R/C MODEL BUILDER

volume 9, number 92 $2.00 SEPTEMBER 1979

ISSN 0194 7079

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You've got the desire to be a Champion.

Dreams of conquering the skies are what makes a winning pattern flier. But even the best contest competitors know that you've also got to have the right equipment. Futaba's J-series radio control systems are just that. Pure, state-of-the-art electronics with high-performance features like full programming capability, dual mixing circuitry, roll and snap roll control buttons and servo reverse switching. And serious fliers can also appreciate our water and dust proof, dual ball bearing S121 servos, modular RF boards and direct servo control.

The J-series Futabas are available in 4, 5, 6 and 8 channel systems, plus a 5 channel Helicopter system. Write now for complete technical data, because the sky's not the limit any more.

All J-series systems use quick-change RF modules for band and modulation selection.

Behind the 8JN's back panel are 20 programming control settings, including 2 dual rates and 3 non-linearity functions.

Model 5JH/$749.95

Model 8JN/$799.95

We've got your radio. Futaba.

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K&B® R/C's

R/C flying reaches its peak of pleasure when you are confident that the power plant will be up to every demand you make upon it while guiding it through its maneuvers — take-offs, turns, banks, loops, landings, etc. This assurance comes from powering your plane with a **K&B R/C engine . . . the engine you can depend upon** for continuous power and performance hour after hour.

K&B .61R/C with MUFFLER

The K&B .61R/C features a crankshaft that eliminates drilling or enlarging hole in propeller. The unusually quiet muffler is fitted with a pressure tap, is rugged in construction and contemporary in design. A top performer in its class, it competes with the best . . . and it is dependable.

K&B .61R/C with PERRY PUMP/REGULATOR

Same as above but incorporates the most advanced step in model engine fuel systems to take place in many years . . . the Perry Pump/Regulator and a larger Perry Carburetor specifically designed for use with the Perry Pump/Regulator system. Result: Fuel is drawn, not fed, into carburetor. Position of fuel tank is no longer critical. Easy to start as fuel begins to flow at flip of prop.

K&B .40R/C

The odds-on favorite for Pattern, Scale and the Quickie 500 racing events. Front rotor type engine with unique machining process permits large by-pass for more power. Coupled exhaust/intake throttle control linked to the carburetor provides instant response . . . from slow, smooth idle to top speed. "Squish Band" racing head standard. Exclusive no tension, single ring and aluminum piston — no long break-in period required.

K&B .40R/C with PERRY PUMP/REGULATOR

Same as .40R/C above but equipped with a Perry Pump/Regulator (see above left) and a larger Perry Carburetor specifically designed to be used with the Pump/Regulator system . . . R.P.M. increased by 1000.

Other K&B R/C engines include: K&B Veco .19R/C, K&B 3.5 cc (.21) R/C, K&B 6.5 cc (.40) R/C with Front Rotor.

K&B MANUFACTURING
12152 WOODRUFF AVE., DOWNEY, CA. 90241

R/C MODEL BUILDER

SEPTEMBER

1979

volume 9, number 92

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

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SCALE VIEWS

CONSTRUCTION

COVER: Twelve-year-old Helen Chaulet, with her father Georges' radio controlled "Synchrogyro," near their home in Antony, France. This twin-rotor autogyro is the latest of many designed and flown by Georges, a writer of children's books. It is easy to build and fly . . . and requires only 2-channel R/C. Construction article begins on page 16.

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Radio Control Made Easy!

1/10 Scale Cessna Cardinal Radio Controlled Electric Powered Airplane

Quiet-Clean-Simple-Economical

Finally from Kraft, a quality ready-to-fly electric powered radio control model aircraft is available. Because it is clean and quiet, your neighborhood vacant lot, schoolyard, or park becomes your private airdrome. Electric power is simple. Turn on the switch and fly. No hard starting, frustrating, miniature glow engine is required.

The aircraft assembles in minutes from pre-painted parts with only a screwdriver. Ample power is supplied by a special motor with high temperature windings and a balanced armature. Extra capacity long life nickel cadmium batteries may be fully charged in 15 minutes with the optional fast charger which plugs into your car cigarette lighter. Flying time is approximately 4 minutes per charge.

Any quality 2-channel radio control set may be used, however, the Kraft KP-2A or KP-2AS is recommended.

Enjoy the sport of radio control the easy way, See your nearest Kraft dealer for the very best in radio control.

SPECIFICATIONS: Wing span 47.5", Length 30.5", Area 295 sq. in., Weight 33 oz. (with radio equipment installed). Suggested Retail Price: $99.95. (Batteries and charger not included).

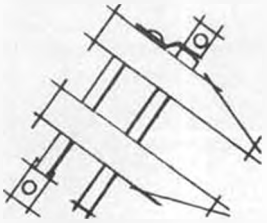
KRAFT SYSTEMS, INC.®

For a free catalog of Kraft's Radio Control line, write
450 W. California Ave., P.O. Box 1268
Vista, California 92083. (714) 724-7146

We must now conclude, however incredulously, that there are folks out there in our audience who want to go directly to Steam without passing through Machine Shop. So, moved by the many requests we have had for readymade power plants for DIANA, we are offering these two pretty Aster outfits. The smaller is about powerful enough for DIANA; the larger, three-cylinder affair, with a boiler 25% bigger, is more than enough.

These are finished, working systems, set up for radio control and all ready to fill and steam. On a Sophistication Scale of ten, they rank six or seven. They have two safety valves, Stephenson's reverse gear, cross tubes in the boiler's center flue, superheat, and exhaust stack blast, but they do not have boiler feed pumps, lagging, automatic water level control, air pumps, or oil separators. They also rank about the same on an Exhibition Scale of ten. That is, while there are a number of good small grace notes, nevertheless slotted screws are used where we like to see hex head capscrews, and the brass plating (after assembly) is a bit too general. Altogether, though, they offer very good value for modest cost. Order from the stock list described below.

Our purpose here at The Steamfitter is to provide, at conscionable prices, materials and things that we know to be valuable and needed, but that ordinarily are available only in big cities, in bulk, and just to industrial users. We have boilermaking tube in sizes from ⅛" o.d. through 6-⅛" o.d., hard copper boiler shell ends, fiberglass lagging for steam lines, liquids for chemically coloring metals, the wonderful Loctite products, small brass wire, Conger train crew lanterns, and much else. Send a dollar for our stock list; the dollar will be credited against the amount of your first order.



the Steamfitter

Specialities To The Live Steam Trade

R.D. 3, Box 326M
Chestertown, Maryland 21620

LEARN TO FLY RC THE SIG WAY

STEP 1 - BASIC : START WITH A STABLE HIGH-WING MODEL

Modelers often want to start in RC with a good-looking pattern or scale model that is complicated to build, has a high wing loading and flies fast. This is a mistake and never works out. First attempts with radio control should be with an inherently stable design having a flat-bottomed airfoil that gives the student pilot time to think and develop automatic reactions. The Kadet, which will fly hands off, is ideal for this purpose. Many club instructors and hobby dealers have told us that two or three check-out flights on a Kadet are sufficient to allow a student to practice fly and learn without constant attention from an instructor. And we know of modelers in isolated areas, with no one to help them, who have taught themselves to fly with the Kadet.

We recommend that the novice begin his training program by using rudder control for first flights and later on switch to aileron control. Ailerons are supplied in the kit for 4 channel use but the model can also be flown on 2 or 3 channels and rudder control if the builder does not have 4 channel radio equipment. A special booklet is included in the kit to help the student pilot make his first radio flights.

Before you can accomplish your dream of darting around the sky with a sleek P-51, you must have some RC flying time on your log book. The word on the modeling grapevine is that our boxy buddy, the dependable Kadet, is the best choice. It's THE standard trainer—nationwide!

BALSA RIB WING

KADET

Designed by CLAUDE McCULLOUGH

LENGTH: 42 In.
WING SPAN: 57 In.
WEIGHT: 4 Lbs.
ENGINES: .19 - .40 Cu. In.
FOR 3 CHANNEL RC EQUIPMENT

$39.95

SIG KIT RC-31

KIT NOW INCLUDES MATERIALS AND INSTRUCTIONS FOR AILERONS

STEP 2 - INTERMEDIATE: PROGRESS TO FASTER SHOULDER WING DESIGNS

BALSA RIB CONSTRUCTION WING FEATURING BUILT-IN WASHOUT

WING SPAN: 55-1/2"
ENGINES: .29-.40

KAVALIER **$44.95**

Designed by CLAUDE McCULLOUGH

When the student pilot feels secure flying the Kadet and can handle it capably, he is ready to take the next step. The Kavalier has a special wing design, calculated to make this transition easier. The precise amount of incidence change required to help eliminate tip stall is automatically incorporated as the wing is built in the usual way on a flat surface. In addition to this aid to stability, differential movement aileron horns are furnished in the kit, providing less down and more up travel on the ailerons. Adverse yaw in turns is reduced by this simple method and controllability of the model is greatly improved. Find out what smooth flying really is with the Kavalier.

LARGER SIZED MODEL - FOAM CORE WING WITH BUILT-IN WASHOUT

SIG KIT RC-32

WING SPAN: 62 In.
LENGTH: 44 In.
WEIGHT: 5-1/2 Lbs.
ENGINES: .40 - .50 Cu. In.

$44.95 **KOMANDER**

Designed by CLAUDE McCULLOUGH

Specially designed for novice RCers who want to move up from simpler models or prefer to start with an aileron controlled airplane. The built-in stability, coupled with good maneuvering and aerobatic ability, allows rank amateurs and low-time fliers to do a creditable job. Piloting boners that would clobber other airplanes are readily forgiven by the Komander. It will fly right down to the full stalling point without snap rolling or falling off on a wing. This enables slowed down, nose-high landings to be made. Coupled with the shock absorbing qualities of the wing mounted gear, the superior ground handling characteristics make this a fine performer from rough or grass fields.

STEP 3 - ADVANCED: MOVE UP TO LOW WING AEROBATICS

FOAM CORE WING WITH WASHOUT

SIG KIT RC-35 **$47.50**

KOUGAR

ENGINES: .40 to .50
WING SPAN: 51 In.
WING AREA: 550 Sq. In.
LENGTH: 45-1/2 In.

Designed by CLAUDE McCULLOUGH

After some flying time on the Kadet, Kavalier and Komander, the student will be ready for this sleek stunter. The Kougar is a carefully tailored design that will do every stunt in the book-even the lomcevak - and yet is not difficult for low-time pilots to handle. The wash-out incorporated into the foam wing allows the model to be slowed down to a walk for the landing approach and flared onto the runway in a main-gear first touchdown without undue stalling or snap rolling tendencies. The large amount of wing area for the 51" span keeps the wing loading low and aids handling characteristics. The Kougar is highly recommended as an introduction to low-wing flying and AMA pattern competition.

STEP 4 - EXPERT: GRADUATE TO COMPETITION FLYING

FOAM CORE WING

SIG KIT RC-29

Balsa Skin **$51.95** Plywood Skin **$56.95**

KOMET

WEIGHT: 6-1/2 - 7 Lbs.
ENGINES: .45 - .60 Cu. In.
WING SPAN: 67 In.

Designed by MAXEY HESTER

In the Komet, Maxey Hester has created a pattern ship that meets the requirements of the most demanding competition flying, yet is equally at home at a Sunday afternoon sport flying session. As in the Kougar, construction is speeded and appearance improved by a formed plastic top made from ABS plastic that is easy to glue and easy to paint. It carries no load and serves only as a streamlined fairing on top of the rugged balsa box fuselage. Featuring a foam core wing, this big kit takes only a short time longer to build than one of the so-called ARF (almost ready-to-fly) types and results in a durable aircraft with lower wing loading and higher flight performance, at a lower cost.

See your dealer first! To order direct, add $1 postage under $10, postage free over $10. No C.O.D.
Send $2.00 for latest catalog of kits , accessories and supplies by SIG and other major companies.

SIG MANUFACTURING CO. . . . . Montezuma, Iowa 50171

from Bill Northrop's workbench

• • •

• It may seem kinda presumptuous on our part to drop the name of famous actor John Wayne, but even though we never saw or talked to the man in person, we did enjoy a feeling of closeness that has been lost with his passing. His home for the last 15 years was on a point of land in Newport Beach harbor, and for the last 5 years, our home has been nearby, also in the harbor, less than a mile away by boat.

From our back patio and dock, we have pointed out to visitors the aft end of the "Wild Goose," his 136-foot converted minesweeper, tied up across the bay. On other occasions, when taking company for a boat tour of the harbor, we could cruise past the point and call attention to the home of our famous "neighbor."

Well, the "Wild Goose" has been sold and will probably leave these waters. And though the home will remain with the Wayne family, the aura of his presence, of the thought that he might be looking back at us as we cruise slowly by, has gone forever. Though his movies and tapes will keep his image alive indefinitely, everyone will miss John Wayne, but we like to think we have the right to feel the loss just a little more than average.

MODEL AVIATION — 1936

Recently, Frank Zaic sent us reproduction copies of the first two editions of *Model Aviation*, published for the then newly formed American Academy for Model Aeronautics, AAMA. The "magazine" was 8 pieces of 8-1/2x11 paper folded in half to make a 16 page booklet. We say "published for," because, according to Frank, it was edited, typed and financed by Lt. W.H. Alden, while he, Frank, did the layout, artwork, and production.

Volume 1, Number 1 is dated June, 1936, and it was published prior to the actual formation of the AAMA, or today's AMA. It discussed the proposed "N.A.A. Chapter," and indicated that it would be officially organized during the upcoming Nationals in Detroit.

Sure enough, Volume 1, Number 2, published in August, contained a story about the AAMA formation during the Nats, and the appointment of a provisional council and executive officers. Willis C. Brown became the president. Frank Zaic was named to the Executive Committee, and the Council included such names as Mel Anderson, Bill Atwood, Vernon Boehle, Carl Goldberg, Charles H. Grant, Al Lewis, Irwin Polk, Hewitt Phillips, and Bert Pond, among others.

It's interesting to note the list of winners in the various events . . . all free flight, of course (a radio event was scheduled, but no one entered).

Twenty-six in the Wakefield Finals, 23 in the Moffat Finals, 193 in the Stout Trophy, 35 in Outdoor Cabin, 192 in Mulvihill, 38 in Outdoor Stick, 97 in Texaco Gas, 43 in Open Gas, 122 in Indoor Stick (under 21 in age), 27 in Indoor Stick (over 21), 94 in Indoor Cabin (under 21), and 19 in Indoor Cabin (over 21). Wow! A lot of multiple entries, but still, a whale of a lot of competition flying.

Incidentally, membership in the new organization was $3 for over 21, and $1.50 for under 21. It entitled a member to the new F.A.I. Sporting License, and a free subscription to . . . ahem . . . *Model Aviation*. The next-to-last paragraph in the formation report read as follows:

"Corporate Members are those members of the industry or allied industries who contribute annually to the Academy. The income from these members will be used to enable the Academy to refrain from carrying advertisements in

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Look who turned up at the Dallas Trade Show! Famed promoter of the Space Control analog radio system, Zel Ritchie, who flew single-stick without centering springs! For more info, see "R/C World" column.

MESSAGE FROM THE PUBLISHER
ONE MORE (LAST) TIME. . .

I don't know why I am taking the time to write the following, as it is akin to being against motherhood to take on the AMA and its magazine! Somehow, someway, we always become the bad guys; witness the August 1979 Model Aviation with the latest tirade, and I use the word quite accurately, as it has suddenly become personal and lost its objectivity. I still must stand by my original facts of the salary levels for the staff of the magazine, as when one checks the masthead which lists the staff members, there are still only four listed: the publisher, editor, advertising manager, and the art director. The fifth listing "advertising representative" is not a salaried employee, but one who works strictly on commission. So the $142,672 divided by four still comes out to $35,668 per individual. I have been chastised for not taking the numbers published in the June issue, which shows that the pie (salary budget) is divided between other staff members, etc. But my original facts were based upon figures shown in the May 1979 issue, and nothing was said about the June issue carrying these extra facts. So, my premise at the time is still accurate, and with that, my friends, will end the tilting with windmills . . . poor Dave Peltz, who has so much to say and no place to say it, has all the right answers . . . but I shall cease and desist, and you shall hear or read nothing more from me, EVER, on the subject of AMA and its magazine.

Russ Barrera "cranking up" a Wright Flyer reproduction being constructed for Irv Perch's Morgan Hill (California) air museum. The photo was taken by Bill Hannan in mid-March, 1979, during a visit to discuss model museum details. Russ was well aware of his terminal situation at the time, but was remarkably calm and organized as usual.

RUSSELL EUGENE BARRERA

June 3, 1917 - May 8, 1979

In better days . . . Russ with a vintage rubber powered flying wing from a September 1936 M.A.N. plan.

"Dear Friends,

"This is not a Eulogy, but the true feelings for my friends who I have met, especially through modeling. I want to thank you all for your thoughtful deeds, visits, telephone calls, cards, etc. by which you have shown your feelings to Lorraine and family. If there are a few wet spots, please excuse them as I have to remain stoic, but even so, often my emotions get away from me.

"I know you will all help Lorraine and the girls through this time as it will be a rough period. It will need patience and perseverance to get through the initial shock, but with your help, I'm sure everything will work out all right.

"Sincerely and thank you. I remain, Russ Barrera leaving on his last flight."
(As you know this became literally true, wcn.)

Written only a few days before his "last flight," and knowing for several months that his days were numbered, this message was Russ Barrera's deep-felt goodbye to his many friends in and out of the modeling fraternity.

The "Big C," as named by another victim of its relentlessness, John Wayne, caught up with Russ as he was in the midst of organizing the model museum he had been dreaming about and working on for many years. He and his family had moved from San Marcos (near San Diego) back to the San Jose area where he was born, and a large museum building was being constructed on land adjacent to Hill Country Park in Morgan Hill. The museum is completed now, except for interior detail, and Lorraine Barrera, his wife, is building a home next to it.

During his last days, Russ worked as much as his failing body would allow to complete organization of the museum. He appointed an advisory board that looks like a who's who in modeling to help the owners, Lorraine, and two daughters, Patricia and Barbara. To quote his organization chart:

"The direct control of the museum will be under the owners. They will look to the various advisory board members for guidance. In order to eliminate or add an exhibit, either on loan or permanent, it will take a majority vote of the advisory board so that none may be added or deleted at whim.

"The sole object of the museum is to show the progress of model aviation through models, ads, accessories, and examples of the state of the art through the years in chronological order.

"All books and magazines will be available for inspection, however, none may be removed from the museum. Use of the museum copy machine is available at nominal fee. Handling of models on exhibition is expressly forbidden.

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OVER THE COUNTER

• If you've attended any of the recent trade shows, you've no doubt noticed and admired the new Curtiss Hawk P-6E from Carl Goldberg models. This eye-catching little ship has been attracting a great deal of attention wherever it is shown. There probably isn't a modeler around who won't admit that the Hawk, with its classic lines and fantastically colorful paint scheme, is one of the prettiest biplanes of all time.

Bob Rich designed the new Goldberg kit and had quick construction in mind when he did it, resulting in a model with many pre-formed parts and very simple structure. The kit features molded foam wings, vacuum-formed plastic turtle-deck, cowl, and wheelpants, pre-bent wire cabane parts (probably the toughest part to make on the whole model, if you were building from scratch), complete hardware package for a 3-channel (no ailerons) version, full-size plan, photo-illustrated construction booklet, three large decal sheets, and a special template sheet for laying out the claws on the wheelpants and the paint scheme on the nose, if you choose to duplicate the scheme that the airplane is best known for.

Very attractive P-6E Hawk kit by Carl Goldberg.

The model spans 41-1/2 inches, is 29 inches long, weighs 3-3/4 lbs. ready to fly, takes .19 to .35 size engines, and needs a 3 or 4 channel radio. The model is designed to fly without ailerons, but the plans show how to install them, if desired.

All in all, we'd say that the new Goldberg kit will result in a flood of P-6E Hawks at your flying field, where previously there were none. The kit retails for $44.95 and should be available at your dealer by now. From Carl Goldberg Models, 4738 W. Chicago Ave., Chicago, IL 60651.

* * *

At the rate R/C components are shrinking, we won't be too surprised when, in the near future, someone invents a complete 5-channel airborne R/C unit no bigger than a postage stamp, and which, like a postage stamp, you can lick and stick to the inside of your pocket-size R/C job. Just think: a 10-inch, .010-powered P-51, complete with retracts! Fly it in the local gym. . .

That day may never come, but you certainly can't dispute the claim that radios are getting increasingly smaller. Case in point is the new Super-Micro servo from Cannon Electronics. It's claimed to be the smallest servo in the world, and having seen one, we have to agree. This little jewel measures a scant 29/64x31/32x1-3/32 inches. Weight is a mere .47 ounces, and the power output is 15 ounce-inches. The servo is compatible with all past Cannon systems and with most positive pulse receivers of other makes.

Retail price is just $44.95, which sounds very reasonable to us. This price includes a 3-wire Deans connector; for Multicon or other brands, tack on an extra $2.00.

More good news from Cannon Electronics is that it has been appointed sole U.S. agent for the G-Mark line of small model engines made in Japan. One engine is available now, with others coming in the near future.

The engine currently available is of .061 cu. in. displacement and comes with a throttle and muffler. The engine is well-made and is claimed to operate at a range of from 4,800 to 16,5000 rpm with a 6x3 prop and 15% nitro fuel. Mounting dimensions are basically the same as for the Cox .049-.051 engines. The engine uses standard short-reach glow plugs, with idle bar. Retail price of the G-Mark .061 is $39.95.

This same engine will also be available later without a throttle for C/L or sport flying. Also coming shortly is a .03 cu. in. engine in both sport and R/C versions. Prices and specs on both of these will be announced later.

The G-Mark .06 R/C engine imported by Cannon Electronics.

There's a servo under that quarter! It's the new Super-Micro servo from Cannon Electronics, is currently the world's smallest.

Charlie's Midget, new servo from Charlie's R/C Goodies.

Last but certainly not least, Cannon will be handling the G-Mark .122 cu. in. opposed twin, which uses two .061 cylinders firing simultaneously. We have one of these engines here at the **MB** office; it's really neat! The engines are not available yet, but when they are, the price is slated to be $109.95 (gulp).

For further information, send an SASE to Cannon Electronics, 13400-26 Saticoy St., North Hollywood, CA 91605.

* * *

Charlie Cannon, Bill Cannon's better half and proprietor of Charlie's R/C Goodies, is also coming out with a new midget servo, to be called, strangely enough, the Midget Servo. It is designed around the Signetics NE544N chip, with outboard transistors. The result is a servo that is powerful (5 lbs. thrust), fast (.3 seconds for 100 degrees of rotation), and small in size (11/16x1-1/8x1-13/32 inches). This, combined with a price of $22.95 in kit form or $27.95 assembled, makes it about the most versatile and affordable servo around.

Also new from Charlie's R/C Goodies is a 2+1 servo tray that will accept a large number of popular servos in use today. One side of the tray accommodates Charlie's Midget, Cannon CE-10, Ace Midget, and D&R Bantam Midget servos. Flip the tray over and it will fit D&R Bantam, Kraft KPS-12, and Cannon and Charlie's CE-3, CE-4, and CE-5 (Dunham) servos. The tray includes provisions for a switch and comes complete with mounting hardware. Retail price is $2.79. From Charlie's R/C Goodies, P.O. Box 192, Van Nuys, CA 91408.

* * *

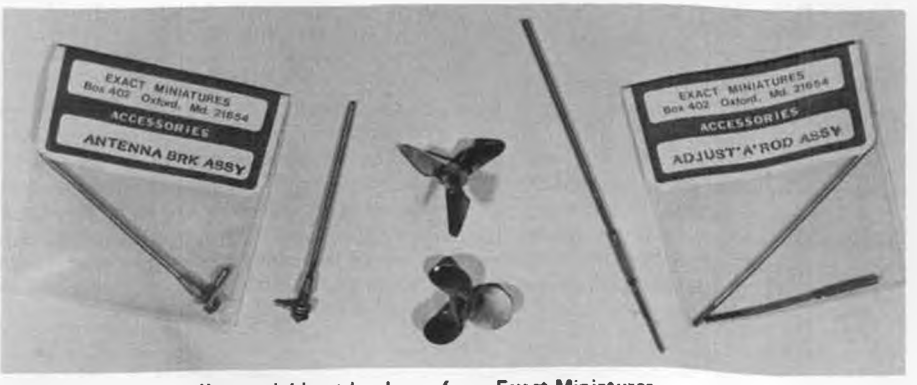
Universal Servo Tray from Charlie's R/C Goodies fits a variety of servos.

Steve Muck never seems to run out of steam when it comes to designing new model boats. Two new ones from Steve are a 1/8-scale Hydroplane hull and a kit for the Lil Streaker fiberglass deep-vee. The Hydroplane hull is of fiberglass construction and takes .60 to .65 size racing engines. These boats are *really* fast (current NAMBA record is 74.5 mph!) and the new Steve Muck hull ranks right up there with the best of them. The hull builds up into boats such as the Miss Budweiser, Miss Circus Circus, Natural Light, and others. In fact, you can use this hull to make something like 41 different boats, just by substituting different paint schemes, cowlings, and dummy engines!

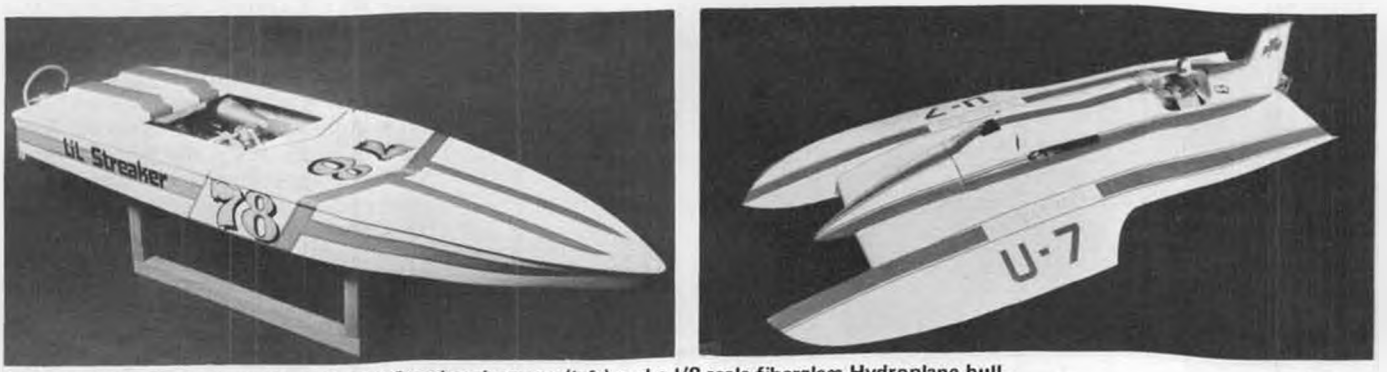
The 1/8-scale Hydroplane hull comes with either a joined or unjoined deck, white gel-cote finish, turn fin doubler, wood floor pan and side rails, and a 1/4-inch plywood doubler is added to the fiberglass transom for extra strength. The hull is 43 inches long, 20-3/4 inches wide, and comes with detailed trimming instructions and a directory of where to get items such as seats, drivers, life jackets, paint schemes, photos, hardware sets, etc.

New wood ship kit by Scientific, the schooner yacht Atlantic.

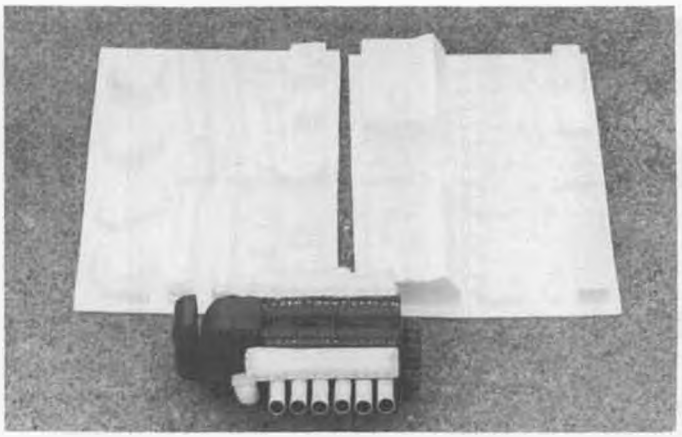
The Lil Streaker is a super-competitive deep-vee designed for 3.5 cc engines (either inboard or the K&B Outboard). The hull features a 16-degree bottom, which makes for a fast and very stable boat. Both the hull and deck are molded from fiberglass and come unjoined, but an overlapping rub rail molded into the deck makes joining the two parts a cinch. An optional fiberglass hatch is also available. The wood engine rails and transom doubler come already installed, and the engine rails are drilled to fit a 4-inch engine mount. The instruction booklet is unusually complete and every



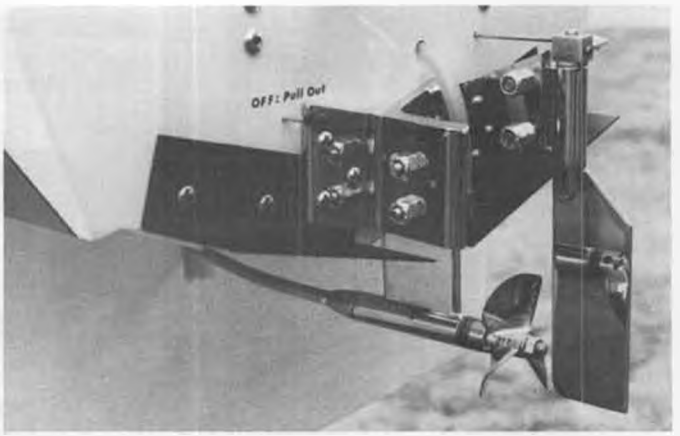
Some of the high-quality model boat hardware from Exact Miniatures.



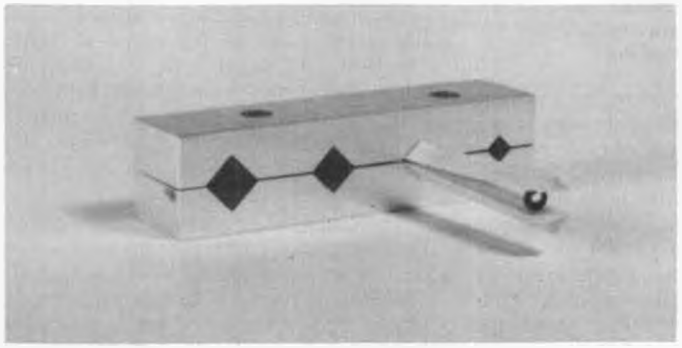
Two new boats from Steve Muck, the Lil Streaker deep-vee (left) and a 1/8-scale fiberglass Hydroplane hull.



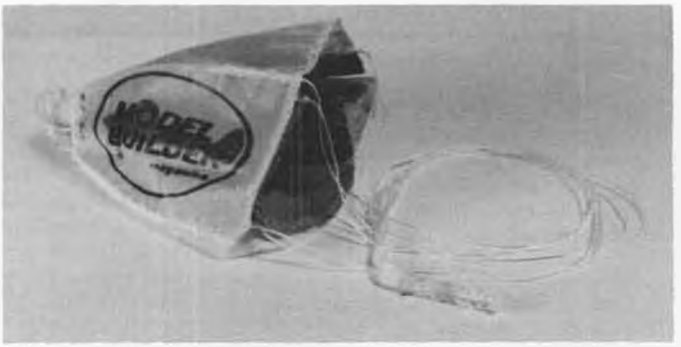
Dummy engine kit from B.J. Fiberglass adds the finishing touch to any R/C scale racing boat.



Prather Products' stern drive hardware kit for the Prather 40-inch Deep-Vee.



The TRI-STRP by Archaeopteryx Avion Associates, for converting square balsa stock into triangular strips.



Nicely made parachute for sailplane launch systems, from The White Company.

step is illustrated with photographs. The Lil Streaker is 32 inches long, 10 inches wide, and uses stern drive hardware set No. 67, also available from Steve Muck.

Prices and additional information on these and other boat kits and hardware sets can be obtained by writing to Steve Muck's R/C Boats, 6003 Daven Oaks Dr., Dallas, TX 75248.

* * *

Scientific Models is adding yet another good-looking model to its fleet of wood ship model kits, the schooner yacht Atlantic. This is an accurate static display model of the winner of the 1905 transatlantic Kaiser's Cup Race, and features a pre-carved basswood hull, pre-ruled basswood decking, precision cast metal fittings, simplified rigging, real cloth sails and colorful pennants, hardwood masts and yards, attractive display stand, metal nameplate, and easy-to-follow assembly instructions.

The schooner yacht Atlantic is 13-1/2 inches long and retails for $12.95. Available at hobby shops, or direct (adding $1.50 postage and handling) from Scientific Models, Inc., 340 Snyder Ave., Berkeley Heights, NJ 07922.

* * *

Jim Pentimall is the head man at Exact Miniatures, a Maryland-based company that specializes in hardware for model boats. Jim sent us a couple samples of his wares, and we must say that they look very good and are beautifully machined. One of the items is an Antenna Bracket Assembly, which is completely made from 306 hard brass. The shaft is three inches long and is drilled for a .040-inch antenna wire extension. For transportation or storage, the shaft unscrews from the base, which is permanently mounted to the deck. The entire package includes the shaft, base, nut, solder lug, and two washers, all for $1.50. Even if you have the facilities to make your own, when you consider the time it would take, you can't beat that price.

Jim also sent a sample of his Adjust-A-Rod Assembly, which is a fancy name for a little device that is basically a turnbuckle. The unit is shown assembled in the photo. In normal practice the short rod is fitted with a regular clevis and attaches to the servo, the long rod being fixed to the pushrod. Turning the hex-shaped barrel lengthens or shortens the total pushrod length, permitting very precise adjustments. A locking nut keeps the barrel from moving and messing up your adjustments. Retail price of the Adjust-A-Rod Assembly is $1.50.

