! Be careful how you apply the Balsarite so that it does not creep through these openings and eat out the core. It dries to the touch almost instantly, doesn't run much, so it should not present any real problems.

After your wing is ready to be covered, including a vacuum job, draw the paint scheme right on the wood, using ballpoint pen. Butt join the clear and colored covering, which will require some careful but not impossible trimming. Try to plan your paint scheme so you don't have to butt join on two sides with the same piece of material. Starting from the center and working out will usually keep you from covering yourself into a corner. The juncture is later trimmed with DJ or one of the other trim tapes in matching or contrasting colors, which helps to seal against fuel. My choice of tape color is whatever color I am using for numbers and lettering.

We have been surprised to find out how little the word has spread that clear Monokote can be painted. It will readily take epoxies and acrylics, and is just like painting anything else. The masking is best done with very thin vinyl tape, such as that available in 1/8th and 1/4th inch widths from JZ Products. They also have die-cut 'crescents'; a 90 degree bend in the same widths, to help you go around

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those difficult corners. Masking tape and paper are then applied to this vinyl tape and to cover the rest of the work.

Be careful when removing the vinyl tape; pull it back upon itself, not straight up, and go slowly. Some of the Monokote covering will probably come unstuck in places, but can be easily re-stuck with your covering iron. Even the painted Monokote will re-adhere if need be. Be sure the paint is completely cured, and use a piece of tissue paper between the iron and the Monokote to prevent sticking and scratches.

And for those false rib effects that you see on some racers to simulate ribbed fabric-covered control surfaces, use JZ Products "Paneling Tape". This is a .02 inch wide tape that is applied to the shaped and finish-sanded surface before the final primer coat. The dried primer is then lightly sanded, and after the paint is applied, lo and behold, there are ribs showing through the dope and fabric. A very simple way to add a very expert looking touch!

Nothing special is required in the way of surface preparation before painting the Monokote, other than the basic rules of cleanliness. Vacuum all surfaces, wipe down with thinner, and keep your grubbies off.

The "Li'l Cobras" have painted canopies, which on mine, are white with shaded-in blue to simulate glass. In this case, the whole fuselage is basically white, requiring that only the windows be painted in. Obviously, if a different color is used for the fuselage, the canopy area will have to be done in white, also butt joining the colors.

The next step is to coat the canopy area with "Liquid Masking Film", as available from Fliteglas Models. This is a type of latex-base liquid material, which can be applied with a brush or sprayed on. Follow instructions! I find it is easier to apply it evenly by spraying, another job beautifully handled by the Bass Air Brush with the large tip. Use vinyl tape to roughly outline the canopy area, so that the mask will build up against the edge of tape as it is applied. Later on, when you go to peel off the mask, it will come off cleanly and completely. I forgot to do this on mine, and found the feathered edge where the spray ended did not peel clean and took some wiping with alcohol before it all came off.

Spray on only enough to thoroughly cover the entire surface, the thinner the better, as the thickness will to some degree control the thickness of the paint buildup against the mask.

The material is of a light blue-green color in its liquid state, easy to see when sprayed. When dry, which takes about an hour-and-a-half during a California summer, it has been transformed into a strong, translucent film. Outlining the canopy is probably the hardest step for those of us with no artistic ability. Use your favorite method of transferring markings, and carefully cut through the masking material. The best tool for this, by far, is a NEW number 11 blade in your Uber Skiver. Very little pressure is required to go through the mask; do not cut the paint underneath. Peel off the unwanted areas; it comes off neatly and cleanly.

Since we mass-produce our racers, usually four at a time, we have found it a real time-saver when it comes to doing the canopy to make a boot-type stencil, as pictured. This was made right on a fuselage, from a couple of layers of thin cloth and resin. Don't forget the release! After it has set and dried, cut out the window areas, dressing them as carefully as possible. From then on, it is a simple matter to drop the boot on a "Liquid Masking Film" protected fuselage, run the Uber Skiver around inside the windows, and peel.

The painting is done with the 'small' Bass Air Brush tip, in blue or



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black, using the same paint as the other colors. Spray from the edge, towards the center, just one pass. The results are a very attractive shaded effect that is also light in weight.

After the paint has cured for the recommended period of time, you are ready for the finishing touches . . . the trim tape and markings. I always use a trim tape that is also available in wide sheets from which numbers and numerals can be cut. The two models shown were done in DJ black, and "Varagold", available from J.L. Wittman Co., P.O. Box 2857, Mission Viejo, CA 92653. The latter has a pressed gold leaf effect, not unlike a highly concentrated oil slick on water,

as it reflects light and changes color when viewed from different angles.

Stick only to large curves, avoid the small ones . . . which sounds like good advice in most situations. You should have no trouble with either of the trim tapes mentioned. The numbers are something else, which I used to avoid 'til the last minute, that is until I developed a less painful way of producing them.

First, I decide on a pattern, either my own, or one such as those found on the back of Monokote Trim Sheets, or as packaged with DJ 6 inch wide stock. Avoid all fancy figures; stick to those made up of straight lines only. I then make a copying machine copy

of each character I will need, and cut them out roughly with scissors. Wet the bottom, and put them face up on the front of the trim material. Sponge off the excess moisture with a tissue or paper towel. The water will hold the pattern securely for much longer than it takes you to do the necessary cutting.

The reason for working on the front of the trim stock is that the edge will turn under as you cut, for a more painted-on effect when the markings are applied. Cutting from the back leaves a turned up, uncontrollable edge.

The actual cutting is done with your Uber Skiver, and a sharp number eleven blade. For a straight edge, I recommend a new fine-tooth hacksaw blade. Buy one specially for this use, sight along the back edge until you find one that is perfectly straight. Some of them, and all the used blades, will have a slight bow along the wide dimension. In use, the fine teeth will provide enough friction between the blade and the material being cut to keep it from slipping, as will a ruler or other straight edge. As a matter of fact, I use my magic hacksaw blade for all wood trimming and cutting when measuring is not a consideration.

Use one pattern for each figure to be cut out. You can save material and some cutting if you trim each pattern along an edge, and match this to an existing straight edge on the material.

After all the trim tape and figures have been applied and are completely dry, including sun baking as is recommended for DJ tape, seal around all the trim edges and Monokote junctures with clear Super Pox. This will seal all the edges, and protect the seams from the ravages of fuel.

Another weight and time-saving hint can be found in Bob Root's "Li'l Cobra" design. The main landing gear is held in place with a grooved "V" block, slightly lighter than a rectangular-shaped gear block would be. Remember, every gram counts! A 'hard point' of five-minute epoxy and micro-balloons is built into the wing to support the main gear upright. The block itself is imbedded into an easily made "V" cut, and glued in with 5-minute epoxy.

After covering, the gear strut itself is held in with silicon rubber, applied in the groove and smoothed over on the outside. This method is considerably faster to install than the straps and screws and is just as secure. Of all these airplanes being raced in this area, we don't know of a single incident of the strut coming out.

You are now ready to race! No, you are not going to win the Best Finish Award at Toledo next year, but you

have a lightweight, very acceptable racing airplane finish which is also easy to maintain and good enough so you'll not have to offer apologies.

Now if only someone will come up with a cure for eyes and thumbs that make you cut, stomachs that go funny only on race days, and knees that suddenly won't carry your weight, maybe I could have a little more success at this business of going fast and turning left! ●

F/F Scale . . . Continued from page 53

scale. Peanuts scale took place at Norton Air Force Base on a very hot Sunday. The number of entries was quite low, and there were few models which I would consider outstanding. There were about six or seven Fikes, and about the same number of Cougars. Believe it or not, there were no Lacy's entered. For the most part, the models were built from a kit or one of the many plans available, but only a few were original designs.

The hangar floor was rather crowded, since both indoor rubber scale and peanut were flown at the same time. Add spectators to this, and well, you can visualize the rest. There were several impressive sights. One was Ken Hannan's (senior class) Fike which really performed flawlessly and eventually won Ken a first place trophy. Don Srull, who cleaned house in many of the scale categories, had a Heinkel V100-8 that caught the eyes of the spectators. Many, I suppose, had never seen a low-wing model perform as nicely as this one did. Bill Warner had an unusual Bleriot, not too commonly seen in modeling. The judging for these two categories was done prior to the flying at the contest site.

At March Air Force Base, the scale cage was set up in one corner of a large hangar which also housed AMA headquarters, and the model supply shop. There was no space available for modelers to work, as in the past. I feel that this really adds a great deal to a Nats. Most modelers did their repair work in the college dorms.

Judging, as usual, is a wonderful chore. You truly get an opportunity to see how modelers tackle similar problems, and see a multitude of very interesting techniques first hand. The F/F models were judged first. I was very disappointed in both the number and quality of the models. There were far too many models that were not very scale or very detailed. Some submitted only construction plans for documentation, while others did not include a scale ruler. In the latter case, the judges do not give any scale points, only workmanship points. Without that scale ruler, no one can determine whether the model is built



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to the scale indicated.

At the flying site, which was about 16 miles from the air base, it was obvious that many models had not been flown prior to entering them at the Nats. Only a few performed as they should have. Fellows, I don't know if I'm just a hardnose or what, but the Nats is not the place to bring sub-par and untested models. I don't think of the Nats as your local club contest. It should be considered one where the best are flying against the best. I hear comments against the rule that allows each modeler four attempts to get an official flight. Is this bad? Should a modeler have as many attempts as it takes to get his official

flight? Or, should the model be so well tested that there is no question in the mind of the contestant that his model will fly, and that four attempts is sufficient?

Every AMA member certainly has the right to compete at the Nats, and if his model is not competitive for whatever reason, I would hope that he would get the message and try to do better the next time. One puzzling question which has bothered me . . . Why weren't there more of our active Flightmasters entered? I thought for sure that this local scale club would have even more participation than it did, especially after not having a Nats around here in ten years. I think



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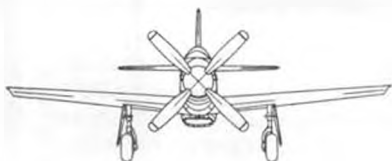
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that many just figured that the models they had on hand were not competitive enough to compete at the Nats. This year they were far from right! My judging schedule did not permit me to see any of the outdoor rubber scale, so I can't make any comments regarding it.

One of the most enjoyable experiences that I get out of attending any Nationals, is the comraderie. I had a chance to visit many friends who I first met at other Nats. This gives you an opportunity to share and exchange ideas. In closing, I want to pass one of several ideas I garnered, this one from George Meyer. George has a

clever but simple way of making a prop with lots of blade area. This was used on a model that had a very short landing gear, and it could not swing a very large diameter prop; thus the increase in blade area. George just took a plastic prop, and glued a 1/64 plywood blade onto the existing plastic one. The seam could be faired using Epoxi-lite or left alone if the additional weight was not required. George had his prop painted black, and it looked just fine and performed equally as well.

Just a reminder that the Flightmasters are sponsoring their annual Jumbo/Rubber contest on December 4th at Mile Square Park in Fountain Valley. There will also be a special multi-engine event using any source of power desirable; gas, CO₂, rubber, and electric. From what I gather, there are many in our area who are building for this special event. ●

Heinkel/Baka . . . *Continued from page 15*

plywood, a partially enclosed wheel, wire, etc. In my case, and knowing our field, I used nothing. I just dab on some new paint every once in a while.

7. Do final sanding and temporarily attach engines and tank. Lay the radio gear in the fuselage, and by the push-and-shove method,

determine the gear location which will permit proper balance without adding ballast. Remember that the finish is all that's left to add, but there is a lot more area behind the CG than in front of it, so leave it a little nose heavy for the moment. No pun intended. (Beat ya, WCN!) Permanently install servos, and if the mini-control horn and clevises are used, you will need to put a clevis at your servo and not just a "Z" bend (or "L"). The safe adjustment range on the mini-clevis is just that, mini, so a little more adjustment range is desired. You will have to do something with that long wire that dangles out of the receiver. You can't let it trail behind the fuselage unless you want it shortened. I put mine to the outside of the fin.

8. Foam wings without spars must have some longitudinal rigidity added or your dihedral will increase very suddenly in the air and not come out. Fiberglass-reinforced strapping tape is required. (*Did you happen to mention that it goes on the bottom surface? wcn*) But you don't just plop it on. Make sure that all the foam dust has been wiped off and bend some of the dihedral out of the wing when applying the tape. The proper dihedral will return and place the tape under tension. If the tape is put on with the wing "re-

laxed," the wing will still flex until the top wing surface compresses excessively. The "play" comes from slippage at the adhesive interface and flexing within the surface beads, to which the tape is attached. Put a strip (the wider the better) from three inches from the tip, right past the front edge of the aileron servo, to three inches from the other tip. A similar strip can be applied behind the servo. I use 1 inch wide tape, but 3/4 inch would be OK. If you only have 1/2 inch wide tape, put two strips edge-to-edge where I have one. Some No. 200 sandpaper will take the wax and sheen off the tape so paint will adhere to these surfaces.





9. Finish. On sport planes, particularly those with foam wings, I always use artists' acrylic paint from the local discount store. It comes in a tube, in many colors, mixes and covers well, thins with water, dries quickly, is oil proof, and has a flat finish. You can be as "cute" as you want with acrylics. It takes India Ink so well that I can't resist adding hinge lines, inspection doors, rivets, slogans, etc. The ink is put on with the usual drafting equipment. If you want a gloss or lustre finish on the model, you can mist Sears Polyurethane on it. Other sprays may work just as well, but test on scrap if you are not sure. My HEINKEL is flat black on top and side surfaces, grungey grey on bottom surfaces, with octane and exhaust stains added by what is known as dry brush technique. The canopy is green. The BAKA is white, with red meatballs and cherry blossoms. Canopy is pale blue. India Ink division lines on both models.

10. Flying. I like to have plenty of control on final approaches, so the controls have turned out a little sensitive when both engines are running. With just one engine running, there shouldn't be any concern about over controlling. I fire up the front engine first and still have plenty of fuel in the tank when the rear engine starts. To launch, just give it a hard chuck, wings level, and make sure that your wrist does not snap any yaw moment into it at the release. Also, give it a slightly upward throw to let it know what you have in mind and to give you a little time to get your hand on the stick. Improper hand launches have damaged a lot of aircraft over the years, and since the hand is quicker than the eye, I prefer to chuck my own. I know what kind of launch I'm getting.

With both engines making their special sound . . . after you have rapidly climbed to 300 feet altitude, and started that first wing-over to come screaming down to buzz the field, don't forget to yell, "ACH-

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TUNG!!" . . . or "BANZAI!!" whichever the case may be (But, if it is "Banzai", remember, you are supposed to pull out.).

My address is Ken Cashion, 235 Tennyson Cove, Picayune, MS 39466 if you have any questions or comments . . . And one last suggestion, make your new model a sailplane . . . you'll enjoy the change of pace. ●

Soaring Continued from page 33
he added two pounds of ballast and four to six ounces of nose weight to provide sufficient penetration. He used the Soaring Products thermal sensor and claims this to be a definite advantage for detecting early-morning lift and avoiding sink in the afternoon "slope conditions." He entered the contest cold, that is with only a dozen hand launches on the previous day. He caught a bubble and maxed out on his first launch, then combined luck and skill to make it all pay off. During the contest, he miffed only two landings and had a string of maxes. Here's wishing Pat and his Paragon continued success.

For the beginner, you need to read "R/C Soaring: San Diego Area Handbook" published by the Torrey Pines Gulls Radio Control Soaring Society. It answers all the usual questions and many others as well. Here is a well thought through summary of what it takes to get started and where you can go from there. It was written with the San Diego area in mind, but the ideas are applicable anywhere. Some copies are still available at \$1.50. Send your request and

check to the Torrey Pines Gulls, P.O. Box 1564, La Jolla, CA 92083. Please add 6% tax if you are a California resident.

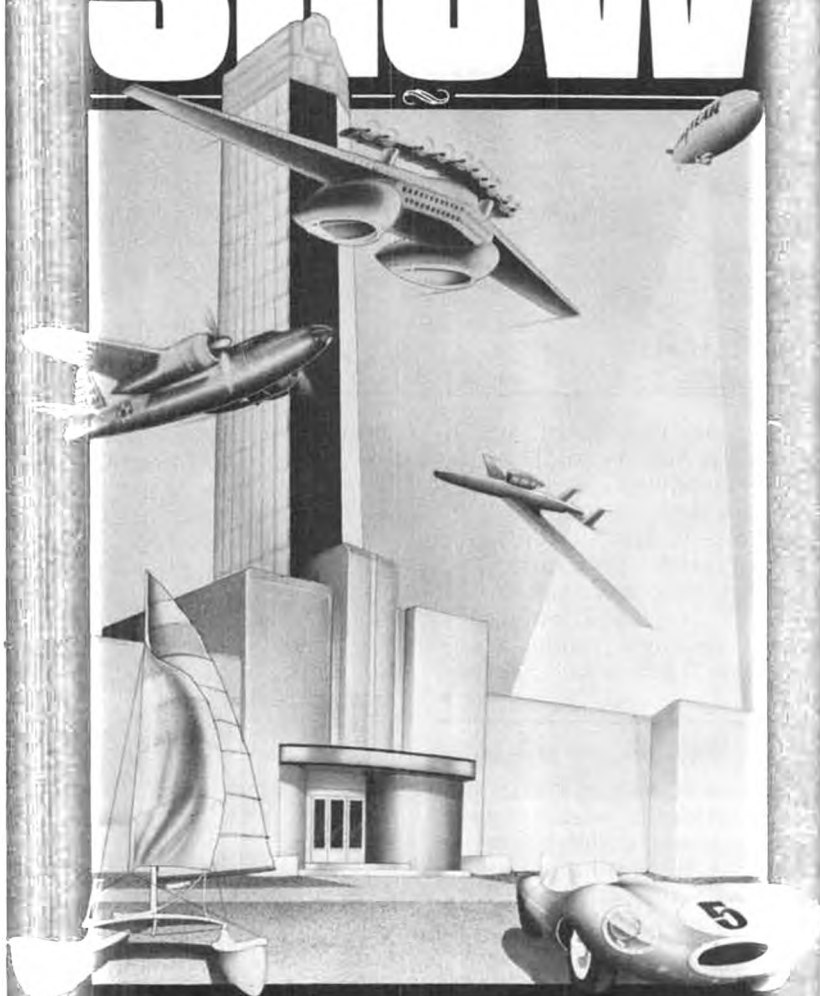
New items: consider the modified tail designed by Al Bendatt, for his Wanderer. This provides more than enough control authority for precision landings. By the way, Al made the wings separable for ease of transport. Good idea.

Being faced with two leftover Gryphon wings, Dan Kreigh of Riverside ginned up a fuselage and V-tail. You ought to see this thing perform. Note, there's no mixer. The V-tail provides only pitch control. The ailerons do the rest.

An even more unusual bird is due to Chet Herbert of Anaheim, California. Here's a flying "V" that's hard to believe. It has 90 degree sweep, 58-inch wingspan, and independent servos for each elevon control. Here again there's no mixer. Chet flies the plane by rotating the transmitter 45 degrees.

The last National Soaring Society Executive Board meeting confirmed the election of Dr. Stan Pfost as President, and a new slate of officers. Yours truly will serve as Senior VP for this term of office, helping Stan to realize his dreams for the Society. Stan's a great guy . . . an active participant in RC soaring for many years, a key figure in the Orlando, Florida soaring scene, and a consistent winner of contests. He usually designs his own planes and has come up with some fine machines. It's good to know this kind of person. Let's wish him well and support his effort to bring out the voice of the soaring community. ●

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Great Lakes . . . *Continued from page 43*

was already as compact as possible, and moving the Cirrus engine meant making it longer and heavier. The only practical approach was to move the center of lift aft to coincide with the C.G. The front cockpit was already under the trailing edge of the center section, and the difficult access was eased by hinging a section of the cowling between the cockpits, so the center section stayed, but the upper wing panels were swept back 9.2 degrees . . . and the most popular sport airplane of all time was reborn.

Today, we call such a happening serendipitous (a \$4 word meaning the discovery of something better than what you were looking for). To the Great Lakes Aircraft Co., it meant success and a backlog of several hundred orders by the middle of 1929.

The 2T-1A was immensely popular with pilots, not only because it was easy to fly, but because it was so responsive to any movement of the controls. It was short-coupled about the transverse and longitudinal axes, and all the large masses of weight were concentrated near the C.G. In a short time, the Great Lakes Trainer earned itself the reputation of being a flyer's airplane. ●

Pennyplane . . . *Continued from page 64*

them on top of each other. Now lay them on the can so that the angled line passes through the line you drew on them for the prop spar. Use gauze or strips of cloth to hold the blades tightly to the can. You can either bake the blades dry in a 120° oven for one hour, or let them stand overnight.

After the blades are thoroughly dry, remove them from the can and carefully separate them. Lightly sand each blade and glue it to the shaft. Don't goof and make a left-hand prop or your Scout's Penny won't fly correctly. Looking from the front, the leading edge of the right-hand blade is up and angled out toward you, the leading edge of the left-hand blade should be down and angled out toward you. The blades should be at a 45° angle to the prop shaft at the end of the spar. The blades are glued onto the front of the spar. Don't use too much glue or you will have a prop that is too heavy. Hot Stuff can be used here to make a lightweight and strong prop. Once the blades are mounted on the spar, hold the prop by the shaft and blow on it. It should turn counter-clockwise; if it doesn't, then remount the blades.

Sand the finished assembly so that it is balanced and check that both blades are at the same angle to the prop shaft. Once you are satisfied with your prop,

make two washers out of thin plastic like that used for windshields, or to package small items such as glow plugs, and put them on the shaft. FLYING

First, find or make a cardboard box to hold your model. Once you have it safely inside your flying site, assemble it and check for damage and warps. Install the prop in the thrust bearing and apply one drop of 3-in-1 oil.

Make a loop of rubber from 1/16 x 1/32 rubber that is 10 inches long. A square knot is about the best to use. Lightly lubricate the rubber, and let's fly. Use your winder to put in about 250 turns, and gently launch your Scout's Penny into level flight. If it stalls, push the wing leading edge wing post down into the tissue socket until a smooth flight is obtained. If your Scout's Penny dives to the floor push the trailing edge wing post down into its socket until a smooth flight is obtained. Once you are happy with the flying of your model, increase the number of turns and watch it go.

When you are obtaining the best performance from your Scout's Penny, it should be landing with about a half row of knots in the rubber. If it either runs out of turns or lands with too many turns left in the motor, you can get better performance. The chart below will help you correct the problem:

Problem: Dead stick landing.

Solutions: (a) Use longer motor of the same size, rubber, or (b) use same length motor of smaller size rubber.

Problem: Too many turns left.

Solutions: (a) Use shorter motor of the same size rubber, or (b) Same length of larger size rubber.

If your model should power stall just after launch and then fly okay after the motor has run down a few turns, try decreasing the wing's incidence very slightly by pushing the leading edge wing post into its tissue tube about 1/32 inch. If that doesn't solve the problem add a little nose weight to the model.

MATERIAL LIST

1/32 x 2 x 36 Contest Balsa — one sheet.

Look over your choices very carefully. This wood is going to be the basic material used in the construction of your Scout's Penny. It should have a straight grain and should be warp-free.

1/8 x 1/4 x 36 — one.

1/8 x 1/16 x 36 — one.

These sticks are for the motor-stick and the tail-boom. They should be relatively hard balsa with straight grains and warp-free.

1/16 x 1/16 x 36 — two.

0.014 music wire.

Model cement.

Small bottle of clear dope.

Japanese tissue — one sheet.

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model. I suggest that if your dealer doesn't carry good, high quality tissue, you try one of the sources that advertise in **Model Builder**.

Rubber — Sterling Flight Center's 1/30 x 1/30 and 1/30 x 1/16, about ten feet of each.

TOOLS AND SUPPLIES

1. Two single-edge razor blades
2. One dozen straight pins
3. Wax paper
4. Sewing thread
5. Small paint brush
6. Extra-fine sandpaper
7. Six round toothpicks
8. Rubber lube
9. Winder

If you want to use the best materials available, I suggest that you try one of the indoor specialty mail order shops, such as: Micro-X Products, P.O. Box 1063, Lorain, Ohio 44055.

They can supply top quality supplies, such as pre-cut indoor wood, very lightweight coverings, thrust bearings, washers, and rubber.

For a super winder, send off to Bob Wilder, 2010 Boston St., Irving, Texas 75061. It costs about \$30.00, but it is worth it. If you have a 16:1 Midwest winder, you might want to glue the conversion chart to it to make its use easier.

Peanut Continued from page 51

on the board with the tips elevated 3/4 of an inch each. The inner dihedral breaks should be exactly 2-3/4 inches apart (the plan shows more because it's a flat view). Install the spar center piece and reinforce the L.E. and T.E. joints with scrap.

Before mounting the wing, cover the entire fuselage except for the wing-joint area, which should also be devoid of stringers. The wing should have the landing gear installed and should have the middle and outer panels covered (but not shrunk). Cut away the bottom longeron as shown on the plans, along with the bottom half of F3, and put them in a safe place. Now, cement the wing to the wing saddles. If things don't line up properly, cut one of the saddles loose and reglue in the proper position.

When everything is dry, reattach the bottom longeron and F3, with the latter glued flat against the wing spar. The soft 1/20 sq. members are now cemented in place under the wing, followed by former F4A.

The air scoops are now installed. Cement W7 and W8 together, and tack-glue the assembly in position behind the L.E. Now cut away the L.E. to fair it into the scoop. Glue the scoop in firmly, as it has to take



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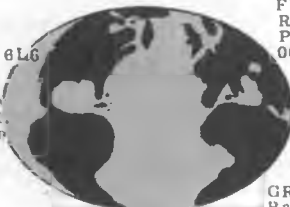
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over where the L.E. left off. F9 goes on after everything is covered.

The sliced ribs are now cemented in place, after being formed in the fingers to conform to the fuse. Likewise, 1/16 x 1/32 inch strips are cemented on the bottom of the wing. Just in case you still haven't figured it out, these ribs give you platforms for attaching wing tissue.

The plans show a built-up scale radial engine, and a sooper-light scale landing gear. These are a must if you are a super-scale detail nut (like me, for instance). However, if you're the "Joe Flyer" type, you can live without them. As a matter of fact, if you plan to fly indoors, I would recommend that you leave the landing gear off entirely. You will find that the "clean" inverted gull wing looks fabulous up in the air, and the longer flights to boot will leave you smiling from ear-to-ear. You can also use a drawn-on engine for simplicity, but this does nothing to enhance the appearance.

I guess I must tell you that the instrument panel on the plan is not drawn from any photos. It's something I made up so you can cut it out of the plan, stick it on, and go flying sooner.

For the sake of giving a hint . . . have you ever tried a permanent marker for coloring tires, props, or engines on that latest cutie? I am sure many have thought of this, but for

those who are still slopping on that heavy black paint, I guarantee you won't use anything but a marker on your Peanuts. It dries instantly and is practically weightless. Just be sure it goes on last . . . dope dissolves the dye readily.

To backtrack a bit, be sure you steam-shrink your tissue. The procedure was fully covered (no pun intended) in the "Rivets" Peanut article last month. If you insist on water-shrinking a light model such as this Corsair, you will end up holding a balsa-filled tissue sack. You might also try alcohol, although I have never tried it and can't say what will happen. A fine grade of tissue is also important. On my Corsair, I used Peck-Polymers' blue Japanese tissue. Their regular blue tissue is then perfect for the insignia.

I presume that if you tackled building a low-winger, you know how to fly it. Therefore, I won't go into a universally known trimming procedure. Ballast in the nose will probably be necessary, so after trimming, permanently replace the clay with a cement-coated lead chunk dropped in through the front hole. I might also recommend that you make a triangular stab slot to simplify making adjustments for varying conditions.

There you are . . . all ready to soak in the praises at the next informal

fly-together. Flying a Peanut Corsair is an exciting experience, and I hope you will enjoy it as I have. ●

R/C Auto . . . Continued from page 37

Cade quickly rebuilt his engine because they were going to run that heat over. It turned out that Bill Steele and I had probably run with paint thinner the day before, 'cause we would dump leftover fuel in a quart can for pit running and testing. That leftover fuel had gobs of paint thinner in it.

Anyway the novice main finally came. The race was a runaway for Jim Boling, from Ventura, California. I believe this is only about his seventh or eighth race, but his car was handling great, and he was doing a good job of driving. There was quite a race for 2nd, 3rd, and 4th, though. Del Barnhart took second after finally putting a lap on Janet Newlin for third, and Mike Reedy in fourth, on the same lap.

In the Amateur G.T. Superstock main, there was a better race for first between Pete "Repete" Fusco III, Jerry Thompson, and Bill Steele. "Repete" ended up winning by a little over a lap, with Thompson and Steele in second and third. Both Thompson and Steele were having various problems through about half the race. Repete, I believe, was 10th fastest qualifier and just made the main . . . but he came through for the main event win.

Finally the Expert G.T. Superstock practice and second qualifying heat time came . . . and went. Several racers really looked hot: Bill Jianas (who was T.Q. with 5:24), Jeff Rold, and Chuck Phelps. The main event was posted and there were gobs of protests, me included. Many of the times seemed to be really screwed up . . . with all the borrowed watches, some with 30 sec. sweep, some with 1 minute. Phelps was in my heat and ended up with about a 5:28 . . . he hadn't lapped me but I had a 6:19. My pit timer, Reba Steele, had me in 5:49, easily making the main, but the official timer apparently misread my time by 30 sec. My protest was disallowed. After the half-hour car preparation period, the Expert main got off after the sun went down. I didn't watch the Expert G.T. S.S. main, but it must have been a bang-up race because the first 4 cars were on the same lap and 5th place just lapped by the winner. The "Greek" Jianas squeaked out the win over Bob Welch, Jeff Rold, Curtis Husting and Chuck Phelps, who finished in that order.

I think the variety of people, and engine builders, represented by this

group of cars illustrates that there is no clear-cut advantage of one engine builder if the basic engine, carb and fuel are restricted. There are probably at least four different engine builders represented, maybe five in this group. Curtis Husting ran the same engine that he did last year and was right there in the top of the heap.

The next day saw the sports cars with open engines hit the track. Wow, what a difference in speed. Even though the G.T.'s had run the road course, the track seemed a little slippery. By the second sports car day, the traction was up and most drivers put in their best time. But several people were having radio problems . . . there just seemed to be quite a few CB's around all the time. Announcements were made, almost continuously, about not having CB's on, but the problems persisted. Some spectators were even walking around with walkie-talkies, thinking nothing of it.

I really got my car dialed in that second day, and it was jetting. The engine was super-strong, and I don't think I lost anything down the back straight to anybody. But it was all for naught, since I didn't even finish one lap of my second qualifying heat before I had radio interference problems. In the sweeper entering the back straight, my car went hard left and full throttle right into the boards. Bob Fredricks, who was monitoring the transmissions on 27 MHz with a frequency analyzer, said the CB channel right next to me had a very strong signal, as if the transmitter was in the parking lot we were racing in. I knew what had happened, but a lot of good that did.

In the 1/8 Novice Road Main, Larry Ferris (the top qualifier) showed that not only was his car fast, but also reliable. Ferris won the main by a lap, with Gordon Hatch second, running a very good race, and Del Barnhart third.

The Amateur Road Main was quite interesting to watch. There was a good race for first throughout the 50 lap event. The start was rather hectic, but after a few laps, Bill Newlin appeared to be putting some time on the rest of the field. Then little "Repete" Fusco started pecking away at the leader. Bill Newlin began having some kind of car or concentration problem, and "Repete" was by and into the lead. Bill continued to have problems, Jim Cade got by into second place, and Repete put a lap on Bill. Finally Newlin seemed to smooth out and began picking up time on both Repete Fusco and Cade. Repete was just behind Cade and Newlin was right behind Repete. For the last



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ten or fifteen laps, Newlin was trying to get past Repete but could never quite make it, and their dicing around allowed Cade to pick up some ground on Newlin. So it ended with Repete Fusco winning the main, with almost a lap on Jim Cade in second, and Bill Newlin third, just barely a lap down. Repete was T.Q. as well.

The Expert Road Main began with top qualifier Bill Jianas shooting right out to an instant lead, with Roger Curtis and Chuck Phelps right behind. Mike Rowland, who looked great during qualifying, got knocked into the boards at the start and was at the back end of the pack. During the first couple of pit stops, Jianas and Curtis exchanged the lead several times. Both had a few seconds lead on the rest of the field.

But in third place was Mike Rowland, who was continuing to pull up on the leaders. After the second pit stop, Mike appeared to just hold back and wait . . . but he didn't have to wait long because he spun a gear and was out. Shortly after that, Bill Jianas started having some steering

problems, and he made it back to the pits to find that the steering servo-saver was broken. So with a little over 10 laps to go, Roger Curtis was in the lead with at least a lap on everybody except Jeff Rold. And that's the way it ended; Curtis winning it, Rold in second, and Gary Kyes beating the rest of the pack for third.

Now we were down to the final event, the 1/8 scale oval. By the way, the event schedule of Superstock, Road, and the Oval worked out fine. Superstock, which needs the least traction, cleaned the track off and prepared it quite well for the Road event. Likewise the Road event helped prepare the track for the Oval cars, which certainly need the most traction. But even with all the running that had occurred, certain parts of the tri-oval corners were quite slippery the first day. By the second day of oval, all normal parts of the track were really very good. However, the front straight was extremely wavy, or bumpy, and cars were getting airborne or lifting the front wheels off the ground. As a conse-

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quence, the front straight had some exciting situations.

In the Novice class, Hatch (top qualifier), Barnhart, and Evans looked good. In the Amateur class, Steele, Fusco (Repete, top qualifier), Newlin, Wright and Cade all looked fast. In Expert, Thorp looked steady and fast, as usual; Jianas and Rowland looked fast but squirrely; Phelps posted fast qualifying time; and my car was going great. I had some understeer, but could get through turns Two and Three at full bore, only backing off a fraction to line up for the front straight . . . then brake good for turn One, then easing back to full throttle at the exit of turn One, which seemed to be the only slippery part of the track. Roger Curtis had some handling problems . . . power oversteer . . . and never got them sorted out.

In the Novice oval main, Barnhart ran a smooth race to win, Hatch was second six laps down, and Harold Harks third. Tom Evans missed the start and was out for about 28 laps but when he got in, he really chewed up the field to take fourth 24 laps down.

The Amateur oval main was really a rock'em, sock'em, crash and burn affair. The amateur cars were much faster (top speed, not quicker around

the track), and when they hit, they hit. I think this is more driver inexperience and attitude than anything else. Most amateurs are go-for-broke, don't-give-an-inch, that's my line . . . until they get to know they really can drive if they want to. Anyway, in the Amateur main, after the first dicing, Bill Steele was in the lead and had stretched it out to a lap by his second pit stop. Everybody else really seemed to be tangling everywhere. When Bill went out on the track after his pit stops, he waited for cars on the front straight to go by. The race personnel had been telling everybody to be careful, because if they weren't, they would be penalized or disqualified.

Anyway, just past the halfway point, Steele was cruising right along when somebody pulled out of the pit right in front of him. Bill reacted and cranked the wheel right . . . right into the wall, making the car undriveable. So from there it was a race of battered cars to the finish. Bill Newlin lasted for first, Lynn Wright for second, and Greg Jones for third. The Amateur main time was considerably slower than the Novice main. After the race, Steele protested the driver who had caused his accident, expecting the other driver might be disqualified or penalized

a position or two . . . but nothing happened.

During the Expert oval main warm-up period, I was putting a little track time on a brand new set of rear tires for the main. Tire wear really wasn't all that bad, but the old ones were just a little small. I ran out of fuel and pulled to the inside wall between turns Two and Three, a good 20 feet from the proper line. I leaned over and told the only other driver with a car on the track where I was. About a half-lap later this guy plastered me going full bore. The other driver's excuse was, "Gee, I was looking for you and lost control of my car." He didn't even back off the throttle at any time. When all this happened, my pit man, Steele, said some emphatic words about disqualifying "that" driver. The next P.A. announcement was that I was disqualified. So then I had to write out a protest . . . and nobody wanted to accept it. Finally I got some race official to take the protest and got over to start checking my car out. The rear axle was bent . . . bad . . . inside the bearing and gear, and I couldn't drive the axle out either way so I had to take off the rear bearing blocks. When the protest committee met I had to be there . . . and they allowed the protest but banned my pit man from the pits. Back to the car I went, thrashing away, plus getting a new pit man. The race was called while I was still putting the car together . . . and the race went off while my pit man, Jim Cade, was on the way to the start line. During the first tank of fuel, the engine was very rich so I just stayed with the back of the pack. By the second tank of fuel the engine came to life and I started picking off cars. I passed Thorp and Camp coming out of turn One several times, and between Two and Three, I got by others, since the car was at full throttle and could be steered to the inside. By the third tank I was up to the leaders . . . but then a wheel came off. In the rush of repairing the car, I didn't tighten them enough. Back on the track, the car just blew by almost everybody. Eric Hahn moved over giving me plenty of room. At the 2/3 point, the throttle arm on the car fatigued and I had to retire. Jianas and Rowland were still super-fast, but not handling well. Eric Hahn was driving a good race, going quick but staying out of trouble. Eric hung on for the win and Thorp was second on the same lap with Jianas third, 10 laps down.