Jim is also making boat propellers, the top one in the photo being his standard design. It is available in 1-1/2 and 1-3/4 inch, right or left-hand versions. Retail price is $2.95 (again, the price is right!). Other shapes and sizes, such as the lower one in the photo, are available on special request.

If you'd like to learn more, write to Jim for a complete list of products and prices. Exact Miniatures, P.O. Box 402, Oxford, MD 21654.

* * *

Balsa USA's new Sopwith Pup. Doesn't look very big? You're wrong!

Continued on page 113

Winners of the 1979 Masters' Tournament in Celina, Ohio, June 21 and 22. . . our team to represent the U.S.A. at the World Champs in South Africa, this September (L to R): Dave Brown, 1st; Mark Radcliff, 2nd; Dean Koger, 3rd.

R/C WORLD

By BILL NORTHROP

HAIL TO THE TEAM!

The U.S. R/C Aerobatic Team for the 1979 World Championships in South Africa has been determined. After six rounds of competition at the NSRCA Masters Tournament, in Celina, Ohio, June 23 and 24, the top three places, and thus the 1979 U.S. Team members, turned out to be Dave Brown, Mark Radcliff, and Dean Koger, in that order of finish. Dave and Mark are veteran team members, while Dean, though a new team member this year, has been a close runner-up in previous selection contests.

Speaking of runner-ups, the number four spot, and the position of team alternate, goes to Steve Helms, who is also no newcomer to the top ranks. Continuing down to tenth place, winners include Jim Kimbro, Ron Chidgey, Tony Bonetti, Jim Oddino, Don Weitz, and Don Lowe, in that order.

Don Lowe, who was team manager for the 1975 World Championships in Switzerland, was unanimously selected by the 1979 team to again be the "mother hen."

Next month we will go into detail on the contest, giving complete results down to last place, and listing complete specs on the equipment used by all contestants. Also, we'll discuss the new system developed for determining the winners, a system which literally prevents one set of judges from deciding the outcome.

NSRCA DISTRICT CHAMPIONSHIPS

The National Society of Radio Controlled Aerobatics now features official competitions to establish annual district champions. First place winner in each class will receive a Special NSRCA Shirt which will have embroidered upon it the District, date, Class, and winner's name. Second and third place will receive a certificate. The contests will be open to any AMA Member who wishes to fly, but to compete for the NSRCA Prizes and the honor of being the NSRCA District Champion, you must be a member of the NSRCA. Memberships will be available at the contest. Entry fee will be $2 over and above the regular contest fee. You must be a resident of the NSRCA District you compete in to be a eligible to be champion. For example, you may not live in California and be District champion in Michigan (California is in NSRCA District VII and Michigan in District IV).

CONTEST DATES

District I: To be announced.

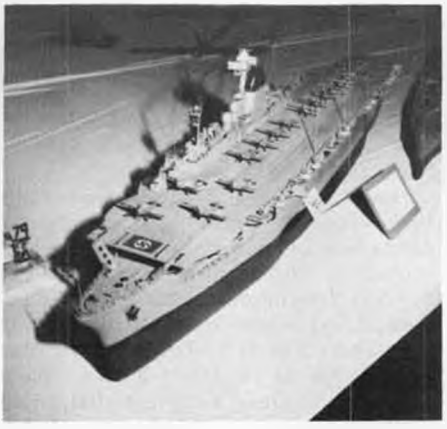
First in Jumbo Scale and Best of Show in Dallas, Jerry Burpee's J-3 on floats, all from Sid Morgan plans. He's from Richardson, Texas.

Don Lowe, 10th in the '79 Masters', selected as manager by the team, MC's their demo flights following the tournament.

Byron Originals' Pitts is the kit sensation of 1979, and the Mig-15 soon to be available, may be just as popular, if not moreso.

Scratch Soling based on Vortex hull. First in R/C Sailboats, Jim Behrens, Dallas.

Only time to catch an open shot of the Kraft Booth at Dallas was during outside live demonstrations of boats, cars, and helicopters. Everyone cleared out to watch!



Actung! Wolf DeVallette's "Graf Zeppelin," won First Place in R/C Scale Boats.

District II: September 15-16, Richmond, Virginia. George Preston, CD.
District III; September 29-30, Orlando, Florida. Wayne Potter, CD.
District IV: September 1-2, Celina, Ohio. Forest Yocum, CD.
District V: August 25-26, St. Louis, Missouri. Tom Walker, CD.
District VI: To be announced.
District VII: September 8-9, Las Vegas, Nevada. Don Weitz, CD.
District VIII: August 25-26, Auburn, Washington. Charles Davenport, CD.

A DATE IN DALLAS

Fate seems to enjoy raining on Mike's and Chuck's parade. After having bad weather plague their first two Dallas-based Southwest Modelers Shows in January of 1977 and 1978, Chuck Holden and ex-Dallas Cowboy footballer, Mike Clark shifted the show date to June in 1979. So wouldn't you know it, the gasoline "shortage" played Dallas on the same weekend!

In spite of difficult odds, the third Dallas show was still a success, and major exhibitors expressed the desire to return in 1980 (dates are June 7 and 8).

This year's show was quite a bit larger than in the previous years, with over 110 booths being occupied by manufacturers, exhibitors, and associations. The floor plan had been considerably opened up, with most of the previously unused area in the Women's Building of the State Fair Grounds being occupied by exhibit booths and wider aisles for the spectators, which numbered over 10,000.

As in the past, live demonstrations were a feature of the show. A large parking area about 200 yards from the exhibit hall, closed to automobiles for the occasion, provided space for R/C cars and helicopters, while less than 50 yards away, a large pond was used for R/C boats, both electric and gas.

On Sunday afternoon, those who

First prize winner in Military Scale; F-100 Super Sabre by Lynn McCauley and Ed Couch, Euless, Texas.

George Pringle and Pete Morrall, Flap Co., Tulsa, Oklahoma, with their kitted Super Ugly Stick. See text. Full size next?

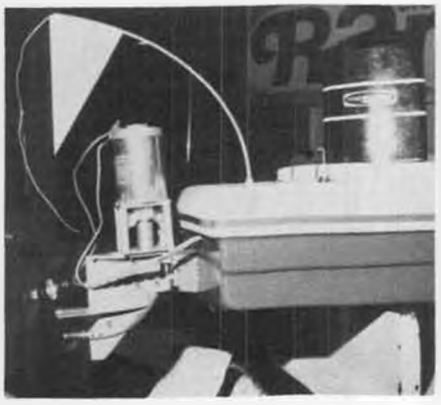
RCM's Pat Cruise (left) and Rosie Rehling (Rosie's R/C Products) always make trade shows more interesting.

Al Novotnik literally holds down the M.A.N. booth while Jerry Nelson checks out a copy of the 50th Anniversary issue.

Aw gee. . . ain't they cute. George and Julie Aldrich discuss a new formula . . . for fuel, that is!

DAve and CAren Litt, of DaCa (get it?), Omaha, Nebraska, make a wide variety of clamp-on holding cradles for all types of models.

Electric powered R/C vroom-vroom from Kraft, a helluva challenge and loads of fun!



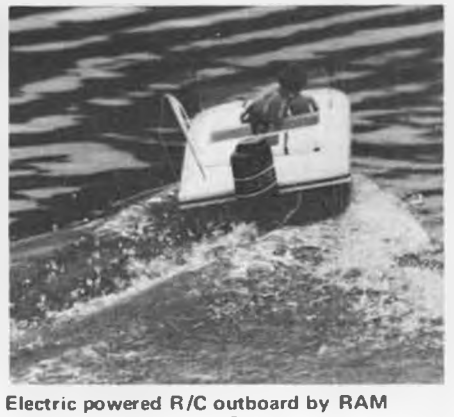
RAM electric outboard unit adapts Astro Flight 25 motor to K&B outboard lower end.

wished to drive to an R/C field about 5 to 10 miles out of Dallas, were treated to demonstrations of the Byron Pitts and MIG-15, and the Jet Hangar Hobbies Mirage.

The handiest live R/C demonstrations were put on just outside the entrance of the exhibit hall, where Phil Kraft and Marty Barry, enjoying every minute of it, were showing off the latest Kraft import item . . . an R/C electric powered motorcycle! These crazy things are just over a foot long, have throttle and brake control, and are steered by tilting the front yoke. Ya gotta see it to believe it! And after you try it, you still don't believe it . . . but it works, and it's quite a challenge to make controlled low and high-speed turns plus small ramp jumps. We'll be reviewing these as soon as production models arrive.

Exhibitors at the Dallas show also got some special treats. On Friday, set-up day, a fun-fly, somewhat hampered by thunderstorms and heavy rain, was held at the above-mentioned R/C field. Though we didn't see it, House of Balsa's Don Dombrowski is said to have put on quite a demonstration of "Beer Can Bowling." Friday evening, the exhibit hosts put on a fabulous barbecue dinner in the eating area of the exhibit hall. The boneless barbecued beef was out of this world!

Most of the exhibitors and their new products have been covered in our previous show reports for this year, but there were a few which we haven't seen before.



Electric powered R/C outboard by RAM really gets up and goes. See below.

Cecil Haga, Legion Air sailplane man, has a new soarer that stops you dead in your tracks at first glance. Unfortunately, the photo is too dark to show it properly, but for one thing, the wings do *not* droop! The inner panels sweep forward, giving that illusion. Called the Chaparral, the 174 inch span (that's 14-1/2 feet!) wing is in 4 sections. Area is 2055. The extremely short tail moment calls for a big stab . . . which it is . . . in two plug-in pieces. Other features include internal ballast box, recessed tow hook, aluminum wing spars, glass fuselage, steel wing rod, large radio space, and wing flaps. Weight of 100 oz. produces a 7 oz. wing loading. Kit will be available in early 1980.

Super Ugly Stick . . . Stick, or Super . . . Ugly Stick. Whichever you prefer, it all

Brown B-2 Racer "Miss Los Angeles" built and flown by MB's graphic art man, Chuck Blackburn. Bridi kit includes glass fuselage, foam wings. Finish is red K&B Super Poxy. Fast stable flier, with Enya 60 Schneurle and Futaba 6-Ch. radio.

Classic Coast Guard cutter "Cape Shell", by Jack Plomen, Arlington, Texas, won 2nd place in R/C Scale Boats. Model is about five feet long.

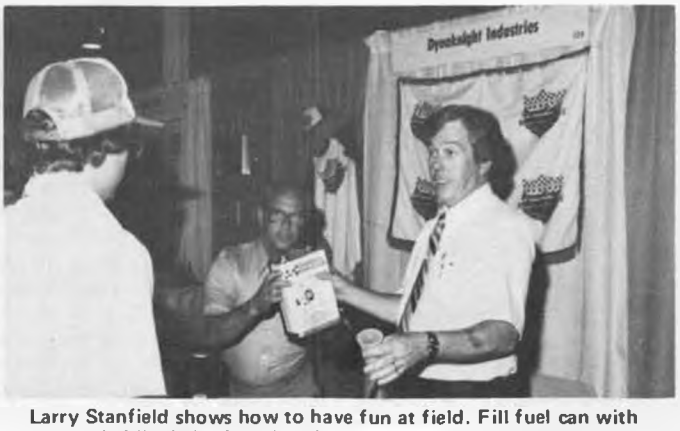
Engine tilted to line up with cowl opening. Top Flite 11x7-1/2 for flying.

comes out the same . . . a huge R/C model spanning over 8 feet (105 inches), for engines in the 2-cubic inch category. FLAP Co. (*Funny* Little AeroPlane Co.?), a partnership of Pete Morrall and George Pringle, both out of Tulsa, Oklahoma, are putting this monster out in kit form. Current price is $180. Pete's address is 1931 N. Florence Place, Tulsa, OK 74110, phone (918) 936-6497.

The kit features foam core wings, built-up hardwood fuselage, spring steel landing gear, and full-size rolled plans. If you want to go all the way with this, be sure to order a Super Ugly Stick T-shirt from FLAP Co. They come in red or yellow, small, medium, large, or extra large, and sell for $7.50.

One very pleasant surprise happened to us during the show. Who should appear but Zel Ritchie! Those of our readers who were into R/C at least 15 years ago should remember his name. Zel was associated with, and promoted through his own expert flying, the first 4-channel proportional control system, the analog Space Control radio. Known as "The Brick" because of the size and shape (and damn near the weight!) of the combined receiver and three fuselage-mounted servo unit, the appearance of this radio signaled the beginning of a whole new era in R/C. Up to then, everything was single channel with

Sproose Goose, MB Editor's design (Jan '73 MB), won Best Monokote job for Gene Hansrote, Garland, Texas. Some modifications.



Larry Stanfield shows how to have fun at field. Fill fuel can with beer and chill. Offer friends a drink.

"Mickey Mouse" devices to accomplish more than one control, or relay and relayless reed multi-channel systems, for direct individual control of rudder, elevator, elevator trim, aileron, and throttle. And they all had one similarity. All components could, and often did come from different manufacturers, sometimes even the transmitter and receiver. You, the buyer, had to untangle all the loose-ended, hopefully color-coded wires, and solder them to your choice of connectors . . . well, it goes on and on.

Anyway, the last time we saw Zel Ritchie was in downtown Oklahoma City, 1966, when we attended the first FAI Team Selection contest as a judge. By then, he had already been totally out of R/C for several years, and as we recall, was not even aware of the contest . . . we just happened to bump into him on the street.

Not too differently this time, Zel ordinarily commutes weekly between his work in Dallas and his home in Southern California. He happened to get hung up in Dallas for the weekend, saw something in the paper about the Southwest Modelers Show, and came over to see if there were any familiar faces. We were happy to be among them (see photo on page 6). If any of "the old gang" wishes to contact him, drop us a line and we'll be glad to forward it.

MY FIRST R/C . . .

The saga continues. This month we heard from E. Paul Johnson, Des Moines, Iowa, whose name and face should be familiar to anyone who has dealt with Sig Mfg. or visited their booth at the various trade shows. Paul is a real R/C pioneer, along with the likes of the Good brothers, Chet Lanzo, George Trammel, and others.

"I first became interested in radio control for model airplanes when I met Walt and Bill Good at the 1947 Nationals in Minnesota. I purchased a 'Beacon Electronics' radio control system manufactured by the Good brothers at that time. I installed the radio gear in a Berkeley Musketeer Standard airplane that I had been flying free flight, and used the regular four-position rubber driven escapement that came with the equipment. In 1948, I entered this plane in the Olathe, Kansas Nationals. On

E. Paul Johnson, Des Moines, Iowa, this month's "My first R/C" story teller, with his 1949 Nats 2nd place winner. Looks kinda "Guffish". Note rudder actuator in fin.

about the fifth official flight, I was doing a spiral dive and broke the wing in two. I had managed to build up enough points before the crash to end up in seventh place, for which I received a very interesting trophy made from a Drone target-plane propeller.

"While at the 1948 Nationals, I had the pleasure of meeting George Trammel, known as the father of pulse control. After watching him fly, I was convinced this was the way to go. No more guessing where the escapement stopped last, or if it had skipped a position. With pulse control, right stick was right turn and left stick was left turn. I went home from the Nationals and built the plane I was to fly in radio control for the next several years. This plane is still in my basement with a Brown Jr. engine in the nose and the three-tube radio I designed installed.

"I had no machine shop to build a pulse actuator for the rudder like George had made. I redesigned the Good Brothers escapement so it would give left rudder with no radio signal and right rudder with radio signal. An HO train motor with a cam was used to pulse the transmitter signal on and off in even pulses. When the receiver in the plane received this pulsed signal, the rudder on the plane moved right and left in even pulses. The plane flew straight away. Now all I had to do was send a steady 'on' signal for right turn or turn the signal off for left turn . . . no guesswork. To be sure I had enough winds in the rubber band that drove the escapement for a full flight, the rubber was run from the nose to the tail inside the plane. I could put enough winds on the rubber to run the escapement at steady pulse for five minutes. When turning right or left, the escapement was locked in one position or the other and the rubber was not unwinding, so I was set for about ten minutes flying time.

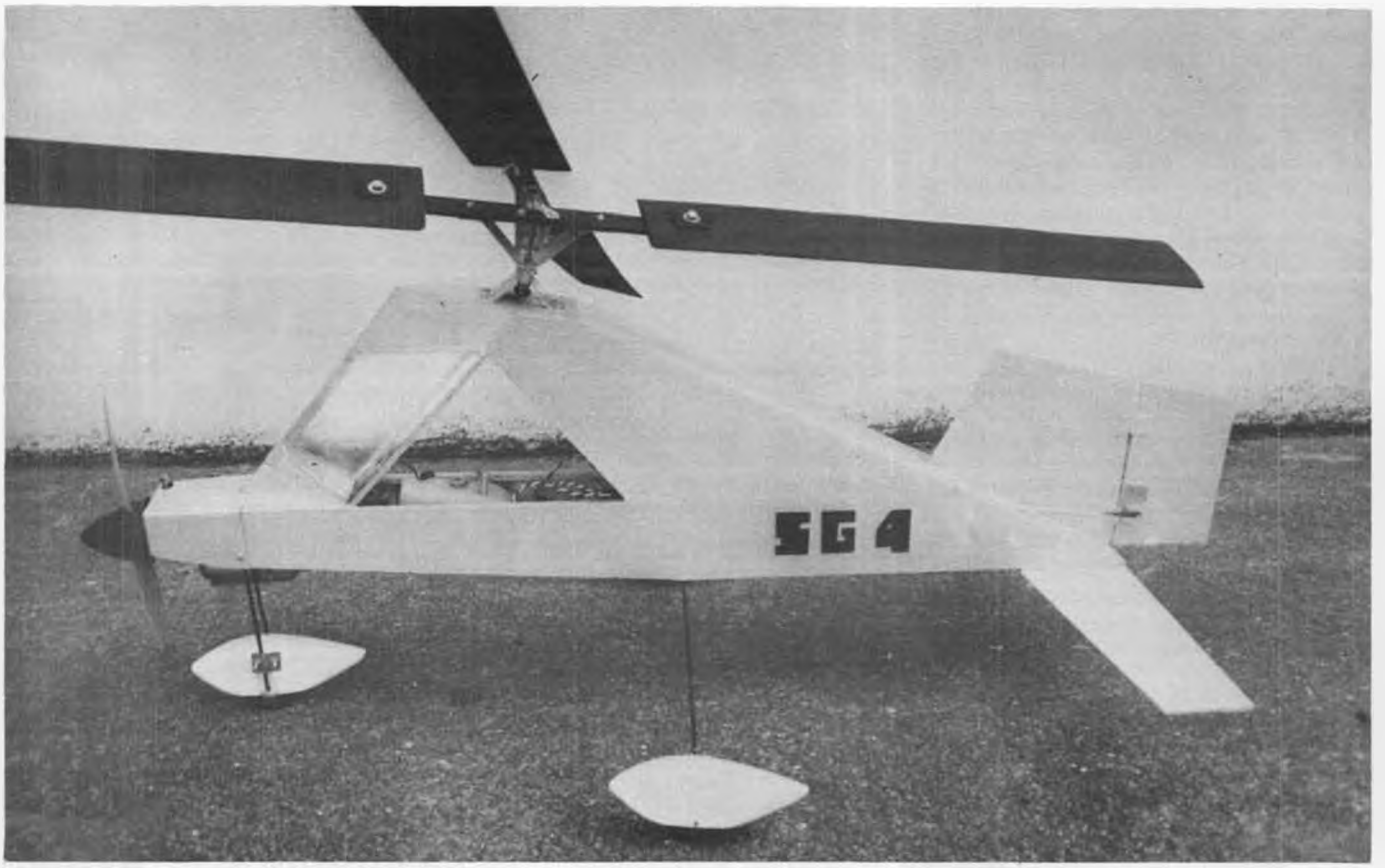
"I entered this plane in the 1949 Olathe, Kansas Nationals and won second place. I was in good company: Walt Good won first and Jim Walker won third.

"I again entered this plane in the 1950 Dallas, Texas Nationals. On the first two flights, I got a maximum of ten points on every maneuver. Coming in for a landing on the second flight, I flew into one of the 'clothesline' transmitter antennas of another contestant. The plane landed on its nose on the concrete runway, ruining the engine. That ended my flights for this Nationals, but I still placed fifth. Gene Foxworthy won first, using the new 465 mHz McNabb Citizenship radio equipment. I don't remember the other winners.

"I had several articles on Radio Control published in the early 1950's. Radio Control model airplanes are still my number one hobby, and for the last four years, I've been trying to master Radio Controlled Helicopters."

Continued on page 117

Burnis Fields' Sopwith Camel says to Tony Orsini's A-4E, "Sure I'll race ya . . . only I choose the course. It's a Half-A pylon layout, with the two long legs shortened to 200 feet!" Interesting summary of aviation, in scale, is this photo by Tony Orsini, Jacksonville, Florida.



PHOTOS BY AUTHOR

SYNCHROGYRO

By GEORGES CHAULET . . . A genuine autogyro rather than an airplane with a full wing and a rotating ceiling fan on top that merely adds to the drag, this one's easy to build and fly, and easy on the wallet.

• *(Introduction: This article, because of its uniqueness, has been published almost entirely in its original form. Mr. Chaulet's English is quite clear, and we have only added interpretations where we thought it might be necessary. wcn)*

This new kind of flying machine has been presented briefly in **Model Builder** (Oct. '78). The first three Synchrogyros were more or less experimentals. This one is much more evolved, with clean lines, and easy to build. It's cheap, too. Just a simple .35 engine, not Schneurle, and a 2-channel radio.

As monorotor gyros have a tendency to instability, I use two rotors turning in opposite directions, and synchronized through gears. These gears are stock Meccano items, with a 45° angle between the axis. Less angle would be better . . . for instance, 30° should fit OK . . . but such gears were not currently available. Another possibility is to use parallel gears about 3/16 inch thick, with filed teeth to become conic.

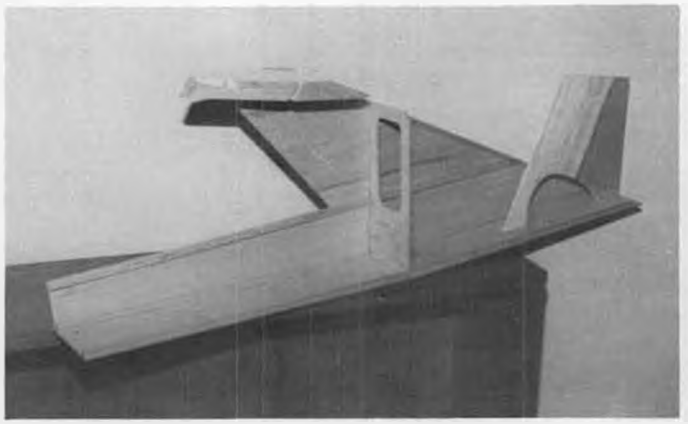
Rotors are synchronized 90° apart by gears. If bevel gears are hard to find, straight gears can be connected through mechanical or spring-type flexible couplers.

The 5/32-inch steel shafts are fitted inside a dural block, with flat ball bearings. The shafts could be mounted on standard ball bearings, but this is not quite necessary, because the efforts *(loads)* on the whole system are extremely reduced. The gears don't have to stand power from a motor, like in helicopters. Here, they just have to keep both rotors at the same rpm, the drive coming from the relative airflow. (Remember that on an autogyro, the rotor is separated from the engine. It is freely windmilling.)

You will notice that the right rotor is turning clockwise, while the left one is anti *(counterclockwise)*. The purpose is that in case a blade strikes the ground, the tip has a tendency to go back, thus reducing the shock.

The rotors are set at a 90° angle. When one rotor is parallel to the fuselage, the other is exactly perpendicular. This trimming is made with a small L-shaped fitting, screwed upon the arms. This 'L' holds a long screw fitted inside a wheel

Yes, it do fly, and quite easily. Gain or loss of altitude is controlled by throttle. To land; pick a spot, fly over it, chop the throttle, and watch the gyro slowly rotor to the ground. No sweat!



Fuselage construction is simple. Sheet sides, top and bottom, one bulkhead, and some crossmembers. It's both functional and stylish . . . in a square sort of way. Triangle side openings left uncovered for accessibility.

collar which is settled *(mounted)* to the shaft. Once the rotors are put at a 90° angle, the 'L' is screwed firmly to the arms (see fig. 1).

The gears, too, must be strongly fixed to the shafts with screws and Loctite, apart *(in addition to)* using filed surfaces on the shaft (see fig. 2).

ROTORS

Compared with the ones used on a helicopter, the blades will appear very broad. Innumerable tests made during the seven last years showed that narrow blades give but a poor lift. The airfoil is of lenticular shape, that is, a sector of a circle, with sharp edges. The model can fly with the flat-bottom type (marked A on the plan), but a slightly curved foil *(airfoil B)* gives more lift. This airfoil is the same as the one used on the Antoinette aeroplane. A good old one!

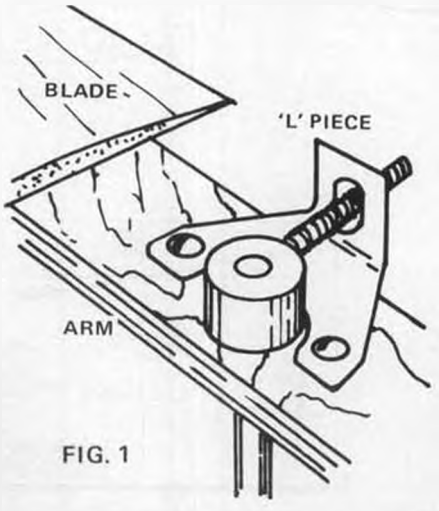


FIG. 1

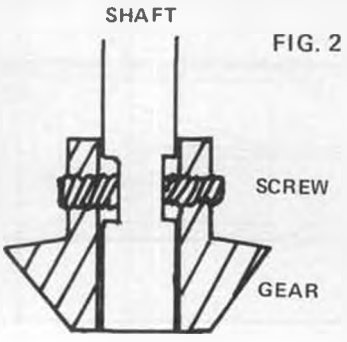


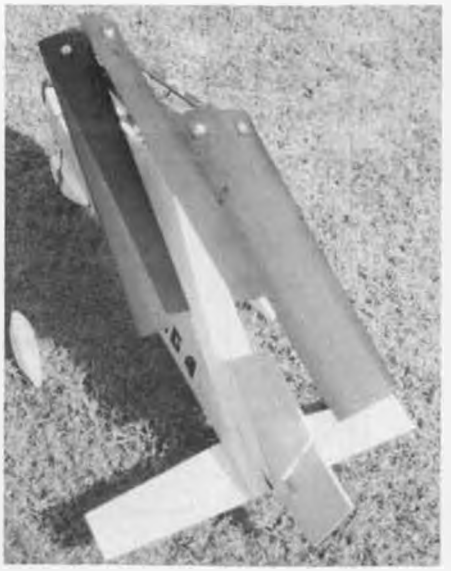
FIG. 2

For the blades, select a very good medium grade balsa sheet 7/32 inch thick. Take care that every blade has the same weight, to avoid vibration. This problem is well-known by helicopterists. Shape is given with a razor plane, then sanded. Small rectangular plywood pieces (3/64-inch thick) are glued to the blades to give more strength on the spots where the blades are secured with *wing nuts* (see fig. 3).

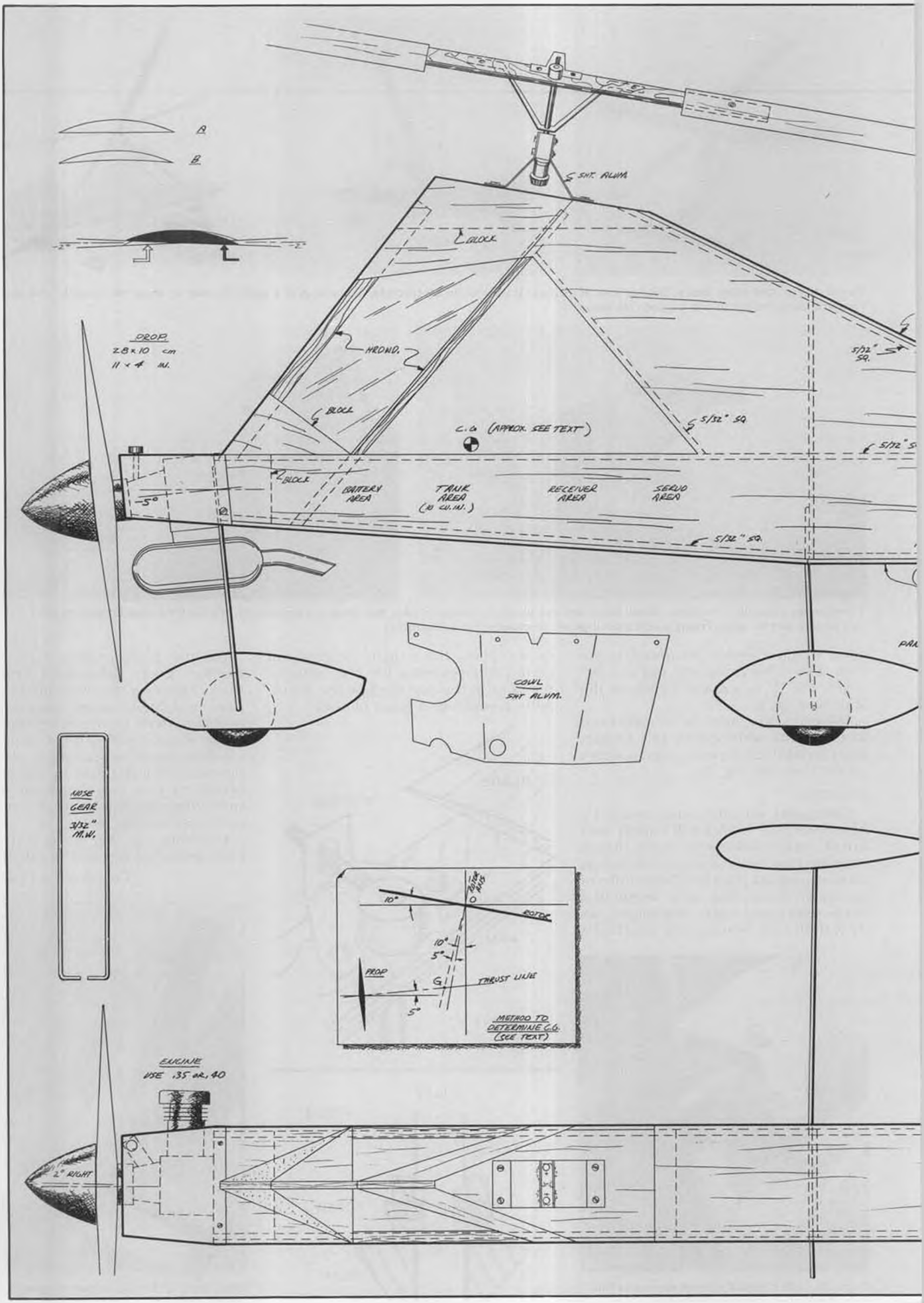
Covering can be made with dope coats and cellulose paint, or with thermo

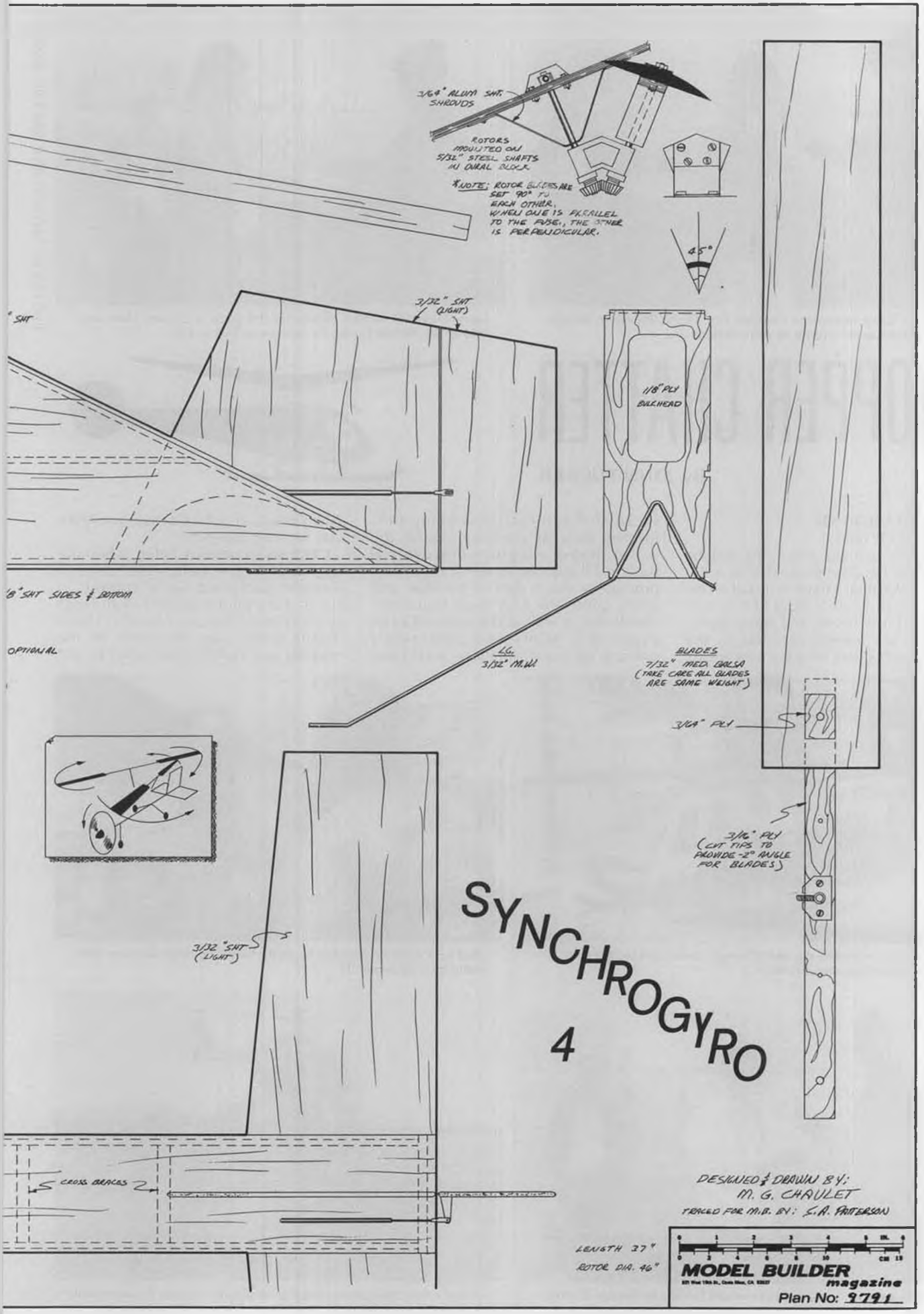
Continued on page 70

Enya .35 pulls Chaulet's Synchrogyro in fine style. Note starter scars on spinner.