So now you can see how my outlook on this Nationals may be a little more biased than usual. I did have a

great time on my vacation the next week though, touring Washington and Oregon.

P.S. The track surface and track site (Southcenter in Tuckwillow) were great. The drivers stand was super, as you can see by the picture. And the announcing of Rick Perry and George Hague was very interesting . . . but I would have liked to hear some announcing by Bob Stevens, "the voice of R/C car racing."

Autogyro Continued from page 23

article on his latest Autogyro, similar to the pusher design shown in Fig. 4. When completed and tested, we will bring it to you. wcn)

Now that the gyro problems are solved, I turn to another crazy stuff; the Ornithopter, or mechanical bird. You will read another article around 1984 from your sincere . . . Georges Chaulet.

Getting Started Continued from page 61

larged stab, etc. Slabsiders such as the Lacey M-10 or Luton Minor are a piece of cake, especially if they have constant-chord wings, where only one rib pattern will do you.

WEIGHING THE CHOICES

Any choice of subject is a balance of a lot of things, and which things are important to you personally will be a strong factor in your eventual decision. My personal feeling is that most modelers getting into scale would be better off avoiding low-wing, World War II type planes, or multi-engine ships. Homebuilts are naturals, high-wing monoplanes usually fly well, and a simple plane will be a whole lot easier to make repairs on than a complex one. Complicated undercarriages such as on a Fairchild 24 or Bleriot 11 are constantly getting broken, as are wooden cabane struts on parasols or biplanes. Interplane struts on biplanes can give you a fit, breaking or coming loose and punching through the wing. Save biplanes until you are confident of your flying ability!

Another point to consider is the location of the landing gear. The further to the rear it is, the less chance you are going to have getting off the ground on an ROG, and the more often the plane is going to dig its chin into the asphalt on landing.

Another "tie-breaker" between two otherwise equal subjects is the relationship of the stabilizing surfaces to the wing; the ship with the longest tail moment winning out, especially if the horizontal stabs have about the same area. Larger-area stabs are usually better, and are often enlarged by scale modelers as a matter of course. I even know a modeler who,

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Dihedral is not essential to a scale model, but it sure makes it easier to trim out. How does the model you like look with 5° or so? If it's a Fokker Triplane, it will probably look as unusual as Farrah Fawcett with her mouth shut. If it's a plane which had some to start with, a little more won't be noticed.

Forget planes with wheel pants, fairings, or other non-essentials. They look great, but add weight and get broken easily. Wait until you are having good success with simple models before you build that really special ship you've always admired.

Finally, never put more work into a plane than you are willing to see wiped out in a crash. When selecting a plane, keep this in mind . . . it will crash. I don't know when or how, but sooner or later, it will happen. If you have a plane which represents an investment of too much time or effort in building, you may be persuaded to take up a less demanding hobby like saving string or clipping coupons. I suppose this holds as true for the old-timer as well as the beginner in flying scale.

BUILDING YOUR LITTLE BEAUTY

Builders tend to fall into two general categories; those who build heavy, hanging on tons of detail and making what might be mistaken for the real plane were it not for its miserable flight characteristics and difficulty of starting the buried motor, and those who are sort of flying a rubber scale job with a motor hung out in front in the breeze as an afterthought. I suggest that for the time being, you join the latter group.

A simple model with a couple of "interest centers" such as a nicely-detailed dummy motor or cockpit will often fool both casual onlookers and judges. If you must add detail, try the kind which adds little or no weight, such as airbrush texture shading, black tissue cut-out lightning bolts, stripes, etc. Fully-operating ailerons, elevators and rudder from cockpit controls are great conversation pieces, but stuff that you can see from five feet away is what brings "oohs" and "aahs" at this point. Anyone who has had a good look at planes by professional artists like Bill Noonan or Bill Hannan can attest to this.

Although "knock-off" components, such as wings, undercarriage, stab, rudder, etc., are nice, perhaps better

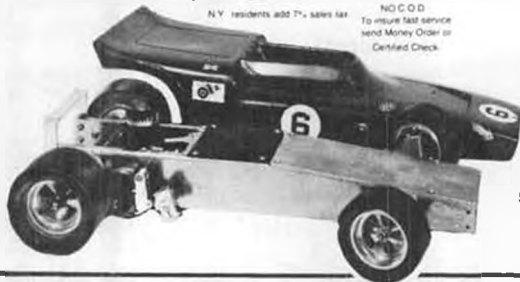
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	Cessna 172 36"	.020 or muffled .049
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● Recommendations by Tony Naccarato of T and A Hobby Lobby, Burbank, CA. ●

to save these until later. They can help save your plane in a crash, and make repairs easier by localizing them, but it adds structure and complicates things to start with. When you go flying, take some "Hot Stuff" (with a jar of baking soda to help it set up), some Saran Wrap and clear dope (nitrate preferred, if the plane doesn't use a glow engine) to repair simple tissue splits (peel off Saran Wrap after dope dries) and go to it! About as far as you'll want to go at this time is probably a knock-off wing held on by rubber bands (make 'em light so they'll break before the wing!).

PICKING A POWER SOURCE

Each form of power has its own advantages and disadvantages. A D-C Dart diesel (.036) is a great, all-around, easy-starting, and powerful engine. It leaves castor oil all over the plane and does make enough noise to give close neighbors something to gripe about. Electric is super-easy when it's working right. Flipping a switch beats flipping a prop any day. Extra weight from batteries, and sometimes unreliable batteries, may offset the obvious advantages of quietness and cleanliness (I fly lots of electric and love it for its smoothness and transition from powered to gliding flight).

CO₂ can be a delight on very light ships, providing the quietness and cleanliness of electricity without the weight. However, problems with freezing (literally) and spitting frost, render the CO₂ useless at times. I haven't as yet experienced this with the Telco CO₂. The contents of Spark-lets type CO₂ cartridges are also very unpredictable ... some giving long flights and some just a few seconds. Glow engines give fantastic power for the weight, but are noisy, sloppy, and require fussing with battery, glow-head, leads, fuel filler, etc. You sort of have to choose what fits the particular plane you have in mind, as well as your own likes and dislikes. If it's going to be a rather heavy plane with not too much wing area, better go

diesel or glow. A lightly-loaded, large-wing-area plane would be good for electric. A small rubber job will convert easily to CO₂.

THE WILL TO SUCCEED

The psychology of the modeler is often neglected in articles of this nature. If you have built a model that you don't care much about, have done about everything you know how to make it fly, and it still won't, STOMP THAT SUCKER! It's great catharsis and will keep your building room from becoming overcrowded with turkeys! Who needs that kind of frustration anyway?

However, if you dearly love that recalcitrant little gem, try reading up on flying techniques a bit more. Join a faith-healing group. Call Fernando Ramos. Do *anything* but further damage to your unfortunate little ship. Rebuild it again and again until it does what you know it can! Some of my most successful models have undergone many rebuilds, sometimes over a period of years (the S.E. 5 that won Biplane indoor at the 1967 Nationals spent 3 years prior in a really destroyed state on a shelf before I had the energy to rebuild it!). Accept the challenge. Hypothesize as to the possible causes behind that fatal spiral dive. Rebuild those weak spots with spruce instead of balsa, but don't give up. Flying in contests is great motivation for this kind of approach. Just before each contest, you go through all of your wrecks, make each one a little better, and go out and impress all of those poor guys flying completely untested ships. I have seen determined beginners better weak-willed oldsters time and time again. If you want it to fly, it will fly.

Note: Free-flight scalars are a breed of modelers unto themselves. With their roots in the 1930's, most of them realize they are a dying breed and long to pass on their secrets to anyone who asks. So ask! I have found them to be the finest people on earth. To build flying scale is to have friends everywhere in the world. The red carpet goes out no matter where, as I found out on trips to England and France. Succeeding in flying toy (excuse me) model aeroplanes is one thing. Flying ones that look like real aeroplanes is "where it's at" for many people. Keep reading **Model Builder**, for its editor is aware of that fact!

APPENDIX:

The Flightmasters: An organization dedicated to FF Scale in all forms, with monthly newsletters containing plans, 3-views, and lots of good stuff. Write to Flightmasters, 19361 S. Mesa Dr., Villa Park, CA 92667. Membership nominal.

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views available. MAP Ltd., P.O. Box 35, Bridge St., Hemel Hempstead, Herts, HP 1, England.

John Pond Old Time Plan Service: Trillions of scale plans for all purposes. At last reading (Oct. 1977) \$1.50 would bring you two long lists of very reasonably-priced scale model plans (A-K and L-Z at six bits each). P.O. Box 3215, San Jose, CA 95156.

Peck-Polymers: Plans, kits, 3-views, CO₂ motors and fillers, electric goodies. Fifty cents for a catalog well spent. P.O. Box 2498, La Mesa, CA 92041.

Sig Mfg. Co.: Kits, etc., but mainly light wood you can rely on. \$1.50

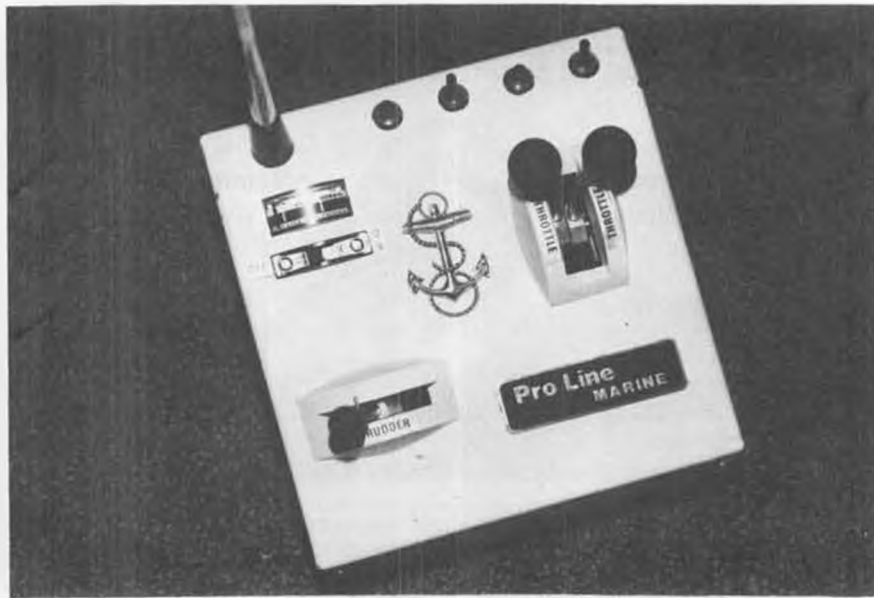
for catalog. Order their contest grade sheet balsa. Light planes fly. Montezuma (pop. 27), IA 50171.

V-L Products: Proven, lightweight, geared electric motor systems. 7023-D Canoga Ave., Canoga Park, CA 91303.

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Hawk Moth . . Continued from page 51

Coat wheels with three coats of sanding sealer. Simulate tires with flat black paint, or for better simulation, use a coating of "Plasti-Grip", a rubber-like vinyl goop available at hardware stores to insulate electrician's tools. This stuff is messy, but it looks like tires when you get done, and it offers resilient protection for the balsa wheels. It can be thinned and cleaned up with naphtha.

Drill a 1/32 diameter hole in the center of the birch dowel hub, and slip in the axle. Solder or epoxy washer

as retainer.

The unusual fenders which prevented mud from English airfields from being thrown into the revolving prop, are cut from thin aluminum and epoxied to thin wire supports, which are soldered to the main landing gear strut base.

PROPELLER

The 14 inch diameter prop is made by cutting four pieces of 1/64 plywood (2 pieces for each blade), using pattern shown. Lay up each blade by cementing two pieces together and binding to a 5 inch diameter cylinder. Angle blades at about 15 degrees from

cylinder centerline. See sketch. A discarded tobacco can or similar container works fine.

Cut 3/8 inch diameter birch dowels for hub. Slot ends to receive finished blades. Taper dowels on slotted ends. Cement blades in slots, being sure blade centerlines parallel dowel sides.

The laminated spinner can be turned in the same manner as described for the wheels, leaving the hardwood dowel core. You should start with an accurate cube which can be placed on the drill press table and drilled with a 3/8 inch bit to provide for insertion of prop hubs.

Insert blades in finished spinner, angling each to 30 degrees at hub for blade pitch. Check for alignment and consistent pitch between blades. Cement in place.

Now cover front of blades and hubs with 1/32 inch medium sheet balsa. This cover should fit neatly where blades enter spinner. Trim and sand to airfoil cross-section. Stain entire prop mahogany color and give three coats of sanding sealer followed by two coats of clear nitrate dope, sanding with 600 grit wet-or-dry between coats. Finish off with brown shoe polish.

The free-wheeling device is made from two thin brass discs which have been slotted from the center out. Bend coinciding tabs in each to form a dog clutch. See drawing. The front disc has balsa spinner cap epoxied on after the 1/16 diameter prop hook has been soldered in place. Assemble prop/nose block parts, being sure to use roller thrust bearing between spinner and nose block. You should wind up with about 2 degrees down thrust when the prop assembly is inserted in fuselage.

WING

Main ribs are made up by laminating top and bottom components around cardboard or balsa forms. Soak 1/32 x 1/16 basswood and balsa strips in hot water for about half-an-hour. The strips should be about 8 inches long. Cement the bass part on top of the balsa and pin against the airfoil form. Make 20 ribs.

When all ribs are complete, position bottom rib components over wing plan, holding in place with plastic "Pin-Downs" which prevent having to pierce balsa with pins. Trim surplus from front and back of ribs to allow accurate contact with leading and trailing edges. Cement these, and front and rear spars, in place. Establish proper chord width for top rib parts, trim these parts and cement in place. Cut the 16 false ribs from hard 1/32 sheet balsa and cement in place.

Wing tips are laminated from two pieces of 1/32 x 3/32 basswood, soaked and wrapped around form.

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When these are thoroughly dry, cement in place.

The spar stubs protrude from the wing root about 3/8 inch and incorporate 1/32 I.D. aluminum tubing as part of the wing hinge. See detail on drawing. The tubing is reinforced with 1/32 plywood "cheeks" which are cemented to spar sides.

The wing root is filled in on the top with soft 1/4 inch sheet balsa and a small block forward of the front spar. Note rounded appearance in front view. Contouring should coincide with plywood root rib R1 on fuselage.

Simulated fuel tanks may be made of stiff artist's paper cemented inside top ribs as shown.

Finish off entire wing with progressively finer sandpaper. Check for any lumps of cement that will cause a less-than-perfect covering job later on. Give wing root three coats of sanding sealer.

TAIL ASSEMBLY

The vertical fin and horizontal stabilizer outlines are of two pieces of 1/32 x 1/16 basswood in the same manner as wing tips. The bones of the vertical fin are 1/16 x 3/32 balsa. Sand ribs to streamline section. Spar is long enough at bottom to penetrate fuselage and cement to cross-piece in fuselage bottom. When covering fin, note that a portion at the bottom is

left uncovered so as to be able to adjust stab incidence. The sheet balsa tab in the rudder provides a method of adjusting for turn.

The horizontal stabilizer utilizes "sister" ribs in its construction. The idea of this is to bury the spar in the ribs, which results in a neater covering job. Cut ribs as shown. As cut, they will have one flat side. When joined side by side on spar, they result in a symmetrical airfoil section. The 1/16 square top spar was added after stab was completed. You may want to follow the more conventional method of cutting single ribs and notching for spar.

Using either method, arrange ribs on spar and cement in place. Cement basswood laminated outline in place. When cement is dry, sand to correct airfoil. Note that balsa filler pieces have to be added where elevator turns into fuselage/fin junction, to bring thickness to right cross-section. See drawing.

Master West Coast scale modeler, Bill Warner, advanced a theory some time ago in an article in the Flightmaster's newsletter, regarding superior efficiency of thick symmetrical stabilizer airfoils. The idea is to minimize the need to enlarge the stab plan excessively from scale. Our model tests this theory, as the stab is only about 10% over scale, but thicker in

scale than the real one. The end result has been quite satisfactory.

Alteration of incidence in the stabilizer is made possible with the incorporation of a tube-and-wire hinge immediately behind the leading edge. The tube cements to the stab, the wire to fuselage longerons. Stabilizer is held in weak compression to top of fuselage by rubber band attached to hook cemented to stabilizer underside. The hook/rubber band assembly is entirely inside the fuselage. This arrangement allows about 3 degrees negative incidence. Merely slip balsa shim between fuse and stab during testing, cementing stab in place after trim has been established.

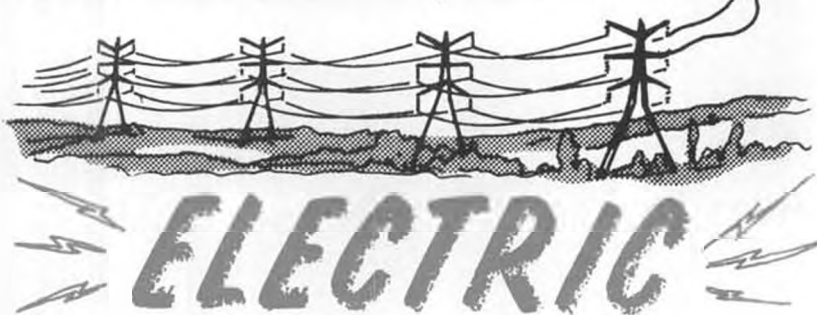
COVERING

The Hawk Moth color scheme follows information provided by noted English aviation author, A.J. Jackson. The fuselage and wheels are maroon or dark crimson, the wings and tail surfaces, silver.

White Japanese tissue from Peck-Polymers was used on our model. White glue, diluted 50-50 with water, was used as adhesive. Some modelers prefer using dope. Use whatever seems to work best.

There are no difficult areas that require special explanation. Water-shrink all covering. When thoroughly dry, apply three coats of clear nitrate

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dope, diluted to a 50-50 solution with manufacturer's thinner. Add plasticizer to minimize warping.

The maroon fuselage on our model was colored with Magic Marker "SprayMark", an aerosol propelled dye (transparent) available at better stocked commercial art supply stores. It has one drawback in that it is water soluble after drying, and has to be "fixed" by spraying, not brushing, with at least one coat of clear dope.

Wings and tail surfaces had a final coat of sprayed dope, made silver by introducing fine silver powder (called brill) into diluted clear dope. About half a teaspoon to two ounces is a reasonable ratio. This last coat barely alters the translucent quality of the white tissue, just enough to give kind of a "mother-of-pearl" look.

Cut wing registration letters from black tissue and cement in place with diluted white glue. The white letters on fuselage sides are made by using a 3M photographic transfer product, I.N.T., available at graphic arts supply houses. A cheaper method is to carefully paint the registration or cut from thin bond paper.

MISCELLANEOUS

Cabin interior is painted flat medium gray before covering is applied. The 1/32 sheet cabin sides and bottom should be given several coats of sanding sealer first. Window frames

are painted silver, as well as door edges.

All struts are painted a warm silver-gray, to simulate anodizing.

The tail wheel on the real aircraft was light gray, the fork black. The shock strut appeared to have a rubber boot wrapped around it. Simulate this by using coarse black thread.

Aileron, rudder and elevator separations are simulated with 1/32 chart tape or black tissue. Control wires running from horns and the two short lengths immediately behind the cabin, were made from 2-pound test fishing leader, painted black.

Geoff de Havilland's likeness, which is encased in the driver's seat, was cut from soft block balsa, dipped repeatedly in sanding sealer and painted with artist's acrylic tube paints. Geoff eschewed helmet and goggles when flying the 75, and seemed to prefer a fedora, which gave him a man-in-the-street look.

Framework photos show thread cross-bracing throughout the length of the fuselage and portions of the wing, between spars. These were incorporated to duplicate original structure as faithfully as possible. The thread is dental floss (unwaxed) which is strong, light and very fine silk. Use Hot Stuff or similar Cyanacrolate glue to adhere.

FLYING

Some models have a "correct" look that suggest testing will be trauma-free. The Hawk Moth is one of them.

The only adjustments made during about a dozen and a half pre-Nats test flights were in the amount of rubber power used, otherwise the model behaved perfectly, without any thrust or rudder correction.

Eight strands of FAI 3/16 brown rubber, 30 inches long, gives marginal performance, so the number was increased to ten, which boosted the duration and altitude considerably.

Using a protective winding tube, the most turns we have tried is 900, before breaking out in a sweat. This gives an average flight of 48 to 50 seconds, consistently.

We modified a rechargeable cordless Black & Decker drill into a field winder, adding a counter. This has some advantages over a conventional manual winder, and some drawbacks. You can keep absolute track of turns, even if someone engages you in a conversation about the lift coefficient of the Eiffel 400. Also, if called upon, you can wind with one hand, leaving the other free to check rubber tension, drink beer, or congratulate the competition. You have to remember to charge the unit before the contest, otherwise you run out of electricity.

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The Hawk Moth is a rugged and reliable modeling subject that incorporates most of the attributes sought for flying scale. It will provide you with many pleasurable building and flying hours. Good luck!

Control Line . . Continued from page 39

putting kills on the best around, and from the 4th round on it was obvious that to keep him from the final match would be a major undertaking. Nobody could do it, but then again, even Howard was unable to stop Brasher in the final.

Just getting to 3rd place was very tough in the contest, as Gurt Frogg of Team Underground will verify. Gurt couldn't exactly get it off on the \$50.00 token award for 3rd, especially when Gary Stevens and I did our best to spend it all on pizza and beer that night.

B/G '76 was a dynamite start for what has become a classic Combat meet, and B/G '77 was even better. Of course, we will have B/G '78 and the prizes will go even higher next year. The \$2500.00 plus worth of this

year's prizes will only be a start when the next B/G comes around. NEW, ALL-CONQUERING FAI COMBAT MOTOR (?) OR, FROM RUSSIA WITH LOVE.

Due to Gurt Frogg's connections with British Combat fliers, I have a copy of the text of a report written for Aeromodeller on the Criterium of Aces. Although it does not say so, I believe John Hammersley wrote it.

I won't go into details on the report, you'll have to read about it in Aeromodeller, but one thing did grab my attention, and that is that the Russians showed up with some impressive equipment. They were using models developed from the Richard Evans Vertigo and capable of turning tighter than the best "foamies" (FAI Blasta, Super Star, etc.) yet seen. Not only that, but the Russians have developed a glow motor that is better than anything else currently available, and that includes the usual Rossi, Cox and ST 15's.

With superior models and engines, the Russians looked to be a threat, but it turned out that their best models were a touch on the wild side, being difficult to control, and their fliers were lacking in Combat experience at this level of competition. But they are definitely going to be a threat at the next C/L W/C's. It shouldn't take much development to make their models

more stable, and with Russian team members being full-time professional modelers, time for practice flying and piles of models for practice flying should be the last of their concerns.

In its first year as an official W/C event, FAI Combat may prove to be the most interesting and hotly contested event. Naturally all of us are pulling for the U.S. Team, but it's obvious that they will have to really have their act together to come through with the win.

IT'S BEEN ALL COMBAT SO FAR, SO...

I really do make an effort at writing about something other than my favorite event when doing these monthly columns, but for this month, you non-Combat types are left out in the cold (which is probably appropriate considering the time of year).

In this area, the dominant engine/prop combination for AMA (Fast) Combat is the good ol' Fox Combat Special twisting a Top Flite Pylon prop (new series). Many of us are using the 8-1/2 x 6-1/2 numbers cut to 8-1/4. That may change, however, as I just bought 12 boxes of the latest run and the blades have been narrowed just a bit on the latest props. Although I cut them to 8-1/4 as usual, it is quite possible that with the smaller blade area, the props can be used out-of-the-box.



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As for the Fox engines, most of us are running them in basically stock conditions. Most play a bit with deck clearance and are very careful to assemble them properly. A short break-in period is all that seems to be required, assuming the hand-lapping was done properly.

Although Fox has now released a new crankshaft that appears to be much stronger than the older versions (I have found two and neither one has broken yet), many of us are running B/M (Brasher/McFadden) shafts. The B/M shafts work super and absolutely refuse to break, so once installed there is no reason to change to another shaft.

The Fox motors can be reworked to give more power, as convincingly shown by both Brasher and McFadden, but only a very few can use the added power. Duke Fox showed me a little porting trick done to the front and rear bypasses. The change is good for 1,000 more rpm, besides being easy to do. If I knew what I would do with another 1,000 rpm, I would probably have been inside my motors right after coming home from the Nats. It is a strange feeling to have enough power on tap from stock engines after several years of thrashing around with a Dremel trying to get more beans . . . usually to have the motor grenade it-self in short order.

Combat fliers have long demanded a motor just like the one Fox is currently producing. Now that they are here, it is so easy to take them for granted and to wonder how we got along without them in the past.

MAYBE NEXT TIME

Last month I promised to let you in on how well the new plugs from Fusite, designed for the Cox 1/2A's, work. At this time, I have only used one on a TD .049, and that was only for one flight. The plug worked OK, but one flight can't really tell you that much. Maybe next time. . . ●

Hannan Continued from page 54

LET'S NOT DUCK THE ISSUE

In the continuing saga of "What does canard REALLY mean?", as applied to back-frontwards aircraft, Pete Soule recalls attending a Wright Brothers Memorial lecture some years ago, where the "hoax" interpretation was attributed to the French, who were understandably reluctant to believe the fragmentary reports of successful flight which had filtered through to them.

Pete also recalled the Curtiss XP-55 being called the "ass-ender" and wondered if an Air Corps PR type had bowdlerized the term to "Ascender".

Incidentally, the famous Granville Brothers of Gee Bee fame, also experimented with a canard design back in 1931.

THE COLONEL SEZ

This month's Thackerism is a genuine gem of wisdom:

"Takeoff is optional;
Landing is mandatory!"

Think about that fellows, before launching that model . . . or full-size aircraft!

KUDOS DEPARTMENT

From time to time we hear of extraordinary efforts to promote model building activities among juniors, which represent a heck of a lot of work on someone's part, not to mention giving up many of their OWN building hours. Latest example is the

That is nice, as nobody likes to spend time trimming props, but unfortunately there is a slight hang-up. The new run of props don't seem to be as well-balanced as the first run was. I know that Gary Stevens and I cut a lot of these props, and they used to be right on for balance, either uncut or when trimmed accurately. But after checking about 30 of the latest props, it looks as if I have some time to spend in balancing props. Still, these have proven to be the best props available presently, and if you haven't tried them yet, you really should. For those still using nylon props, I would imagine that there is no hope left for you, and you are invited to keep right on using what doesn't work.

An interesting thing to note is that Gary Stevens has his Fox/Nemesis/T.F. Pylon prop/Magnum 25% fuel combination working so well that he has recently gone to 8-1/2 x 7 props cut to 8-1/4, just to tame things down a bit. Gary found himself overshooting once in a while in the turns and the 7 pitch holds the motor back for just a split second in a tight turn, giving him time to get lined up. Of course, Gary's Nemesis models are all as good or better than any Nemesis you have ever seen, and his motors flat smoke.

The point is that if you are after improved turn performance, the Top

4-H Club aeronautics program being spearheaded by Ken Simpson, in Cedarburg, Wisconsin. In addition, Ken runs a summer school aviation project for kids, meaning that the lucky youngsters in that area have nearly year-round modelling instructional facilities and talent available to them!

THE BATZLOFF ENGINE

We are continually amazed by the old ignition model engines that surface from time to time, in spite of the intense efforts of collectors and Old-Timer enthusiasts scouring the country in search of them. Some seem simply to pop up from nowhere. A case in point concerns the engine shown in one of our photos. A box of parts for them turned up at a swap meet, and found its way into the hands of Russ Barrera, curator of the Russ-Craft Model Museum, now being relocated in Morgan Hill, California. Model engine authority Bill Thompson estimates that only about a dozen of these units were ever finished. The resemblance to an Ira Hassad design is obvious, and stems from the fact that Bill Batzloff was a close friend. Our thanks to John Pond for putting us on the trail of the true identity of this rare power plant.

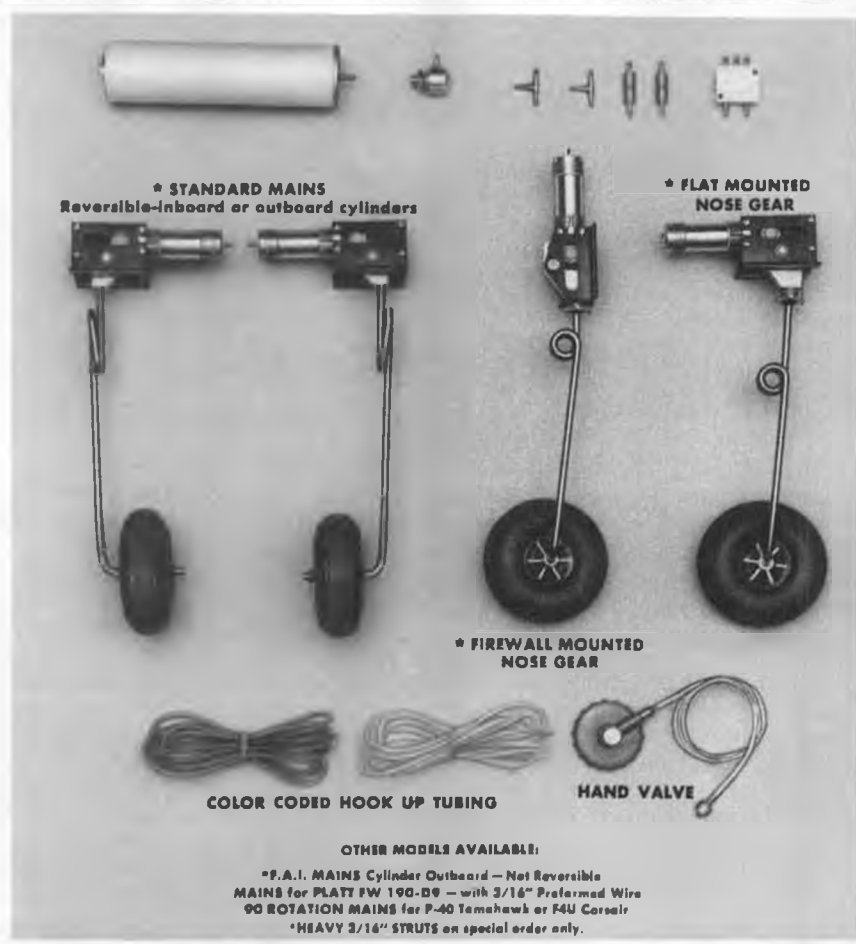
THAT'S THE SPIRIT!

As most of you know, the Experimental Aircraft Association has been flying its version of the "Spirit of St. Louis" around the country, in tribute to Charles Lindbergh and all aviation pioneers. Entirely a volunteer effort, from the construction of the plane through the operation of it and its supporting craft, a vintage Stinson, the tour has attracted a great deal of well-deserved attention. Needless to say, we were proud to attend when the EAA Spirit visited the San Diego area, not far from where the original "Spirit" was constructed.

Guiding light behind the entire concept was Paul Poberezny, President of the EAA, and we were delighted to see him at the controls of the machine when it landed, resplendent in an authentically-styled Lindbergh uniform. Both he and Verne Jobst, well-known aerobatic and airline pilot, told of their adventures during the tour, and fielded questions from the audience.

The machine itself was constructed in 90 days, at a cost of about nine times that of the original (inflation, you know!). Many modifications were made in the interest of improving safety and reliability. Thus, it is sort of a full-size "stand-off" scale model, preserving the general appearance of the prototype, but differing in various ways. A model of it would doubtless be easier to fly than

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a model of the original, although both pilots were quick to point out that it was far from being a docile proposition, even in modified form. Changes include the following: 220 Continental radial engine instead of the Wright J-5 of the original, a choice dictated by parts availability; a wingspan of 43-1/2 feet, rather than the 46 feet of the original, and noticeable dihedral in same; removable aluminum panels over forward windows, installed for reasons of improved safety; an enlarged and reshaped stabilizer; a tailwheel; plus other slight differences. Model builders can find outstanding photo-

graphs of the machine in "SPORT AVIATION", magazine of the EAA. Also, a color photo of it appeared on the cover of the June 1977 Aero-modeller. Who will be first to construct a model?

Incidentally, we noted the absence of the traditional EAA trophy for the best model of a homebuilt aircraft, at this year's Nationals, and wonder if it might not simply have been an oversight on the part of the extremely busy crew at headquarters?

Returning to the visit of the EAA Spirit to San Diego, we were fascinated by some of the experiences related by Poberezny and Jobst:

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Seems they were greeted by previously unreported incidents in the life of Charles Lindbergh, as well as unknown photographs, at many stops along the route (Let's hope they publish a collection of both in a future issue of Sport Aviation). One story that particularly seemed to capture the modest personality of Lindbergh was related: It seems that Charles was seated next to a woman during a banquet some years after his initial fame, one who obviously had not the faintest idea of who he was. In an effort to spark some conversation with her dinner partner, she inquired, "Have you ever been to Paris?" To which he replied, "Yes . . . once".

During another stop in the tour, Mrs. Anne Morrow Lindbergh was taken for a ride in the EAA Spirit (She had never been in the original). Her enjoyment was tremendous, and she summed up her experience in these words: "I now better understand a part of my husband's life".

While in California, Verne Jobst managed to persuade Ed Morrow and Neta Snook Southern aloft for rides. Morrow had been a draftsman for the original "Spirit", and Neta was Amelia Earhart's first flight instructress. Each took a turn at the controls of the craft, and Jobst re-

ported that they were super-smooth, in spite of many years away from active flying.

But the account that sent shivers up and down our spines, was that of Jobst: It seems he was preparing to fly the machine away from a small town, after the usual reception and presentation, and was all settled down in the cockpit prior to take-off. Suddenly a woman appeared from out of the crowd, rushed up to the plane and thrust a small object in his hand. At this point in his account, Verne reached into his pocket and produced that small object . . . a tiny antique mirror! Those of you who have seen the James Stewart portrayal of Lindbergh in the movie will understand, and the EAAers checked out the original account of the mirror incident which took place during 1927 at Roosevelt Field, and found it to be 100% truth.

SIGN-OFF:

Rod Smith, of Mark's Models, sez: "Before I actually met Walt Mooney, I thought he was 3 different people."●

Half-A Continued from page 65

comes down it is producing power from burned fuel. As it goes up it is squeezing (compressing) a fresh charge of fuel and air ready to fire. The sneaky part of this is that while

the top of the piston is used as an engine, you can think of the bottom of the piston as a pump! If you take the glowhead off an engine and spin the prop fast you can hear the pumping action.

As the piston is driven up by the flywheel effect of the propeller, it creates a bit of vacuum beneath it. The outside air pressure forces the reed valve open and fuel/air mix flows into the crankcase. As the piston comes back down it begins to create pressure in the crankcase. This pressure first closes the reed valve so the fuel/air mix can't escape. At the bottom of its travel the piston uncovers one or more grooves (bypass ports) in the cylinder wall. The high pressure fuel/air mix squirts around the piston up into the cylinder. The burned gas from the explosion at the top of the cylinder has lost most of its energy in the process of driving the propeller, so the fresh charge can easily push it out the exhaust holes (ports).

That is the solution to problems one and two. Problem three was how do you get the mix to fire? The answer is the glow plug element. At the top of the cylinder head is a coil of very fine wire. This wire has a 90% platinum content. Platinum is used for two reasons. First, it does not oxidize (go bad or get eaten up) in the intense heat of the fuel/air flame. Second, it acts as a catalyst (go see a chemist, I don't understand it either) to enhance the ignition and stability of combustion. The fuel/air mix is "timed" by the amount of fuel in the air and the amount it has been compressed. The basic engine has a pre-set amount it squeezes the air (compression ratio). You vary the fuel/air mix with the fuel control (needle valve) to reach the best setting for top power.

The final problem to be discussed is how the fuel is drawn to the engine and mixed with air. You remember that the piston acts like a pump? Well, just outside the reed valve is a pipe called the venturi. This pipe is made narrow at one point to restrict the flow. At this restriction point there is a low air pressure. (Take my word for it this time, please.) The low pressure sucks fuel from the tank to the engine. In order to set the correct amount of fuel for top power, you have a control called the "needle valve" which is opened (unscrewed or turned counter-clockwise), the mix gets more fuel, which is called a "richer" mixture. The opposite turning gives less fuel and makes a "leaner" mixture. Working from the basic setting given by the engine manufacturer, you just have to experiment and get the feel of your own engine for the

top power setting.

BACK TO THE REGULAR COLUMN

For those of you in the Southern California region who are C/L freaks, there is an excellent newsletter. Patty's Pinkie covers contest results, all upcoming meets, and discussion of techniques and rules. Very good coverage of half-A activity is the feature I like best! Published bi-weekly, subscription is \$4 for the rest of the year. Contact Ben and Patty Sasnett, 1443 McKinley Ave., Escondido, CA 92027. Phone (714) 745-4489.

Since this column is running a bit long, I'll only cover one model in detail. The combat model shown was designed and built by Sonny Butler. Sonny and I flew together as kids and lost track of each other for over ten years. He stayed interested in combat and placed well at this year's Nats. The model shown features Sonny's own cut foam wing and surgical tubing pressure fuel bladder. He uses a Kustom Kraftmanship needle valve and bored venturi on an otherwise stock but well run-in engine. As you see, construction is very clean and functional. Performance is hot!