When through flying, loosen wing nuts, fold rotors, and slip S.G. into car.


A
B
SHT. ALUM.
BLOCK
HRDWD.
BLOCK
C.G. (APPROX. SEE TEXT)
5/32" SQ.
BLOCK
BATTERY AREA
TANK AREA (10 CU. IN.)
RECEIVER AREA
SERVO AREA
5/32" SQ.
-5°
PROP
2.8 x 10 cm
11 x 4 in.
COWL
SHT. ALUM.
NOSE GEAR
3/32" M.W.
10°
THRUST LINE
10°
5°
PROP
G
5°
METHOD TO DETERMINE C.G. (SEE TEXT)
ENGINE
USE .35 OR .40
2° RIGHT



FULL SIZE PLANS AVAILABLE – SEE PAGE 116

At the West Coast Helicopter Champs, Col. Glenn Shaver Jr. awards the 2nd place Expert trophy to John Simone Jr.

Larry Jolly picks up his trophy for 3rd place in Expert. Meet was held at the Marine Corps Air Station in Tustin, CA.

PHOTOS BY AUTHOR AND WALT SCHRODER

CHOPPER CHATTER

By JOHN TUCKER

AUTOROTATION OF R/C HELICOPTERS

What do you do when the engine fails? Is my helicopter capable of autorotation? What do I have to install on my helicopter to keep it from crashing in case of failure? These, and many similar questions are asked every day by the R/C chopper pilots who are now seeing successful autorotations being performed daily at contests around the world. Being a highly controversial subject, I'll approach it with caution and provide as much data as possible, and freely quote the FAA Basic Helicopter Handbook as well as the views of a few expert R/C pilots who consistently execute such autorotations with ease. (Many thanks to John Gorham and Mike Mas for their inputs.)

Contrary to popular belief, when the engine fails, the helicopter doesn't plummet earthward out of control . . . that is, if the pilot is on the ball and uses good control inputs. Usually, these "falling-bricks" are the result of the modeler not knowing just what to do!

Dieter Schluter attended the Heli Champs, demonstrated his new Bolkow chopper between rounds.

And here's Dieter Schluter himself, discussing rules with Joe Bridi, Helicopter Champs CD.

Col. Shaver awards 1st place Intermediate trophy to George Croker.

Dieter's new chopper develops so much lift, it takes 3 guys to hold it down! L to R, John Tucker, Dieter Schluter, Kim Tucker.

John Gorham waits to call for Dr. Richard Smith, firing up his Schluter Bell 222.

Dr. Richard Smith's Bell 222 with the gear retracted. Sure makes for an unusual and clean appearance in the air.

Of course, there's more to it than pilot technique alone, so let's get with it right now and talk about the theory of autorotation. No one seems to know just where this term originated, but one of the stories claims that an early helicopter pilot once said that the blades "oughta rotate" in an emergency! Ha!

A helicopter obtains its lift from the main rotor system spinning at a certain minimum rotation speed. Lose this rotor rpm, such as in a power loss to the rotor drive system, and you will lose lift. This, of course, results in the earthward plunge and loss of your pride and joy. On the other side of the picture, however, keep the rotor speed up where it belongs and lift (and control) is maintained, and the helicopter can be safely guided to a successful landing. The big question, therefore, is "How do I keep that high rotor speed when the engine suddenly quits?"

When power fails, there are *three basic sources of energy* which we can harness, in addition to a few other things we can do to enhance the autorotation capabilities with ordinary precautions.

Curtis Croker picks up his trophy for 1st place in Novice from Col. Shaver.

1) The *height* of the helicopter at the time the engine fails provides a *potential* energy in the form of gravity. This gravity potential may be used to increase existing rotor speed.

2) The forward speed of the helicopter provides a *kinetic* energy, or energy due to its mass and speed. Even a brick will "fly" for a short distance if propelled fast enough!

3) The *rotor system* itself has a speed and mass, hence, an *inertial* energy potential.

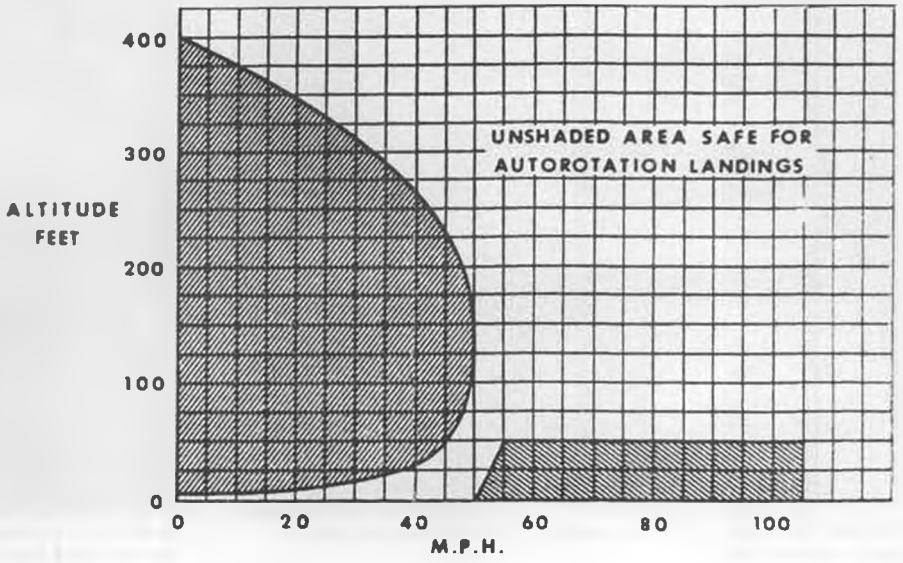
Now, how are these energies used in autorotation? The easiest way to understand autorotation is to think of your helicopter as a small airplane, rather than as a rotorcraft. In normal flight (with the collective pitch in the cruise position), the rotor blades (wings) fly at a positive angle of attack, producing lift and drag just like an airplane. The drag is overcome by thrust; in this case, by the engine turning the rotor blades. Now, if the engine were to stop suddenly, what would we do in an airplane? We'd reduce the angle of attack by lowering the nose to maintain some airspeed and keep the wing from stalling . . . now it's flying at a lower angle of attack, producing less lift, but some thrust (gravity), and the airplane continues to glide forward, gradually losing altitude. Exactly the same thing occurs in the helicopter

Lowell Draper was 4th in Expert with this fully aerobatic Rev-olution.

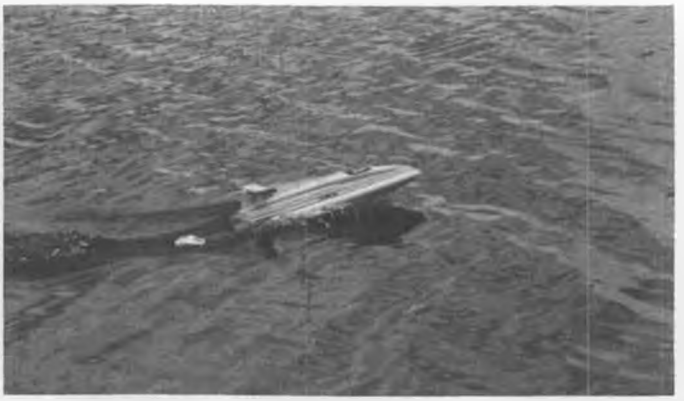
when we reduce or lower the collective pitch; the blades (wings) nose down and their thrust keeps the rotor turning. (For a more detailed explanation of autorotation forces in a helicopter, see Chopper Chatter, **Model Builder** magazine for February 1976.)

Usually, an in-flight power failure

Continued on page 72



The MRP electric boat offers a lot of fun if you've got a lake handy. This is Mitch Poling's boat; photos last month were from MRP.



The MRP boat really scoots, especially on eight cells. See last month's column for prices and options available.

ELECTRIC POWER

By MITCH POLING

PHOTOS BY AUTHOR

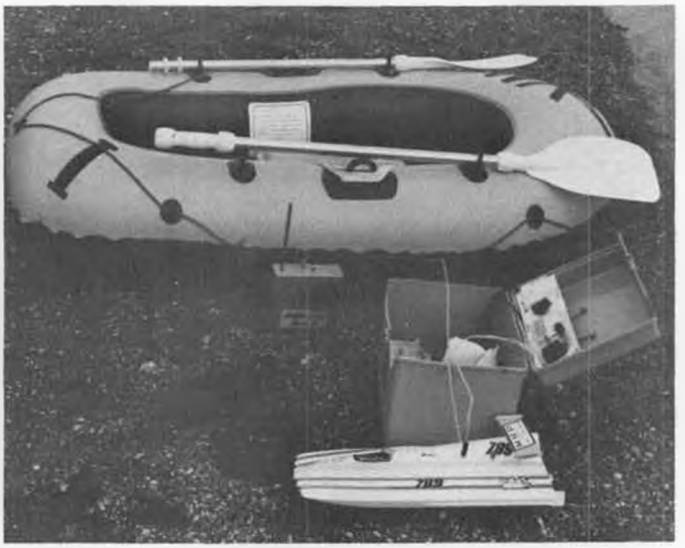
• The photos of the MRP electric boat last month were supplied by MRP, so here are some of my own photos of the boat. As you can see, the kit is almost ready to float. It is very easy to decorate; the plastic tape and the decals do a good job. It runs very smoothly on the water, the wake is not large for the good rate of speed it makes. The support system on shore is very simple; a large plastic file box holds all the equipment needed, including the transmitter. The inflatable raft is a precaution I have never had to use . . . I wish I could say the same for my electric seaplanes! The boat has held up perfectly under a lot of running and is an ideal way to start with electrics; all fun and no problems.

Cox has come out with an electric-powered version of the .049-powered Sportavia trainer. The motor and battery pack give the same climb and more flight time than the gas-powered version at almost the same weight, quite an accomplishment. My electric Sportavia with a Cannon receiver, Bantam Midget servos, and an Astro 250 mah receiver pack, weighs 32 oz. The gas-powered version weighs 28 oz., and since this is a powered glider (span 70 inches) the difference doesn't cause any problems at all in flight characteristics. I think it is a good introduction to electric flight for a beginner, and Cox has made the system simple and safe in addition to providing good performance.

The motor and battery pack represent a big step forward for 1/2A size electric airplanes, and if Cox markets it as a separate unit, I'll bet that there will be a lot of them in 1/2A scale, Q-Tees, 1/2A sport pattern, and the 72-inch span gliders. Right now it is available only as spare parts (the motor group, 911026, is $19.95, the battery pack, 900554, is $29.95). The motor is a Mabuchi 380S, with a balanced three-pole armature, oriented magnets, and a steel mounting clamp. The clamp does more than mount the motor; it also serves to confine the magnetic field within the motor (it is steel), and drops the current draw of the motor. The motor I got turns a Cox 6x3 black nylon prop at 14,000 rpm at 9.75 amperes with the mount on, and the same rpm at 10.25 amperes with the clamp off. This is the same rpm as the Cox QRC that is also used to power the Sportavia, so it is not surprising that the performance of the gas and electric versions is the same. I had been told by the Cox representative that 13,000 was the nominal rpm, so Cox is modest in their claims. The motor is much smaller physically than the Astro 05; in fact, it is the same diameter as the Astro 020 and about 25% longer. It weighs 3-1/2 oz. as compared to 2-1/2 oz. for the Astro 020 and 5-1/2 oz. for the Astro 05. It has about twice the power of the 020, and about 15% less than the 05.

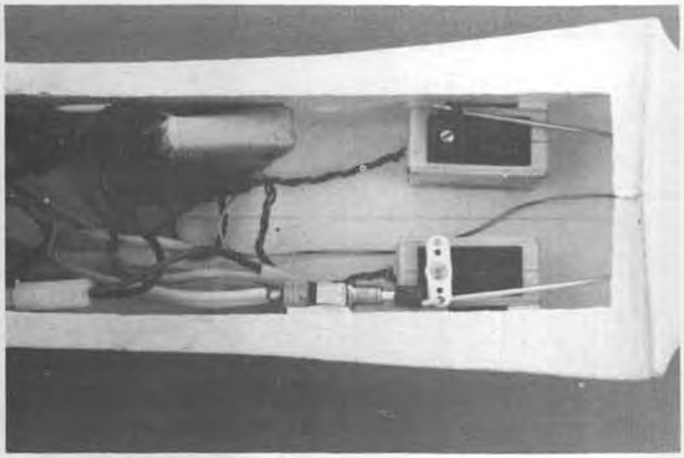
The battery pack is eight GE .500 Ah fast-charge pencells, weighing six ounces all-up. These charge up to nearly 100% in fifteen minutes. I notice that some Cox advertising says twenty minutes for a full charge, but both my charge ammeter and the instructions with the plane say fifteen minutes is the limit. Cox also included a 10 ampere fuse in the motor lead, a very good idea, as it

The semi-assembled boat. Well designed, but Mitch says to follow the directions exactly.

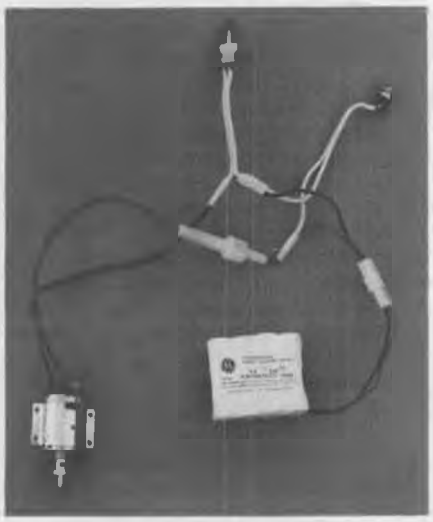


At the lake with the "rescue boat" (definitely not needed). Note how neat and clean everything is.

Cox is producing an electric version of the popular Sportavia motorglider. Weighs only a few ounces more than the gas version.



Mitch installed a push-push switch in the Sportavia so that full down elevator turns the motor on and off.



Modified motor wiring circuit includes a push-push switch and charge jack.

could save the motor if it gets stalled in a bad launch. It should save the beginner some disappointment. I should know, I don't fuse my motors, and I've burned out several from stalling them in bad launches!

The battery pack is charged either from the cigarette lighter in a car (12 volts) or from a 12-volt motorcycle battery. The pack is wired so that it must be unplugged, removed from the plane, and charged outside the plane. I thought this was inconvenient, so I installed a charge jack so I could do the whole thing without taking the wing off. After two flights, I noticed that the charge rate went way up, from an initial four amperes to an initial six amperes, and ten minutes was the most I could charge without overcharging. After two more flights I investigated and found a very hot battery pack, too hot to hold. This did not damage the pack, but it probably would have if I had kept it up. So, I advise either doing it the way Cox intended, or if you do install a charge jack, open the plane up and let it cool off after a couple of flights. Another possibility is to have two packs, and let one cool while the other is in the air.

The system as it comes from Cox has a toggle switch for on-off, located on the left side just in front of the wing. I found this very awkward, so I installed a push-on, push-off switch instead, just in front of the elevator servo so that full down turns the motor on and off. I recommend replacing the toggle with the push switch, which is available from Astro Flight or Radio Shack, even if it is used in the same external mounting hole that the toggle switch was in, because it does not accidentally trip on as easily as a toggle does. That can be no fun at all if it happens in the car or when your hand is in the way of the prop!

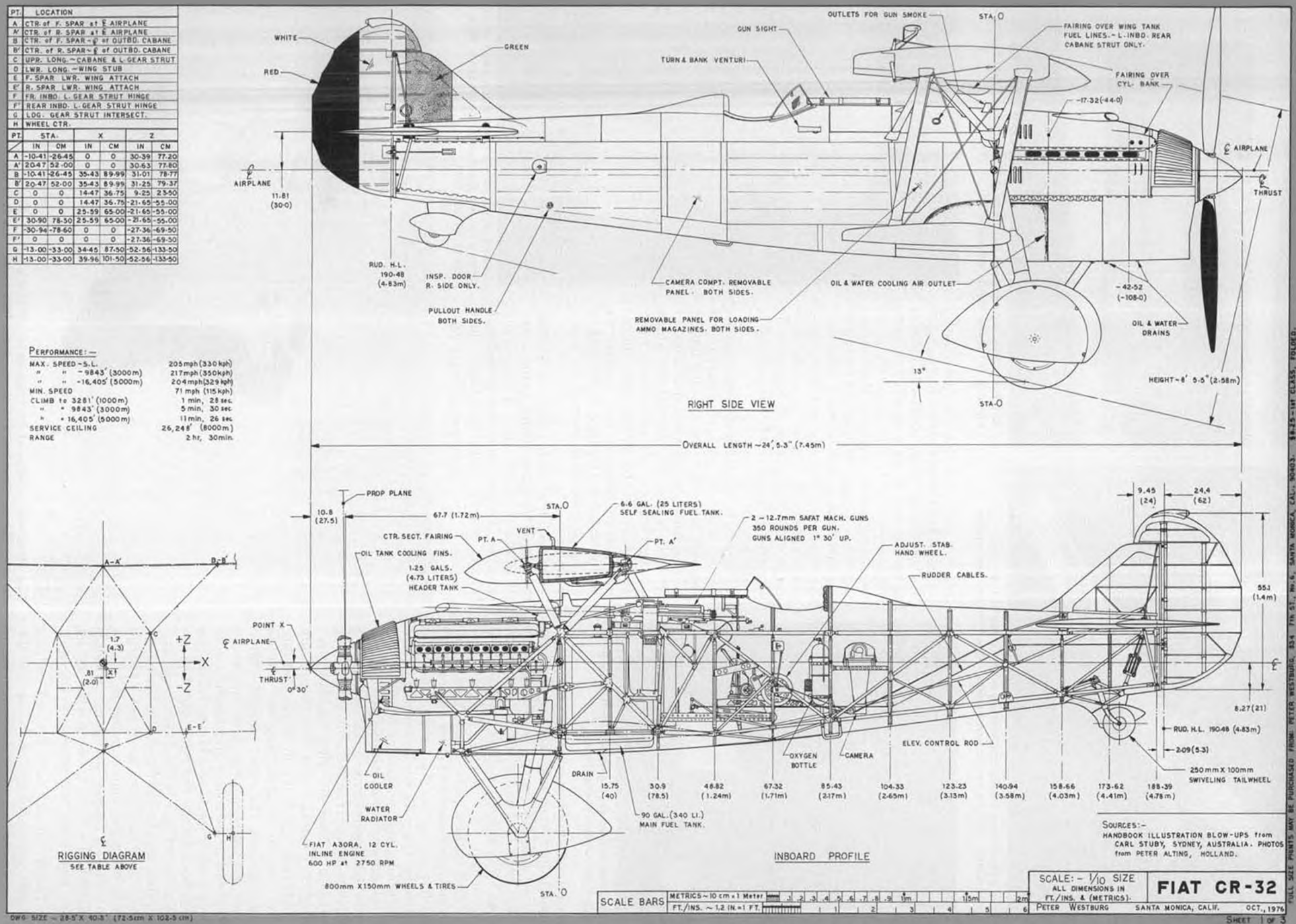
The plane itself comes semi-assembled, and it took only two hours of TV watching to get it ready to fly. It is simple to assemble and is well designed. I particularly like the slip-together wings and the bolt-on tail assembly. I have used this system for several years on my own planes because it is so easy to disassemble them for trips. It also makes repairs easy because everything is accessible.

Once at the field, I discovered that hand launching a low-wing plane is not all that easy, and after a few scary launches, I developed the underhand launch, which works beautifully. Just

Continued on page 75

Closeup of the motor installation and motor battery for the Sportavia. Motor turns 6X3 prop at 14,000 rpm.

Dick Henderson, author of the "Hendertoons" that appear in *Model Aviation*, with his Poling-designed Electro Flea. Has 115 sq. in., Astro 020 motor, Ace R/O unit.



Public relations photo of the CR-32 shows the fighter in pre-1938 aluminum finish. An agile fighter, the Fiat had a top speed of 205 mph. Note use of struts instead of wires to brace wings.

FIAT CR-32

by PETER WESTBURG

PART ONE

• Wars produce famous generals and machines, and in this century, famous tanks and airplanes. WW-I had its Fokker D-VII, SE-5, and Spad; WW-II its Hurricanes, Spitfires, Messerschmitts, Mustangs, and Thunderbolts. A miserable small war fought before most **R/C Model Builder** readers were born produced but one airplane of fame. The war was the Spanish Civil War, beginning in the late summer of 1936 and lasting to the spring of 1939. The airplane was the Italian Fiat CR-32.

A tough, agile fighter, the CR-32 was designed by Celestino Rosatelli, one of the engineers who designed the WW-I Ansaldo SVA. A common practice amongst Europeans is to designate a model with one of the names or the first two letters of the designer's name; thus the "CR" meant *caccia* (hunter) *Rosatelli.*

Casualty figures from the Civil War reveal why the Fiat became so famous. The Republican Air Force had a total of 2,256 aircraft, 1,947 furnished by the Russians. Two out of eleven were lost in training and other accidents, and 1,520 were destroyed on the ground or in the air, more than a third by the CR-32 alone, with a total loss of only 186 Nationalist aircraft in General Franco's air force.

Drawn irresistibly to where the action was, the tough Fiat fought for Paraguay against Bolivia in the Gran Chaco War of 1935, for Nationalist China against the Japanese over Shanghai, and for Hungary against Czechoslovakian Avia B-534's in March of 1939. And when the Germans took over Austria, they seized the Austrian Air Force Fiats, put swastikas on them and used them for combat trainers. The ubiquitous hunter also saw action in WW-II in 1940 when it shot down two Hurricanes in East Africa. Perhaps no fighter aircraft can claim to have been embroiled in so many wars.

(Continued next month)

Italian "volunteers" served with Spanish Nationalists, taking the motto *Bridegrooms of Death.* Insignia on airplane in foreground is a man with a cat's head, on a shield topped by a helmet.

The CR-32 *quater* was built by Hispano-Suiza in Spain under license from 1938 to 1942. Spanish called it the "Chirri."

Flight INSTRUCTOR

Conducted by
DAVE BROWN
8534 Huddleston Dr.
Cincinnati, OH 45236

• Things are pretty busy this month, what with Masters Tournament preparation, so I decided to take the easy way out and cover the subject of judging for the inexperienced, as suggested by one of our readers recently. Matter of fact, since Sal is our resident judge, I'll let her write that part this month.

SAL ON JUDGING

For any of you who are at all interested in competition, from rank beginner to Master flier, one of the biggest areas of concern has to be judging. Being this residence's expert on judging (my opinion not necessarily Dave's), Dave asked me to write my opinions on the matter. I have a habit of saying, "If ya haven't bothered to vote, don't complain" (this in reference to AMA and NSRCA elections), and I'd like to paraphrase it to say, "If ya haven't judged, don't complain about the judging!" In my opinion, judging a maneuver is nearly as hard as flying one; it isn't a matter of sitting down and saying, "Bring on the fliers."

OK, so you have never judged before . . . What do you do? First and foremost, READ THE CURRENT AMA RULEBOOK THOROUGHLY!!! I don't mean skim and I don't mean just maneuver descriptions, as there are sections on positioning, size, smoothness, and consistency of judging, just to name a few, plus there is a section on AMA Pattern and another one on FAI Pattern. The rulebook isn't always consistent or totally clear, but it is the only guide we have and we MUST use it. Anything you do that can be proved by the rulebook is correct unless the field or contest rules plainly state (in writing) differently.

People ask how I became a judge. Actually, it was **RCMB**'s Fearless Leader (Bill Northrop) who is responsible, as he asked me to help judge Novice, Advanced, and Expert pattern at the Nats in 1973. Actually, although I had never judged previous to this, I probably had watched and analyzed more flights than most judges, which brings me to step two. Watch the flying around you, whether it be Novice, Master, or Sunday hacking around . . . get a feel for the maneuvers. All maneuvers are or are combinations of straight flight, rolls, or loops, and surely most of us can recognize these three things with no problem. A straight line is still supposed to be straight whether it goes up, down, or left to right, a loop is still round whether there be one, three, or one on top of another, and a roll is that alone whether there are three consectively or one which stops at each quadrant. Learn the basics and apply them to the harder maneuvers.

OK, reading the rulebook and putting the basic lines, circles, and rolls together gets you an idea of the maneuvers you are supposed to be judging. Now we must keep in mind where the pilot puts these maneuvers. Three rolls done with ten-point precision but done 1000 feet in the air cannot be given the ten points, so we are looking for not only precision but also positioning. All maneuvers should be centered on the judges at a comfortable distance out (comfortable for the judges!) and up. If I have to actually strain to see a maneuver because it is far away or high over my head, the points come rolling off. This is a very common fault in the Novice and Advanced classes (although it can be found in all classes). Many of these pilots have the actual maneuvers covered quite well but cannot place them where they want them. I can almost always tell you what maneuver each individual pilot has the most trouble with, as it is always the highest!

The other two things mentioned in the rulebook are size and smoothness of the maneuver. These two really go together, for example, very small loops tend to be snappy and jerky, and very large ones tend to stagger and "wing walk" about, neither of which gets you smoothness. This smoothness thing is very hard to describe. At it's very best it can be described as a flight that "flows." You don't often see this done superbly . . . I have seen Dave do it a couple of times (notably at the 1975 Masters). I have seen Rhett Miller and Ivan Kristensen and Hanno Prettner do it. It is when each and every maneuver is done in exactly the same airspace, the maneuvers are centered . . . one after the other they are the same distance out and height up . . . the flight flows, painting a perfect picture. This as compared to three rolls done very high, followed by three inside loops done lower but very small and jerky, followed by one outside loop done very high and spiraling out, etc., etc. A very disjointed picture indeed!

OK, you have all the things to look for, now HOW DO I JUDGE??? That is a good question, as you could ask ten different active judges and come up with ten different answers. It is a matter of personal learning, and I will go out on a limb and tell you mine. First off, the rulebook implies that a point is taken off for each mistake seen. This just cannot be done; I have seen maneuvers that would have ended up with a minus number! My theory is this: first, if there is the slightest mistake, the 10 is impossible, as 10's are for perfection. After that, I watch the maneuver as a whole and consider the mistakes seen. Then I try to visualize a percentage of correctness. I watch a maneuver and say (to myself) that was only 50%, meaning he had done 50% (or half) of everything that needed doing for a ten.

For example, say an advanced guy was flying three outside loops; his roll-in was climbing and pulled off heading, he does two loops reasonably nicely but goes quite off heading in the third, and exits climbing sharply, plus he had begun the maneuver quite high. I now visualize what a 100% maneuver would look like, then I consider what percentage this maneuver was . . . in my opinion, 50% (halfway to perfect), so he received a 5. I have a feeling this sounds more confusing than it really is . . . it takes only a few seconds to do. Compare what you have seen to perfect and an answer will be there. I don't say you won't sit there and say, "Was that a 6 or a 7," as you will, but the 100% theory will help. This will become easier as you judge more. Experience is a great teacher. So is asking questions. I have been chief judge at the Mint Julep Meet (one of our area's largest) for the past few years and each year have had two or three judges who have never judged before, and my system has been to place these inexperienced judges with people whose experience and ability I know and trust, with the orders that the experienced judge has final say on any questions and the inexperienced judge should feel free to ask any questions at the flight's conclusion. This has worked out very well indeed, gaining us many new area judges, plus we have had no complaints from the fliers.

Many of our area contests have contestant judging, and in my opinion this is a great way to jump in with both feet. Everyone should judge at least one contest, if for no other reason than to learn, and here is a plug for my own sex: ladies, instead of being bored out of your wits at a contest, why not learn how to judge? I have never flown a pattern plane in my life (a comment Don Lowe says is responsible for my being such a scrooge. He claims if I realized how hard it was to do some of those maneuvers, I'd give more tens!). Anyway, my point is that some of our best judges could be the wives. It takes time and willingness to learn, but certainly isn't hard and beats the devil out of sitting around wondering when you're going home.

One last section to consider is my own idea, as it is not in the rulebook; your behavior as a judge. You are there because you want to support modeling in general and this contest in particular; the contest and fliers are not there for your convenience. This is a job and you must do it as well as your ability allows, plus do it with a smile and a certain amount of politeness. NEVER discuss anything during anyone's flight . . . it is very distracting to a pilot to hear the judges talking during a flight. This is not to say you can't talk to a pilot or answer questions before his time starts, but please do him the courtesy of shutting up during his flying. Remember, these guys are usually nervous (this nervous-

Continued on page 76

FUEL LINES

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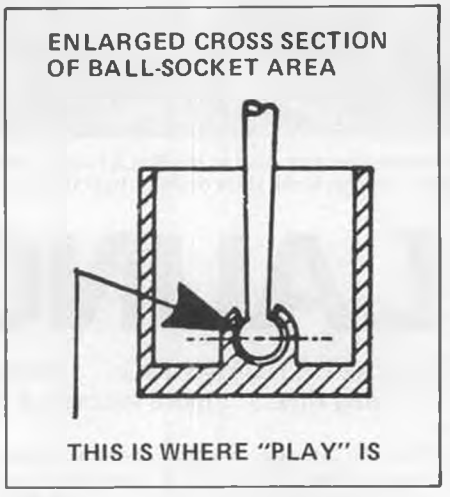
Send in your questions, relative to glow or ignition engines, and these experts will give you the correct answers.

KLAUSE

• As with anything mechanical, model engine failures do occur. Sometimes, it's simply a matter of a part wearing out after long and faithful service. Other times, it's because the engine was abused. Since nobody purposely abuses engines, any such damage must have been done unknowingly. This was highlighted in a recent letter that read something like this, "Perhaps you can help me with this problem before I have our field knee deep in Cox connecting rods. I've been flying a lot of 1/2A R/C planes with Cox .049's and .051's as power. There is no problem in getting plenty of power... However, I'm breaking too many connecting rods. How can I prevent this?"

Maybe we can help prevent some unintentional damage by reviewing some causes of connecting rod and crankshaft failures. In general, there are three reasons. The first of these is operating the engine beyond its design limitations. In the case of the T.D. .049 and .051 engines, they were designed to be operated as glow ignition, combustion engines up to approximately 24,000 rpm. If you use something besides a glow head to initiate combustion, such as extremely high compression, spontaneous ignition, or if you consistently operate it much above 24,000 rpm, then you must expect a high incidence of part failures. On more than one occasion, I've seen 1/2A pylon planes intentionally put into long vertical dives to see who could get the highest rpm reading on a sonic tachometer. It's usually accompanied with, "Hey guys, watch this!" It does seem like fun at the time, and I can assure you they'll go well over 30,000 rpm, after which they often won't go very well at all.



In thinking about the second culprit of junk parts, I've got one of those visceral feelings that, when they read my solution to the problem, a lot of guys will say, "The H--- with him..." Nevertheless, here goes. The culprit is the electric starter. Now, it's not my intention to say they're all bad. In fact, I think they're great on automobiles. Unfortunately, they're brutal on model engines. To begin, they're very powerful, and that fact all too frequently leads to what's known as a hydraulic lock. The sequence for it goes something like this.

The engine is flooded. The volume of liquid fuel in the upper cylinder is more than the volume of the combustion chamber when the piston is at top dead center (very common on inverted engine installations). The starter drives the piston up, the liquid fuel won't compress, and you have a hydraulic lock. However, that powerful starter just doesn't understand such things, and insists on turning the crankshaft. Something's gotta give, and it's usually the crankpin, or connecting rod, or both. They don't often break right then. They just bend a little. They fail during a later engine run. How much fuel is too much of a flood in a T.D. combustion chamber? Approximately six thousandths of a cubic inch . . . about five drops or so of fuel. That's all it takes to make some junk parts.

Take a close look at the accompanying photograph of a T.D. crankshaft. That crankpin is bent down about 10 degrees as a result of a hydraulic lock with an electric starter. In the other photo you'll see a couple of T.D. thrust washers before and after an encounter with an electric starter. If you want further proof, take off the backplate of an engine on which an electric starter has been used. Chances are you'll see gouge marks on the inner surface. They're caused by the crankpin being jammed against it, usually after the starter has chewed up the thrust washer. Earlier, I alluded to a solution to this problem, and I'm sure you've guessed that it's something like "Forget those electric starters." However, I'm enough of a realist to understand that practically none of the readers will do that. This possibly might deter someone who is contemplating buying a starter, but it's unlikely to prompt an owner to get rid of his. At least, though, you'll know what can happen. So, if you do use a starter, be absolutely certain the engine isn't flooded, and apply the starter for no more than one second at a time. If it doesn't start right away, then check out the battery, glow head, fuel line, carburetor, etc., etc.