Next month the Beginners Workshop will be much shorter, but this month there just wasn't any way to make an engine's workings simpler. So, see you next month. ●

Power Boats . . . Continued from page 35

St., Waltham, Massachusetts 02154, has a good assortment of mufflers for boats. Send 25¢ for their catalog.

Follow the Dumas instructions and the boat should run OK. As you get more experienced, you will find props, drive shaft angles and depths, and sponson depths will make performance differences that add up. The best advice I can give you is to follow the plans, and if you make a change on any boat, make one adjustment at a time so that you know what improved or hurt the performance.

Because your boat is not 1/8 scale, it could not compete in the IMPBA or NAMBA unlimited class, so you could paint the boat as you wish. However, I would still paint it as the Atlas Van Lines, which is a good looking unlimited.

Gentlemen:

One question - I am interested in Off-shore V-hulls. Where can I get decals, such as Bertram and MerCruiser Stern Drive to finish the hull and deck?

Bill Pistello
Villa Park, Illinois

Dear Bill:

I suggest you write: D-V Decals, 1297 Dansville Road, Mason, Michigan 48854, for a brochure. They make assorted decals in full color on self-adhesive mylar. I have tried

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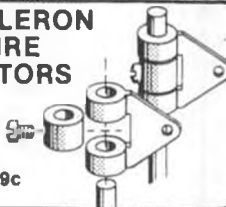
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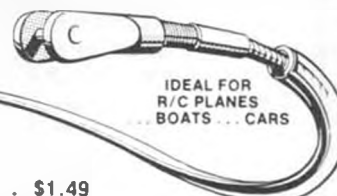
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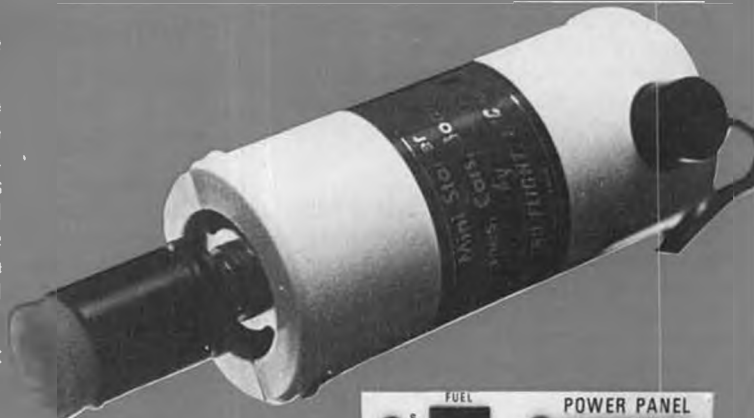
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Dear Sir,

First I want to say how much I enjoy your articles on Model R/C Power Boating in **Model Builder Magazine**. It adds even more to an already outstanding magazine, and I'm looking forward to many more of your articles.

For some time now, I have been waiting to get into model R/C power boating, but live in an area where there is no activity in model boating, so since I saw your request for questions on model boating for your column, I have this question. I recently acquired a new fiberglass model boat with no instructions. The hull looks similar to a Dumas SK-Daddle, it's length is 35-1/2 inches, beam is 12-3/4 inches, and weight just slightly under 2 lbs. At this time, I'm not really interested in competition, but would hope to get enough experience from this boat to build something more competitive. I guess what I'm trying to ask is, can you recommend the displacement of engine to use and what type of running hardware to use. Would really appreciate your thoughts on this.

Sincerely,

David P. Wilke
Idyllwild, California

Dear Mr. Wilke,

Thank you for your letter regarding my R/C power boating column in **Model Builder**, I am glad that you

enjoy it.

There are many clubs in California that belong to the North American Model Power Boat Association. Most are in the larger metropolitan areas. You may have to travel a little to join one. Maybe a local hobby shop or dealer could provide names and addresses of interested boaters in your area? There are clubs in the Los Angeles area, maybe San Bernardino? Clubs are great for providing help to the beginner.

The fiberglass hull you have seems perfect for a .40 engine. I would recommend either a K & B .40 or a piped OPS .40. These are very good engines and their high quality should keep problems to a minimum.

Since you say the hull looks like a Dumas SK-Daddle, you could use a Dumas hardware kit H-15, which is for a .40 mono, or you might even use the H-18, which is for a .60 mono. The kit includes: motor mount, turn fin, steel flywheel, universal, water pick-up, rudder assembly, drive shaft, and stuffing box. Why not write Dumas for a catalog? Dumas Products, Inc., 909 E. 17th St., Tucson, Arizona 85719.

There are really many selections of hardware available from numerous manufacturers. I would suggest that you try to determine what boat you

have and then write the manufacturer for the instruction sheet. Send me a photo and I'll try to help you identify the hull.

Also check over the hull carefully. Make sure there are no twists, hooks, or warps to the bottom (especially the wetted surface near the transom).

If I can be of more help just drop me a line. Also, read the April issue of **MB**, which features another mono ... "Northwind", powered by an OPS .40. Maybe you can pick up some installation points.

Gentlemen:

Re your article on power model boats, Vol. 7, Number 63. I would like any information you can supply on upper deck building and dummy engine construction.

I have the U-55 Lincoln Thrift, the same plan the author has, with an OPS .60.

I have the model half constructed now, but have not put the deck on yet. Your article on construction tips was very informative and I would like more in this field of scale boats.

Would like to hear from you as soon as possible so we can have this boat ready for Reno in August.

Hope to meet you there. Thanks!

Gale L. Wood
Calgary, Alberta, Canada

Dear Gale:

Thanks for your letter to **MB** regarding scale unlimiteds. (Answer was sent prior to August deadline.)

I think I can give you some good sources for cowlings and dummy engines for the U-55 Lincoln Thrift, as I have built this boat. I built the original rear cowling completely out of plywood (bulkheads and 1/32 sheeting) however, the curves were very difficult and I would not recommend this route. After using that cowling for a year, a friend of mine who needed the same cowling for his Miss U.S., used my wood cowling to make a pattern mold. The original was destroyed but we now mold fiberglass ones. We also have a fiberglass mold for the front cowling. We can send you both cowlings for \$20. They are not covered with gel-coat and do require some filling and sanding, but they eliminate most of the tedious building. If you want a set, let me know.

I have plans for a Rolls-Royce but not the turbo-charge Allison. Enclosed is a drawing of the Allison that may help you. Roger Newton, 14518 167th Place S.E., Renton, Washington 98455, has plans for the Allison (\$2.00) so you may want to write him. Don Pinckert, of Miami, has a fiberglass Rolls block and will be building a glass Allison soon (see last month's "Over the Counter").

Let me know what you decide, and send me a photo of your U-55 as I'd like to see it. Good Luck.

Send your letters to **Model Builder** or direct to Bob Preusse, 432 Emery Lane, Elmhurst, Illinois 60126. Hope to hear from you soon. ●

Rocketry . . . Continued from page 44

What does the record show? On May 20, 1976, at a NAR-sanctioned meet in Florida, there was an accident. The second stage of a rocket, that was fitted with a mercury-switch staging system, fired without warning, burning the hand of the person carrying it. This person was awarded \$700, and St. Paul is trying to get the money back from the rocket owner's homeowners policy, since the bird had no safety cutoff or disarm switch. A bad break, but really not serious, considering some of the accidents that happen in other hobbies; the fellow wasn't even permanently scarred.

And that's ALL! ONE accident in twenty years. Stuff that in your actuarial table and smoke it.

Well, we're on the verge of some good news. Due to the efforts of Elaine Sadowski and other Trustees, there is information available on the record. Dane Boles, of Estes Industries, has gone through the trouble and expense of making copies of this information



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and mailing it around; I got the information used in this column from Dane. The other manufacturers have responded with information on their product liability, providing more ammunition for the Forces of Good. Harry Stine (No. 2 and trying harder) and Larry Chumlea (Junior NAR member from Stow, Ohio) both presented the results of their searches for insurance information to the Trustees at NARAM. Thanks to all these people and their selfless efforts, I'm confident that we'll soon have insurance again. The latest, but by no means the last, battle in the NAR WARS is turning in our favor.

But every battle has its cost. What will this policy cost the members? Will it be so expensive that it has to be offered as an option to membership, available only to those who can afford it? Will it be available only through clubs? What kind of a deal are the insurance giants, who move in mysterious ways in their seller's market, going to impose on this tiny little very-non-profit organization?

Yes, every battle has its cost. But the cost that is hardest to bear is that of a battle which should never have been fought in the first place.

On to more cheerful stuff. Pat Miller, Chairman of the NAR Education Committee, is busily passing miracles. NAREC has formally an-

nounced the availability of the NAR Educational Section Program, which allows an education group to charter as a NAR section for twenty bucks plus 75¢ per student. What does this get you, friends? Just a bushel of reference materials from all major (and most minor) model rocket manufacturers, NASA, NAR, and twenty other aerospace education groups. As if that wasn't enough, it gets you nine Activity Packets, one each month, with updated material. It gets you on NASA's mailing list. It gets you the Pink Book, so you can compete the way us Big Boys do. It gets you the *Model Rocketter*. It gets you a 15% discount to **Model Builder** as members of NAR (real frosting on the cake, that one). This could be the greatest thing for the befuddled science teacher since the invention of static electricity. Write to the Education Section Program, NAR HQ, P.O. Box 725, New Providence, NJ 07974, to get on the bandwagon. Do it!

It was announced at NARAM that there has been a change in the Bylaws, to wit, that it now requires only five NAR members to form a sanctioned Section. It used to take ten, which contributed to the number of lone wolves in rural areas. One of the five must still be over 21. Chartering as a Section is well worth the trouble, for

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effort to make up for the cut, finally double-cutting and giving the race to Jacobson. The final flyoff between Jim Moorehead and George Parks was somewhat anti-climactic. Parks was first to reach No. 1 pylon and easily kept out ahead of Moorehead, who finally cut on the 6th lap, leaving it an easy race for Parks.

Terry Prather, flying his newly-kitted "Little Toni", won first place and also set low time of 1:36.6. The other top twenty finishers and their point totals appear elsewhere in this article.

As you're aware, this race was run with slotted exhaust pipes and stock props. Of course, everyone followed the rules closely and the only problem we noticed was the poor quality control some of the prop manufacturers were having just prior to the Nats. We personally examined several props and found the lengths running from as short as 6-1/2 inches on a 7 inch diameter prop, and there were also some that didn't have enough blade width out toward the tips. So . . . while the engines were checked for compliance to the idle rule and were torn down and inspected after racing was over, to make sure they hadn't been modified, nobody bothered to check the props.

Formula I racing was pretty much a replay of the three preceding days of Q-M races. Flame-outs took the highest toll of eliminating the major contenders, again proving that you not only need to go fast but need to do it consistently. Take a look at the point standings and it's not hard to figure that out of a possible 44 points, there had to be some DNF's or no-starts in there someplace.

The actual racing was mostly low key, as once Ed Hotelling started flying, he was out in front point-wise all the way. Rusty Van Baren and Tom Christopher were two people close enough in points, but ultimately the finish was again an anti-climax. In Hotelling's last race, there were only three planes in the heat and all Ed had to do was go out and get his engine started and finish his ten laps. What a way to go!

A fly-off between Bob Wilde, Jim Stafford and Bill Hager was necessary for determining 13th place. Wilde was in first at No. 1 pylon, with Stafford and Hager close behind. The lead never changed and Stafford flamed out after the 4th lap; Hager then cut No. 1 pylon and the race went to Wilde. A fly-off between Mike Atzei, Jr. and Laird Owens for 11th place was less than exciting, as Atzei was first to the scatter pylon, but cut out within two laps to present 11th place to Owens.

The highlight of all the Formula I racing was the 4-way tie for 5th place between Dave Pearce, the Clay-

reasons too numerous to mention (let the editor pad his own articles!). Send two bucks to NAR HQ for the NAR SECTION MANUAL, an inch-thick tome with more helpful advice than you could get at a year of bull sessions. Mrs. Mayer, the entire office of NAR HQ, will get you a copy at just under hyperlight speed. There are rumors among those who haven't met Doris, that she has eight arms, and is in the Guinness Book for a speed run on an Addressograph.

Finally in this month's agenda, there is a follow-up on the efforts of the Great Lakes Association of Rocketry. Remember the Science Center exhibit that they had signed on to set up? Well, it's becoming a permanent part of the Detroit Science Center, which has visitors of 85,000 people each year. Note accompanying photo of large, weird-looking Center.

GLAR still persists in holding meets and demos in some of the worst man-made weather this side of Pittsburgh. The accompanying shots are of some of their Open Event birds, judged on originality, creativity, and general weirdness. Beautiful!

It's amazing the events clubs can come up with. A section in Rochester, NY, the Monroe Astronautical Rocket Society, originated an event called LeMans Start, in which the modeler is

required to stand behind a line 10 feet from the launcher with his prepped bird. At a signal, he sets the model up on the pad, launches it, recovers it, and races to the returns table. I believe the club record is 30 seconds. The Section which is unfortunate enough to have me as a member at the present time, the Spacemodeling Society of Kansas City, has successfully flown an event called Stand-off-a-quarter-mile-and-squint-through-dark-glasses Scale. The silhouette of the bird in question is the most important factor here, leading to the interesting concept of a Two-Dimensional or Profile Model Rocket. Finally, Chris Tavares, of NOVAAR in Northern Virginia, tells me that their two-day meets they fly two separate rounds of R&D, one on each day. The resulting event is called R2D2. Ouch! ●

Pylon Continued from page 26

between Gail Jacobson and Lee Helsel proved to be one of the most exciting races, for a couple of laps. The race horse start saw both airplanes reach No. 1 pylon neck-and-neck and remained so for the next three laps, until Helsel cut No. 3 pylon. At that point, Helsel had nothing to lose and really started to cut close to the pylons in an

Moncreif team, Dave Shadel, and Bob Smith. In the race horse start, Smith was first to No. 1 pylon, with Clay-Moncreif close behind, followed by Shadel and Pearce. Shortly into the race, on about the 6th lap, both Clay-Moncreif and Shadel cut. Then trying to make up their cuts, both fliers received their 2nd cuts. Pearce flew a consistent course and wound up in 6th place overall.

The flyoff for 2nd place between Rusty Van Baren and the Christopher/Stafford team was also a bust, as Tom Christopher cut out in his efforts to catch Van Baren.

Times were much slower at this Nats, as it took several days for anyone to break the 1:20 barrier. I apparently didn't write low time down in my notes, but as I recall, it was set by Bob Violett flying his own-design "Polecat", powered by K&B and using a Top Flight prop.

Bill Wisniewski handled engine teardown, and no illegal engines were found. A total of 56 entries showed up for this Nats. Best Junior award went to William Hempel, Jr., and Best Senior went to Richard Kaplan.

And *that's* the Nats. Hope you get a subscription to **MODEL BUILDER** from a loved one for Christmas. •

QUARTER-MIDGET RESULTS

Name	Pts.
1. Terry Prather	32.5
2. George Parks	32
3. Jim Moorehead	32
4. Bob Root	31
5. Bob Nickle	28.5
6. Lee Helsel	26.5
7. Gail Jacobson	26.5
8. Tom Christopher	26
9. Bob Novak	25.5
10. Kent Thomas	25.5
11. Mel Santmyers	25.5
12. Vince Caluori	25
13. David Robertson	24
14. Bill Hager	23
15. Dave Pearce	23
16. Charles Gastott	22
17. Jim Gager	22
18. Nick Nichols	21
19. Kenneth Tinker	21
20. Dale Yaney	20

FORMULA I RESULTS

Name	Pts.
1. Ed Hotelling	43
2. Rusty Van Baren	40
3. Tom Christopher	40
4. Gary Hover	38
5. Bob Smith	37
6. Dave Pearce	37
7. Clay-Moncreif	37
8. Dave Shadel	37
9. Bill Pries	36
10. Whit Stockwell	34
11. Laird Owens	32
12. Mike Atzei, Jr.	32
13. Bob Wilde	31
14. Bill Hager	31
15. Jim Stafford	31
16. Bob Brogdon	30
17. Ron Sheldon	29
18. Jerry Boyer	29
19. Jim Jensen	29
20. Ron Schorr	29



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Mexico R/C . . . Continued from page 11

Contest registration was done right in the hotel lobby, the evening before the start of the contest. We had a pleasant surprise when we saw the sign saying "Bienvenida (Welcome), Raquel Welch" 'til we spotted the bottom line: "If in the area." As it was, we had our own "Bienvenidos" banner across the entrance arch, but we lost the spot to another celebrity. Young Nadia Comaneci was in town, at our hotel, and got her own welcome banner. The Tapatio's lucky enough to get tickets, paid from \$5 to \$35 to see her; we did so for nothing, at the pool one morning.

In all, 33 pattern flyers registered; 12 Expert, 3 Intermediate, and 18 Novice. Thirteen Formula Ones were processed and flown, and for the smallest number of entries, five scale types showed up. Actually, we were glad to see even this number, as scale competition is just now starting to be popular in Mexico, and this is one of the few contests that included it. Racing is by far the most popular event, with lots of Quickie and Open racing being done. At this contest, Quickies were not included, but the Open racing drew the largest number of entries. In all, 36 racers, from Joe Bridi's 1/2A Stik to a number

of pattern aircraft, were entered. The majority were Quickie types with racing engines, pipes and all. Bob Root flew a modification of his very successful "Li'l Cobra" Quarter Midget design, with 350 square inch wing area, slightly larger tail, and K&B 6.5 cc or Super Tigre .40 installed. Kathy Root flew her pink "Li'l Cobra" with a Cox .15 under pressure and with a non-R/C carburetor. I flew a stock Spickler Quickie, which is all you are going to hear about the Marez/Root racing team . . . we all bombed out.

Actually, the only successful team member was Kathy, who had a couple of 'firsts' for Mexico. One is that she was the first lady flyer to fly power or race in any south-of-the-border contest. There is a young lady named Lupe de la Vega, from Mexico City, who flew gliders in competition a few years back, but we haven't heard of her lately. Also, Kathy was flying a QM, her other first, which was not expected to do much, as the feeling down there has always been that due to the altitudes ranging from 5000 to 7000 feet, the little birds just wouldn't perform.

We've been telling our Mexican friends that with the new engines, and a design with a decent aspect ratio, they would notice the same differ-

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lunch breaks, we were all treated to some exhibition flying by Mexico's "Mr. R/C Helicopter", Luis Castaneda with his Kavan Jet Ranger. The altitude seems to inhibit helicopter flying in Mexico, as it has Quarter Midgets. There are a number of them there, but Luis has stuck to it more than anyone else, and is easily the most experienced chopper flyer in that country. We also saw some surprisingly successful flying by Teodoro Bogarin, of an extremely large twin with looks somewhat inspired by the Chase C-123. This 8.5 kilo (18.7 lbs.), 2.75 meter (9 ft.) winged monster is constructed from balsa and foam, and powered by two Webra Speed front rotor .61's. Even at that weight and altitude, these two beauties hauled it off the ground with no problem, and flew it around at a speed faster than some of us skeptics expected. There was little doubt about Teodoro's ability to handle it, up to and including beautifully placed landings on the adequate but too-short-for-mistakes runway.



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ences they are used to in flying Formula One's there as compared to sea level, but they could fly and race successfully. Anyway, Kathy's flights were watched by one and all. It was obvious by the first pylon that the airplane was flying and was competitive, more so when she was able to edge out some Quickie/racing .40 combinations by out-turning and out-flying them. After every heat was over and she was back on the ground, Kathy was the recipient of a round of applause from the competitors and spectators.

Though the U.S. racing group should have stayed home, as far as results are concerned, the exact opposite took place in the aerobatics competition. "Pepe" (nickname for Joe) Bridi brought home the First Place trophy, a two-gallon size silver cup. To make it a clean sweep for the 'Norte-

americanos', Phil Kraft and Tony Bonetti took places two and three respectively. Other pattern Firsts went to Francisco Taboada, for Intermediate, and to Sergio Panameno, of Tampico, for Novice.

The First Place racing trophies went to Mexico City; Formula One to Dr. Victor Coria, and Open to Gaston Mathelin, owner and operator of "Mathelin Modelismo", one of Mexico City's better hobby shops.

The Scale top spot was won by Alejandro Benitez, with a very well done Chipmunk. All of the five scale entries were the equivalent of the better class of workmanship seen in U.S. stand-off scale contests, and the final standings were actually determined in the air, with the Chipmunk's excellent flying characteristics giving it the needed edge.

In between rounds and during the

The Saturday night banquet was a big success, further evidence of the planning and preparation that was done for this event. It was held at the hotel, and attended by at least 250 persons. The decorations included balloons and pattern ships hanging from the ceiling, a floral decoration of the club emblem, and ceramic flower vases and ash trays on each table, inscribed with "Tenth Guadalajara R/C Contest", in Spanish of course.

We were welcomed by Jose Barrios, President, with a translation by Marty Barry. Every contestant was then called, in turn, to the podium, and introduced, by name, home town, and country. Everyone received a certificate of participation, and we all settled down to serious drinking and eating.

Now, in Latin countries, you eat late dinners, which we knew about from previous experiences, and for which we had tried to fortify ourselves. So it was really no surprise when dinner started to arrive at 11:30, by which time some of the fortifications were long gone. The meal was well worth waiting for, the service was excellent, and much enjoyed and appreciated by all.

There is always a sad time at these events, starting on the last day of the contest when some of the early departures take place. So it was with regrets, but nonetheless with smiles and 'abrazos', the traditional Latin hug, that we started saying 'adios' to our friends, old and new, on Sunday afternoon. And it was back to 'El Tapatio', which also had started to look empty with so many familiar faces lacking, to pack. Packing was easier this year, as we didn't have the complications of trophies to bring home. But we did

pack some of the excellent 'pan dulce', Mexico's sweet bread that we all like so much, and decided against any of the delicious tree-ripened fresh fruits which we also enjoy. This decision was based on the fact that if we couldn't have them to eat at home, we didn't want U.S. Customs to have the pleasure. Anyway, we got it all together, and made a fast trip through part of the "San Juan de Dios" (St. John of God) market, which is one of the largest covered markets anywhere. It covers 40,000 square meters, or close to 44,000 square yards. Nope, we didn't see it all. Then, off to the airport, where the only unpleasant part of the trip took place.

As mentioned, we went with Aeromexico, which appears to be a modern, well equipped and operated airline . . . at least, modern enough to have DC-10's, and according to one of their people in Guadalajara, they operate 35 airplanes. The trip down from Tijuana, just across the border from San Diego, was normal. The trip back turned into my worst airline experience. To make a long story short, the 5:00 p.m. departure did not take place 'til 4:00 a.m. the following day, eleven hours late! Aeromexico kept us waiting at the airport, with no facilities, all night, constantly stretching the estimated departure time. We find this completely inexcusable, and do not expect to ever travel Aeromexico again.

However, we will travel back to Mexico . . . every chance we get, and must stress in all fairness, that this is the exception rather than the rule. In fact, another company, Mexicana Airlines, has treated us better than the U.S. lines that operate in that direction. Our reason for going this way this time was to take advantage of an excursion rate that resulted in \$70 savings per person. Also, in fairness, I have experienced delays before, in this country, and in others. But in all cases, a lot more consideration and respect was shown by the airline concerned, and in all cases that I have experienced or heard of, the passengers were moved to a hotel when the delay was indefinite or extended. In a contest that received only top scoring points in all respects from us, we have to score Aeromexico zero on this particular maneuver, there not being any lower score.

Not being the types to let one unpleasant experience put a damper on things forever, and because it is now a matter of honor since we didn't place at all, we'll be back for as many of Mexico's contests as possible. There is Puebla in November, Mexico City on Easter week, and Luis Castaneda and some of the other spark plugs are making a serious bid for the 1979 R/C Aerobatic World Championships. The

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proposed site is the Mexican Air Force Base in Puebla, at 7000 feet altitude. We'll keep you advised. In the meantime, we'll be going to Mexico again, as soon as possible. If you'd like to join us, or receive information about their contests, we'll be glad to keep you posted. We won't make any mistakes in our travel arrangements and can promise that you'll come home as we did, happy . . . trophy-less, but happy.

OFFICIAL RESULTS PATTERN, EXPERT

1. Joe Bridi, California
2. Phil Kraft, California
3. Tony Bonetti, New Jersey
4. Luis Castaneda, Sr., Puebla

5. Alejandro Benitez, Puebla
6. Marty Barry, California
7. Mario Chapa, Monterrey
8. Benjamin Castaneda, Puebla
9. Roberto Mathelin, San Martin
10. Salomon Feiner, San Martin

PATTERN, INTERMEDIATE

1. Francisco Taboada, Monterrey
2. Miguel Gomez, Cuernavaca
3. Jose Calderon, Jr., Guadalajara

PATTERN, NOVICE

1. Sergio Panameno, Tampico
2. Hugo Lopez, San Martin
3. Felipe Hinojosa, Puebla
4. Luis Garcia Blake, San Martin
5. Emilio Sanchez, Tampico
6. Augusto del Castillo, Mexico City
7. Gustavo Inman, Sr., Guadalajara
8. Edmundo Montano, Guadalajara
9. Jesus Viana, Cuernavaca
10. Gregorio Osuna, Monterrey

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F/F Continued from page 69

available again, in almost the same layout. Jensen Tools, 1230 S. Priest Dr., Tempe, AZ 85281, is the place. Called the "Easy Hand Drill," it features a 3.5 to 1 ratio and costs \$14.50. The catalog also features numerous other goodies for the free flihter, including a variety of files, taps, dies, precision tools and the like. Just like owning a toy store (see display ad).

Nordic Tow Winch. The FAI Models Supply winch is a good one for A/2, but Bob Wilder also builds one that just does the job a bit better (of course, the cost is higher, too). Bob's winch is sooo smooth in operation, has a larger reel, and a quicker gear ratio. Many circle towers don't even remove the line from the winch, as they can pull up any slack in the line by winding it in. Try Bob at 2010 Boston St., Irving, TX 75061. Send him \$22.50 for the winch and another \$1.50 for postage and insurance, for your very own.

Free 1/2A Plans. Jim Clem has another one ready for field testing. This one is the 1/2A Witch Hawk, with 240 sq. inches of wing and an aspect ratio of 7.5 with a 27% stab. The ship features a box-type fuselage and (get this, gang) a rudder and fin mounted in front of the stab (what won't they think of next!). Send to Jim at Clemcraft, P.O. Box 524, Sand Springs, OK 74063. Oh, there is a catch to the free plans . . . you gotta send Jim a report on the construction and flight performance. Can't win 'em all.

SOME HINTS AND TIPS

Head Bat Helmick passes these on for those of us who have run out of uses for Hot Stuff, Zap, et al:

1. Got a blister on your foot? Smear on a few layers of Hot Stuff.
2. Got bug bites all over your bod? Hit them with a spot of Hot Stuff. It works (Be careful in the tender spots, though).

3. Can't get the stuff out of the bottle? Try using Zap tubing instead of H.S. tubing.

4. Hot Stuff is also handy for making up little tooling jigs for easing the construction of your models. Examples are jigs for cutting webbing, gussets, a double ended "T" pusher to help hold webbing into spars while the glue sets, etc. If you really need epoxy to glue something "quick and dirty", use Hot Stuff thickened for filleting with a powder like baking soda, Micro balloons, flour, or whatever.

Some more hints to pass along from the Flight Plug, according to Terry O'Meara, who uses a heat gun to:

1. Hasten drying of water spray and dope coats
2. Soften windshields to shape while holding them in position
3. Change wing and tail warps.

Try some of the above, you might be pleasantly surprised. If they work, thank **Model Builder** and give me some credit. If they don't, complain to Helmick and O'Meara.

IN CLOSING

The Flight Plug had a squib entitled: "Words that changed Model History."

It went like this: "Book publisher in 1934, Well, Frank, we can give it a try, but the modelers are buying books full of math equations these days. With your idea of nothing but 3-views and letters from experimenters, I doubt we'll sell five copies." I gave it a bit of thought and came up with a few more:

1. Executive at Acme Models in 1938: "Listen to me, Carl, baby. What flier in his right mind would want to build a model that looked like that . . . with the wing up so high, you can't tell me it's going to fly. Take it over to Comet, maybe they'll kit it for you, but it'll never sell."

2. Anonymous modeler in 1946: "Sal, your stab is on crooked. You'd better do something to take that tilt out . . . who knows what it'll do when you launch it."

SPORT SCALE

1. Alejandro Benitez, Puebla
2. Hugo Lopez, San Martin
3. Jorge Burgueno, Culiacan

FORMULA ONE

1. Victor M. Coria, Mexico City
2. Miguel Gomez, Cuernavaca
3. Antonio Galicia, Mexico City
4. Bob Root, California
5. Francisco Gonzalez, Mexico City
6. Rail Aguilera, Guadalajara
7. Joaquin Alba, Mexico City
8. Jesus Mata, Guadalajara

OPEN RACING

1. Gaston Mathelin, San Martin
2. Miguel Gomez, Cuernavaca
3. Mario Carabez, Mexico City
4. Gustavo Inman, Guadalajara
5. Luis Munguia, Mexico City
6. Victor Cardona, Guadalajara
7. Jesus Mata, Guadalajara
8. Eloy Marez, California
9. Raul Aguilera, Guadalajara
10. Omar Lopez, Mexico City

GLIDER, 15-Minute Precision

1. Miguel Enkerlin, Guadalajara
2. John Rimmer, Texas
3. Raul Lopez, Puebla

GLIDER, 5-Minute Precision

1. Raul Lopez, Puebla
2. John Rimmer, Texas
3. John Riggs, Texas

GLIDER, Speed

1. Miguel Enkerlin, Guadalajara
2. Raul Lopez, Puebla
3. Tied: Gabriel Sandoval, Guadalajara
Connie Jones, Texas

3. Comet Models manager on the phone in 1940: "No, I can't guess the latest this time, Carl. Tell me again! The tail comes up . . . pops up, you say. Yeah, then what? The plane comes down. Yeah, go on. It lands on its wheels. Sure, sure. Who is going to believe that. Since it's you, Carl, we'll try it, but don't blame me if no one buys it."

4. Official at Champion Spark Plug Company in 1947: "O.K., Ray, so it runs without a coil and condenser. What happens when you take off that battery? . . . So, it still runs. Who is going to believe that you don't need flight batteries? A spark plug like that will never catch on. Sure, we'll make a few, but mark my words. . ."

Sailing Continued from page 34

improvement scheme into four general areas:

- 1) Self or individual effort
- 2) Pair sailing
- 3) Seeking out competition
- 4) Clinics

These will all relate to the improvement of individual sailing skills. It will be easier to talk about each in turn.

SELF OR INDIVIDUAL EFFORT

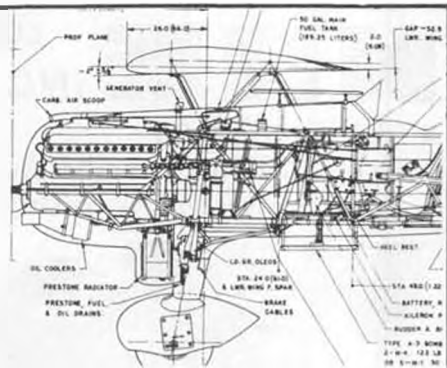
Strangely enough, though this will have the most immediate benefit, it seems to be practiced only by a few in our sport. Facets of this effort consist of reading about sailing and applying what you read to the operation of your boat. It doesn't matter that the book was written for some fellow who has to sit in his boat. The physics of air and water, and the forces that make a square rigger go, are the same ones that will push your boat across the finish line. The monthly literature is full of good articles. There is so much information that I've taken to a filing system that organizes the different articles that appear. Now, when I want to find out what the pundits have to say about "sailing downwind", I just open a folder and 10 or 15 articles fall out in my lap.

While you are reading, take the time to learn the proper nomenclature for the parts of your vessel. A clew is a clew. A clevis is not a clew, nor should either be called a "thingy, do-jigger, or thing-a-ma-bob". If you don't know the proper names, when somebody tries to help you, it will go in one ear and out the other. Learn port from starboard, upwind, leeward and so on.

More information can be obtained by talking to others. By others, I don't mean theoreticians who are great at the blackboard but in the back of the pack on the course. Very often, there will be no apparent explanation why some adjustment or other makes a boat faster. Don't worry about that, if red jibs make boats fast . . . go get a red jib!! Get fast first!! Worry about why

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Douglas XO-36/XB-7	1	3.00
1/12th size: 1" = 1 ft.		
Curtis A-8 Shnke	3	\$7.50
Curtiss Gullhawk 1A	2	5.00
Curtis O-1BA-3 Falcon	3	7.50
Curtiss XP/YP-23	3	7.50
Czech Avia B-534	2	5.00
Davis D-1K	2	5.00
Douglas O-25C	3	7.50
Douglas O-31A/O-31B	3	7.50
Douglas O-31C/Y10-43	3	7.50
Douglas O-38/O-38B	2	5.00
Douglas O-43A	3	7.50
Douglas O-46A	3	7.50
Fokker D-XVII	3	7.50
General Western Meteor	1	3.00
Travel Air 2000	2	5.00
Waco ATO Taperwing	2	5.00
1/10th size: 1/2" = 1 ft.		
Curtiss Hawk P-6E	4	\$9.50
Fiat CR-32	3	7.50
Great Lakes Trainer	4	9.50
Hawker Fury Mark I	4	9.50
Hawker Taper Wing Fury	3	7.50
Hawker Parsian Fury	3	7.50
Sparmann P-1	2	5.00



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you are faster later on. A classic example of this occurred in our EC/12 fleet in the 1970 season. Bob Harris carried an unbelievably loose jib sheet, yet his boat pointed a good deal higher than the rest of the fleet. I took a couple of measurements, set my boat up exactly as his, and presto, pointed right with him. It was somewhat later that we discovered that the pointing was the result of a fairly tight main leech. The loose jib allowed the boat to come up under the influence of the main, while a tighter jib would have held the head of the boat off the wind. What is important here is that by duplicating Bob's set up, I got an immediate improvement in my boat. Your quest is to find out what is working for the winners, not primarily "why". The "why" will come as a natural product of your reading and experience.

Observe other skippers' boats. All too often, I see skippers paying no attention to the heats that are sailed without them. These are just the moments that you can give full attention to learning what the winners are doing right, as well as what the losers are doing wrong. We have an advantage over big boat skippers, since we are able to see our hull and sails as a functioning entity. Poorly trimmed sails, too much heeling of the hull, erratic steering, and so on, are ours to see and learn from. Comparison of our boat with the competition allows us to make immediate changes to improve performance. I might add that how the boat is handled is just as important as the physical set-up of the beast. The hand on the transmitter makes a dead boat come alive. If you don't believe it, put the last place boat in your fleet in

the hands of last year's champion. By the end of the day, he will be winning his share with it. At the same time, his going machine will have slunk into last place under the heavy hand on tail-end Charlie.

Learn your own boat. Take the off weekends to put her on her side with the rig up. Tighten the backstay, tweak the shrouds. Winch the sails in and see if the sheet tension is distorting the mast. Now flip 'er over and see if it is symmetrical on each side. If not, you may be well on your way to discovering why she goes better on one tack. Check the internal stowage. If you have a battery that goes clunk from one side to the other as you tack, it may be funny . . . but it is costing you precious stability, and must be remedied.

PAIRED SAILING

In the previous activity, you have become familiar with the parts and functions of your boat. Now, you and a partner set out to put into practice the skills you will need to hone for competition sailing. Since no two skippers are ever equal, it is important in these tunings that both skippers sail both boats. The control functions on both boats should be as nearly identical as one can make them . . . Right-hand stick moved left and right steers the boat. The left-hand stick moved up slacks the sails out, and moved down, pulls the sails in. I suggest that any other sail controls be put on the left stick. One usually has his right hand busy, twiddling the rudder and the rudder trim.

A couple of buoys will help, as it structures the water that you are sailing on. Put one way up dead to windward and another close by your

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launch site. It is then easy to sail the boats up and around the weather mark, then bring them back while one is adjusted for improvement. Keep fiddling until one is best when either skipper sails it. Then work on the other one. Keep some notes at what you do so that you can reproduce it at a future date.

As I have mentioned before in these pages, the start is all-important in every race. Add a third buoy to make a very short starting line. It should really be only 2 to 2-1/2 boat lengths long. Use a two-minute starting tape and you'll be able to run a whole slew of short races in an afternoon. Swap boats until both have been fine-tuned. Then it is time for the better skipper to try to explain the things he is doing up the course which is allowing him to work his boat out in front. This is no time for ego problems. The fellow I pair with is a good deal better than I am. But by learning from him, I've improved a lot. As we sail together, we both seem to keep learning, and that little difference appears quite stable. One good mistake and I've got him, and that is what keeps me going.

If pair sailing develops your skills, then you would be well off to spread the word by making up a new pair. Bring another skipper into your fold, and if your ex-partner does likewise,

then there will be 4 of you. In my work with the match racing eliminations for the Mini-America's Cup in our club, this technique was applied. The result: of the four fellows from my fleet who went . . . one was winner of the Mini-America's Cup, the other three finished 1st, 2nd, and 4th in the Narragansett MYC Regatta. I put it all down to the mutual benefits which derive from honest and open pair sailing. Even if you never beat your partner, you'll be so much better than when you started, the effort is well worth it.