The third major cause of rod and pin failures is too much "play" in the ball socket joint where the rod is attached to the piston (see the accompanying illustration). When there's too much play, things begin to slap around, so to speak, and the rod or pin fails, or the crown of the piston breaks away. When the engine is run at very high rpm, it is especially important that the ball socket joint be snug. To check it out, hold the piston

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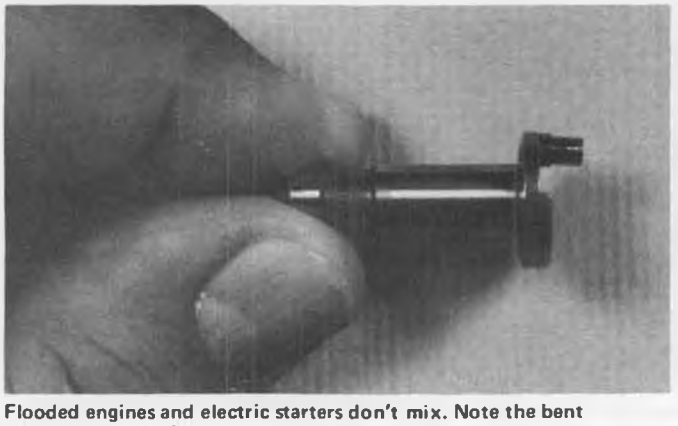
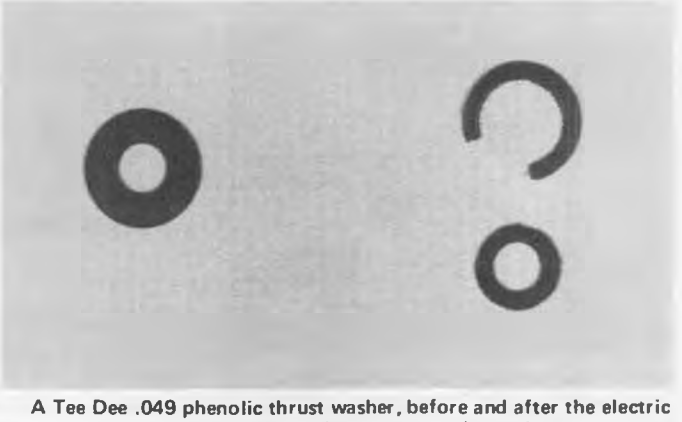
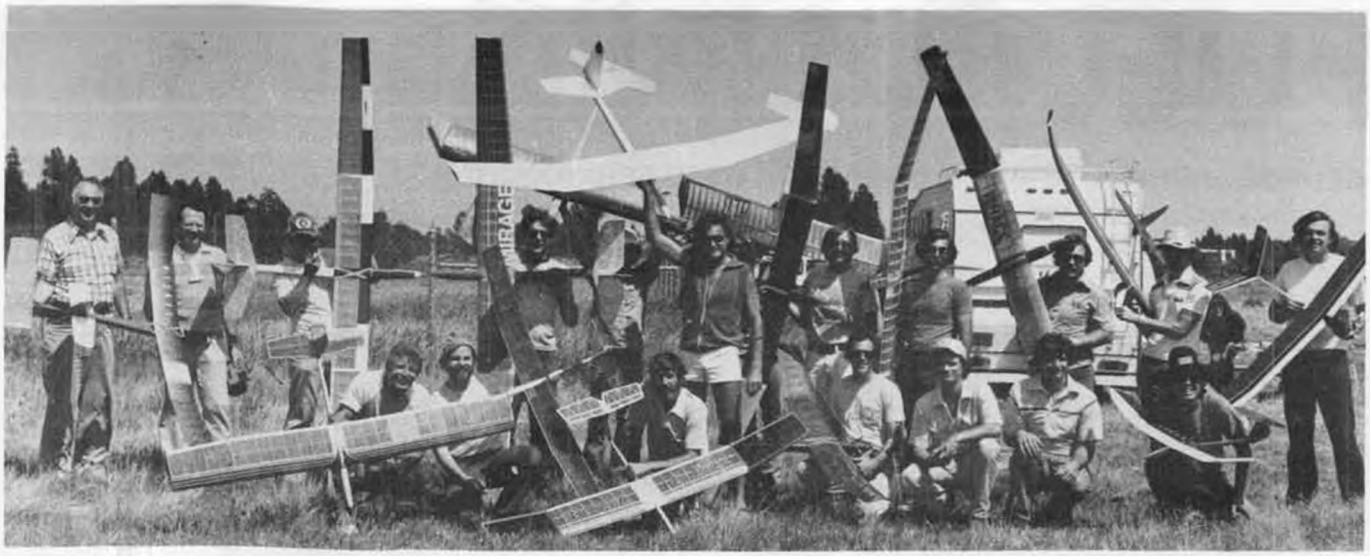


Flooded engines and electric starters don't mix. Note the bent crankpin. More info in text.



A Tee Dee .049 phenolic thrust washer, before and after the electric starter. Apply starter no more than one second at a time.



PHOTOS BY VERN AND CINDY BROESAMLE

Eighteen of the 24 fliers who showed up for this first-ever contest, held at the SULA field at Cal State Dominguez Hills, Carson, CA. Wing spans ranged from 54 to 112 inches and included 8 original designs. Small ships couldn't hold their own with the big ones when the wind came up.

HAND LAUNCH R/C

By DAVE THORNBURG . . . First really different R/C sailplane contest in a long time . . . more successful than anyone had dreamed.

• They showed up with airplanes that ranged from 54 to 112 inches, from less than twelve ounces total weight to over thirty. An even third of the entries (8 out of 24) were original designs, one or two built specifically for handlaunching (look Ma, no towhook!) with the rest designed primarily for two-meter competition. The weather was perfect: one round of warm, calm air followed by two rounds of 12-15 mph breezes. So we got to find out who flew well in "easy" air, and who still flew well when the picking got tough. And his name is Blaine Rawdon.

Blaine flew his Mirage, a 112-inch open-class airplane, to a 2977 total score out of a possible 3000: he won two rounds outright and was only beaten by eight seconds in the round he lost! Blaine's Mirage design, in fact, took three of the top six places: Rick Pearson flew a Mirage to second place, and Mike Reagan tossed his Mirage into a sixth, just behind Chris Adams, Dick Odle, and Joe Wurtz, all of whom flew originals. All six of these top placers belong to a single club, the San Fernando Valley Silent Fliers!

Thanks to Tom (man-on-man) Williams, who did the matrix for each round, the high scorers from Round One were constantly matched against one another during rounds two and three: Rawdon had to face Adams and Reagan, Pearson flew against both Adams and Wurtz. So nobody who finished on top of the pyramid got a shoo-in victory.

The contest rules were ultra-simple: put four pilots into a 300 by 300-foot area and give them ten minutes exactly to make five official flights, shooting for a two-minute max each time. Every throw counts: the pilots in the next group are standing just outside the launch area doing the timing, and they record every toss to the nearest whole second, from the time the plane leaves the pilot's hand until it touches the ground or returns to the pilot's hand. The sum of the five tosses equals the "raw score" of the round, which is normalized against 1000. By way of example, here are the results of the first flight group in Round One, the first four pilots ever to fly in a sanctioned handlaunch R/C competition:

NIBLEY	KOPLAN
53	33
Max	Max

C.D. Dave Thornburg preaches from Rick Norwood's Toyota "Porta-Pulpit" while his wife, Jan, does the real work of the contest.

Two-shot launching sequence showing Larry Jolly giving the heave to his original design Icarus, soon to be kitted. Mike Reagan landing his Mirage in background.

Smallest ship was Thornburg's T-tail. Spans 54 inches, weighs 11-1/2 ounces.

38	23
21	100 (ie. 1:40)
Max	53
352	329
PEARSON	BAME
20	27
98	21
40	33
34	Max
Max	45
312	246

Normalized, this gave Nibley 1000 points, Koplan 934, Pearson 886, and Bame 698. It's tempting to look at the pattern of maxes (any flight over 120 seconds was scored 120 . . . no penalty for overflying) and try to read in thermal patterns, but the pilots rarely tossed simultaneously. Some pilots would take the whole ten minutes, standing quietly and "feeling" for thermals, often making their fifth and final launch just as Timekeeper Chuck Moore was counting down the last thirty seconds of launch time. Others tried to "key" off of pilots launching nearby, waiting until the other guy found lift and then launching into it: the fine art of piggybacking. More than once I saw a pilot bump into a bubble too low to work it, hang for a couple of precarious circles and finally fall out, only to have some sharp-eyed piggybacker toss right up over his head and "go out" for a max. Whatever it takes, gentlemen! A couple of times during the contest we had three airplanes in the same thermal, hanging suspended like a giant mobile, twenty feet off the ground. Lovely! But what about midairs, you ask? Out of 360 official launches, there were only two reported midairs, both minor.

So what does it take to be competitive in handlaunch? Let's take a look at the scores. Round One, before the wind came up, had thirteen maxes and thirty-five flights of over one minute duration. The round yielded nine scores of over 300 seconds total . . . nine pilots out of twenty-four who were averaging over sixty seconds a toss! That's pretty discouraging news to somebody with a weak arm, like myself!

However, the scores in rounds two and three are probably more realistic: only four pilots broke 300 in Round Two, and five in Round Three. There were only six maxes in the second round, with 24 flights of a minute or more . . . no question that the wind makes thermal-riding a lot tougher, down at hand-launch altitudes. By Round Three, people had begun to resign themselves to the wind, and were working it more profitably: there were twelve maxes and 28 flights of over a minute.

In fact, it was Round Three that saw the highest single score of the contest, Blaine Rawdon's 413-second total. Going into this round, Blaine carried a normalized score of 1977 points against Mike Reagan's perfect 2000; Joe Wurtz had 1899 and Chris Adams 1777. These four pilots were the first flight group of the round; the wind was holding steady at around 15 mph and the lift felt spotty at best. Blaine and Mike were both flying Mirages, while Chris flew a 78-inch original pod-and-boom design built around a Mirage airfoil. Wurtz had a six-foot original with a highly-undercambered section and sharply upturned wingtips, somewhere between polyhedral and NASA winglets. When the dust cleared, here's what had happened:

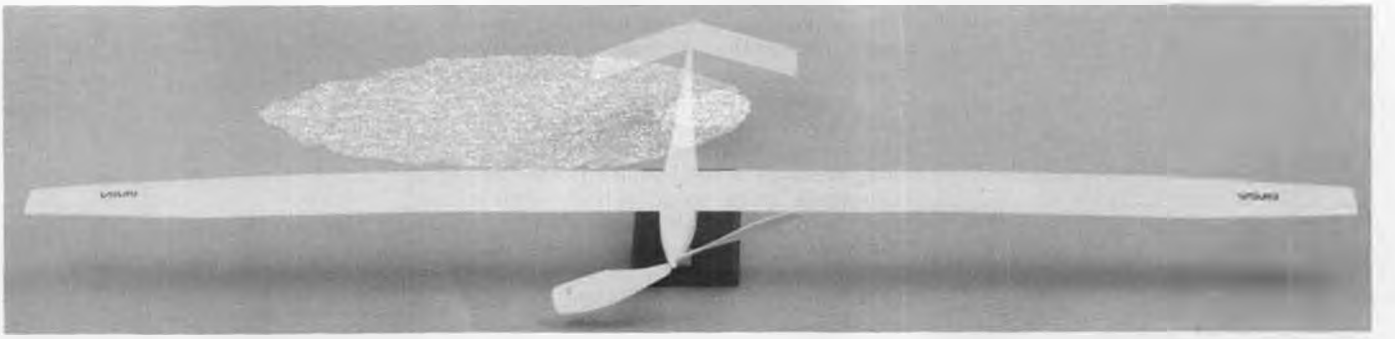
RAWDON	ADAMS
Max	0
44	36
110	49

Continued on page 78

First place winner Blaine Rawdon launching his Mirage. Five Mirages entered.

Blaine Rawdon accepts trophy from Dave Thornburg. Had highest single-round time.

Top six pilots all came from the same club, the San Fernando Valley Silent Fliers. Rawdon's Mirage design was most popular plane, placing 1st, 2nd, and 6th.



An R/C powered glider designed to fly in the atmosphere on Mars? How far out can you get? But this semi-conventional appearing craft is intended to do just that. Wing span is just over 70 feet, and the wings fold in six places to get it to a managable size. More info in text.

R/C SOARING

by Dr. LARRY FOGEL

PHOTOS BY AUTHOR

• How about a *really* different scale model? You've all seen models of present or past full-scale sailplanes. They're beautiful and may be of historic interest . . . but that's all. Let's try a scale model of a *future* sailplane. That would be different!

Most scale models are of sailplanes flown here on Earth. How about one that is expected to fly in the atmosphere of Mars? Now, that's *really* different.

Abe Kerem is Project Engineer for Developmental Sciences, Inc., developers of the MARS airplane, under contract to NASA. This powered glider will be released from a space capsule, unfold its wings and fuselage, then fly over the Martian terrain to gather important photographic and other scientific data.

Designing such a craft is no mean trick. The airplane must fit within a 12.5-foot diameter aeroshell, and weigh less than 300 kilograms all up. The capsule will separate from the mother craft, deorbit, and enter the Martian atmosphere. A parachute will deploy, decelerating the descent to 60 meters per second. At that point the folded airplane will be released. It will automatically unfold and the hydrazine engine will start at 7.5 kilometers altitude. It must fly slower than 100 meters per second at an earth equivalent air-density altitude of 105,000 to 130,000 feet, carry a 100-kilogram payload and 50 kilograms of avionics, and travel thousands of miles using a non-air-breathing engine.

According to Abe, there would seem to be too many contradictory requirements, and yet careful design has resulted in an ultra-lightweight (1.5 kilogram per square meter) high aspect ratio, thin wing configuration which should meet the needs. The wing will operate at from 45,000 to 90,000 Reynolds number (Rn), depending upon the cruise weight and altitude . . . just the range of radio control models here on Earth. Remember that full-scale light aircraft cruise at a Reynolds number of about 10 million. The lift-to-drag ratio (L/D) of a wing drops rapidly as the Reynolds number falls off (the fewer molecules interacting with the wing, the less the efficiency).

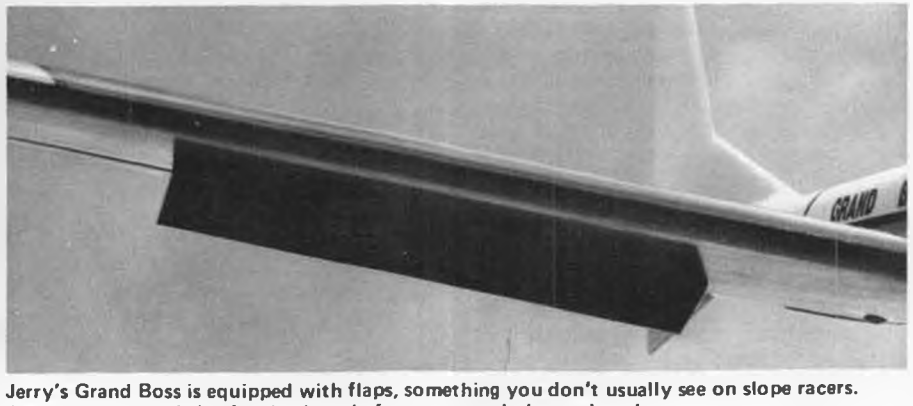
Birds and slow-flying model aircraft have very thin airfoils, which create most of their cruise lift at low angles of attack on the highly cambered undersurface. Very limited wind tunnel tests and the performance of free flight model aircraft show the actual L/D to be only 20% lower than the theoretical value. In this flight regime, some experimental results demonstrate that tripping the boundary layer on the wing upper surface improves the maximum lift coefficient and thus improves the L/D ratio at Reynolds numbers lower than 100,000.

According to a technical paper entitled "A Mars Airplane?" by Clark, Kerem, and Lewis (pages 42-55 in the January 1979 issue of *Astronautics and Aeronautics*), "The speed of sound on Mars varies between 220 and 245 meters per second. Even at low cruise speed, the Mars airplane will have a high enough Mach number (approaching 0.6 at high altitudes) to cause some concern about buffeting at the low Reynolds number and the high cruise lift coefficient (C_l). No tests have ever been carried out for these conditions, as far as we know, since they are difficult to conduct and are of little value on earth." The high-Mach, high C_l, low Rn problem becomes far worse at the propeller tips.

The resulting design resembles a competition glider. The fuselage has a flat top to fit into the cone of the aeroshell. Choosing a shoulder wing

Bob Worley's sloper just entering a pylon turn at Torrey Pines contest.

Jerry Arana is an avid slope pylon racer, flew his Grand Boss in meet at Torrey Pines.



Jerry's Grand Boss is equipped with flaps, something you don't usually see on slope racers. Just remember to bring 'em back up before you touch down, Jerry!

During a heat. Pilots don't look very excited, but you can bet that there's plenty of hollering and shouting going on, especially if it's a close race.

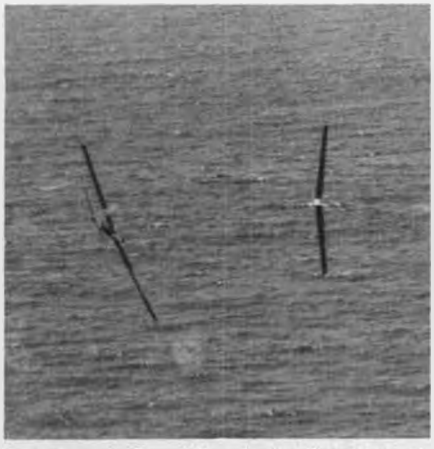
Well-known thermal flier, Rick Pearson, brings his ship in after a heat.

permits parallel stowing a 20 square meter area, 21 meter span wing in the maximum diameter part of the base cover, using only six wing breaks. The fuselage breaks at three places and the inverted V-tail turns 360 degrees and rolls 180 degrees to reach the deepest part of the aeroshell. Hinges near the spinner make possible stowing propellers of more than five meter diameter. Only the left wing has an aileron, thus simplifying control. Up to 50% of the all-up weight will be taken by fuel.

The plane will have a capability to land on the surface by entering a deep stall and descending vertically, then taking off again using a rocket boost to a thousand meter altitude which will allow pullout and level-off at 300 meter altitude. Demonstration flights on radio controlled scale models of light aircraft have shown that they can descend very stably in such a deep stall.

The wing airfoil is an Eppler 61 with modified upper camber (aft of 90% chord) to thicken the trailing edge to 0.5% chord. Abe plans to build and fly a 1/5 scale (14-foot span) radio controlled model as part of the development first phase. This model will be of simplified structure, probably foam, balsa, microglass, with carbon fiber spar cap construction to take the loads at the hinge points of the wing. The hinges are miniature in size and machined from steel. There are no commercially available hinges for this bird. The prop will be much like those used in conventional rubber-powered planes. All in all, here's a challenge for those of you interested in an unusual scratch-built scale project.

Mike Foreman of San Diego put together a beautiful 1/5th scale Cobra 17. He stretched the wingspan of this Veron (British) kit from 120 to 136 inches. The fully-sheeted wings carry 100 ounces. It flies well and looks great in the air. Spoilers are useful for landing approaches.



Jerry Arana's Grand Boss leads Rick Pearson's ship around the far pylon.

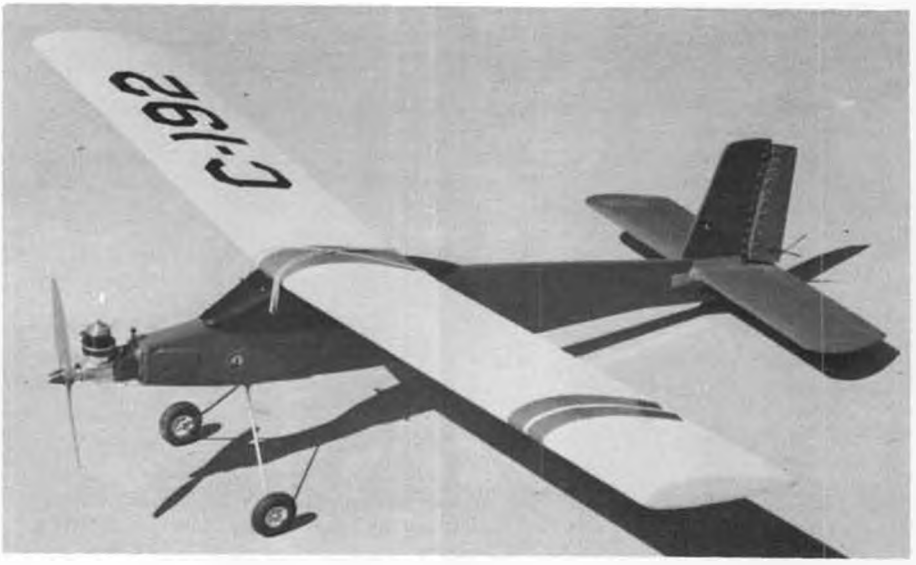
Rick Schrameck's screamer turns in front of and below two full-size soarers.

Pylon racing is exciting for both pilots and spectators alike. In a recent event at Torrey Pines, Jerry Arana flew his Grand Boss, an 84-inch span ship (13-1/2 inch

Continued on page 86

Mike Foreman did a beautiful job on this 1/5-scale Cobra 17, built from a Veron kit. Wing span stretched to 136 inches, weighs 6-1/4 lbs.

John Bruner demonstrates his hand-operated winch switch. Said to be easier to use than the usual foot switch.



PHOTOS BY AUTHOR

CRICKET

By JACK HEADLEY . . . A good-looking 1/2A sport model by a well-known designer. Uses Ace foam wings and a minimum of your time.

• The Cricket represents a very simple approach to a sport model, and requires little expense for the building materials and little time to construct, both of these items being important factors these days. The power required for the model is provided by a Cox .049 or its equivalent, and the radio is an Ace single-channel pulse system. As an alternate, Bill N. suggested that one of the smaller Cannon radios could also be used, and this would give an additional channel, as well as being proportional control. Although I haven't tried this out myself, it sounds very practical, and further along in this discussion I've included a short section on my ideas of converting the Cricket into a two-channel version.

In keeping with the simple features of the model, I'll keep the construction notes on the same simple level and not bore you with details of every step in the construction (there aren't many anyway!). There is also a quite detailed set of construction photos to go along with these notes, so building the Cricket should be virtually trouble-free.

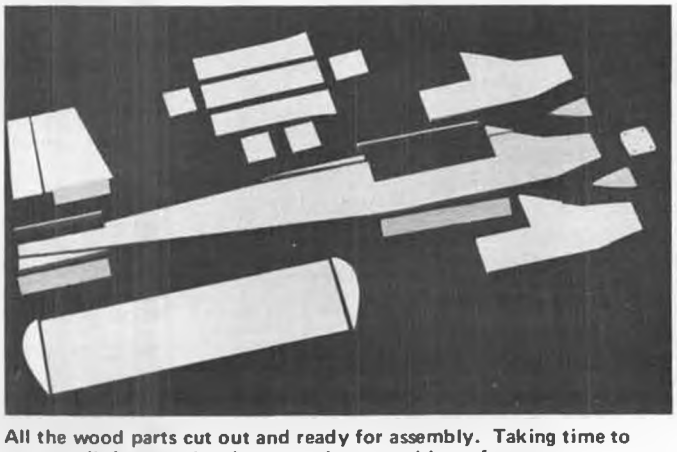
WING

The wing used is the Ace Mini Foam Wing, the one with the constant chord (No. 13L192). The wing area is 192 square inches, hence the numbers you can see on the model photos. The Ace kit, in addition to including the two wing panels, comes with voluminous instructions on how to put it together, so rather than repeat all of these here I'll just let you read the Ace data, and this will tell you all you need to know on assembling the wings.

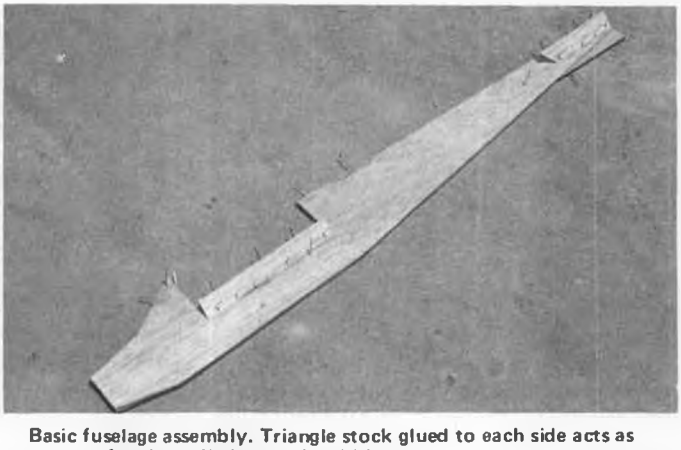
For the Cricket a total dihedral of 3 inches is required; that is, 1-1/2 inches under each wing tip. The only thing I added to the foam panels was a couple of scraps of 1/16 ply at the trailing edge of the centersection, to prevent the wing bands from cutting into the foam.

FUSELAGE

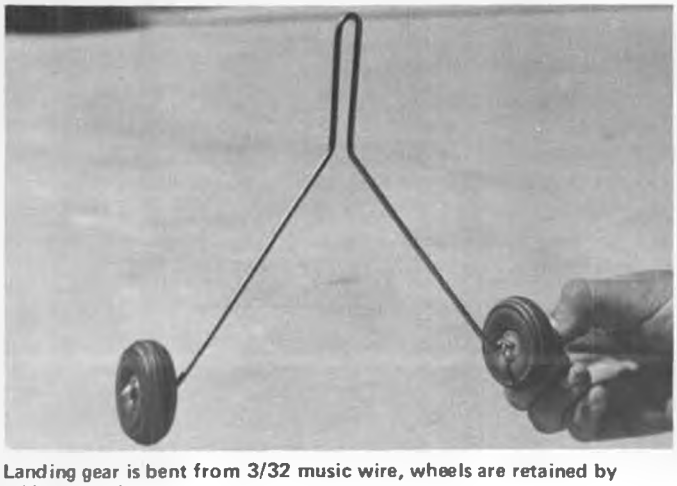
Construction begins with the profile



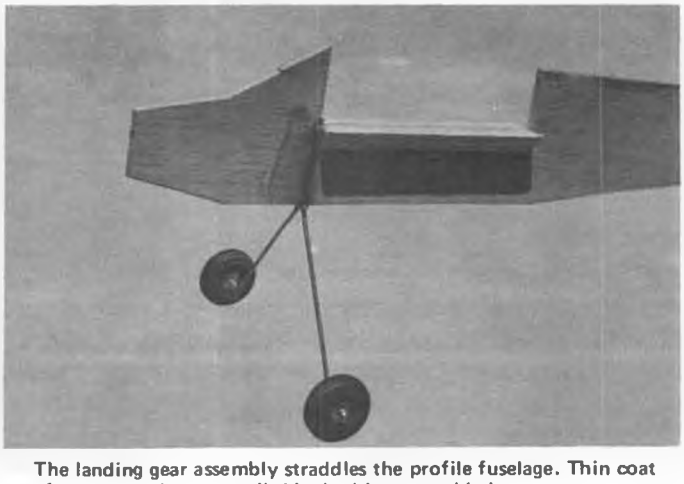
All the wood parts cut out and ready for assembly. Taking time to cut out all the parts in advance makes assembly go faster.



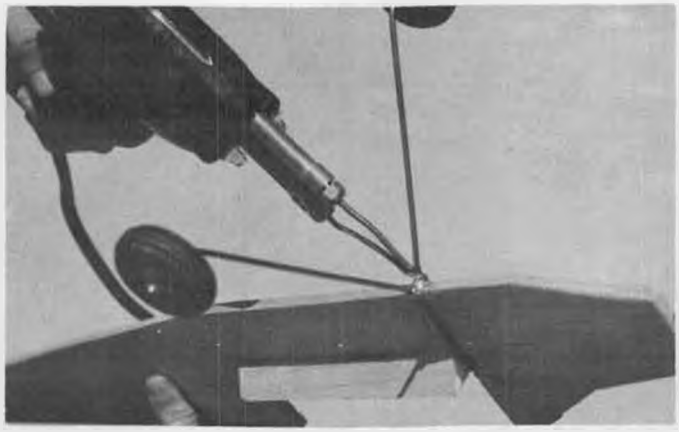
Basic fuselage assembly. Triangle stock glued to each side acts as support for the radio box and stabilizer.



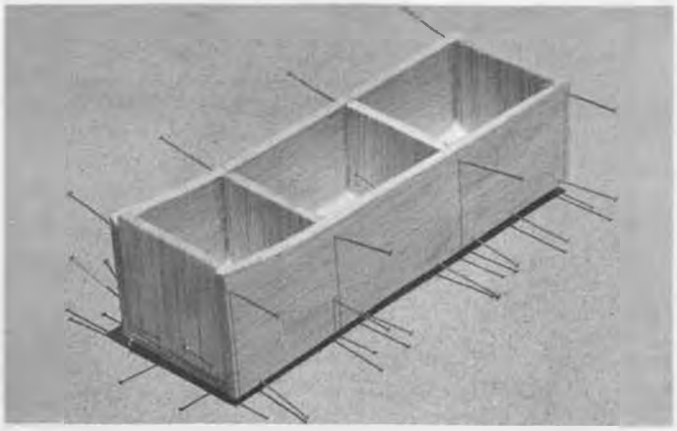
Landing gear is bent from 3/32 music wire, wheels are retained by soldered washers.



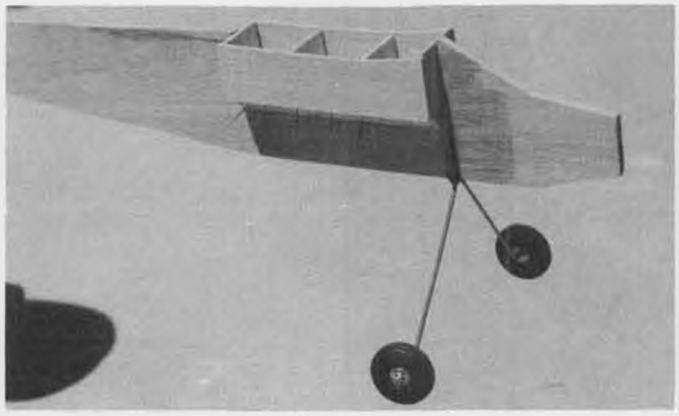
The landing gear assembly straddles the profile fuselage. Thin coat of epoxy holds gear until side doublers are added.



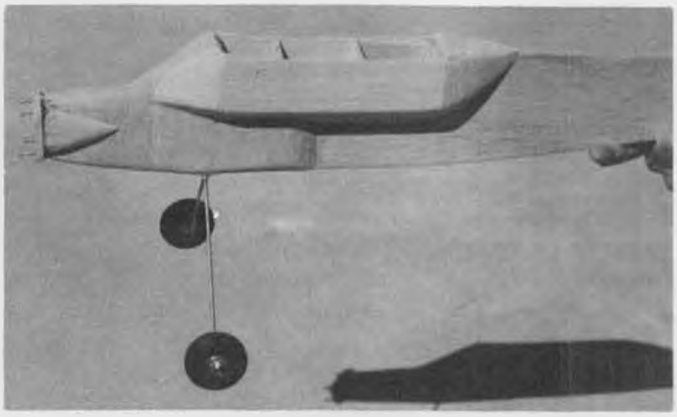
Binding the gear legs together and soldering keeps the legs from breaking out of the doublers on hard landings.



Radio box assembly. Compartments hold, from front to back, the battery, receiver, and actuator.



The radio box glued in place on the fuselage.



Fuselage with the nose doublers, firewall, firewall fairings, and front and rear radio box fairing blocks added.

fuselage, which is cut from a strong piece of 1/4-inch sheet. The profile outline is shown on the plans by the small triangles, and if you use a 4-inch wide sheet of wood the fuselage can be made in a single piece. Otherwise, a 3-inch sheet can be used, with a couple of extra pieces tacked on in the cabin area. Don't bother to round off any corners at this stage, this will all be taken care of later.

Make the radio box support and the tailplane support from a strip of 1/2-inch triangular stock, and glue onto the body, together with the tailskid.

LANDING GEAR

The landing gear consists of a length of 3/32 wire and a pair of 1-1/2 inch diameter wheels. Bend the wire to the shape shown on the plans, then test fit on the fuselage. If the wire doesn't fit the 1/4-inch sheet tightly, make the gap at the top end of the wire a little smaller. Keep test fitting the assembly until the wire clamps onto the body, but not so tightly as to crush the wood. The top end of the wire loop fits into a small notch cut in the body.

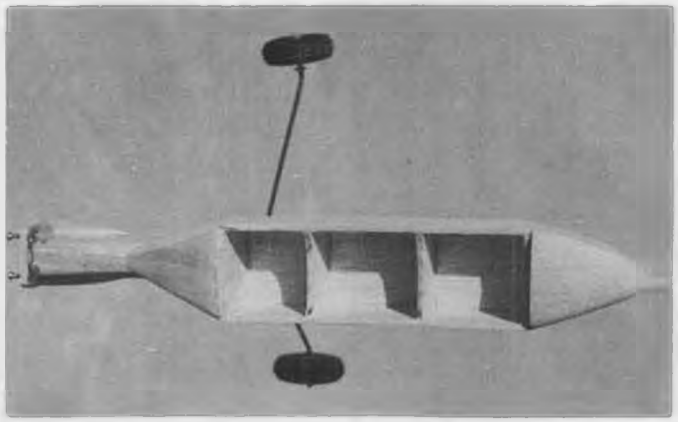
With the wire correctly located, bind the two legs together with soft wire, then solder. A coat of epoxy smeared over the wire and the body will help keep this assembly in place until the fuselage doublers are attached.

RADIO BOX

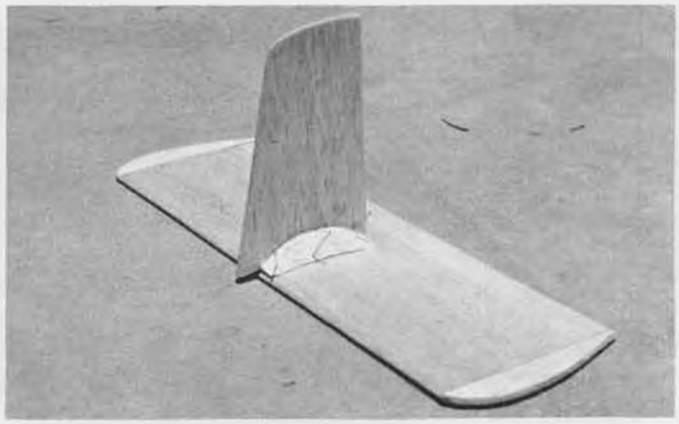
The radio box, or cabin, is entirely made from 1/8 sheet and consists of a floor, two sides, and four frames. The plans show details of all these pieces. When this item is constructed it can be sanded lightly all over, and then cemented into place on the fuselage.