COMPETITION SAILING

Having honed up with the local fleet, now is the time to journey to distance regattas. New lakes with new winds and new skippers will add yet another dimension to your skill. The more races you get into, the more experiences you will store in your skull. Seek out away-from-home regattas, they are the best proving ground for the kind of practice you have been doing. You'll run up against some unexpected differences; for example, salt water, or a lake which has a long fetch and gets covered with waves under a blow . . . or maybe a lake with structures along the side which funnels the wind into a series of jets across the course. All are a test of your cognitive powers. Can you recognize places in the wind structure

where a certain method of attack will give you better speed, or a more direct course to the next mark?

Staying home and sailing on your local lake is convenient and fun, but not nearly so exciting as wading out into new water with a new fleet clustered at the starting line.

CLINICS

As a way of transferring much of this information, I have tried holding a couple of informal clinics. The idea was to bring together all the ingredients of sailing, i.e., boats, wind, water and people, but to do it in a manner which allowed discussion, contemplation, and learning. We had found that while skippers were getting answers to their questions during local regattas, the explanations were far from complete. The answerer was usually on his way to the water, struggling with his boat. Or else the questioner was off almost before the question was out. All-in-all, a fairly unsatisfactory exchange. By separating the formal learning from the racing, we all got more out of the effort.

We started out with each boat rigged and lying on its side. We squinted down each mast, discussed what rigging adjustments were needed to straighten the spar. The role of side stays, lower stays, backstay, and jib stay and jenny's were observed. Each was adjusted under the guidance of the clinician, with as much input solicited from the crowd as possible. About 10 boats turned out to be the most that a single clinician could handle in a single lot (For larger groups, split them up by frequency and put the second lot of 10 on the water for coaching in tactics and sailing skills).

The group rapidly tuned its rigging and masts. We then moved on to the initial settings of sheets, halyards, and downhauls, clew outhauls, and vang. Tight versus loose leeches were discussed, and sail influence on pointing ability was covered. A goodly number of changes had to be made to sheet leads, vang arrangements and other fittings. This work gave everybody the opportunity to consider the many small points of rigging and construction that individual skippers had come up with. I found it helpful to have on hand the tools and materials required for making changes right on the boats as the analysis proceeded.

About the only difficult point in the whole on-shore proceeding was the problem of keeping the group together so that something only had to be said once. As a fault was located on the boat under scrutiny, it was common to see half the skippers leap to their boats to fix the same problem. As a result, the discussion continued without them for a few minutes and they often



Henry Has Struck Again

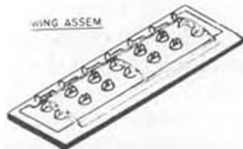


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came back with, "Say that again, I didn't hear. . .". Maybe a small thing, but it slowed the pace somewhat. About an hour and a half of that activity at a stretch seemed to be the length of concentration.

The next phase was to put the boats on the water, into a short triangular course. Using a one-minute starting sequence, we ran through 10 starts. Comments on each skipper, or general remarks were provided. I was amazed at how much improvement occurred between the first and last of these sequences. At start No. 10, 9 boats crossed the line between "BOOM" and "BOOM +5 seconds". We then ran a series of short races with the same continual coaching. They too tightened up as the afternoon proceeded.

At the wrap-up session, I urged those in attendance to write down some of what they had heard. And to make marks on their boats to help them in returning the boat to its improved state of tune. How much inroad did the clinic make? Well, I think it must have helped some, as the next local regatta was won by a clinic graduate, and one who had never sailed higher than 6th before. Made me feel pretty good to see it happen.

I've often wondered if a traveling clinic might be something in which the established model yacht clubs would be interested. I've some ideas on how such a program would operate and would be happy to talk with anybody who thinks their club might be looking for such an event. It might serve as a way to get some new skippers out who are presently turned off by the emphasis on racing. I can be reached at: 7608 Gresham St., Springfield, VA 22151. And while you have the paper and envelopes out, remem-

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ber to send your 1978 AMYA dues to Bob Crysler, 2709 S. Federal Hwy., Delray Beach, FL 33444. That five dollars is the very best you'll ever spend. Besides this **MODEL BUILDER** column of mine, the AMYA Quarterly Newsletter is the only source of R/C model yachting news and information published in the country.

Hurricane . . . Continued from page 31

bands around bamboo pins and the dowel pin to hold it in place.

Flight instructions called for sliding the wing back and forth to obtain a proper glide, adding weight to nose or tail if moving the wing was not sufficient. Balance point was not specified, but right turn under power and in the glide was strongly recommended. Ours flew this way, with a 1/16 shim under the bottom front spar of the wing, to increase incidence.



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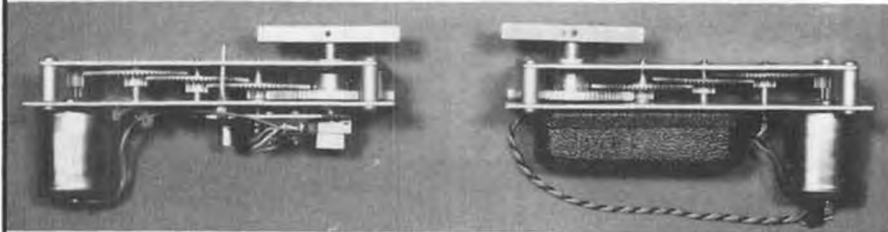
Counter Continued from page 11

ments. Prices? Hurricane is \$129.95, Folgore is \$124.95. Available from the manufacturer, or through your local dealer. Tell them both you read about the "Dogfight Pair" in MB.

Beginning rocketeers will do well to take a close look at Centuri Engineering Company's new concept in model rocketry, called "Rocketry Exploration".

The first offering in this series is the No. 5200 Power-System outfit, which includes a planned sequence of nine building and flying projects in one package. The outfit contains 12 engines, 7 vehicle configurations, a heavy-duty launch system, and other rocket supplies that take you into multi-staging, payload launching, altitude measuring, and engine clustering. An illustrated manual/handbook covering rocketry history and theory, techniques, kit assembly and experi-

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ments, is also included.

Over \$30 worth of rocket supplies, for only \$25. Complete information is available from Centuri Engineering Co., Box 1988, Phoenix, AZ 85001.

* * *

Pete Bechtel, of Windspiel Models, has released some advance information about some new products that his company will have available in the near future.

From Wanitschek Modellbau, Germany, it will have the ASW-20 kit, with a 98 inch wing, 640 sq. in. wing area, 2-1/2 lb. weight. Also, the WA-23 slope and aerobatic soarer, at 98 inches span, 45 inch length, 600 squares, E-374 airfoil, and 3-1/8 lb. weight. It is available in two versions, one with epoxy glass fuselage, and conventional built-up wings with ailerons or wing twisting gear. The other version is an A.T.C. (All Ready To Cover???) version, at approximately \$145.

Also from Wanitschek will come two Quarter-Scale planes, the HP-18 and the Jantar-1.

A spoiler set is available, servo actuated, and constructed of epoxy-filled carbon fiberglass. They are 14 inches long, and .43 inches wide. The price per set is \$28.50.

Winspiel Models has also acquired the Fokker FK-3, Cirrus and Sagitta that started life with Francis Products and more recently have been manufactured by A & L. The FK-3 has been completely redesigned, with a polyglas fuselage, canopy, machine-cut ribs, complete hardware, decals, and full size plans with instruction book. It has a 128 inch wing, 750 sq. in. area, at a weight of 3-1/4 lbs., for a wing loading of 8 to 10 ounces per square foot.

Contact Winspiel Models, Rt. 3, Box 457, Coeur D'Alene, ID 83814, for complete details and availability.

* * *

Some time back, we had trouble with noise complaints at one of our local flying fields, all spearheaded by one lady (?). This person was so determined to rid the world of us that one of her calls to the local police took place during a glider contest!

If she or one of her sisters now lives close to where you sail your noisy R/C sailboat, and your life is being made miserable, best you look to Sail Engineering, whose sail control servos are claimed to be the quietest ones around.

They are available in three servo/switch operated models, and one proportional type designed to plug directly into the receiver.

The cases are made of water-resistant high-impact plastic; a heavy die-cast metal gearbox, and hardened metal gears. On the higher power servos, the first gear is a helical gear, integral with the motor shaft. This feature prevents backing off under heavy loads.

Various epoxy fiberglass and aluminum sail control arms are also available, for the different servos and different applications. They all feature chrome plated eyelets to prevent chafing of the lines, and a unique clamping collar which permits easy adjustment.

Complete specifications, prices and availability data can be obtained directly from Sail Engineering, P.O. Box 8439, Richmond, VA 23226.

* * *

For many of us active modelers, many tools, such as a lathe, are considered real luxuries, and have to take a back seat in the budget to that new radio, engine, and the more necessary tools, such as assorted screwdrivers, wrenches, and by the looks of some airplanes, hammers. We are all familiar with the small Austrian made "Unimat" lathe; the first stop for the average modeler who really doesn't need a lathe capable of turning brake drums. And for all that eventually obtain one, we have found that the longer we have it, the more things we learn to do with it on every project, and the time comes when you wonder how you ever did without it.

And soon, you are limited by the machine itself; the swing and bed length limitations. Well, all of a sudden, life has become brighter for us amateur machinists. American Edelstaal, Inc., 1 Atwood Ave., Tenafly, NJ 07670, has announced its new "Machinex 5", a universal machine tool capable of doing turning, drilling, milling, boring and grinding operations with split-thousands precision.

The basic lathe setup has a 5 inch swing, and two beds are available, one being 20 inches for a 10 inch

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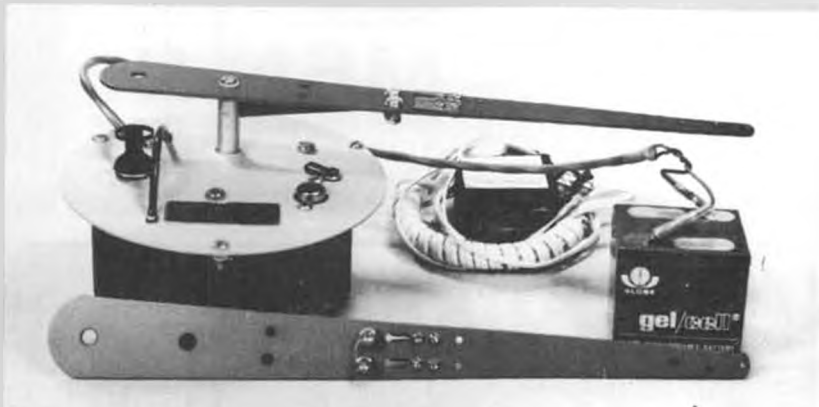
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capacity between centers, and a longer 24 inch bed with 14 inch capacity. The headstock motor unit is removable and can be located on a vertical column to convert the "Machinex 5" for precise 8 inch vertical capacity drill press and milling operations.

Space does not permit us to tell you all that can be done with a tool of this type. Complete information can be obtained for the asking from Edelstaal, both about the basic unit and the many accessories available. The price of this all-American made machine is \$349.95 for the standard bed model, and \$379.95 for the long bed.

When you write, tell them **MB** sent you!

* * *

If you are an R/C single-sticker who felt like a second class citizen because the manufacturers of the so-called Super Radios have been ignoring you, weep no more. You can again hold your head up when you unload at the local field.

Millcott Corporation, manufacturers of the 'Specialist' has come to your rescue. After a long period of development and experimentation, they have introduced the 'Specialist Eight' a top-of-the-line, maximum-performance single-stick R/C system. Retaining some of the features already proven with the two-stick 'Specialist',

the single-stick model sports unique features all its own. The stick assembly can be rotated 30 degrees, so the position can be set as most desired by you. The rudder knob houses its own pot assembly and turns on bearings.

All secondary control functions are located on the right side of the case, and using a practice common in full scale aircraft, each function is controlled by a differently shaped device. Aileron and rudder trims are on top, where they won't be disturbed, as is a three-position auxiliary function switch. A rudder control lever can also be installed on top, at your option, as a second rudder control to be left thumb-operated.

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Doesn't it just pain you to hear a servo beating its poor little motor and gear train to death against a bottomed throttle or nose gear? And worse, to think that such an overload might be the cause of that servo giving up completely next time you are on the runway going too fast to stop and too slow to fly.

Like most other things, servos like to be treated with kindness and respect. One way to prevent some of those shocks and stresses is through the use of an override device, such as Du-Bro Products' new "Control Over Ride Assembly". It comes complete at 98¢, can be used on most

servos, and with either rod or cable. Two sets of springs are included, one for light, and one for heavy applications. Now available at your local Du-Bro dealer. For more information about this and many other Du-Bro products, designed to make life easier for the modeler, inquire direct: Du-Bro Products, Inc., 480 Bonner Rd., Wauconda, IL 60084.

Whether the current month ends in "R" or not has no bearing on the availability of Ream'rs, Drum'rs, Lock'rs, Sand'rs, etc., or a Tote'r to carry them in. These are some of the fine tools available from Hobby Products, 18719 Covello St., Reseda, CA 91335.

In many cases, it is the only tool of its type available in the hobby market. For example, there is the "Ream'r", which is used to enlarge the 1/4 inch hole in most propellers to either 5/16, 3/8, or the metric size, required for Supertigres. This hand tool can be used in the shop or field, and will enlarge the hole all the way through or part way as required for some engines. Each size is \$5.98.

Another one-of-a-kind is Hobby Products "Grind'r", a 1-1/2 inch cut-off wheel, available either by itself at 69¢, or with a 1/8 inch mandrel

for \$1.49. If you are still cutting music wire any other way than with a Dremel or similar motor tool and a cut-off wheel, you are making work for yourself.

The "Size'r" is another worthwhile tool. It is a hand-held die, in 1/4 x 32 size, for cleaning and sizing the threads on glowplugs. Most plugs don't really need this, but it only takes one to ruin the head, which in most cases is softer material than the plug. At the least, you lose compression; at the worst, it will need to be replaced. Save it with a "Size'r" at \$3.98.

There are yet more goodies, some uncommon, others simply improved versions of items that have been with us for some time... Such as the "Tote'r", a compact field box just the right size for small airplanes and gliders, or as a line starter box for pattern or racing. See the complete line at your nearest full service hobby shop, or write for further information.

"Dear Bill:

"I am aware that this is a rather odd item for your New Products column, because it concerns a service rather than a product, but I can't think of a better way to reach the people concerned.

"I wish to contact the small manufacturer or individual who is now making, or would like to make an item for sale to the hobby industry, and does not now have, or does not feel that he can later achieve, national distribution.

"I am sure you know the hardest part of introducing a new product (regardless of how good it is) to the modeling fraternity is distribution. Most distributors do not wish to handle a single-item line, especially if it is a low-priced item. When a distributor adds another supplier to his line, additional bookkeeping, inventory control, and the cost of stock all add to his operating cost. This makes it almost impossible for the

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of 1 min., 13.4 sec.

distributor to make a profit on a single-item, low cost line. This problem is the beginning of a vicious circle.

"The small manufacturer, or the individual with an idea for a worthwhile new item, is caught in the middle. If he introduces a new item (as a single-item line), most distributors will not handle it. If he offers it direct to the consumer, there is usually insufficient volume to make it profitable to produce.

"I'm sure you get the picture, and the circle goes relentlessly on.

"Over the years, I have met many people who have bumped into the 'circle' and come away stunned, but not ready to give up. After numerous such conversations, and much thought, I felt that a solution to this problem would be a distributor-oriented marketing agency that would work for a reasonable commission, and handle the entire sales and distribution of the small manufacturer's products. With this thought in mind, I established Strick's Enterprises.

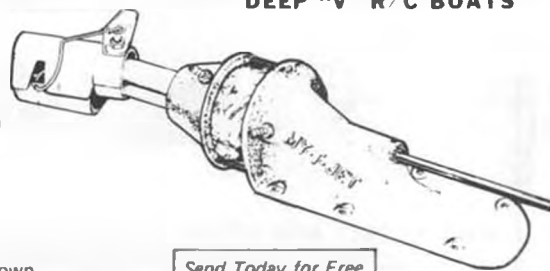
"Bill, there is a vast difference in the operation of Strick's Enterprises and a factory rep, who is, in simple terms, a commissioned salesman covering a territory restricted by his ability to travel. At Strick's Enterprises, we offer the following: An already established national distributor network, and we also advertise, stock, pack, ship and bill the small manufacturer's products.

"As an example, Bob Dunham (Dunham's R&R) was enjoying a very successful business, selling his excellent line of servo mechanics battery cases, stick assemblies, etc., to manufacturers of radio control equipment. At the same time, Bob was not reaching the retail market through the distributors and dealers, and did not feel that he had the time to develop this area. After discussing this market, Bob became the first client for Strick's Enterprises.

"About the same time, Don Mathes (Mathes Electronic Systems) introduced the Powr-Mite Sander.

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Again Strick's Enterprises was chosen as the exclusive marketing agency (Since the Powr-Mite was introduced, Strick's Enterprises purchased that portion of Don's operation, and we are now manufacturing the Powr-Mite Products . . . but that is another story).

"To summarize, we offer the small manufacturer an established national distributor network, plus complete facilities for:

- 1 — Warehousing
- 2 — Shipping
- 3 — Billing
- 4 — Advertising, etc.

"The small manufacturer keeps his own identity and manufactures his own product, we take it from here.

"I will not go into further details here, but if there are any 'circle bumpers' out there who feel that they have a worthwhile product and want national distribution, I will be glad to supply additional information if they will contact me at the address below."

Warmest personal regards,
A.L. Strickland
Strick's Enterprises
P.O. Drawer S
2284 Mimosa Lane
Lake Havasu City, AZ 86403
(602) 855-3185

Remotely . . . Continued from page 17
next period. One of them we view in the same way as the story about the guy who is watching his mother-in-law drive off a cliff in his new car . . . with mixed emotions. This is the growing interest in big engines for quarter-scale aircraft.

We are obviously very much in favor of the large scale aircraft . . . if for no other reason, at least for their scale-like flight. Of course, to accomplish this, they must have an engine or power system that will turn a large prop at moderate speeds, but with adequate torque. The average modern-day glow 60 develops its best power with 11 or 12 inch props turning at high RPM. Put a big prop on them, say a 16 or 18, and they're like trying to drive a Porsche at 15 mph in 4th gear . . . forget it!