Make the nose fuselage doublers from 1/4-inch sheet, noting that both a left and right handed piece are needed. Trim and chamfer as shown to fit over the landing gear wire and the triangular support for the radio box. Glue these items into place, then make and attach the nose fairings. This latter item should be sanded to an elliptical cross section before being finally attached. Roughly carve to shape, then glue the block balsa pieces which represent the cabin windscreen in place. The block fairings at the aft end of the cabin can also be made

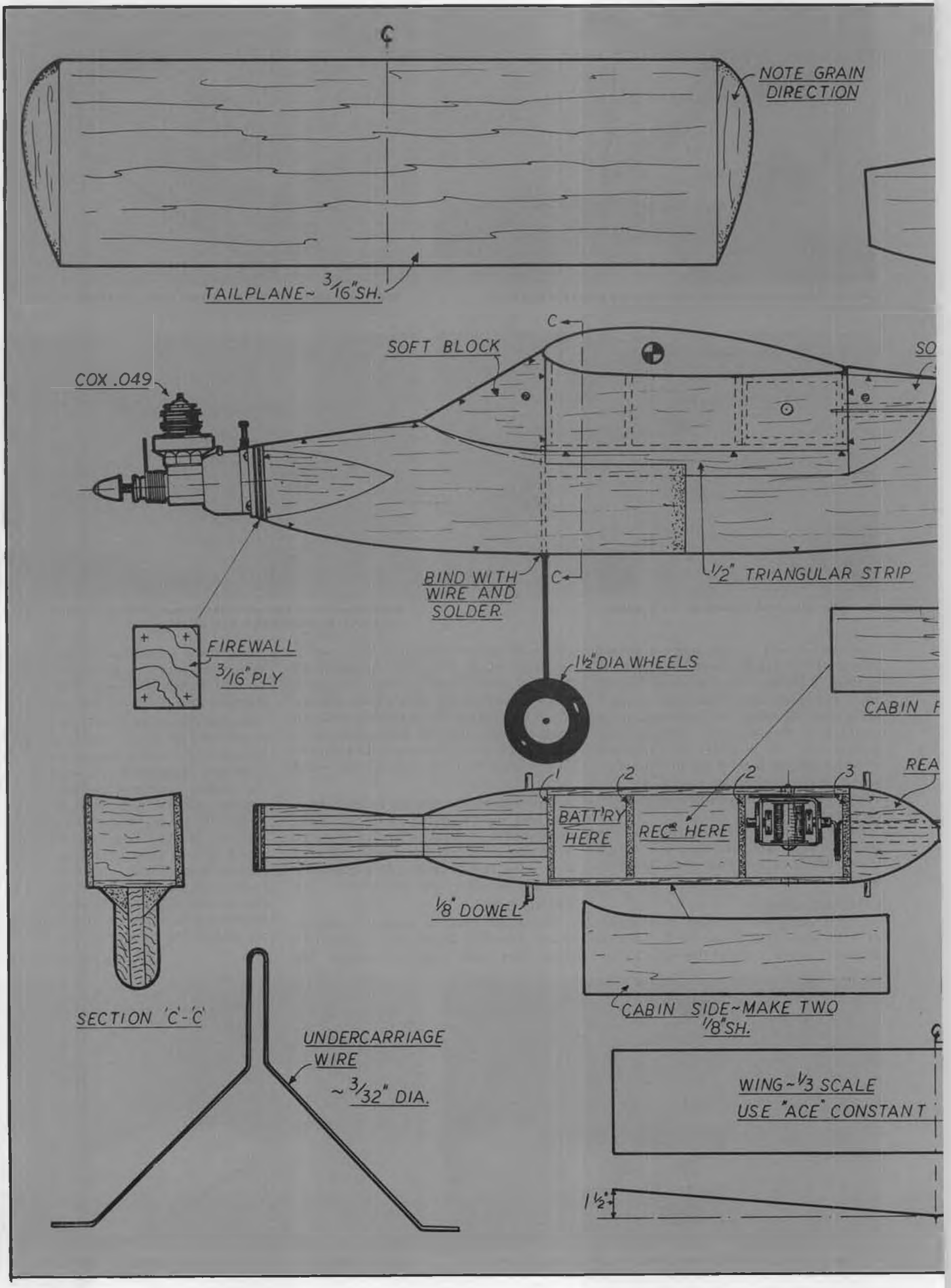
Continued on page 88

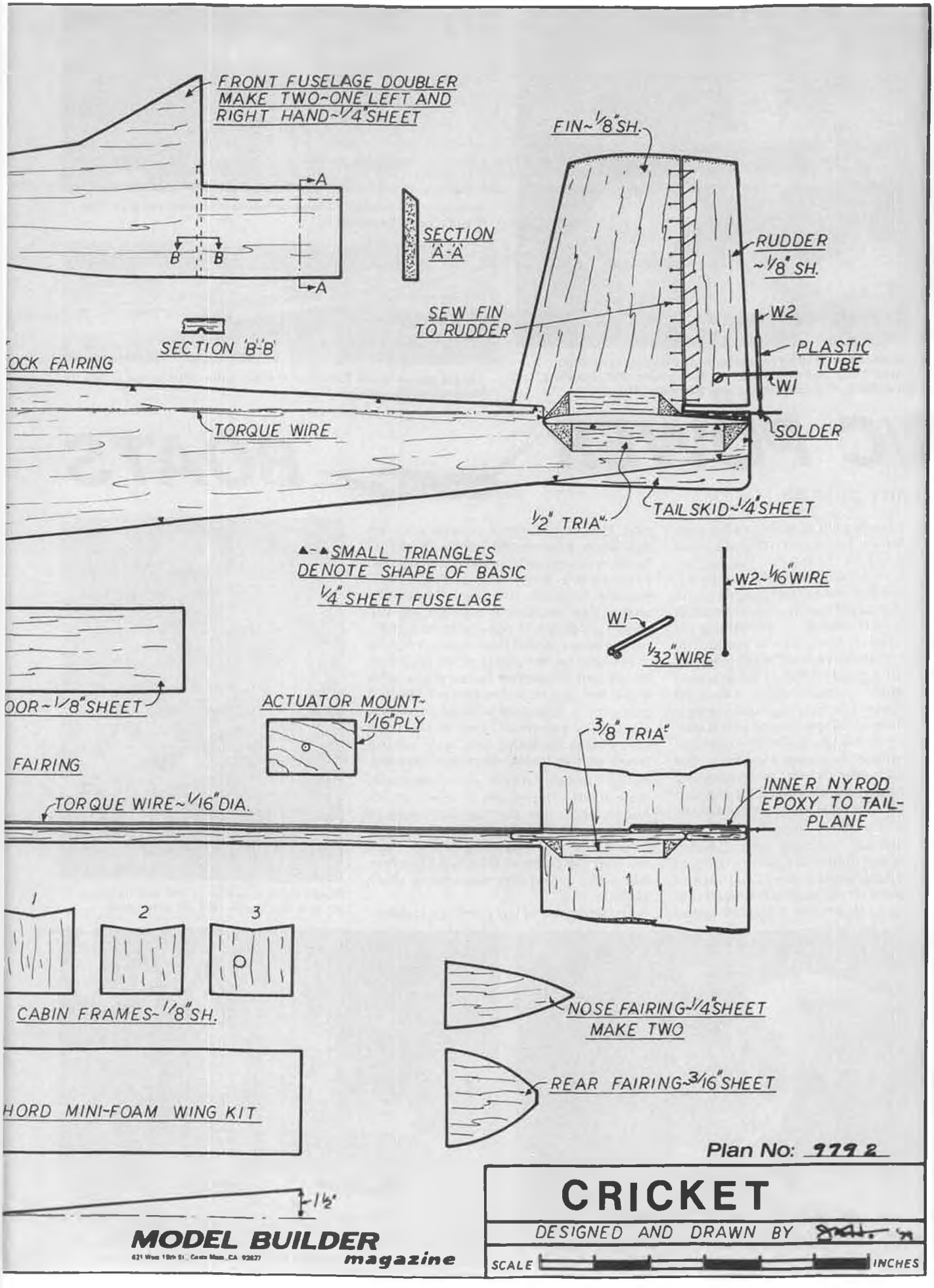


Looking down into the radio box. Note how all the fairings and blocks have been rounded, looks nice when painted.



Stab assembly is a cinch. Triangular fin gusset is on left side only. Rudder is attached with figure-8 thread hinges.


NOTE GRAIN DIRECTION
TAILPLANE~ 3/16"SH.
SOFT BLOCK
COX .049
BIND WITH WIRE AND SOLDER
1/2" TRIANGULAR STRIP
FIREWALL 3/16" PLY
1½"DIA WHEELS
CABIN F
BATT'RY HERE
REC" HERE
1/8" DOWEL
SECTION 'C'-'C'
CABIN SIDE~MAKE TWO 1/8"SH.
UNDERCARRIAGE WIRE ~ 3/32" DIA.
WING~1/3 SCALE USE "ACE" CONSTANT
1½"



FULL SIZE PLANS AVAILABLE – SEE PAGE 116

Winners of the May 19 Hobbytown Outboard Regatta (kneeling, l to r): Kathy Moss, 3rd; John Moss, 1st; Mike Wight, 2nd. Standing, l to r: Mike Groul, 6th; Leo Dreith, 5th; Ron Fisk, 4th.

Nice catch by Dennis Caines as he makes a one-arm arrest of Mike Wight's wood Excalibur II.

Dennis Caines' wood Excalibur II looks quite realistic as it scoots by. Won 4th in the enduros.

R/C POWER BOATS

By JERRY DUNLAP

• I have been writing about radio controlled model boats and activities since 1966. During all those years I've written about a multitude of different boats, engines, radios, races, and people in the hobby of model boating. But my leadoff topic for this month is something I'd hoped I'd never have to write about. The task that confronts me is the reporting of a death of a good friend of mine and of many others in our hobby. I've read many accounts in varying hobby magazines telling of the passing of an individual who had made significant contributions to model airplanes. However, that still doesn't seem to help me in knowing how to begin. Possibly the best place to start is with the facts as they were told to me.

On Saturday morning, June 2, Marianne Preusse died while participating in the Indy Unlimited model boat race in Indianapolis, Indiana. It is believed that the cause of death was a massive blood clot. For the benefit of anyone who has not been around the hobby of model boating for any length of time, Marianne Preusse was the "M" of G&M R/C Boating Supplies. It is the belief of this writer that Marianne was among the most significant, if not *the* most significant woman model boater in our hobby at the time of her passing. She was truly loved and respected by all those who knew her as a business person and as a competitor. Together with her husband, Gary, they comprised one of the most successful husband and wife racing teams in the hobby of model boating. Being a female racer in a predominately male sport often made it necessary for her to endure more than her share of "female driver" jokes. But Marianne had a unique sense of humor that allowed her to more than hold her own when the verbal digs were being slung about.

To her husband Gary and her children

Randy Seiser holds his record-setting Gator 20. K & B .21 with OPS .21 pipe, Kraft.

Mark Erickson prepares to release Dale Fugman's Dumas Hotshot 21 fiberglass tunnel in the enduro racing.

John Moss about to launch his wife Kathy's boat in one of the enduros. Kathy was 3rd in the enduros, 3rd overall.

More action in one of the 10-minute enduros as Mike Wight helps Dennis Caines retrieve Dennis's Excalibur II.

After a pitstop, Dennis Caines launches Mike Wight's boat back into the 10-minute enduro. Mike won this event.

David and Debbie, I know I speak for many other model boaters who extend deep and sincerest condolences. Maybe it is because radio controlled model boating is a rather young hobby/sport that makes the passing of Marianne Preusse so difficult to comprehend. Like the hobby/sport, she was young in years, being only thirty-seven at the time of death. In the fourteen years I've been associated with R/C model boating, I know of no other nationally recognized individual whose death would have affected as many people as Marianne's. I consider myself fortunate to have known Marianne as a personal friend. Along with my wife, Maren, I had the opportunity to share some memorable times with Marianne and Gary.

The Dunlaps and Preusses first met at the 1967 I.M.P.B.A. Internats at San Francisco. But it was a chance meeting at Disneyland just a few days after the Internats that really cemented our friendship. After spending a day looking at Mickey, Mini, and Daffy, Maren and Marianne thought it might be exciting to check out the action at some of the local Orange County nightspots. That year (1967) was about the time that topless dancing was a new entertainment fad and the ladies decided they'd like to see what this was all about. I don't think they had to twist my or Gary's arms all that much. We spent a large part of one August evening wandering around Orange County, looking for a topless joint. We finally located one about 1:00 in the morning and then found ourselves the only patrons in the entire place, other than the dancer and bartender. As I recall, it didn't take the ladies all that long to decide they'd seen enough and dragged their husbands out of the establishment.

Racing action between John Moss on the inside and Joe O'Danel on the outside.

The next time we found ourselves together with the Preusses was in 1970 at a contest held in Lake Tahoe. Even though the racing was good and I did well in that area, it was something that Marianne and Maren did that I remember most. We were standing together on the main floor of the Sahara Tahoe when

Continued on page 90

Mike Groul drove this glass Excalibur II to 4th in heat racing and 6th overall.

John Moss's Dumas Klampon-Kai running in one of the 10-minute enduros while Mike Groul uses rowboat for retrieval.

Leo Dreith's wood Excalibur II was 5th in the enduros and also 5th in the final standings.

Nicely finished Dumas Hotshot 21 by Dale Fugman coasts into the pits, following a heat.

Jim Gale, supplier of J.G. props, put on a sailing demo in pool at '77 Namba Nats. More on Jim in text.

Low freeboard of BONE and BONE II shows on this run in which a bow roostertail is being thrown. BONE III has added freeboard.

The aft placement of the keel on the prototype BONE has proven excellent at keeping the bow out of the water.

STRICTLY SAIL

By ROD CARR

Note the difference in streamlining between the BONE bulb plug (top) and EPIC bulb.

• Last month our designer in residence, Karl Kirkman, discussed the notion of components of resistance. He dealt briefly with dimensional analysis and described the use of non-dimensional coefficients as a way of comparing different size vehicles at different speeds. The magnitude of different drag forces of submerged bodies was shown as a function of a speed/length parameter called the Reynolds number (Rn). Model yacht hulls operate in an Rn range from $2x10^4$ to $3.5x10^6$, just the range where flow can be either laminar, turbulent, or transitional. This month Mr. Kirkman continues the lesson by exploring the consequences of operating a vehicle near a free surface (a hull atop the water).

MODEL SAILING YACHT HYDRODYNAMICS: PART II,
by Karl Kirkman

The effects noted as an object operates at or near a free surface are named Froude effects, after the brilliant early hydrodynamicist William Froude. His accomplishments in the field of fluid dynamics research form the basis for modern towing tank experiments. He developed the means for comparing the wave patterns of ships and their models by the method of corresponding speeds.

It should be mentioned that an object does not have to be running at a free surface to make waves. The wave-generating capability rapidly alternates (decreases) with distance from the surface. Imagine the wave train generated by a surface-running submarine and how it decreases and subsequently vanishes as the vehicle submerges.

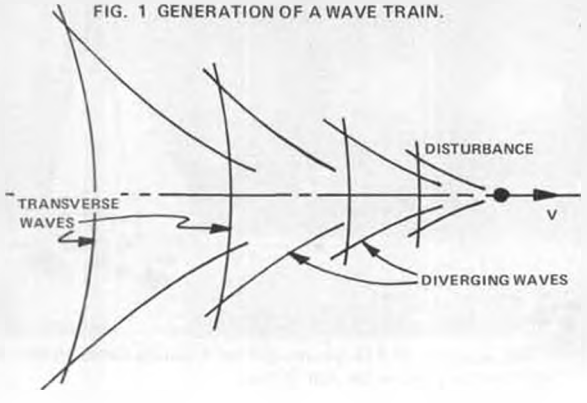
Wavemaking resistance is the integrated effect of the pressures acting against the body. As the body moves along the surface, flow distortions cause pressure fluctuations which appear as piles of water that we call waves. Some of the waves actually help the body along, but the net result of the whole pattern is drag. The energy necessary to counteract this drag is precisely the energy tied up in the wave system.

In the late 1800's, Lord Kelvin laid down the basic description of wave patterns (Fig. 1). He theorized that if a simple disturbance traveled at the surface, a pattern of waves would result, as shown in Figure 1. Subsequently, William Froude sketched the pattern of waves around a moving hull in a report published in 1877 (Fig. 2).

Although the waves seem to move with the hull, each water particle actually moves in a circular, vertical orbit as the wave passes. The energy stored in the wave train (originally stolen from the hull) moves along with the hull, with new energy being added by the hull and old energy being dissipated farther back in the wave train as molecular friction or viscosity. It should be pointed out that while a large wake with steep waves is indicative of a poorly designed hull, it is not the waves but the pressures they represent which do the damage. For real hulls, the total wave train is the sum of two wave systems, one generated by the bow and the other by the stern, as shown in Fig. 3.

As the speed of the hull increases, the pressures at work increase the wavemaking resistance of total hull drag at a rapid rate. Over a wide speed range this drag increase is approximately at the rate of velocity to the fourth power (V^4). For example, if drag is 1 lb. at 1 knot, it will be (1 lb.x2x2x2x2) 16 lbs. at 2 knots. As the speed increases, the bow and

FIG. 1 GENERATION OF A WAVE TRAIN.



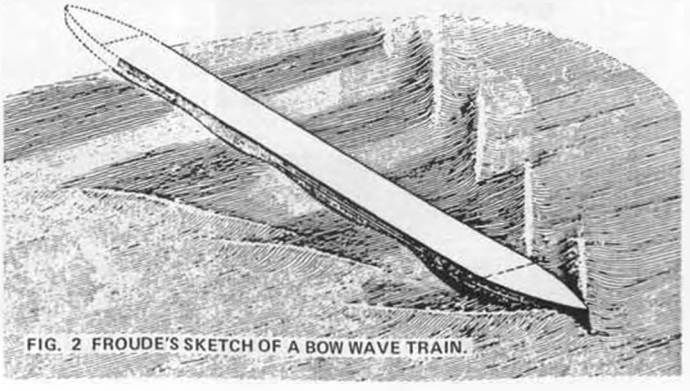


FIG. 2 FROUDE'S SKETCH OF A BOW WAVE TRAIN.

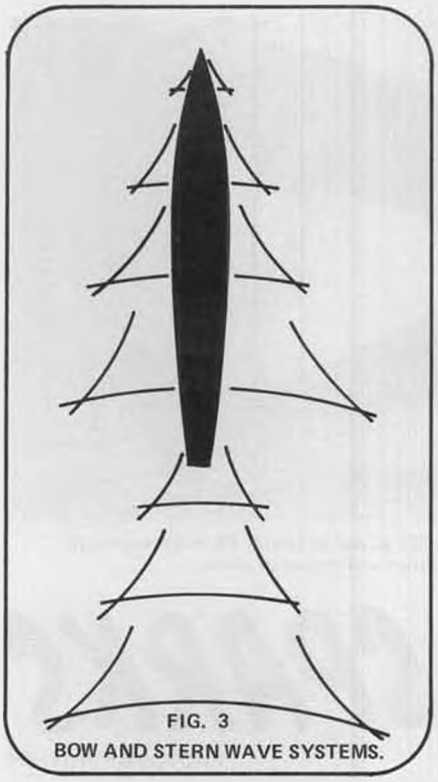


FIG. 3
BOW AND STERN WAVE SYSTEMS.

stern wave patterns intermix, resulting in alternate reinforcement or canceling out. Total resistance increases, but has superimposed on it smaller additions or diminutions of drag. These humps culminate in one final hill which sets the hull speed for a displacement (non-planing) hull. Fig. 4 shows a non-dimensional resistance coefficient versus speed for a typical 50/800 hull.

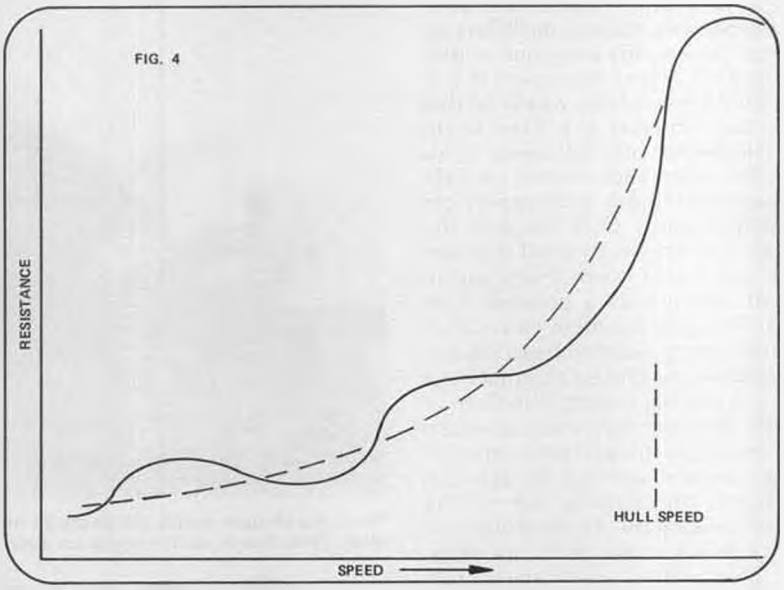
The large hump which sets hull speed occurs when the length of the waves in the wave train is nearly equal to the waterline length. To move faster, the hull must literally climb up its own bow wave, which requires a tremendous amount of energy. One usually sees this happen when a gust hits a flattish-bottomed model and it "planes away."

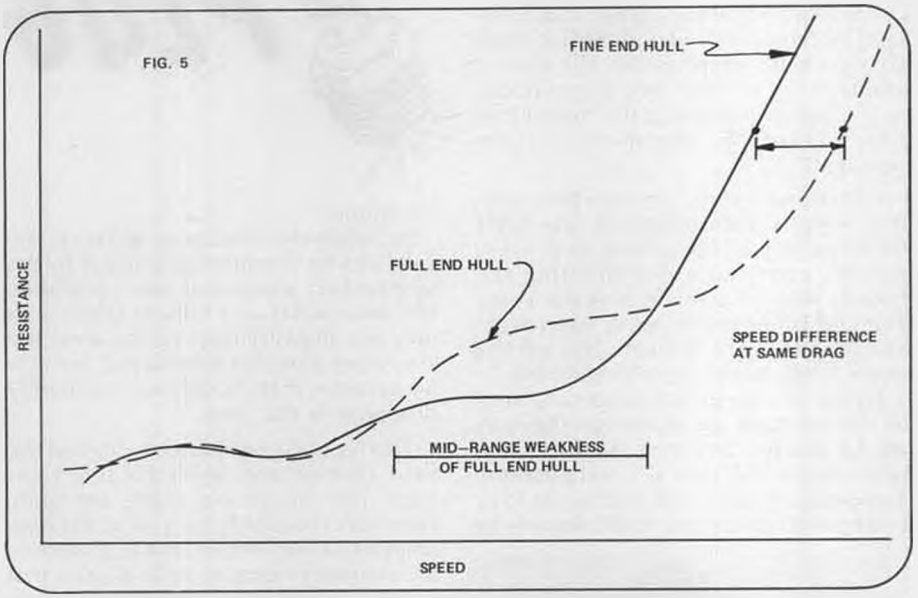
What might the designer do to raise the allowable hull speed of his model? First, one can strip weight out of the boat, reducing the intensity with which it disturbs the water surface and thereby reducing the wavemaking resistance. If the rules allow it, a length increase will help, since a faster moving wave train will be generated by the longer hull, raising the hull speed allowed. The practical limit to this approach is the increase in wetted surface which comes with the long hull, and an increase in skin friction.

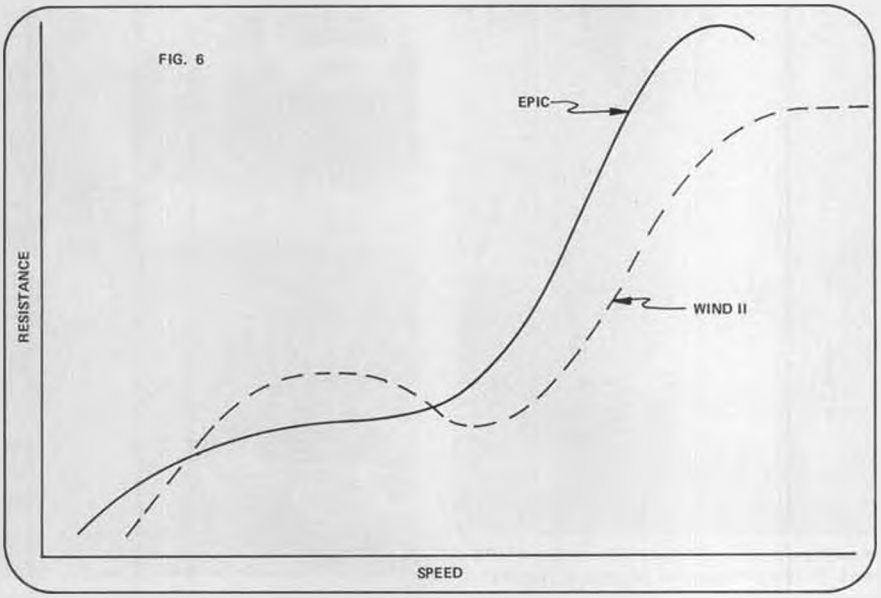
A second change would be to increase the fullness of the ends of the hull. Full-ended hulls have a potentially higher speed at the same resistance. The tradeoff is the acceptance of slightly more drag in the mid-range speeds, as shown in Figure 5. As mentioned before, yacht design is commonly a series of tradeoffs; you don't get something for nothing! The balancing of tradeoffs is one of the fascinating parts of the process.

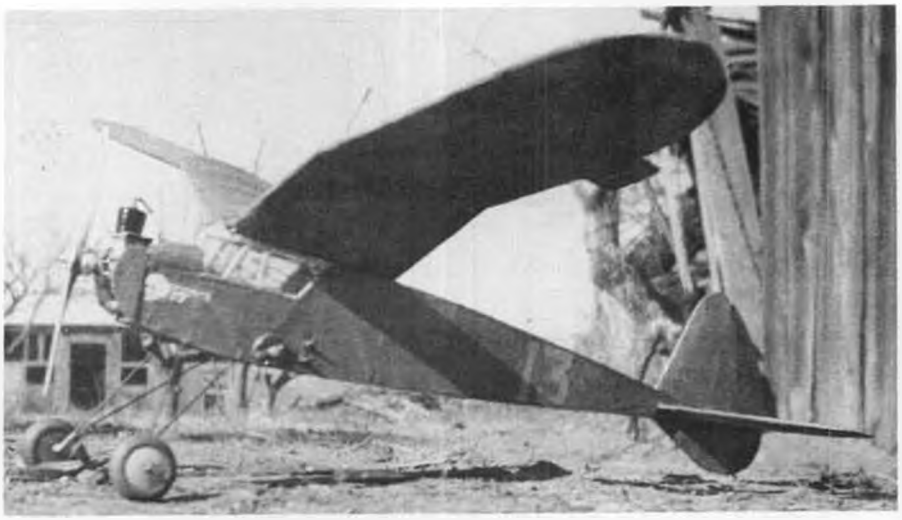
As part of the development of the

Continued on page 98









From Joe Morgan comes this photo of his Ohlsson .23 powered Spook 48, built way back when. Note Spook skull insignia on nose, cut from plan and doped in place.

PLUG SPARKS

PHOTOS BY AUTHOR

By JOHN POND

• There is a saying, coined and promoted by this writer about modelers, to the effect, "Eventually everyone comes to California." This is true even if it is only for the Memorial Day weekend that features the fabulous U.S. Free Flight Champs at the famous Taft flying field.

There has been a lot written on Taft, but an easterner simply can't appreciate the available space until he sees the flying site. The area is so good that one year the AMA sent Frank Ehling out to look over the site as a possible Nats location. The only problem with Taft is the rather remote location from Bakersfield (40 miles), the closest city that has a large amount of big motels. The town of Taft itself features only two fair-sized motels, and these fill up in no time.

Hence, anyone coming to Taft can always figure on camping out on the flying site. Despite the daytime dust and wind, the living under tents, awnings, etc., is pleasurable; particularly with friends to talk with. It's simply great from that standpoint.

Evenings are always great, characterized by campfires and night flying. Night flying really emphasizes the rocket climb of the modern free flight model, as the lights attached to the model look like rockets as the models zoom upwards.

Old Timer events are the best from this writer's standpoint. As the USFF Champs get older, more and more fellows come to enjoy meeting the friends they have made over the years. The Old Timer events never seem to get any larger participation, but on the other hand, never seem to diminish.

Flying, of course, was practically ideal in the morning air. Although thermals are far and few between, the flying and retrieving at that time is a real pleasure. Temperatures generally start out at 65 or better and rapidly rise to 90 degrees by noontime.

So, when the newcomer arrives at the Taft field, he is immediately struck by the tremendous amount of room available. The area is flat as a billiard table, with only one industry marring the area; the kitty-litter plant far downwind, but it is no surprise that models are constantly dropping in that area.

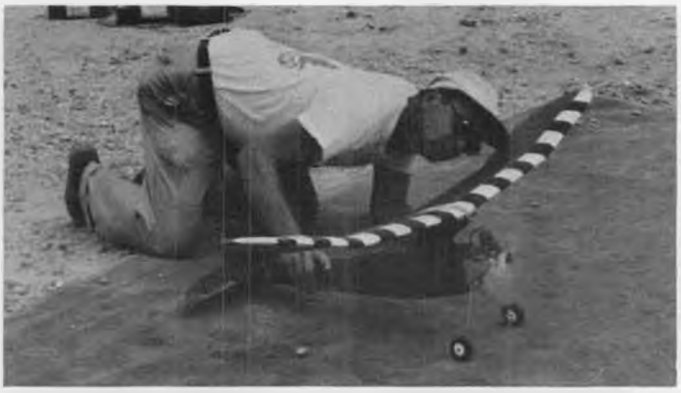
Thanks to Gene Spence, who had the field cleared and leveled a few years back, rise-off-ground flights are quite common. It was only because of the high amount of rain this year that promoted an unusually heavy growth of grass that R.O.G. flights were a trifle tricky. However, a good lawn mower did the trick in clearing off a takeoff area.

By the time the U.S. Champs take place, most all the grass has completely disappeared, leaving only a few weeds, a hard pan that will destroy any model, and a light covering of dust that gets picked up by the dust devils (called "trash movers" in California). These miniature cyclones have to be watched for carefully, as any model left on the ground unattended is fair game. More than one model has been cartwheeled for 100 yards, shedding parts as it rotates down the field.

Thermals are most surprising at Taft. It

Larry Hindergard, 1979 winner of the AMPS Bowl. This most unusual perpetual trophy must be prominently displayed as a condition of winning. . . and not in a closet, either!

Here's a rare one. Joe Konefes still has his follow-on design to his famous Buzzard Bombshell, and is said to fly even better than the Buzzard. Super Cyke engine. Bob Larsh photo.



Jim Robinson sets the timer before releasing his Ohlsson .23 powered Playboy Jr. for an official in B Pylon at the '78 SAM Champs.

Al Lidberg built this CO_2 Powerhouse for his 11-year-old son, Paul. Model really flies up a storm.

is the columnist's contention that thermal activity is much stronger in the east because of the huge cumulus clouds that seem to be present most of the time. In Taft the skies are blue, and sometimes there is a haze that defies the best eyesight to see a model for any great length of time.

Well, we've talked about some of the drawbacks, let's get on with the plusses. Where else could you stage six to ten events a day, all having separate centers? Under the USFF Champs system, each club runs at least one event each day . . . sort of like a series of small contests put together under one roof. Most of the timing is done by the contestants themselves, as is all retrieving. A motorbike is a must here!

Weather is always a problem, as it gets progressively hotter as the day wears on. For that reason, Sal Taibi makes a practice of flying as early as possible. This system has paid off more than once, as attested to by his contest record.

The layout of the field is such that all the contest recording tents are on the north side, generally surrounded by many modeler's cars, trailers, RV vehicles, house trailers, and tents. This is the hub of the action.

On the right-hand side (looking south) most of the modern free flight boys set up camp. On the east side of things is the area reserved for Old Timer activity. The line of cars here extends almost the full length of the field. This is where we end our description of the Taft field and start talking about the Old Timer events held on Saturday and Sunday of the three-day Memorial Day meet.

Old Timers like to start early, hence it was no surprise to this writer when he was informed he was too late to fly his twin pusher in the Mulvihill event. For some reason (from the purist standpoint) it was decided to run this meet between 6:00 and 6:30 in the morning. Getting up at 5:00 a.m. seems like an obscene hour to us!

The running of the Old Timer events is generally divided between the two large O.T. free flight clubs in California, the SCIFS (Southern California Ignition Fliers) and the SCAMPS (Southern California Antique Model Plane Society). This year was no different, with seemingly the same faces behind the entry table. Some fellows fly only, and then there are those who truly dedicate themselves to advancing the status of model flying.

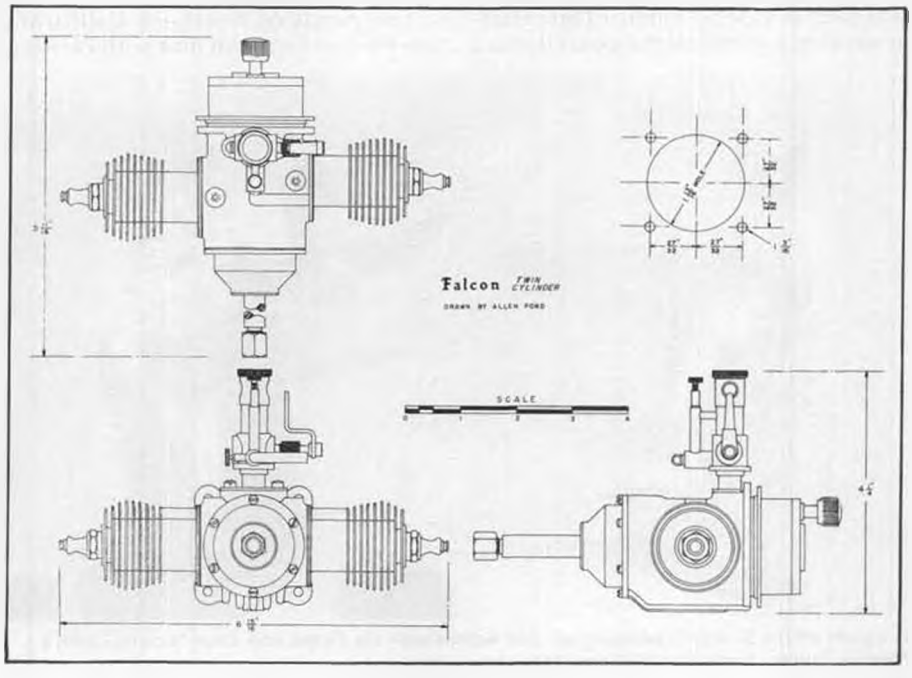
Having arrived a bit late, the writer immediately got himself involved in some friendly bartering, particularly in view of the fact he had missed last year's bash in favor of the West Coast O.T. R/C SAM Champs staged at the same time last year at Fresno.

This year, the West Coast O.T. R/C SAM Champs fell by the wayside, a victim of the gas crunch. When Otto Bernhardt, the Contest Director, found he had only eight firm reservations for lodgings and dinners guaranteed for twenty-five people, Otto could only see a huge loss in money. Reluctantly, he called all interested SAM Chapters and had the sad word spread far and wide.

This didn't hurt attendance at the O.T. F/F events one bit, but surprisingly did not add appreciably to the overall entry list. Truly a shame, as only 60 miles separate the two sites and many a modeler had figured on dividing his time between the two meets.

The fun got started real quick, with Bud McNorgan launching his Anderson Pylon and immediately taking off for the west. However, the model had other ideas and drifted to the east. McNorgan

Bob Dittmer and wife with Bob's Megow Ranger, built from P&W kit. Won 1st in A Pylon at '79 U.S. F/F Champs at Taft.



How to chase models . . . do it together! Bruce and Leslie Norman returning from a dual retrieval on their bike at '79 F/F Champs.

Prolific Bud McNorgan of the SCAMPS club with his Anderson Pylon, with Forster .99 (what else?). Bud sure does beautiful work.

Tom Heiser, also of the SCAMPS, produces nicely decorated models, and his Brooklyn Dodger is no exception. Powered by an O.S. Max ignition conversion by 77 Products.

If you gotta go all the way out to the hot desert to fly, you might as well enjoy yourself, right? Bill Cohen shows how.

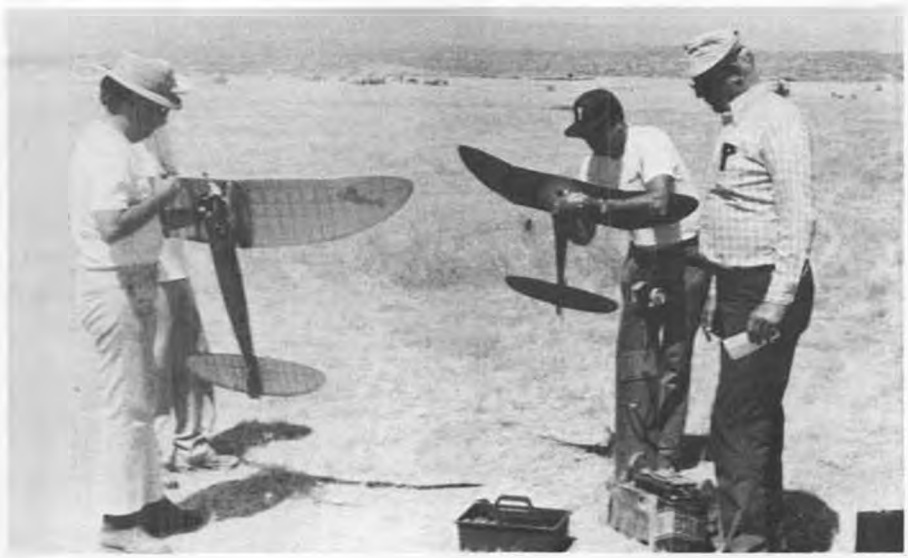
was gone so long that Bill Cohen almost shagged the model in his wheelchair. McNorgan finally came back with the normal exclamation, "Anyone see where my model went?" Pandemonium followed when Brad Levine appeared with Bud's model and inquired innocently where Bud had been.

Interestingly enough, there were four Anderson Pylon models on the field, all powered with Forster 99 engines. The most surprising part about the models was their decidedly familiar flight characteristics, a zoom off the ground into a steep climb, losing speed to gradually fall into a right-hand spiral turn that allowed the model to slowly gain altitude. Couldn't complain about the glide, as most of them did place. In talks later with Sal Taibi, the winner of 30 Second Antique, he offered the opinion the Anderson Pylon was greatly overrated by those opposing its use. Sal felt a good cabin job such as his Powerhouse or Heit's Scram could outperform it. Take it from the old master!

The Amps of Northern California were out in force this time with Persson, Silva, Emmert, Gregory, and a flock of others to challenge the Southern California boys. Fred won the Rubber event using a Toft Stout Cabin design that this writer is quite partial to. The only difference was that his flew like it should!

No word should go unsaid about the "dynamic duo," Bruce and Leslie Norman, who entered just about every event. These two certainly make their trip from Ft. Worth pay off in trophies, trophies, and more trophies. Needless to ask who won the Sweepstakes Trophy.

We could ramble on indefinitely about the simply great time everyone had, but we have to save some room to run off the winners. After all, you do like to see your name in print, don't you?



A couple of the SCAMPS warming up. Jim Adams with his Zipper and Leon Nadolski with a Megow Ranger. Timer Bob Dittmer stands by.

CLASS A CABIN
1) Leon Nadolski 11:01
2) Bruce Norman 10:17
3) Wade Wiley 6:32

CLASS C CABIN
1) Jim Ogg 13:22
2) Bruce Norman 8:17
3) Abe Gallas 8:15

CLASS B CABIN
1) Bob Dittmer 11:34
2) Leslie Norman 10:24
3) Bruce Norman 7:57

.020 REPLICA
1) Jack Jella 9:00
2) Al Heinrich 8:15
3) Abe Gallas 7:58
30 SECOND ANTIQUE
1) Sal Taibi 11:46
2) Wade Wiley 11:30
3) Bruce Norman 11:05
CLASS B PYLON
1) Wade Wiley 15:00
2) Bruce Norman 13:16
3) Steve Beebe 12:14
RUBBER
1) Fred Emmert 14:39
2) Glen Schneider 10:54
3) Earl Hoffman 10:32
CLASS A PYLON
1) Bob Dittmer 14:34
2) Cliff Silva 14:00
3) Rudy Calvo 11:39
CLASS C PYLON
1) Bruce Norman 15:00
2) Steve Beebe 14:01
3) Leon Nadolski 12:09

David Deadman showed up at the Old Warden Rallye in England to fly in the O.T. Control Line event. Model is a Mardix Challenger with a McCoy .49.

ENGINE OF THE MONTH

This month's subject, the Fergusson Twin (advertised as the "Falcon"), derives its name from the designer and manufacturer, John T. Fergusson. What may surprise most modelers is that the John T. Fergusson Co. was connected with the manufacture of aircraft for the United States Army Air Corps. The main product of this company was sub-components such as struts, landing gears, guy wires, fittings, and other small gear.

For twenty years, this company was associated with full-sized aircraft and earned the title of "Air Corps Inspector in Charge" of no less than five leading aircraft firms.

About 1926, Fergusson became interested in model airplanes as a hobby. Model flying in those days called for extremely light construction, something Fergusson found not to his liking, as models broke rather easily. In place of balsa John tried substituting spruce, mahogany and the like. Of course, this made the model quite heavy, requiring more power. To decrease the wing loading, bigger models were tried until the size was beyond the capability of rubber.

About this time, Bill Brown came out with his sensational Brown Jr. engine that became the model for all others to follow. Fergusson, who was by now convinced that gas power was the answer after the large rubber model fiasco, was not quite sure the single-cylinder engine was the answer.

Fergusson felt that, from an engineering standpoint, two cylinders were more reliable than one, as there would always be power to carry the propeller over despite a misfire, relying on the prop's weight to carry it through another revolution.

According to the brochure issued by the Fergusson Company, three years were spent on a model engine design. As always, the bugaboo of weight constantly haunted him when considering an engine for models of four or five foot wingspan. With the advent of the large models (such as the KG, Miss Philly, etc.) as dictated by the fuel allotment rules, Fergusson suddenly found the answer with his twin-cylinder engine design. Here was an engine suitable for a ten-foot model that would run with less vibration, deliver more power, and in general be much more reliable than a single-cylinder engine.

Manufactured at first in small lots, the price of production was prohibitive for the average modeler. (Times were tough in 1932!) It was then that Fergusson drew on the talents and advice of two engineers and formed a company to produce engines.

Three engines were designed and put on the market: the "Eagle" (single cylinder), Falcon (twin cylinder), and the Condor (four cylinder). All engines were

Continued on page 110

Still plugging the Old Timers! Former SAM prez Joe Beshar at the WRAM show.

Another 15-foot Dallaire Sportster, this one by Ron Keil, a Novato CHP officer. A new way to clock speeders?

ACHOOO! A helluva time to sneeze with a hot front rotor Ohlsson .60 snarling away. Dave Brodsky's Playboy. Gesundheit, Dave.

FAMOUS R/C AIRCRAFT.....

NO. 4

LANZO'S 1937 R/C STICK

By BILL NORTHROP and CHET LANZO . . . Build the first winner of the Nationals R/C event, 1937. It can still win contests today!

• Chet Lanzo's airplane designs from the Golden Era of modeling still keep his name in the forefront of modern model aviation. The Lanzo Puss Moth rubber ship (**MB**, Jan. '72), Lanzo Record Breaker gas model (**MB**, July '73), and Lanzo Stick (large competition rubber ship, Nov. '74 **MB**) are some of our best continually selling plans.

It is only natural, therefore, that his 1937 Nats R/C winning model should be one of the most famous of our Famous R/C Aircraft series. Not only that, it just might be about the only thing to come along that can surpass the current majority winner of today's R/C Texaco events . . . you guessed it, the Lanzo Record Breaker!

Our favorite story about Lanzo and his '37 R/C "Stick" model (it's really not a stick fuselage, but is built up in normal fashion . . . however, in the air, it looks like . . . well . . . damn it . . . a STICK!) goes back to one of the famous Indian Town Gap, Pennsylvania (near Harrisburg) get-togethers of the late '50s and early '60s. Superregen radios were still in use (Superhet radios, with crystal controlled, selective receivers were not yet available) so only one plane could go up at a time on 27, one or maybe two on 6-meters, and one on 465. There was lots of watchin' and waitin', and not much flyin', if a meet was well attended.

Very few successful takeoffs were seen in those days. Taildraggers ground looped and trike gears might make it on smooth flat runways. Landing gears were for just that . . . landing. Hand launch was the order of the day. Above all, an awkward, gangly old-timer, with wheels way out ahead of the prop, was a total no-no. Chet's R/C Stick didn't know this.

On one flight, the engine seemed to richen in the air, and as power sagged, Chet had to make a power-on landing (mostly we flew until out of gas and dead-sticked . . . no throttle control). Of course, with rudder-only, the landing was at least 2 or 3 hundred yards away. The plane rolled to a stop, engine still ticking. Chet dropped the keying cable to the heavy ground-based transmitter, shut it off, and hiked off at a fast pace to get the plane.

Halfway to the model, the engine coughed two or three times, cleared itself, and wound up full bore. Pretty soon the model was rolling along in the most beautiful 10-point takeoff you've ever seen. In true Mack Sennet fashion, Chet wheeled around and ran at high speed for the transmitter, switched it on, and resumed flying until out of fuel. It was the star incident of that Labor Day Weekend, and all the armchair experts on landing gear requirements for decent taildragger takeoffs were silenced forever!

We called Chet and asked for some further background on the '37 R/C Stick, and now give you his response. Incidentally, the original construction article appeared in the Dec. 1937 Air Trails.

"The Lanzo R/C Stick, 1937 Nats R/C first place winner was one of a series of R/C models built during the early years (R/C wise) of 1933 to 1937. The first radio controlled model, called R/C One, was built in 1933 and 1934. This was done when I was 20 years old. The model had a 7-foot span and was powered with a Brown Jr. ignition engine. The plane was flown R/C and free flight during 1934 and 1935 with homemade equipment and parts found in various places to keep down costs.

"The Lanzo 1937 R/C Stick was built in 1935 and 1936 and was flown in the fall of 1936 and spring of 1937. The 1937 R/C Stick was flown with R/C and also as a free flight with and without the radio equipment. As a free flight, the model won first place in a free flight gas event sponsored by the Cleveland Press in 1937, with a flight of 30 minutes O.O.S.

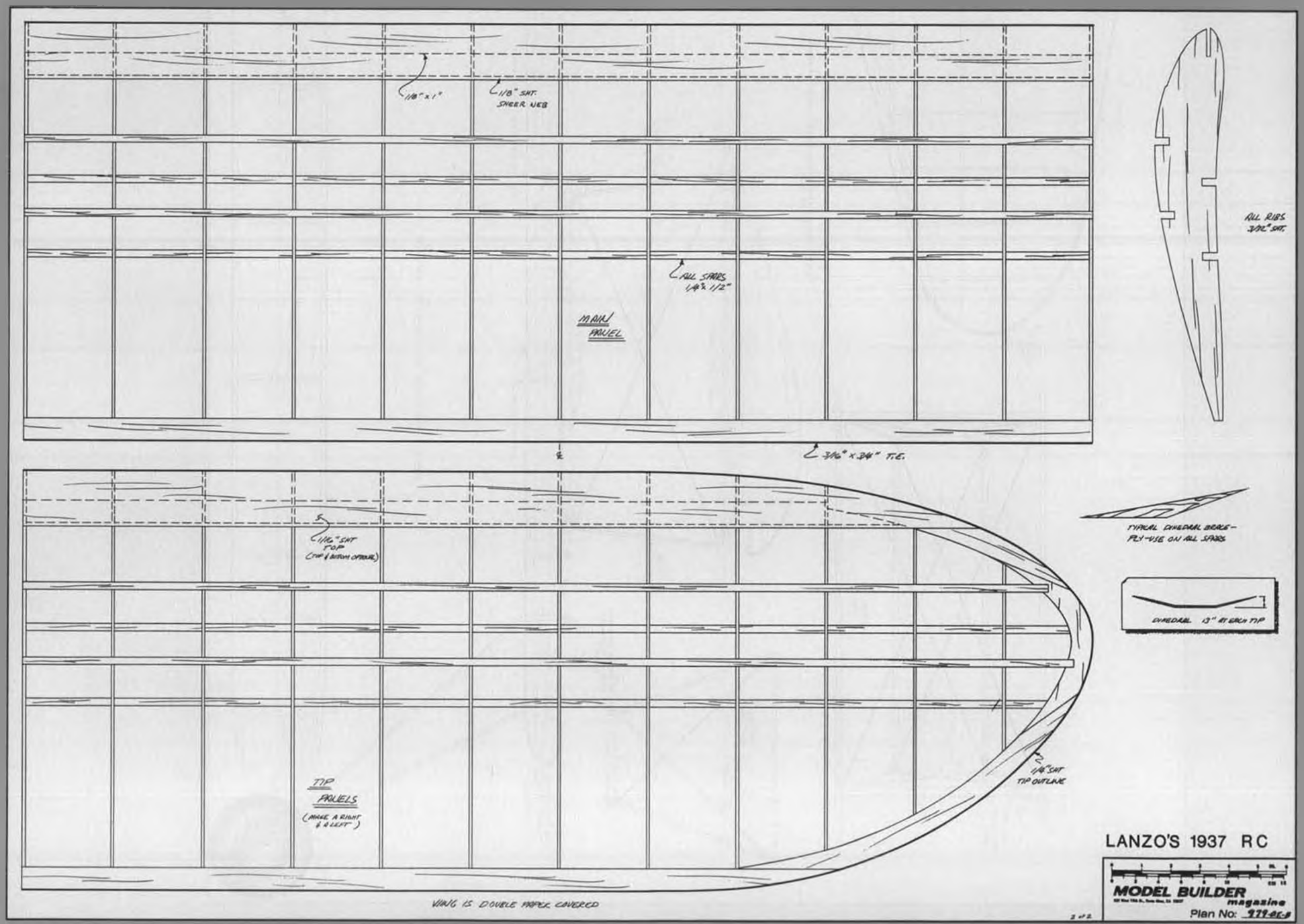
"The photograph shown here is the free flight version of the model, complete with D.T. and engine cutoff. This model has excellent glide characteristics, almost as good as present-day gliders.

"The original 1937 Stick Nats winner was powered and flown with a Baby Cyclone engine; but Brown Jr. and Ohlsson .60 engines were also used up front. The Baby Cyclone was about the right amount of power for the type of radio equipment (home built, home designed) that I used. This was an unexplored area at that time.

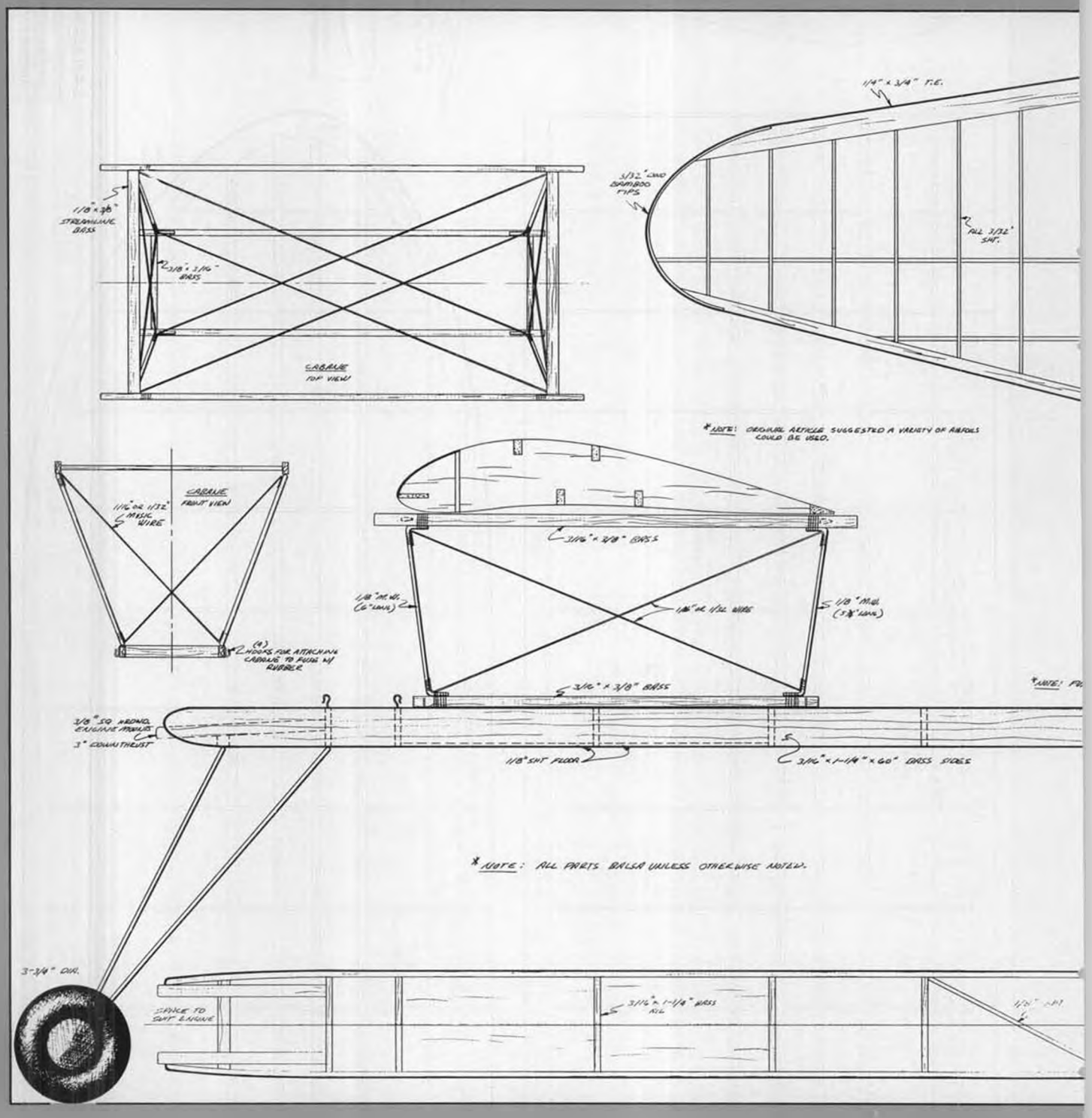
"The 1937 Nats winner was flown during the fall of 1937 and at several contests during 1938. At the end of the 1938 season, the model and the R/C equipment was loaned out for display in a radio shop on the east side of Cleveland, Ohio. The shop folded (Depression years) and disappeared, along with my model and the R/C equipment. I was not able to find the owner of the shop or my model again. What a disaster!

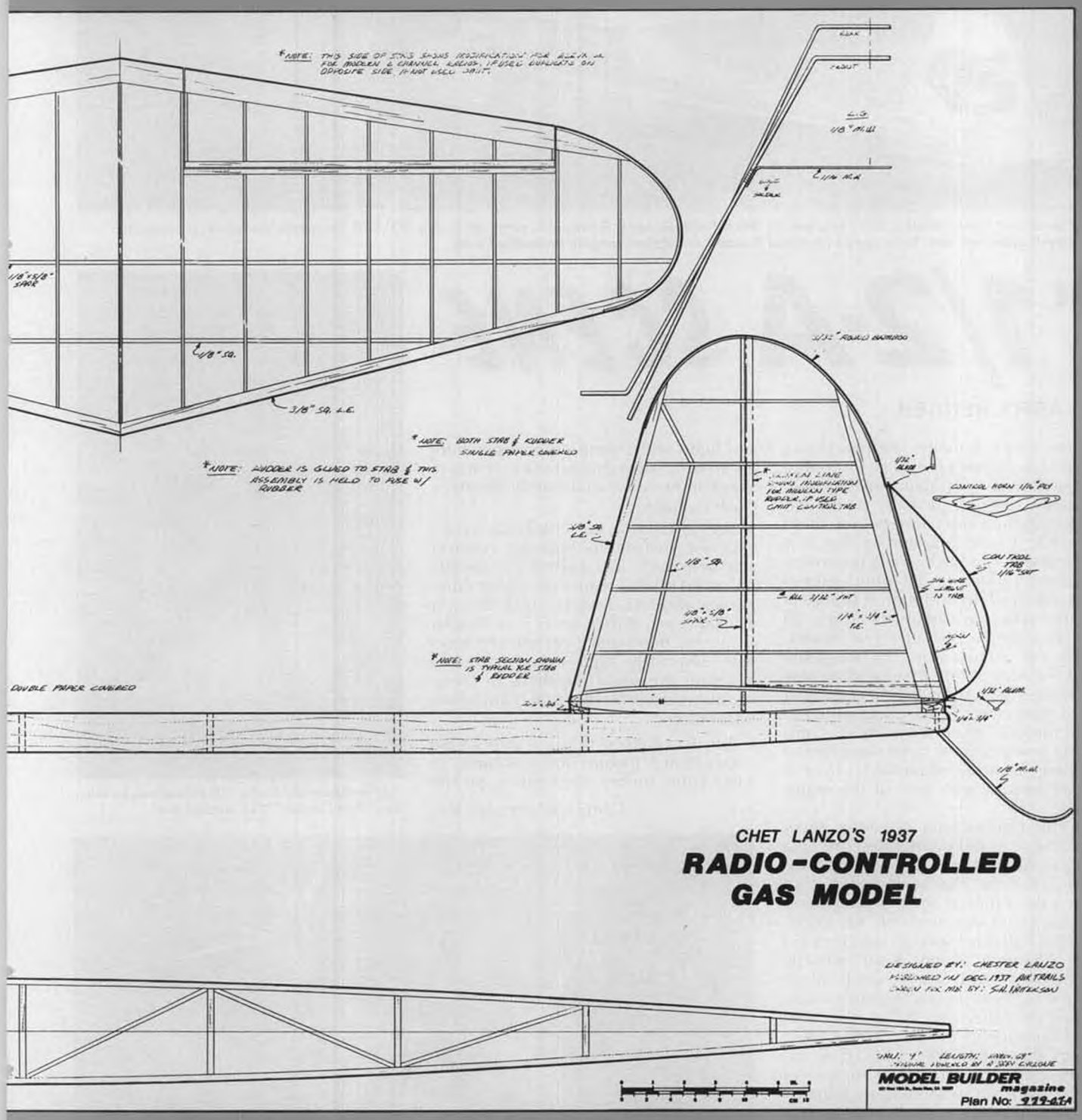
"I have built 3 versions of the original R/C Stick since 1937 and have won with them at several contests, both R/C and free flight. One of my most recent wins was a 5th place at the 1978 SAM Champs Texaco event.

"The R/C version is a slow flying, very forgiving airplane that responds very well to the small rudder tab used for control. The 1937 Stick (R/C) used the same type of dihedral and birdcage wing mount as used on the Record Breaker."•



FULL SIZE PLANS AVAILABLE — SEE PAGE 116


1/4" x 3/4" T.E.
1/16" x 3/8" BASS
CARRIAGE TOP VIEW
3/16" x 3/8" BASS
1/8" SQ. HARDWD. ENGINE MOUNTS
3" DOWNTHRUST
1/8" SHT FLOOR
3/16" x 1-1/4" x 60" BASS SIDES
* NOTE: ALL PARTS BALSA UNLESS OTHERWISE NOTED.
3-3/4" DIA.
FENCE TO SUIT ENGINE
3/16" x 1-1/4" BASS



FULL SIZE PLANS AVAILABLE – SEE PAGE 116

David Unruh, of Kenai, Alaska, did a nice job on this 42-inch Buzzard Bombshell, powered with a TD .049. Dave says the model is aerobatic and doesn't glide half bad. **Note copy of original Buzzard Bombshell insignia on vertical stab.**

The 1/2-A SCENE

By LARRY RENGER

• Show time! Actually, the two shows that hit Los Angeles each year last only a total of four days of public showing time. Somehow, though, it seems as though one has spent a much longer time there than that. I have a suspicion that it is because one can pack so many conversations with different old friends into so short a period. In addition, it is a great time to make new friends. On top of all that, you get to see all those models which are pictured in the magazine advertisements. You can see if some new accessories which have just come out will really do what you need. Last but not least, there is often a variety of completely new products to be seen for the first time, as most companies try to time market release with one of the major shows.

At the International Modeler Show early this year, Bill Cannon told me that he had a new servo coming out that was really small. At the Model and Craft Show I got a look at the mechanics and electronics for this new unit. My goodness! Bill had three servos taped on a 3x5 card: a Bantam Midget, Kraft's KPS-18, and his own new servo. No doubt about it, the new servo was significantly smaller than the other two. Bill also showed the difference in the size of the electronics that go in the servo; they are much smaller than the ones he uses in the Dunham Micro Servo units. I understand that the servos, while intended for small models, will fly up to a .15 powered model safely. I'll publish more information on these servos as it becomes available. I wonder if there will be a similarly shrunk receiver to go with it?

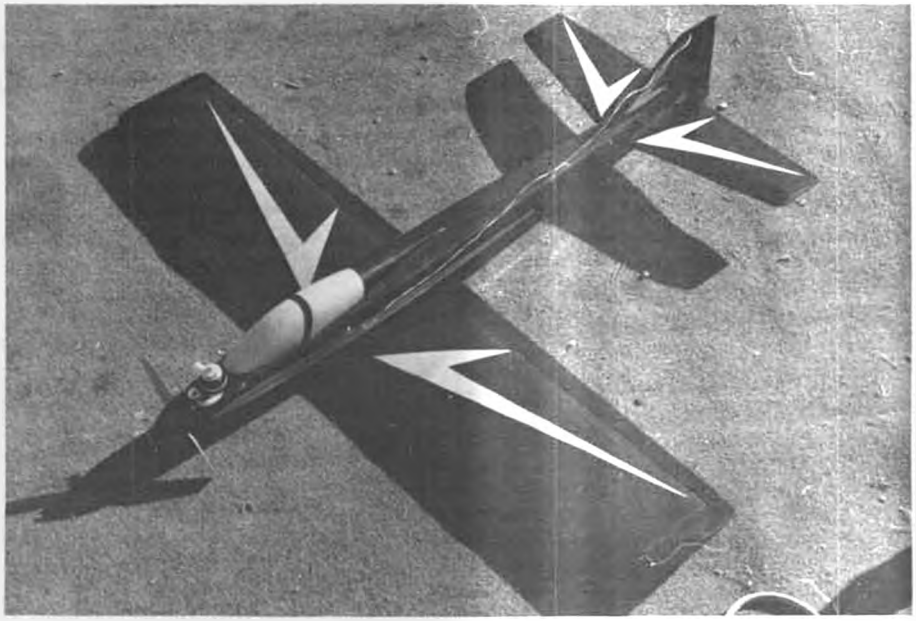
Also in the radio line, there is a new receiver that is well worth your consideration. Bob Novak (designer of the RS radio) has added a new receiver to his growing line of products from Novak Electronics. The new unit is very small and light, and among other super-nifty electronic design features, it has a shock-mounted crystal to help minimize crash damage.

Sneaky lad that he is, Bob has used a superior feature to improve receiver performance. It's called a "double balanced mixer" front end. Other companies' receiver designs which are now available use either an FET or Bipolar front end. Bob's unit gives you a receiver with unusually high sensitivity while avoiding the usual problems of cross-modulation interference from other transmitters.

Bob has packed the unit into a case 2.45x1.08x0.7 inches, for a volume of 1.852 cubic inches. Depending on the

Continued on page 93

Addie Naccarato at the '79 IMS show, holding her "Fan Dancer" 1/2A ducted fan.



Bob Parks produced this clipped-wing version of the already small Baby Birdie. Also added a **full-flying stab. Alas, it exists no longer. . . see text** for sad story.

1 TO 1 SCALE

By BOB UNDERWOOD

• "The Contest Director will make every reasonable effort to assure himself that each flyer has completely constructed the model(s) he uses in competition, including the covering where used, with 'construct' to be interpreted as the action required to complete a model starting with no more prefabrication than the average kit. Models which are completely prefabricated and require only a few minutes of unskilled effort for their completion shall be excluded from competition." AMA Official Model Aircraft Regulations 1978-79.

Have you ever studied that paragraph before? A sentence preceding the material quoted relates the builder of the model rule. I wonder how I would interpret the above paragraph if I were the CD in a contest and a model showed up that seemed to violate the rule?

Consider a few of the key phrases (or "optional words"), if you will: ". . .no more prefabrication than the *average kit.*" Could we safely say that over the years the "average kit" has been greatly modified in configuration? One need not go back very far to find even the fancy ones containing blocks of wood to convert by sharpened knife into wheel pants. Then they were bandsawed to shape; next they were fiberglass halves, and next? Today the "average kit" contains a great variety of molded, preformed pieces and hardware that might have at one time taken ingenuity, skill, and time to create.

What is an "average kit" anyway? Are fiberglass fuselages, foam wings, etc. average? Would all-foam models which require no shaping be considered an "average kit"?

The next set of questionable words would seem to be "a few minutes of unskilled effort." Oh me oh my! There would seem to be a world of difference between an "average kit" and "a few minutes of unskilled effort." Perhaps my head is in the sand, but I haven't found *anything* in the scale world that could compete after "a few minutes of unskilled effort." That is, of course, unless I miss the true meaning of "a few minutes" or "unskilled effort." I can complete an AMA Cub (Delta Dart) in a "few minutes" but I haven't found the three-view of the full-scale ship that would let me compete with one so far.

One of these days we will have to address ourselves to this problem, and it has to be nothing but a big can of worms.

Lenore Gotts poses with her husband Jerry's T-28, built from a Platt kit. Photo taken by Fitz, of the DC/RC club.

Over-the-pilot's-shoulder view of the cockpit in Jerry's T-28 shows very impressive workmanship. Model is powered by a Webra .61, has Kraft radio and Rhom retracts. Fitz photo.

My personal opinion has been and continues to be that the builder of the model rule and some concern about how much building is done are good rules. I realize that some are strongly opposed to those concepts. I have heard the statement that "golfers don't make their own clubs," and perhaps there is some justification in it if the event does not include consideration of the model itself in the judging.

Pattern is, of course, an excellent example of an event in which the appearance of the model does not figure in the outcome of the event. At least, that's what the rules seem to state. After all, it's the fella who does the best set of maneuvers who wins, not the one who is the best craftsman. But you know, you might want to think about that for a minute because the craftsmanship of that model might well play an important role in helping to determine the winner.

Scale, as I view it, is an event designed to produce a flying miniaturized version of a full-scale aircraft. In order to be competitive, it must be nicely built, wisely chosen and documented, and flown well. All of these aspects are considered in the ultimate outcome of the event. To allow someone to contract the best builder in the world to construct it and the best flier in the world to fly it would soon reduce competition to the level of the "go-cart syndrome." Do you remember how everyone had a pack of fun lumping together an old lawnmower engine and four wheels and racing around parking lots at 20 mph? Then someone figures that "thar was gold in them thar hills," and within two or three years the whole thing collapsed in a cloud of highly-tuned money machines.