Gearing or belt reduction drive is one way to go, but big engines, such as the Quadra, present another, and less expensive way, both in initial outlay and in operating costs. Can we allow these big engines in competition, and if so, would someone take advantage of the situation and come up with a 10 HP, Schneurle-ported, 2 cu-in. man-killer? Maybe not. We already have a 1.25 limit in scale, and no such engine has appeared . . . though Webra is now producing a



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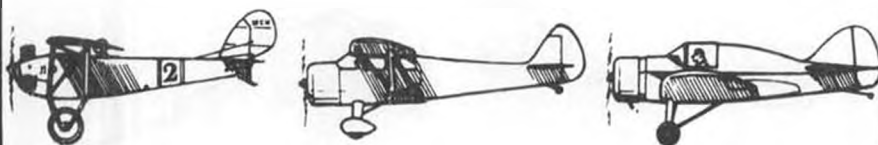
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powerful .90.

Our idea for Mammoth Classic Scale would not require a big engine, because we are thinking of light-weight, rubber powered scale-type construction, with super-light wing loadings. You could get away with 14 and 16 inch, low pitch props on these birds, using .60 to .80 cu. in. engines.

The other question for the future has to do with pattern scoring. Russell Knetzger, Milwaukee, Wisc., suggests that, as in many Olympic-type events, judges should go to half-points, particularly in the 6 to 10 point portion of the 0 to 10 range. This is not really something new, as the idea has come and gone on numerous occasions in the past, but perhaps we are more ready for it now than before.

Of course, as with any suggestion to change the pattern event rules, we are always faced with domination of the FAI in our thinking. U.S. modelers seem to be more flexible and willing to experiment than modelers from European countries, but in order to be able to compete in World Championship events, we must play and practice according to the current rules or find ourselves unaccustomed to them and thus at a disadvantage in international competition.

There is one answer, however, and that is for us to lead the other member/countries in the FAI . . . show them by actual experience, facts, and figures, that an idea will work. In response to our suggestion, Russell's club, the Milwaukee Flying Electrons, Inc., will incorporate this scoring system into their major pattern contest for 1978.

Anyone else care to give it a try? With modern portable calculators, the tabulation should not present any additional problems.

SPEAKING OF BIG ENGINES

Paul Tompkins, owner/proprietor of X-Cell Hobby's, Salt Lake City, Utah, did what a lot of scale modelers do . . . built a scale model to suit some particular item that became available before an airplane was selected. Here's how Paul did it, and as you read, check the cover photo and the black-and-whites with this column.

"Before this new craze of gearbox use in large planes, I had been giving some thought to building a high-torque engine for R/C flying; one that would swing large propellers. What provoked these thoughts, you might ask? Well, picture this if you will . . . the beautiful sight of a scale model flying at near scale speed with the wings shining in the sunlight. It is a perfect scene . . . if you're watching

silent movies. If you aren't watching movies, you must be at the flying field. Here, the total beauty of the first picture is shattered by the screaming sound of a single-cylinder engine.

"With this common scene in mind, I decided to do something to improve the situation. I thought that perhaps a high-torque, twin-cylinder engine would do the trick. After much thought, I found I would be able to connect two K & B 40 crankcases together by using a timing wheel. Then, by using a 180 degree firing order, an inline twin increases torque substantially, and this worked out very well. By increasing the stroke, I was able to come up with a displacement of a little over eighty. I elected to use twin carburetors, and after bolting the engine together, put it on a test stand. Using a Heathkit tachometer to check performance, I found it will swing a sixteen/six propeller at 7,500 RPM, on five percent nitro-methane fuel.

"Upon completion, this engine greatly surpassed my expectations. I had hoped the performance would be close to an 80. After comparison checks I find that it has

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2. Mail Subscriptions	12,770	13,790

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I certify that the statements made by me above are correct and complete.
 Wm. C. Northrop, Jr., Publisher

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AERO ERA Peanut Plans now introduces new Grapenut Scale! Catalog for stamp. Aero Era, 11333 N. Lake Shore Dr., Mequon, WI 53092

more. The sound of the engine is impressive.

"With the engine completed, I now needed a suitable plane. I decided on a Rearwin Speedster, as the nose was just right for the twin. I checked all of the available plans; old-timer and later. Not finding anything suitable or large enough, I used the Jetco plans, and started to enlarge from there. After getting some actual photos from Dan Lutz (the only ones in the world, I believe), the end result was this 78 inch Rearwin Speedster.

"I machined a manifold out of aluminum bar-stock and heliarced some headers into it so the model has a functioning scale exhaust system.

"The landing gear is shock absorbing."

Paul adds that if anyone is interested in more details on the engine, he can be reached at X-Cell Hobby's, 461 East 21st So., Salt Lake City, Utah 84115.

Workbench . . . Continued from page 6

gettin's good, we suspect that most, like MODEL BUILDER, are in it to stay. If that's the case, support of the AMA Nationals through trophy sponsorship is a small outlay for a large investment in the future.

As the Product Information Report is not readily available to everyone, we thought you'd be interested in seeing

the list of 1977 Nats sponsors.

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☆ WILLIAM F. "RIVETS" FALCK ☆

One has to wonder about the strange trick of fate that made us, after

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having the article on hand for over a year, decide during the first week of September, to publish the Peanut Scale "Rivets" by Mark Drela, in the November issue.

It wasn't until early October, when the issue had gone to the printer, that we learned of the passing of Bill Falck, the renowned designer, builder, and pilot of the famous "Rivets" Goodyear racer. He died, at the controls of his pylon ship, on September 4th, in an accident that didn't have to happen, during the Cleveland National Airshow. A local FAA official decided that the Formula I race should begin with a flying start, instead of the traditional racehorse standing start that had been used for so many years. The racers were to maintain a maximum speed of 130 mph until they crossed the starting line at zero time. Unfortunately, this was the stall speed of Rivets, a thoroughbred racer that was not intended to fly slow. Approaching the start line too fast, Bill tried to slow down some more, and Rivets got away from him. They went into Lake Erie inverted, and it was several days be-

fore they were found. Bill was 64 years old.

We wish to thank Dennis Norman and Russ Brown, of the Cleveland Free Flight Society, for giving us this brief report on the loss of two greats in aviation history.

IT AIN'T WHAT YOU KNOW . . .
IT'S WHO YOU KNOW

The following was clipped from a 1930's issue of "The Aeroplane," an English publication, and sent to us by Bill Hannan, who received it from Walt Mooney.

"Pilot W. D'Coursey-Watney's Nieuport Scout was extensively damaged when it failed to become airborne during takeoff. The original Court of Inquiry found that the primary cause of the accident was carelessness and poor airmanship on the part of a very experienced pilot.

"The Commandant General, however, not being wholly convinced that D'Coursey-Watney could be guilty of so culpable a mistake, ordered that the Court should be reconvened. After exhaustive and extensive inquiries and lengthy discussions with the Meteorological Offi-

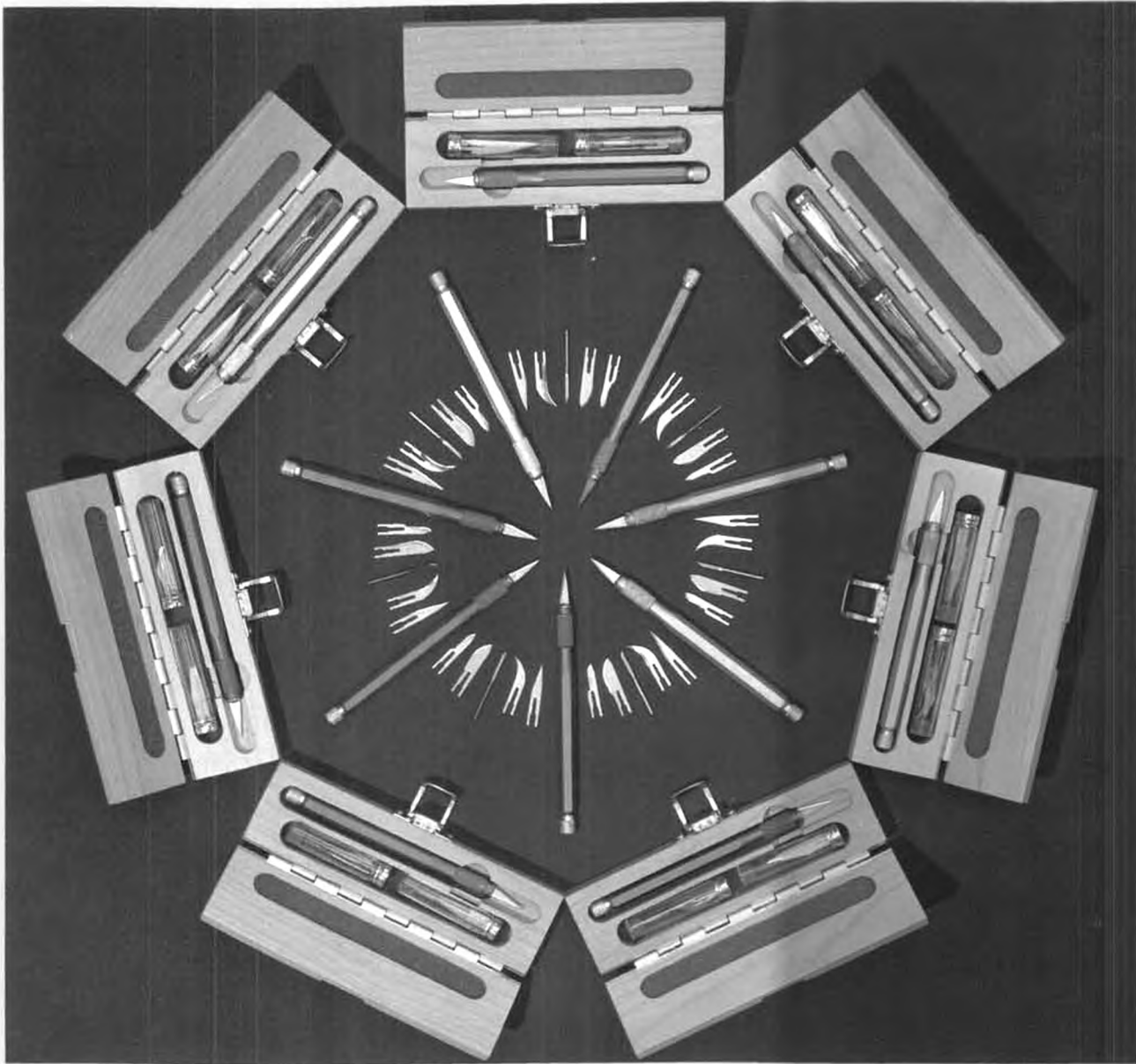
cer, the Court came to the conclusion that the pilot unfortunately was authorized to fly his aircraft on a day when there was absolutely no lift in the air and that he therefore could not be held responsible for the accident.

"The court wished to take this opportunity to extend its congratulations to Pilot W. D'Coursey-Watney on his reprieve and also on his engagement to the Commandant General's daughter, which had been announced shortly before the accident."

No doubt this Court of Inquiry could have given us a final answer to the "Great Downwind Turn Debate," provided we had the right connections! CHALK UP ANOTHER ONE!

Seems funny to be writing it now, but that's the way it is in the publishing game. Some of you will be reading this in late November, others as late as mid-December . . . but whenever . . . have a nice Christmas and a safe New Year's Eve, and when you're out in your car during the Holidays . . . and any time, for that matter . . . drive carefully, the life you save may be that of a MODEL BUILDER!

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NEW! ECONOKOTE^{T.M.}

Because of its lower heat application, ECONOKOTE is ideal for use on foam surfaces.

ECONOKOTE is great for use on solid areas and strong open frame structures where extra strength isn't necessary.

ECONOKOTE's new formulation makes it more flexible and pliable for use on compound curves.

ECONOKOTE is perfect as a trim material on *any* surface, *without* solvents.

TRY IT! ECONOKOTE is the best economy-priced covering that you can buy. 6 FT. ROLL OF ECONOKOTE IS ONLY \$6.95 (SUGGESTED LIST PRICE).



TOP FLITE
MODELS, INC.,

1901 N. Narragansett Ave.,
Chicago, Ill. 60639



Dual conversion receiver

We built the Contest 7 to prove a couple of important points. First, we packed more unique features into the entire system than any previous Futaba radio. Features to assure you of competition-caliber performance coupled with our famed reliability. And we held the price to just \$579.95, just to make sure that our reputation for quality and value continues to be unequaled.

We began with the receiver, which boasts a dual conversion IF stage in addition to our standard double-tuned, RF amplified front end. And we've also used our exclusive, extra strength 3-pin connectors for the ultimate in positive contact.

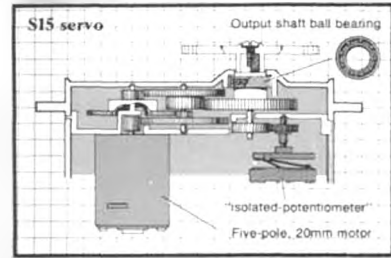
Then we built the FP-T7G-72 transmitter complete with 7 channels, dust-free, ball-bearing open gimbals, dual-rate elevator and aileron controls, slide auxilliary pots, and a beautiful aluminum case.

Dust-free open gimbals

Even the servos for the Contest 7 are special.



The system includes four S15's (3-S15's/1-S15L), our ball-bearing equipped, miniature marvels.

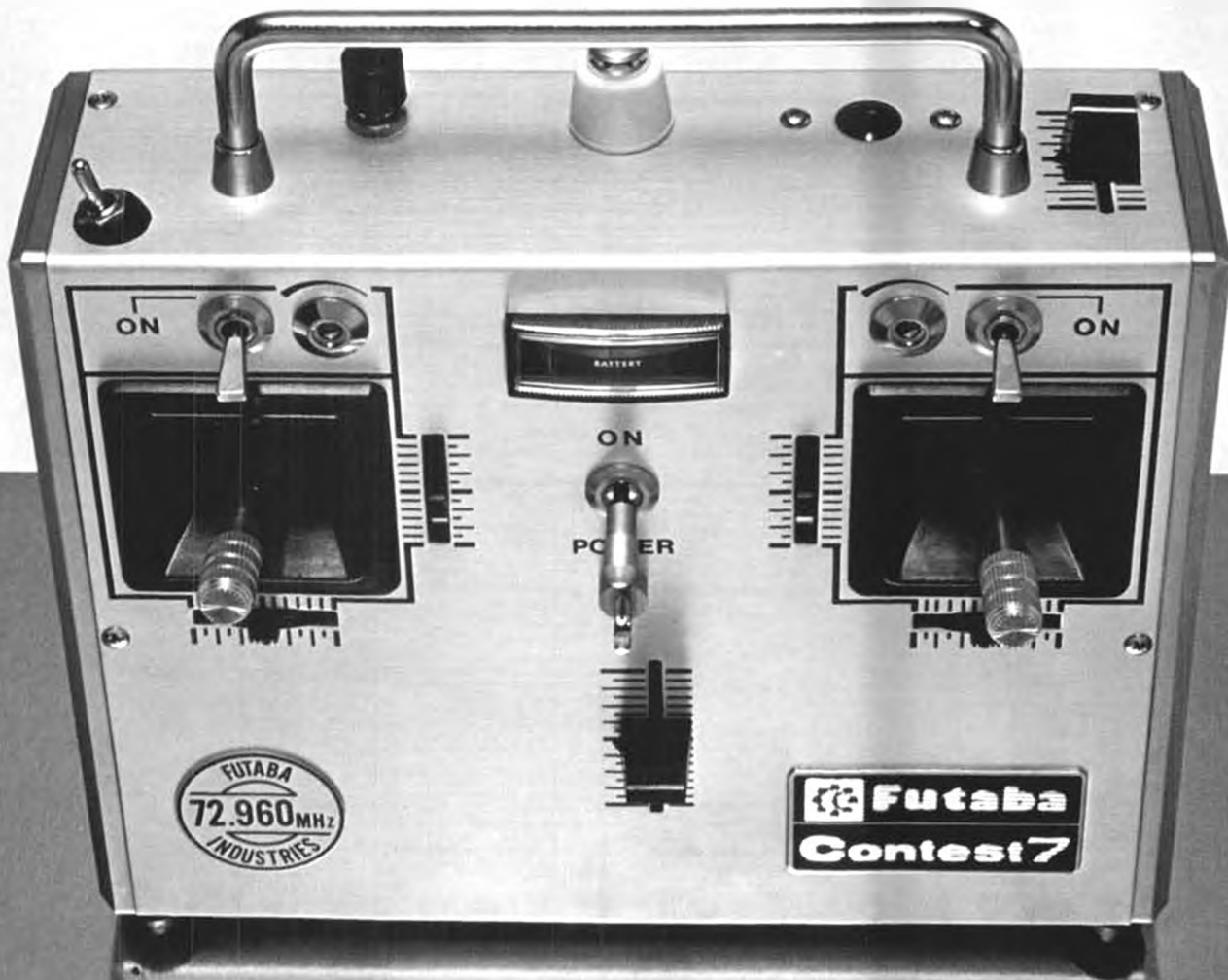


Within each sturdy nylon case lurks a custom monolithic, single-inline IC and a separate output Stage 9 pin IC for the optimum in selectivity and accuracy.

The Contest 7. It all adds up to the most Futaba money can buy.

Futaba

The Futaba Contest 7.



A fresh idea for the sport flier

4 channels designed precisely for his needs

New Look . . . New Technology . . . New Price Range: Our engineers were given the latitude to take a fresh approach to designing a 4-channel sport flier's radio. They were told not to cut corners and create an economy 5-channel like others have. This one was to be built from scratch. The result: MRC's 774 with features that make it strikingly different and more advanced than any system in its price range.

Fresh Appearance: To begin with the 774 looks different. Its unique size is just right to the touch . . . with contoured side plates for your palms. A ribbed bottom and finger-grip back make for a balanced feel and sure grasp. Modern yet functional.

Sound Engineering. Less evident, but just as new, are the smooth and responsive semi-open gimbal sticks . . . a novelty for the sport flier, long an essential in more expensive sets. The sticks also have external tension

adjustments to let you set the response to match your preferences. And there's a voltage regulator for ease of operation on 9.6 volt nickel cadmiums or 12 volt dry cells. Advanced servos have a Signetic NE544 IC and two output transistors to amplify power. Even the receiver is state of the art, including C-Mos circuit decoder for low current drain and added reliability. You'll find the 774 compatible with all MRC servos. Unlike some others on the market, this 4-channel lets you interchange servos as the need arises. In short, our engineers have created what may well be the prototype for every new sport radio to come . . . including an amazingly low-key price range. Available with 2 servos and battery holder for dry cells or complete with 4 servos, nickel cadmium battery and charger. Send \$1.00 for MCR's 1977 Color Model Aircraft Products Catalog.



MODEL RECTIFIER CORPORATION/2500 WOODBRIDGE AVE./EDISON, N.J. 08817