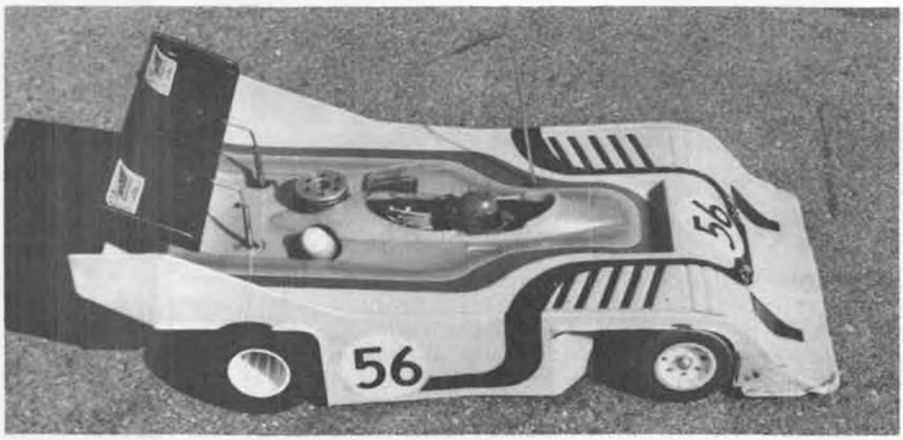
Let me close with one thing that I find interesting and perhaps simply proves me wrong altogether. In pylon, the models are judged for workmanship, fidelity, and appearance prior to competition to determine order of takeoff. It would seem to me that a fella would want to get off first, since it's a race. If he builds his own models, doesn't anybody object to the fact that he might be last off the line because the other fella pays a super builder? Or doesn't anybody build their own?

Ah well, enough agitation for this month. In a few short paragraphs I've angered the supporters of team scale entries, pylon fliers, manufacturers of very prefabricated models, and cousin Joe who thinks model airplanes are childish anyway.

CRAYONS, STRAWS, AND STUFF

The first contest of the year in this area

Continued on page 95



Top qualifier at opening SoCal series race, held in San Diego, was Jack Barton's quick Titan car. Jack was 3rd in the final standings.

R/C AUTO NEWS

By CHUCK HALLUM

PHOTOS BY AUTHOR AND MIKE PINO

• The 1979 racing season has started here in Southern California. The first So. Cal. series race was held in San Diego on April 22. As you can guess, lots of racers had some new cars and improved components. There were several differentials in gear drive cars Saturday as well as in the belt drive cars. But by Sunday all but one of the gear drive cars went back to a straight axle as the bite came up.

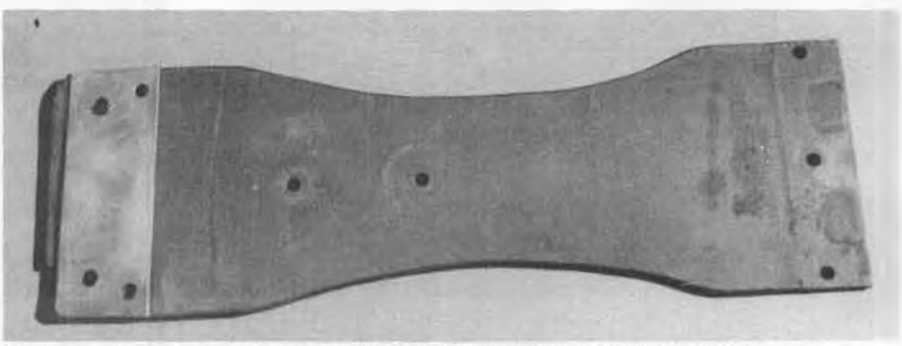
The Southern California Series format has all official racing on Sunday, but most of the serious racers practice all day Saturday. There is lots of thrashing at the track Saturday and back at the motel that night. On Saturday it looked like the guys to beat were Curtis Husting and Bill Jianas. Bill Watson was going very strong and Bob Titterington looked good while he was on the track but was actually having all sorts of radio problems. Rich Lee and Butch Kroells were in pain with their differentials and engines screeching on practically every corner and not going much of anyplace. Both Butch and Rich were concerned about blowing their engines during one of those unloaded inside wheel lift maneuvers.

Besides the differentials in gear drive cars, the only other thing notable was that Rich Lee started something with his "T" bar support (radio tray). Most Associated team drivers had converted their cars to some type of "T" bar arrangement. Actually, what it appears to do is stiffen the car chassis vertically so that it doesn't flex and cause bounce. Lots of people used stiffeners on older aluminum chassis. In fact, Bill Watson used a stiffener from an old Magnum car . . . and it really helped. I've seen the same general thing on Delta cars. Glass chassis need stiffening, but the "T" bar also probably provides some roll stiffness which lower height stiffeners may not provide.

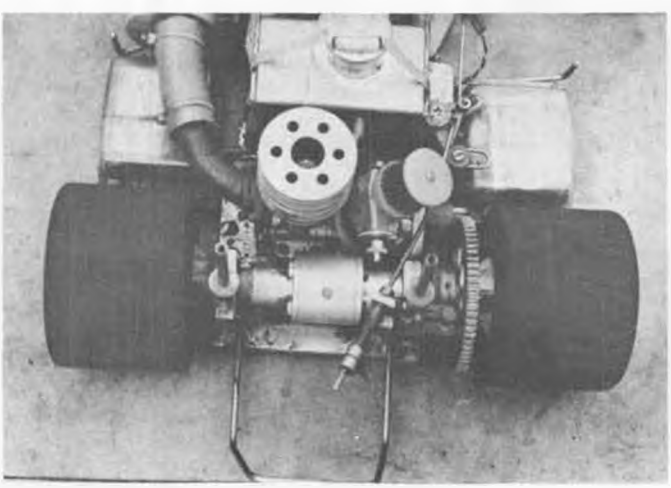
Bill Steele had a graphite-epoxy chassis plate at the meet, but it wasn't in his car. He said it was stiff, strong, and worked well in the car. But it looked brittle and was chipped. Even though graphite-epoxy is about three times as strong as regular glass-epoxy, the graphite has low impact resistance and is brittle. So, even though it works well, more work proably has to be done to make it usable. Also what will the cost be?

As you can guess, the traction was good. There seemed to be eight to as many as twelve or thirteen cars going all the time. With all the comp otion, most people didn't notice that I had a prototype HRE differential in my car. It is quite different, with adjustable limited slip. Since it was a brand new car with a glass chassis, I was sorting out things and switching tires. by the end of the day the car was going quite respectably timewise, but still had a tendency to push a little more than desirable in the corners. The new engine was breaking-in nice but even when leaned out the other cars with the pumper carbs were just leaving my non-pumper down the straight. Saturday night I inspected the differential, decided to leave it in for Sunday, made some changes to the front end, and inspected my supply of front tires.

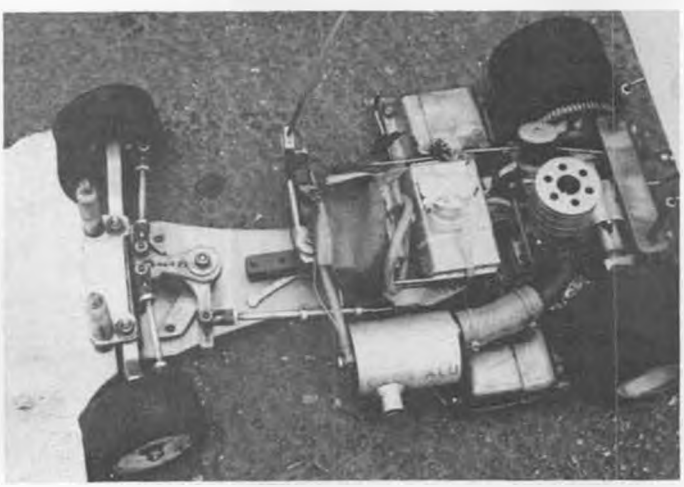
Sunday morning the weather was terrific and the sun was well up when I got to the track. Lots of racers were



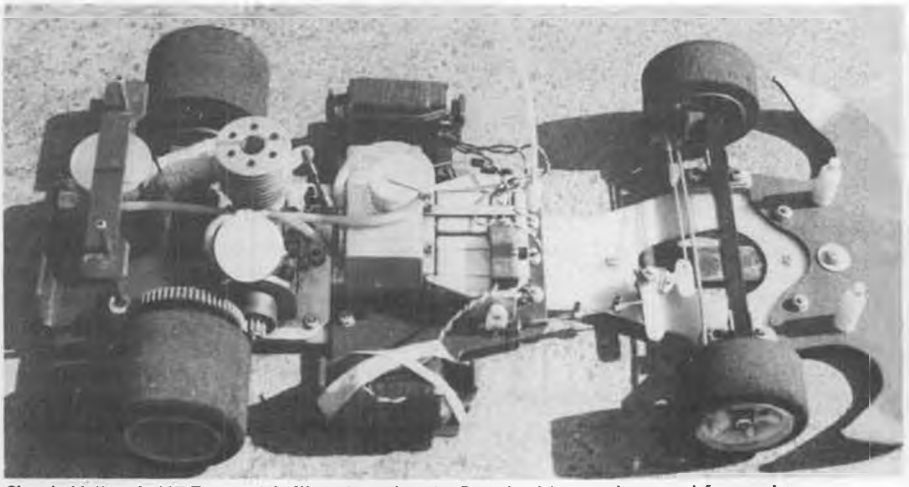
An experimental graphite-epoxy chassis by Bill Steele. Saves weight but is brittle.



The differential in Rich Lee's car. Rich took the differential out on second day of race because traction was so good.



Rich Lee, "A" main winner, started a trend with a T-bar chassis brace made of Delrin.



Chuck Hallum's HRE car with fiberglass chassis. Standard layout is moved forward to compensate for the weight of the muffler.

practicing but my frequency clip was not on the board, so I set up, checked in and looked around. Chuck Phelps was racing, you couldn't miss his engine because it sounded super strong and his car was going good, too. Pretty soon my clip was on the board and I got out for some practice. The car turned much better, but there was little hop. So I switched to a harder rear tire compound . . . a set of tires that had been sitting on my oval car since last year's Nats.

After a driver's meeting, a round of five-minute practice sessions for the board was started. Since I hadn't run since the Nats, they put me in the third heat from the end, but I was up pretty quickly. The tires were pretty dry from sitting out for so long and the rear end was pretty loose until almost the end of the practice session. Then the rear end stuck better and the car worked well and ran away from the rest of the cars in my heat.

All the hot dogs were in the next two heats. They all looked fast. I don't know about you, but whenever I watch good drivers they look so fast that I think that all I'll see is their dust. Bill Jianas looks deceptively slow and deliberate going through the semi S-switchback just after the start-finish line, but he gets through there faster than anybody. None of this blip-blip-blip stuff on the throttle, just smooth throttle application of the right amount. Rich Lee looked much faster today without his differential, getting good traction. Jack Barton was going good with his Titan car, as was Dana Smeltzer with his Thorp car. Didn't see these last two on Saturday.

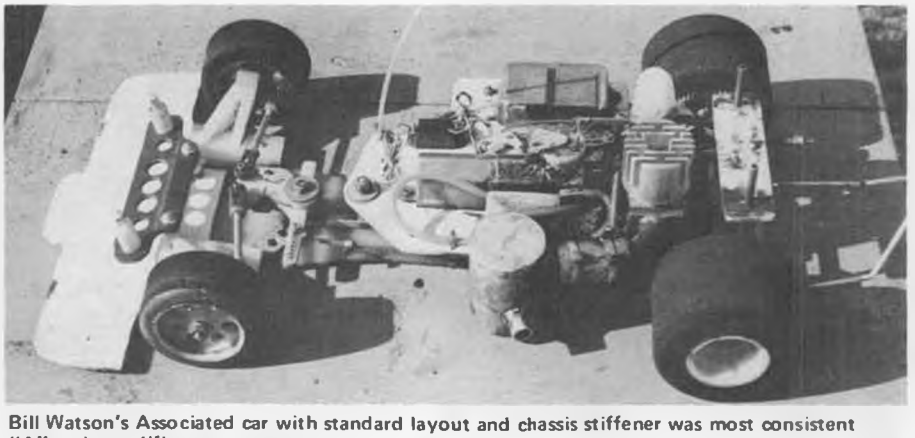
After the practice it was right into the qualifying heat races. Everybody was amazed when Jack Barton became top qualifier with a super-quick drive in his first qualifying heat. Bill Watson was really driving well, and was the only driver with both qualifying times good enough for the "A" main. I won both of my qualifying heats, getting sixth qualifying position.

The limited slip differential was working quite well. Only on very hard cornering would the differential action be noticeable. Even then, the engine rpm would only increase a small amount and car acceleration only drop off a little. From a braking standpoint I could hardly notice any difference. I had brakes when turning as well as when going straight.

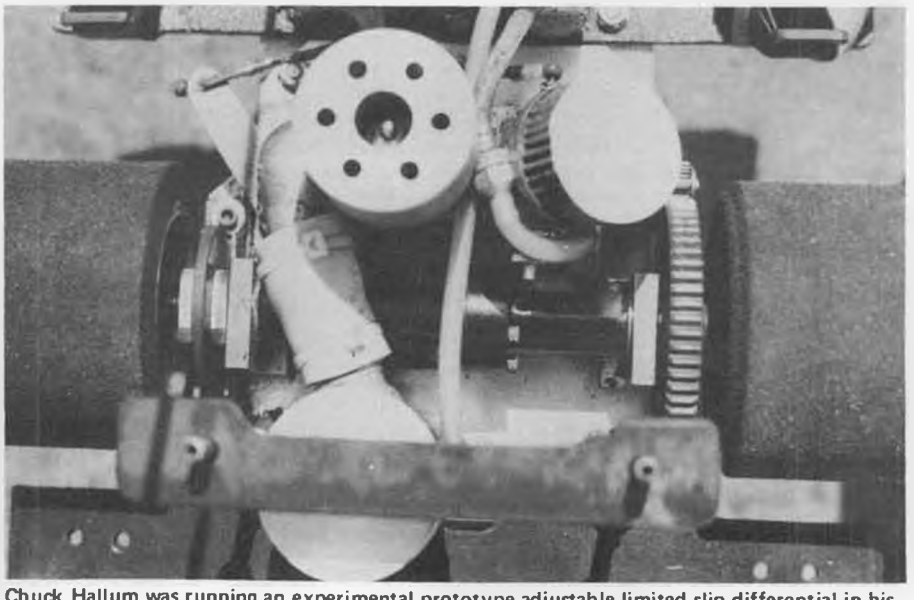
The problems were that the car had some power understeer and had oversteer during decelerating hard turns. The car never felt like it was going to spin out, but it did tighten up the corners more than I liked and had more speed variation than desirable for quick times. For some reason the left-hand portion of the track seemed to have lower traction than the right side, and most drivers had to ease up on the throttle from the tight corners. That's where I was able to pull out a few feet on most cars.

Dana Smeltzer also qualified for the "A" main and while the early main events were going on I looked his car over. Last year Dana did extremely well in the SoCal series. I was very happy to see that he is experimenting to get the most out of his Thorp car. Dana removed the front suspension and moved the battery back some to help keep the rear wheels on the ground more, and he doesn't lose much power and time during cornering.

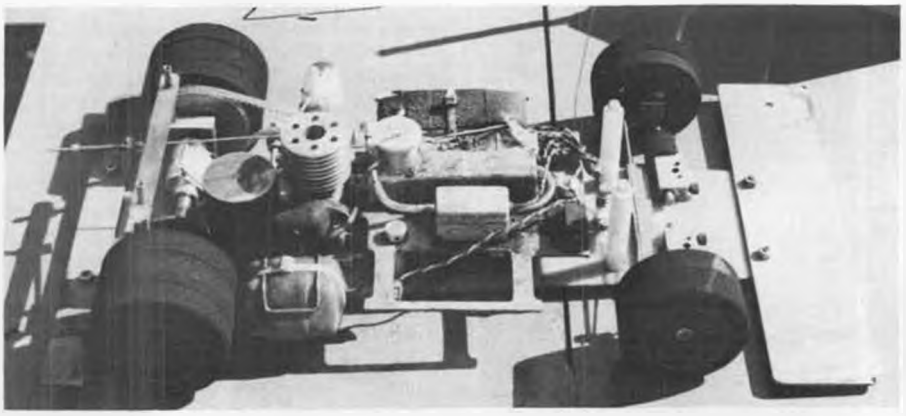
Out here I think Rich Lee was the first to really think about what to do to a car with a differential to make it perform better. A couple weeks ago I was talking with Rich and he was mentioning the various things he was doing to his car. His basic approach was to try to keep the rear wheels, particularly the inside rear, on the ground more during cornering. So Rich has taken out most of the angular caster on the front end and stiffened up the chassis, which is the real reason he came up with the "T" bar with several adjustment bolt locations.



Bill Watson's Associated car with standard layout and chassis stiffener was most consistent "A" main qualifier.



Chuck Hallum was running an experimental prototype adjustable limited slip differential in his car, but most people didn't notice.



Dana Smeltzer was experimenting with weight location and front end geometry on his Thorp car. Dana placed 6th overall.

Butch Kroells won the "C" main and Bill Steele the "B" main, and then it was time for the 60-lap "A" main. Out we went with 3 minutes to the start. I had changed to some fresher but worn-in rear tires and had the needle set almost perfect. The car was going well, and with two planned pit stops vs. three (I guessed) for the rest of the cars, I was looking forward to a good race. But Husting, Jianas, and Watson could pull me down the straight.

When the flag lifted I got a good start in second position, but between turns 1 and 2 the lead car bobbled and I got through to the lead with Curtis Husting second and Rich Lee third. Jianas had missed the start for some reason and Smeltzer, I found later, had a servo problem and was replacing it at the start. I kept the lead for awhile, but Curtis kept nibbling away at the gap and passed me when I overshot a corner at the end of lap 5. Curtis started pulling away and Rich lee and myself were having quite a race. Then somebody broadsided me and the engine died. The engine wouldn't start because the glow plug blew, and after replacing the plug the engine wouldn't idle because a clutch shoe broke also, or I cranked up the idle speed and got back out. In the meantime Curtis Husting had been pulling away, with Watson giving Lee a good race for second. By about lap 45 Curtis had about a one-lap lead, but then the flywheel popped loose and he was out. Rich Lee kept tooling along with Watson trying to catch him and Jack Barton not too far back. And that's how the placing was at the end. Curtis was fourth, I was fifth, and Dana Smeltzer sixth. Prior to the race I had seen Curtis replacing the clutch shoes; apparently he's having the same problem I experienced, and didn't get the clutch nut tight enough.

Meanwhile, back East, the Winternationals meet was a showplace for some new things. I got secondhand reports from several fellows to relate to you. Practically all the British drivers had differentials in their cars and looked pretty impressive in the early going. Several U.S. drivers had differentials too, but as the traction came up, out came the differentials. The British were doing everything they could to get more lock-up in their differentials with heavy oil, grease, etc., but were never able to get as much as they desired. One of the British drivers had a problem with stripped threads on the right side differential hub where the gear screws on. I had a somewhat similar problem with my adjustable limited slip differential. It is related to not tightening the gear sufficiently on assembly. When you first put the car on the track, the habit is to ease out the first time, blipping the throttle to check out the steering, brakes, and other things. During this time brake application can tend to unscrew the gear/brake assembly. Then the first time the throttle is really applied, the gear spins up before it hits bottom and puts one heck of a strain on the threads. So be sure you cinch up the gear and brake units on the differential before you go out.

An experimental car (sorry, didn't get the builder's name) drew a fair amount of attention with its electric brakes. Small solenoids are located in the front wheel hubs which, when energized, push a pad against a disc to provide braking action. A separate 9-volt battery was used for power. There is a small

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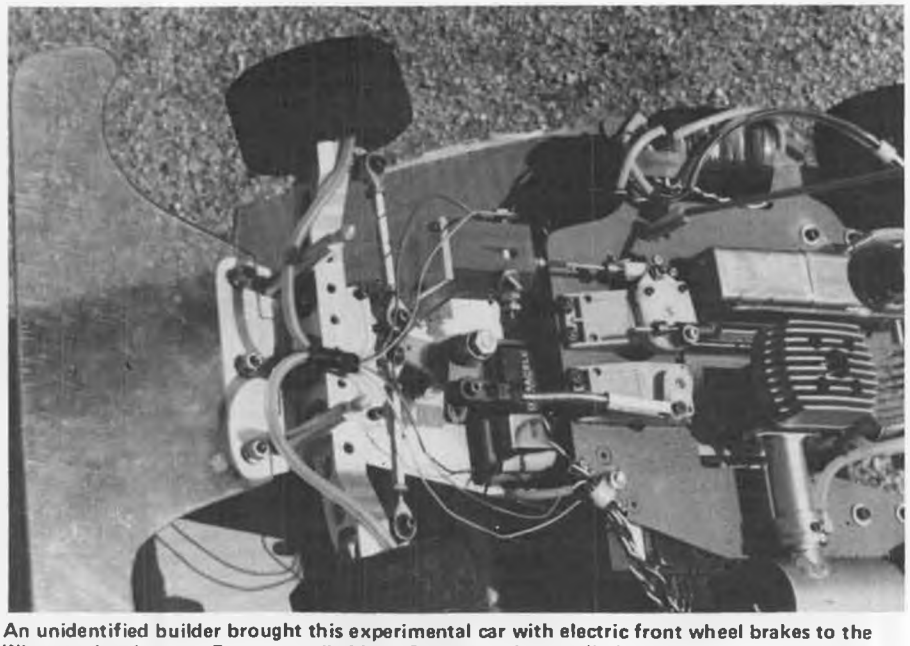


An unidentified builder brought this experimental car with electric front wheel brakes to the Winternationals meet. Power supplied by a 9-volt transistor radio battery.

Phil Greeno's nicely laid-out PB car at the Winternationals. Has weight considerably far forward.

Another PB car, this one with a wet weather air cleaner, simply a spray can top put over the stock air cleaner.

FREE FLIGHT AND CONTROL LINE

The GRAND PEANUT of 1979, Sherman Gillespie's Glenny and Henderson "Gadfly". It was first in the Golden Age category, with top points in both static and flight. Its shipping container was also the best!

Sherman Gillespie's charming little Gadfly was 1st in Golden Age, had highest static and flight points. Also was Grand Peanut.

Jean Andrews entered the only floatplane, a Japanese "Willow." Flight average was very respectable 21 seconds. Note dolly.

FREE FLIGHT SCALE

By FERNANDO RAMOS

• Another successful Postal Peanut contest is now history. Since I had an opportunity to help judge all of these little jewels, I would like to give you my impressions of what I saw, and whether or not the state-of-the-art has changed significantly.

As you would expect at any kind of contest, there were exceptional models, good ones, average, and some that were lacking in many respects. In behalf of those few which fell into the last category, I have to believe that these modelers have not had exposure to see what other modelers are doing and how they are doing it. These individuals often have to rely strictly on what they read in model magazines, seldom ever seeing a good competitive model. Sometimes, photographs do not point out enough for the neophyte to grasp what it takes to build a first-class model. If you don't have some way or someone to point out errors, you continue to make the same ones. I definitely feel for those who are truly geographically secluded from modeling activity. Just don't give up!

It is interesting to note that with few exceptions, modelers have taken heed of some of the comments that have been made in this column. For one thing, the tiny opening in the nose for the rubber motor to go through was seldom seen. Nose blocks were made removable with plenty of access for a fully-wound motor. I did see too many nose blocks which did not fit snugly. If the nose block is permitted to fall free after the motor has unwound, it will act like a dethermalizer and cause the model to come down much sooner than it should. Several coats of dope in this area can help make the nose block achieve a snug fit to the fuselage. If the slop still exists, use several layers of tissue doped down. This will take care of any slop.

Another positive area I noticed is that the many models which were not finished with a dye or pigmented paints, had no bare edges showing. So often all of the edges of the wings and tail would

Neat Powell Racer by Roy Mayes, of Laguna Hills, CA, garnered a 4th in Golden Age. Was 3rd in static, averaged 26.5 seconds.

Holbrook Clay entered this colorful Rearwin Speedster in Golden Age, placed 5th. Was 2nd in static, 6th in flight points.

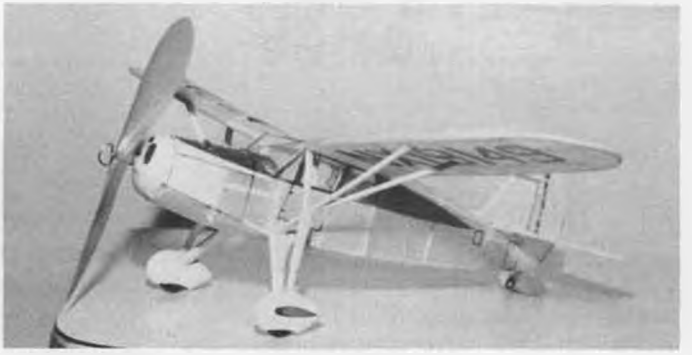
Well-known scale modeler Dr. John Martin sent this Bat "Baboon," built from Mooney plans. Placed 5th in WW-I.

Nicely built Sopwith Pup by Steve Gardner just barely qualified with a flight of 10.5 sec. (10 sec. minimum required!).

Flightmasters president George James placed IIth in Golden Age with this Puss Moth. Note drag tab on tip.

Look at all the rigging! From Frankfurt, W. Germany, Benno Sabel's 1909 Clerget. Flew much better with a plastic prop.

Impressive DO-235 by Dr. William Harris is covered with light green Scotties tissue, placed 7th in WW-II.



John Oszajca, Kailua, Hawaii, sent this nice Fairchild 24, the only one entered. Was 8th in static, averaged 20.5 seconds.

be perfectly bare . . . many of you are getting the message.

I feel that the overall quality of most of the models was higher than some years. I have to admit that I lose interest when I see the Cougars, Lacys, and Piper Cubs. I would say that Peanut modelers have done to these three what R/C has done to the venerable Mustang. I think they call it overkill! You can't knock the way they fly, however, because they certainly do that, and well.

Vacuum forming was much in evidence. Seems as though many modelers have this trick well under control. From canopies to wheel fairings, several incorporated this technique in detailing their models. This adds a touch of realism to the models.

Propellers seem to be the biggest grey area going. Many modelers seem to shy away from carving or making any kind of homemade prop. Most models had plastic props. I think that many times, the average modeler doesn't want to spend the time it takes to make a prop, considering the little effort it takes to destroy one. Of the hand-made ones I did see, they were of the laminated variety as opposed to the hand-carved type. Of the numerous plastic variety, painting took care of any distraction they might otherwise have caused.

If you are skeptical about making your own props you should give it a whirl,

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* F/F * SCALE The EASY WAY

By LARRY RENGER

• One of the most beautiful sights in all of modeldom is a small free flight scale model puttering around in lazy circles against a blue sky. A few puffy white clouds and a little thermal assist don't hurt the picture either.

For most modern modelers, however, the thought of all those sticks and tissue going crunch while they learn the art of trimming results in a certain amount of reluctance to get started. Add to that the hassle of using rubber power effectively, and free flight scale becomes a "someday" project.

As in other forms of modeling, what is needed to get started is a trainer. We have to select a model which assembles quickly, is rugged, repairs easily (and often), and above all, flies!

Eureka!! After about a fifteen-year lapse from flying free flights, I have found a combination which meets all my criteria. The recent comeback of the CO_2 engine after twenty years of unavailability, seemed to provide the obvious way to go for a simple, clean, quiet power source. The model type was chosen quite readily; one of several available brands of all-balsa, rubber-powered scale models.

Let's examine these selections to see why they work for our purpose. The CO_2 engine has a moderate run duration of between 15 seconds and 1 minute, depending on the charge and power setting. In addition, the power is controllable, repeatable, reliable, and starts easily, but not until you want it. Try setting a fully-wound rubber-powered model down for a few seconds some time! CO_2 capsules are not cheap, but I have found that it costs less that 5¢ per flight with my Telco engine and capsules purchased from the local discount store.

Another point in favor of the modern

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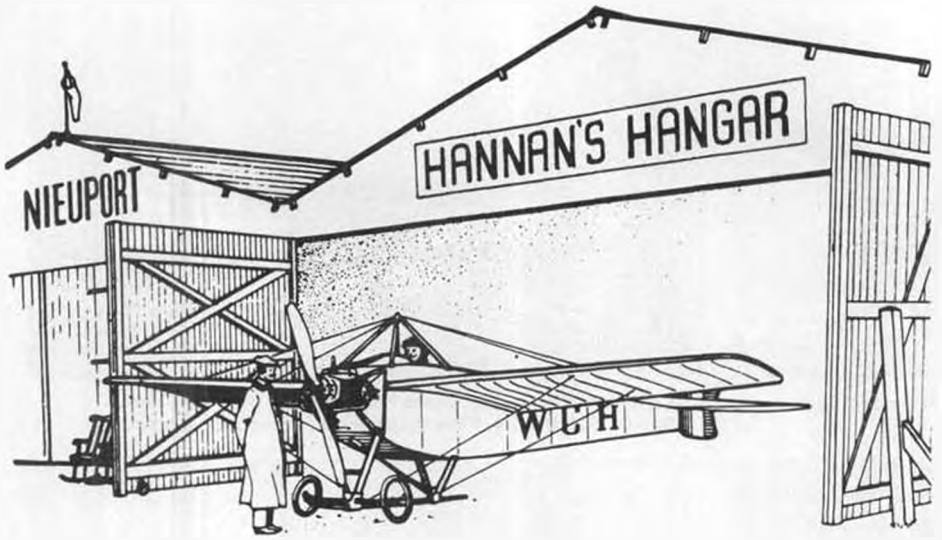

"Model Aeroplaning is an Art in itself."

• Our lead-in line, written by V.E. Johnson, circa 1910, is every bit as appropriate today as when first written!

LINKS IN THE CHAIN

The history of aviation is liberally laced with the achievements of bicycle enthusiasts. The Wright brothers are the best publicized of this group, which also included Henri Farman and Edouard Nieuport. One of the important keys to the mechanical success of the bicycle itself was the tension spoked wheel, which was invented circa 1808 by the "Father of Aerial Navigation," Sir George Cayley. It also appears that the Wright brothers made the first pair of "balloon tires" for a bicycle, during 1893.

SEX SYMBOLS?

Dennis O. Norman, writing in *"Cross-winds,"* the newsletter of the Cleveland Free Flight Society, devoted an editorial to the possible sexual connotations of aircraft. It seems that he had asked a psychologist for an interpretation and was advised that this was indeed the case. The next question (apparently phrased in the form of a paradox by Norman) concerned the maleness or femaleness of an aircraft. Most men, of course, assign them a female status without hesitation. However, this psychologist assured Norman that aircraft should be regarded as *male* sex symbols. That's *her* opinion!

AND SPEAKING OF FEMALES

Carl Hatrak forwarded a copy of *"Flying Your Way,"* the inflight magazine of Air New England, from which we abstracted this bit of history: "Anxious to catch up with the English, French, and Germans, who were far ahead of the U.S. in the design and construction of warplanes, the military arm of the U.S. government ushered in its Air Age in Vermont when Fort Ethan Allen in Winooski was chosen as the site for a bomb-dropping exercise in 1915. A small 16-year-old girl named Ruth Burbeck Johnson dropped the flour-filled "bombs" from an aeroplane's wings without being secured to the craft, a significant if somewhat belated event in the history of U.S. military aviation tactics."

A ms. is as good as a mile?

WEIGHT A MINUTE

From the *"Buzzard Droppings"* model flying club newsletter, a useful list of approximate weight comparison items for "ballpark" model part weight checking:

An ordinary paper clip:	0.5 grams
One dime	2.24 grams
One penny	3.1 grams
One nickel	5.11 grams
One quarter	5.66 grams

VINTAGE RENT-A-STUNT

From Northrop University's newsletter in an article about the 1924 motion picture stunt team, the "13 Black Cats," a price list: "Ship spins down on fire (does not crash), $50. Blow ship up in mid-air, pilot chutes out, $1,500. Loop with man on each wing, standing up, $450. Fight on upper wing (two men, one man knocked off), $225."

NEW RULES?

Dick Baxter feels that present free flight scale rules inhibit flying, and that builders have a tendency to put in only enough flights to satisfy rule requirements. In some cases, this might amount to only a single flight per contest! Baxter suggests that a change in rules would promote greater participation and provide better spectator entertainment in the bargain. He proposes:

1) No limit to number of flights allowed.

2) All flights added for flight score. (Some maximum might need to be

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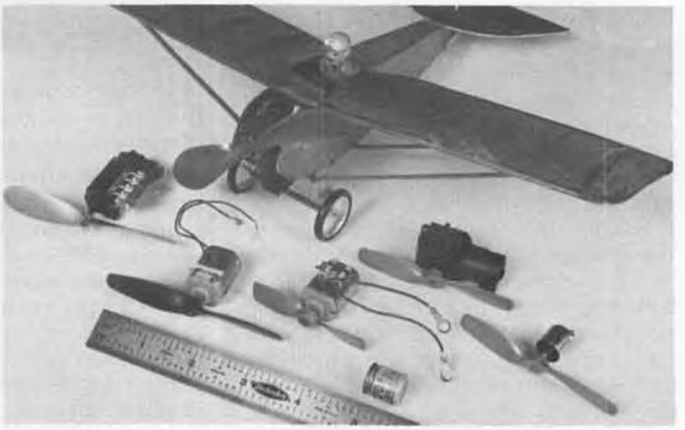
A rare Polish RWD-5 rubber model by Alan Callaghan of England. Spans 19-1/2 inches, weighs 18 grams. With that wing area and simple lines, it would be a good choice for a Peanut.

The Solar Riser, world's first man-carrying solar plane, is based on the popular Easy Riser tailless biplane hang glider. Has 168 solar cells in top wing. Photo by Jerry Litwak.



Ed Toner's Huntington monoplane Peanut "test bed" for electric power experiments. See description in text.

PEANUT SCALE

EAA BABY ACE

By JOHN BLAIR . . . The Baby Ace is without a doubt one of the most popular homebuilts around, and makes an attractive and good-flying Peanut. Scale documentation is as close as the nearest airport.

• From Demoiselle through Pietenpol to EAA Baby Ace, the parasol monoplane has consistently been one of our most successful aircraft types. The Baby Ace itself is a development of the earlier homebuilt Corben Ace designs of the thirties. What modeler over forty doesn't remember his twenty-five cent, kit-built Corben Super Ace?

This plan is presented as a stick-for-stick, exact scale model, from drawings in the October 1973 *Mechanix Illustrated*. Built as shown, the model will be reasonably light (about 1/2 oz.) and will fly well. If you want to go for maximum endurance, the structure can easily be simplified to bring the weight nearer to 1/4 oz.

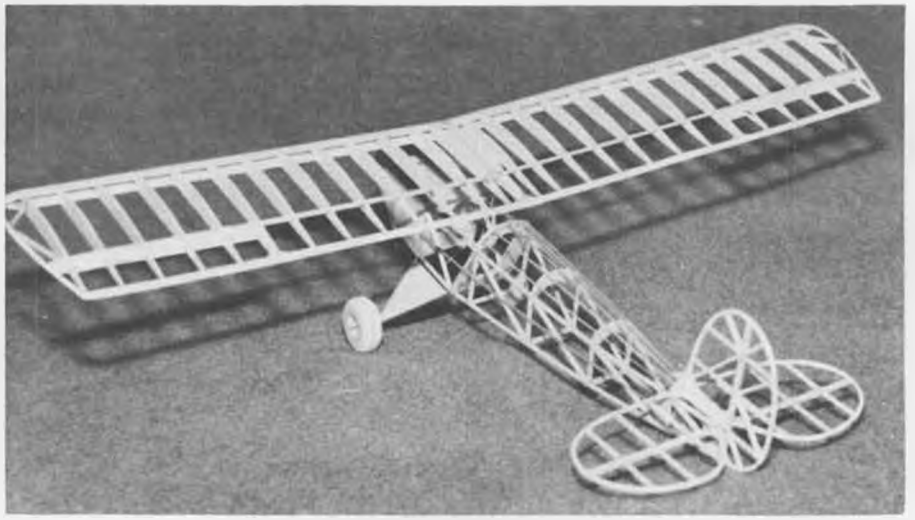
Begin by preparing some non-stock wood. With a balsa stripper or a good straightedge and your trusty Uber Skiver, cut some 1/32 x 1/16 balsa for fuselage structure and wing spars. Wing struts are 1/32 x 1/8 balsa, 1/32 sq. balsa is used for tail structures, 1/32 x 3/32 soft balsa is used to fair the cabane wires, 1/32 x 3/32 rock-hard balsa or basswood is needed for wing trailing edges, and 1/32 sq. basswood is used for tail surface outlines and wingtip bows. (Hint: a ready source of basswood is the wooden coffee stirrers provided at snack bars.) Secure or sand down some 1/64 sheet for leading edge sheeting (if used) and wing ribs. Turtle deck and side stringers may be either 1/32 x 1/16 balsa or 1/64 sq. bamboo slivers. The bamboo looks more "in scale."

Since construction is quite conventional, we will concentrate on features. First, you will find that working with tiny Peanut structures requires a good pair of bent-nose tweezers. As the fuselage box is assembled from the tailpost forward, put a temporary crosspiece in the bottom between stations 3 and 4. This will make installation of the landing gear easier, and will be removed later. Note that uprights at stations 3 and 4 are 1/16 sq. Bend the landing gear wires over the diagram and sandwich between two pieces of 1/32 sheet. Bend and sandwich the cabane wires in the same manner. Referring to the "typical section" shown on the plan, install the landing gear legs and cabanes in their proper positions. The front and rear gear legs, and cabanes "a" and "b," may now be epoxied or soldered together. The cabane wires are faired with soft 1/32 x 3/32 balsa. The landing gear is filled in with 1/32 sheet balsa. Sheeting the fuselage nose and adding turtle deck stringers completes this assembly.

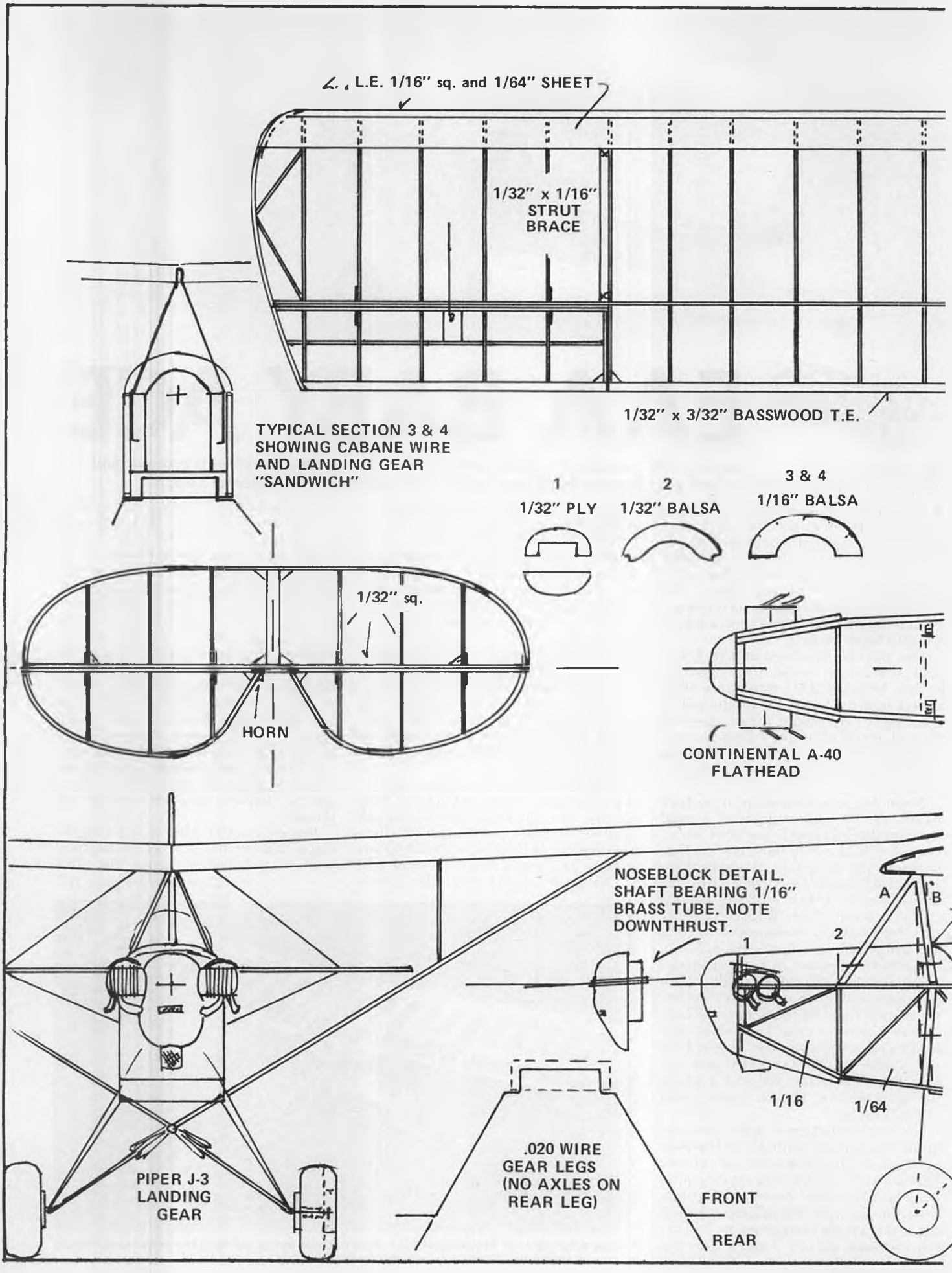
Trying to produce "in scale" appearing structures, I have progressed from clumsy, cut-out sheet outlines through laminated balsa (and even smaller-section laminated basswood) to my present practice: a single piece of 1/32 sq. basswood. A stab or rudder outline wet-formed from 1/32 sq. basswood is plenty strong enough and looks really good on a Peanut model. With 1/32 sq. spars and ribs (or 1/64 x 1/32) a lovely, light unit results which can feature scale spacing without an undue weight penalty. Care in tissue shrinking and the use of plasticized dope is advised, however. Make cardboard forms for bending the outlines. Fifteen minutes soaking in hot water will soften the basswood so that it may be stretched around the forms without breaking. Lace the wood to the form with rubber bands and bake for an hour in a 200-degree oven. The tail surfaces may then be assembled directly over the plan. Soft wire hinges make all control surfaces movable. (The outlines are cut after the units are covered and doped.)

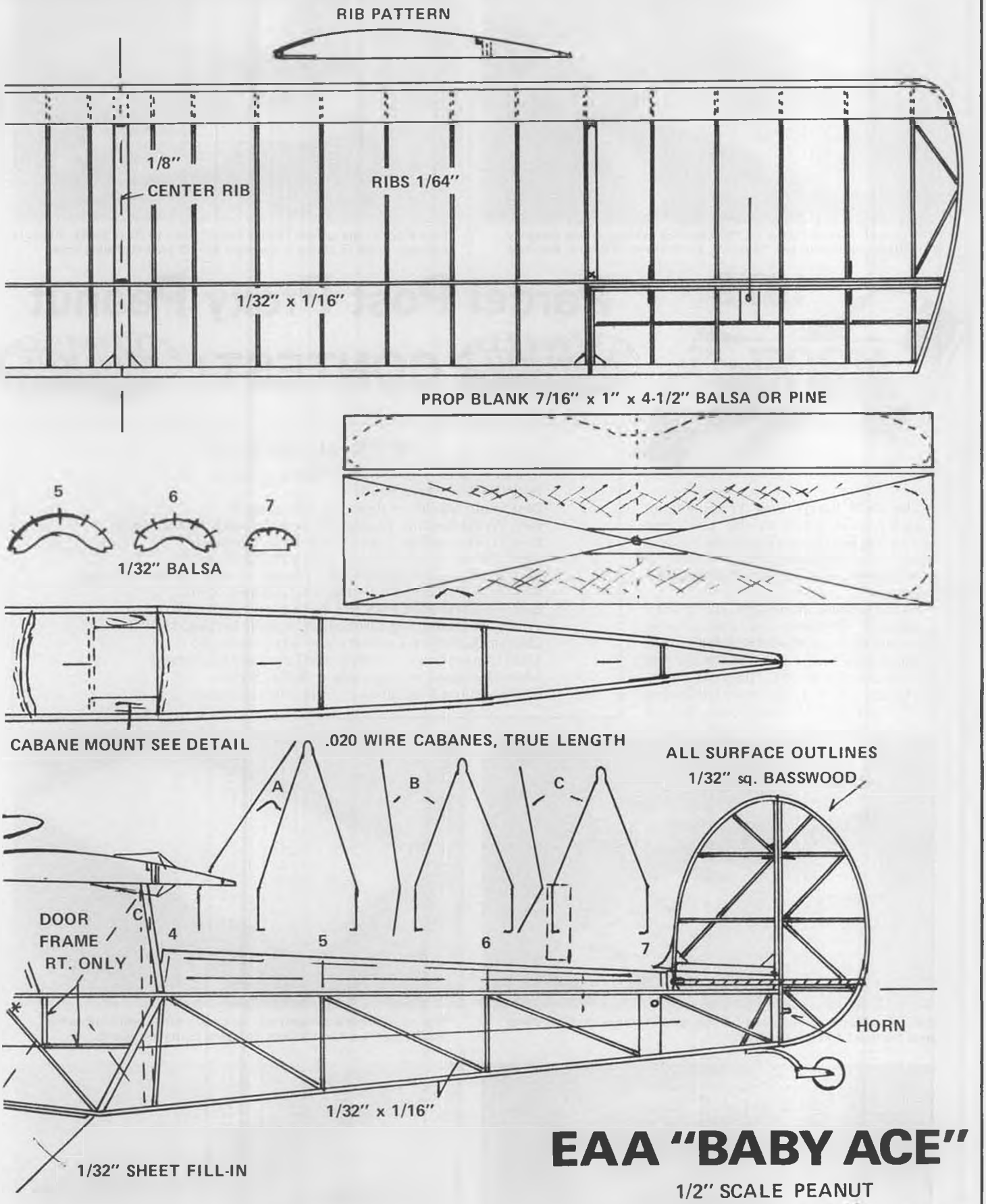
The exact scale wing is not complicated, it's just that the pieces are tiny. Make two 1/8 sheet center ribs. The

Continued on page 102



Narrow strips used for stringers and tail surface outlines add to the scale-like appearance. Wheels are turned from balsa. Control surfaces are hinged for flight adjustments.


L.E. 1/16" sq. and 1/64" SHEET
1/32" x 1/16" STRUT BRACE
1/32" x 3/32" BASSWOOD T.E.
TYPICAL SECTION 3 & 4 SHOWING CABANE WIRE AND LANDING GEAR "SANDWICH"
1
1/32" PLY
2
1/32" BALSA
3 & 4
1/16" BALSA
1/32" sq.
HORN
CONTINENTAL A-40 FLATHEAD
NOSEBLOCK DETAIL. SHAFT BEARING 1/16" BRASS TUBE. NOTE DOWNTHRUST.
A
B
1
2
3
1/16
1/64
PIPER J-3 LANDING GEAR
.020 WIRE GEAR LEGS (NO AXLES ON REAR LEG)
FRONT
REAR



EAA "BABY ACE"

1/2" SCALE PEANUT

John Blair 11-75

The winnah! Grand Peanut of 1979 and 1st in Golden Age category, this Glenny & Henderson "Gadfly", by Sherman Gillespie, San Jose.

First Place in the special "DH-6 Event" went to Dave Smith, Phoenix, Arizona. Sixth in Static, it averaged 49-1/2 seconds flying time.

PHOTOS BY AUTHORS

1979 Parcel Post Proxy Peanut CONTEST!

PEANUT SCALE

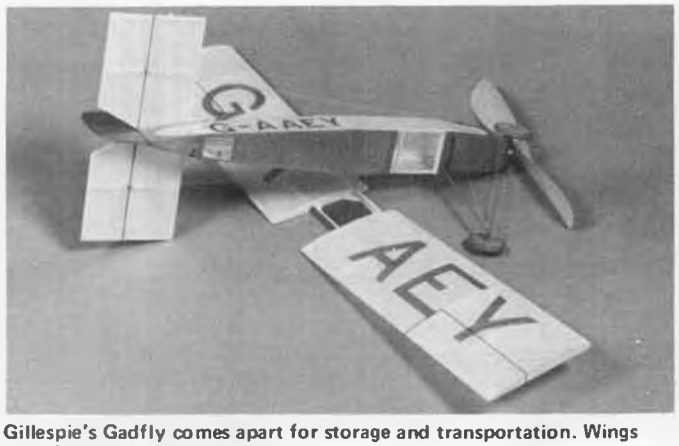
PEANUT SCALE

✶ SPECIAL AWARDS ✶

Grand Peanut — Sherman Gillespie, Gadfly
Best DH-6 — Dave Smith
Best Static Model — Phil Cox, Nieuport 17
Best Workmanship, Foreign — Benno Sabel, 1909 Clerget
Best Workmanship, USA — Phil Cox, Nieuport 17
High Point Female Entry — Eeva Riihela, Piper J-2
Best Score by 15 Year Old or Younger — Ross Jahnke, Cougar
Best Peck-Polymer Kit — Dennis Osborne, Zero
Best from Mooney Plan — Chuck Conover, DH-6
Youngest Qualifying Contestant — Ross Jahnke, 15
Oldest Qualifying Contestant — Roy Mayes, 65
Most Distant Entry — Hannu and Eeva Riihela, Finland
Most Damaged in Shipment — Robt. Stovel
Best Shipping Container — Sherman Gillespie

• The 1979 Parcel Post Proxy Peanut Contest took place in the California State Long Beach men's gymnasium, also the site of the four previous annual PPPP contests, as originated by **Model Builder** magazine.

As in the past, all models, still in their respective shipping containers, were transported from **Model Builder**'s office storage area to the contest site, on the day before the event. This year, transportation was in a van provided by our R/C Auto News columnist, Chuck



Gillespie's Gadfly comes apart for storage and transportation. Wings are a friction fit in the fuselage.

Sherman Gillespie's model box was every bit as well built as his Gadfly, earning him the Best Shipping Container award.

Phil Cox continues to produce some of the best-built Peanuts we've ever seen. His Nieuport 17 won 1st in WW-I.

John Oszajca won Modern with this copy of Dick Rehling's (D&R Products) full-size Tailwind. Averaged 31.5 seconds.

Mustachioed Chuck Conover applying tender loving care to a Piper Cub.

Walt Mooney appears to be clobbering that DH-6, but he's really applying Hot Stuff.

Dick Baxter, master troubleshooter, gives the evil eye to a recalcitrant Peanut.

"Mik" Mikkelson's cute little Elias Airsport, 3rd in Golden Age.

Too bad. No one was able to qualify Ray Stearns' OS-2U "Kingfisher".

George James' PT-19 was 2nd in WW-II static, finished 5th with 12 sec. flight average.

Ken Hannan launches winner in Pioneer, a Demoiselle by Ron Limbrick.

Heinkel 100-J8, damaged in shipping, repaired by Walt Mooney. Bob Stovel, Victoria, B.C.

Close-up of two-cylinder ABC "Scorpion" engine in Gillespie's Gadfly.

Hallum.

The model boxes were placed in a locked room, across the hall from the gym. The Peanuts were then removed from the boxes and placed on tables so the static judges could begin their work immediately upon arrival the next morning. Each model and box had been assigned identification numbers prior to transporting. Main purpose of this cross-referencing was to assist the proxy fliers. Once assigned a model to fly, the proxy would search out the corresponding shipping box and discover what, if any, instructions and spare parts the contestant sent along with his entry.

Speaking of proxy fliers, the backbone of this whole contest is the work put in by the modelers who contribute their time by judging and flying the entries.

Not to belittle their efforts in any way, they actually get quite a charge out of examining the workmanship and building techniques used by modelers from other parts of the country and from

Continued on page 100

In spite of heavy appearance this Japanese "Willow", by Jean Andrews, averaged 21 sec.

Christmas "Bullet" by Ken Johnson, Canoga Park, CA, probably flew better than original.

Dornier DO-235 by Dr. Wm. Harris would not fly until front prop was eliminated.

FINAL RESULTS

DH-6

PLACE		FROM	TOTAL	STATIC POSITION	FLIGHT AVERAGE	FLIGHT POSITION
1	David Smith	Phoenix, AZ	6	49.5	2	8
2	Holbrook Clay	Flagstaff, AZ	5	37.	5	10
3	John Winter	Penfield, NY	8	39.	4	12
4	Bert Kriebel	Falls Church, VA	1	20.	14	15
5	Jack McGillivray	Toronto, Ontario, Canada	16	90.	1	17
6	George Washburn	Malvern, PA	3	19.	15	18
7	Ross Jahnke	Cedarburg, WI	7	23.	12	19
8	Roy Mayes	Laguna Hills, CA	2	17.	17	19
9	Thomas Telesca	Riverside, CT	9	24	11	20
10	Jim Brichacek	Norwalk, OH	4	18.5	16	20
11	Ken Johnson	Canoga Park, CA	18	43.	3	21
12	Ernie Wrisley	Santee, CA	15	36.5	6	21
13	Robert Liefeld	Las Cruces, NM	14	33.	7	21
14	Jonathan McPhee	Evanston, IL	13	28.5	10	23
15	Charles Shaw	Sarasota, FL	10	20.5	13	23
16	Tom Croft	Manchester, MO	17	30.	9	26
17	J. Miller	Cincinnati, OH	20	32.	8	28
18	Dennis Osborne	Lazo, B.C., Canada	12	15.	18	30
19	Charles Coeyman	Red Lion, PA	11	14.	19	30
20	Ray Stearns	Raleigh, NC	19	18.5	16	35
—	Colbert Broussard	Luling, LA	21	—	—	DNQ
—	Bob McKenzie	Jacksonville Beach, FL	22	—	—	DNQ

George Washburn's DH-6 entry sported fancy laminated 4-blader. Placed 3rd in Static but low 19 sec. average dropped it to 6th.

Roy Mayes, retired, oldest contestant, placed 2nd in static with this DH-6, 8 points total. His Powell Racer was 4th in Golden Age.

Proxy Postscript

By BILL HANNAN

• Five years of Model Builder Peanut Postals have passed into posterity. Having been fortunate enough to attend all of them, it seemed appropriate to reflect upon the changes which have taken place over the years.

The Peanut phenomenon has gone a long way since its humble inception in Bridgeport, Connecticut back in 1967. Dave Stott and Bob Thompson could never have imagined in their wildest fantasies the effect their little idea would have upon the world of aeromodeling. Inspired by pre-war Dallaire 10-cent kit plans, they conceived an event for a class of models that could be quickly and inexpensively constructed, yet still closely resemble honest-to-goodness man-carrying aircraft. In the bargain, the performance potential proved unexpectedly high. Another unanticipated bonus was the fact that the small size of Peanuts made them fairly easy to ship. Thus the proxy idea came about.

How well Peanuts were accepted is best demonstrated by their worldwide

Sandy and Bob Peck wind up Ken Johnson's 1911 Cessna Pioneer entry. Pioneers tied overall. Flight times picked winners.

MB's Editor shuffles through paperwork while CD Carl Hatrak checks entry forms. We needed you, Russ Barrera!

FINAL RESULTS

PLACE		FROM	PLANE	TOTAL	STATIC POSITION	FLIGHT AVERAGE	FLIGHT POSITION
			PIONEER				
1	Ron Limbrick	Thunder Bay, Ontario, Can	Demoiselle	3	26.5	1	4
2	Ken Johnson	Canoga Park, CA	1911 Cessna	2	22.5	2	4
3	Benno Sabel	Frankfurt, West Germany	1909 Clerget	1	21.5	3	4
			WORLD WAR I				
1	Phil Cox	Highland, IN	Nieuport 17	1	23.5	2	3
2	Chuck Conover	Long Beach, CA	DH-6	3	31.5	1	4
3	John Winter	Penfield, NY	Fokker E-III	2	15.5	5	7
4	Ken Johnson	Canoga Park, CA	Hergt Monoplane	5	18	3	8
5	John Martin	Miami, FL	"Bat" Baboon	6	17	4	10
6	Steve Gardner	Hamilton, AL	Sopwith Pup	4	10.5	6	10
—	Jim Martin	Bronx, NY	Fokker D-VIII	7	—	—	DNQ
—	Colbert Broussard	Luling, LA	Nieuport Tripe	8	—	—	DNQ
			GOLDEN AGE				
1	Sherman Gillespie	San Jose, CA	Gadfly	1	42.5	1	2
2	Steve Gardner	Hamilton, AL	Hawker Fury	5	36.5	3	8
3	Mik Mikkelson	Hollywood, CA	Elias Aerosport	4	30.5	4	8
4	Roy Mayes	Laguna Hills, CA	Powell Racer	3	26.5	5	8
5	Holbrook Clay	Flagstaff, AZ	Rearwin Speedster	2	25.5	6	8
6	Dr. John Martin	Miami, FL	Jenny Monoplane	11	36.5	3	14
7	Ken Johnson	Canoga Park, CA	Christmas "Bullet"	6	20.5	8	14
8	Mrs. Eeva Riihela	Lahti, Finland	Piper J-2	14	41	2	16
9	John Oszajca	Kailua, Hawaii	Fairchild 24	8	20.5	8	16
10	Jonathan McPhee	Evanston, IL	Arrow Sport	7	10	11	18
11	George James	Costa Mesa, CA	Puss Moth	9	12.5	10	19
12	Hannu Riihela	Lahti, Finland	Pietenpol	13	22.5	7	20
13	Colbert Broussard	Luling, LA	Pietenpol	10	12.5	10	20
14	Clark Wade	No. Vernon, IN	Davis D-1K	15	13	9	24
—	Charles Coeyman	Red Lion, PA	Spirit of St. Louis	12	—	—	DNQ
			WORLD WAR II				
1	Dennis Osborne	Lazo, B.C., Canada	Zero	1	18	5	6
2	Jean Andrews	La Crescenta, CA	"Willow"	4	21	3	7
3	Steve Gardner	Hamilton, AL	P-40	8	27	1	9
4	Ernie Wrisley	Santee, CA	Miles M-6	7	22	3	10
5	George James	Costa Mesa, CA	PT-19	2	12	8	10
6	Robert Stovel	Victoria, B.C., Canada	Heinkel 100-J8	9	26	2	11
7	Wm. Harris, M.D.	Honolulu, Hawaii	DO-235	4	11.5	7	11
8	Thomas Telesca	Riverside, CT	P-51	6	16.5	6	12
—	Ray Stearns	Raleigh, NC	OS-2U Vought Kingfisher	5	—	—	DNQ
—	T. Furusawa	Fukoyamshi, Japan	Ohka-II	10	—	—	DNQ
			MODERN				
1	John Oszajca	Kailua, Hawaii	Tailwind	1	31.5	6	7
2	Robert Lunsford	El Paso, TX	Fike	6	53.0	2	8
3	Ernie Wrisley	Santee, CA	Nesmith Cougar	2	30.0	8	10
4	Chuck Conover	Long Beach, CA	Cougar	4	30.0	8	12
5	Roger Aime	Salone, France	Clipped-Wing Cub	8	32.0	5	13
6	Dick Baxter	Costa Mesa, CA	Swiss Glider Tug	13	55.5	1	14
7	Ken Johnson	Canoga Park, CA	Fike	12	45.5	4	16
8	Lou Roberts	Denver, CO	Volksplane	3	17.5	14	17
9	Walt Mooney	San Diego, CA	Bellanca Aries	5	19.5	13	18
10	J. Miller	Cincinnati, OH	Clipped-Wing Cub	10	26.	9	19
11	Karl Harmon	San Jose, CA	Fike	17	48.5	3	20
12	Ross Jahnke	Cedarburg, WI	Cougar	14	30.5	7	20
13	Steve Gardner	Hamilton, AL	Cougar	11	24.0	11	22
14	Jack Kurth	Taylor, MI	Ganagobie	7	10.0	15	22
15	Jonathan McPhee	Evanston, IL	Nesmith Cougar	9	17.5	14	23
16	Joe Koch	Fallingston, PA	Volksplane	16	24.5	10	26
17	Lyle Gadsden	Mt. Warrigal, N.S.W.	Avion Leningradec	15	22.	12	27

distribution. They are now an important part of competition calendars in several countries, and on a less formal basis, probably represent the most plentiful type of flying scale models on the globe.

Not confined to a particular class of modelers, they have appeal to everyone from static-scalers through R/C enthusiasts. Somehow there is a "friendly" aspect about them that transcends geographical and political boundaries.

During last year's Woodvale, England International Free Flight Scale contest, which was open to any size of model, Walt Mooney participated by proxy with a Peanut. And, although he didn't win any top prizes, his model was singled out for exposure on BBC Television! Not bad for 13 inches.

Past Model Builder postal contests have attracted entries from countries including Canada, Czechoslovakia, England, France, Germany, New Zealand, Rhodesia, Australia, Kuwait, and virtually every corner of the United States. This year saw representation from Finland (a man and wife team) and Japan. Yet F.A.I. C.I.A.M. officials still cling to the notion that F/F Scale is limited to England and America.

The first MBPPP drew 104 entries and required two full days for completion. Subsequent years have seen a decrease in quantity, but an increase in quality. This year it was anticipated that a single day would be adequate for the event, and it was, but just barely, as some 75 models appeared, and the crew was really kept busy.

A sad note this year was the passing of Russ Barrera, who had been the Chief Static Judge for the first several MB postals. A few other members of the crew were also absent, but happily were replaced by other volunteers, under the direction of our traditional Contest Director, Carl Hatrak. Representing

Continued on page 98

Twenty-five years ago, Carl Wheeley won FAI Power at the last F/F World Champs to be held in the U.S. Note Bill Hartill in background, now in charge of this year's World Champs at Taft.

Guy Larsen, II, with Peck J-3 Cub at Lake Charles Nats, 1977. Dave Linstrum photo.

FREE FLIGHT

by TOM HUTCHINSON

PHOTOS BY AUTHOR

• I thought it would be appropriate to start out this month by commemorating the 25th anniversary of the last time the U.S. was the host nation for the FAI World Free Flight Championships, since later on this year, we'll be doing it again. It was back in 1954 when AMA, with the aid of Convair and the USAF, invited the rest of the modeling world to Suffolk AFB in Long Island to compete for the Wakefield and FAI Power championships. (In those days, the nation which won an event had the honor of hosting it the next time, and the U.S. had won both the individual and team championships the previous year at Cranfield, England.)

Transatlantic travel wasn't as common or inexpensive as nowadays, so the entry list was quite a bit smaller than we're used to seeing at a World Champs. There were 28 entries in the Wakefield event and 21 in Power, representing 11 different nations. No European nation sent a full team, so proxy flying was necessary for about 1/3 of the entries.

This was the first World Champs to be flown for 3-minute maxes, and Allen King of Australia won the Wakefield Cup with 5 maxes. Carl Wheeley won the Power event with only 3 maxes out of 5 flights.

FAI models were a bit different in those days. ROG or VTO was required for all flights. No pushes were allowed, either! (An American proxy flier was disqualified for this on the last flight of Hugh O'Donnell's model, which cost the British the team championship in Wakefield.) But you had more power to play with in those days . . . Wakefields used 80 grams of rubber, twice as much as nowadays. Power models had more than twice the engine run (15 seconds) and lower weights (minimum weight for a .15 was 17.5 oz.) than today's Rossi-powered birds.

This contest was a forerunner of quite a few future trends in international free flight. It was billed as the "World Model Air Olympics" (even though the A/2 Championships were held separately in the rains and wind of Denmark), but the first true free flight championships (for all 3 FAI events) didn't take place until the next year. The U.S. again won both the Wakefield and Power team championships in 1954, but the poor attendance from Europe precluded our hosting the event the next year. So AMA agreed to co-sponsor the triple championships in 1955 with the German Aero Club, and the seed was planted for the type of World Champs we now are familiar with.

Tom McLaughlan launches his Swinger FAI ship at King Orange Internats. Linstrum pic.

Current U.S. FAI Power team member Carl Bogart checks in at 1975 Galeville semi-finals. Photo by Joe Guylas.

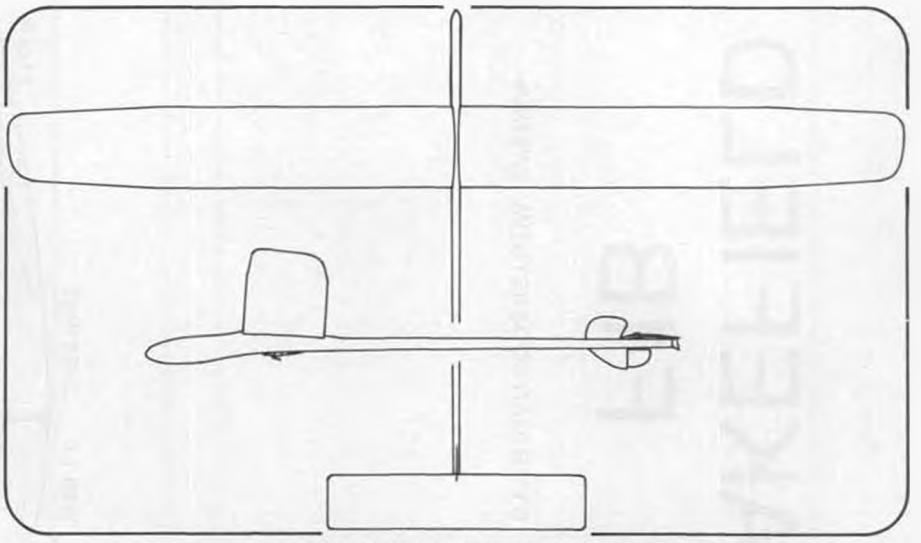
George Reich proxy-flew at 1954 W/C, went on to become most recent American to win Wakefield (1961). Photo taken at Bong finals, 1968, by unknown person, sent in by Stalick.

The 1954 contest also marked the end of the dominance of the FAI power event by American fliers and engines. Carl Wheeley was the last American to win an outright World Championship in Power (Larry Conover shared the title with 4 others in 1960). The Torp greenhead .15 was king of the hill in 1954, but was soon eclipsed by engines from Europe and Japan. (A Cox TD .15 was used in Schneeberger's 1961 winner, but that was the last American engine to ever be a threat.)

The experience of proxy-flying ships from other nations in a World Champs seemed to rub off on some of the proxy-fliers. A goodly number of them (Hermes, Andrade, Reich, Hatschek, Montplaisir, Dean, Parmenter) ended up representing the U.S. in World Champs on their own.

And probably the most significant event for free flight came about as a result of the troubles many of the gas fliers had with their pneumatic timers. John Gorham's model was in a position to win with a max on the last flight when the timer failed because of oil seepage into the timer, giving a 4-second run. John Tatone was a U.S. power team member, with a model that several observers called the highest climbing of them all. Yet, he suffered 2 overruns in the third round and collected a zero score. He thought about the timer problem all the way home, and that's how development of the Tick-Off timer began.

Steve Helmick displays novel circle tow technique involving two steel lines. (TH says that if Dirty Dan can publish a photo of Earl Moorehead in the C/L column. . .)



SEPTEMBER MYSTERY MODEL

THE RUSSIANS ARE COMING?

I haven't heard anything official yet, but have heard from a fairly reliable source that the Russians have declined to enter the Taft World Champs because of South Africa. But Steve Helmick received a letter from Kingsley Appleby of South Africa that South Africa had announced their intention to NOT go to Yugoslavia, and that they have decided not to change their intent, now that the site has been changed. Steve also got a letter from Rhodesia saying that they didn't think anybody would be coming, but it was up to the individuals, since they had to pay their own way. But the Swiss will not come because of Rhodesia being here! Both the Rhodesian and South African non-entries included proxy-flying.

Sounds like none of the Eastern bloc nations (including North Korea) will experience a Taft trashmover this year.

DOUBLE COVER UP

(by Tom Heppler, from the *FFFliar*, newsletter of the Alabama FFFlyers. Contact Bill Matthews, 311 Poinciana Dr., Birmingham, AL 35209 for subscriptions)

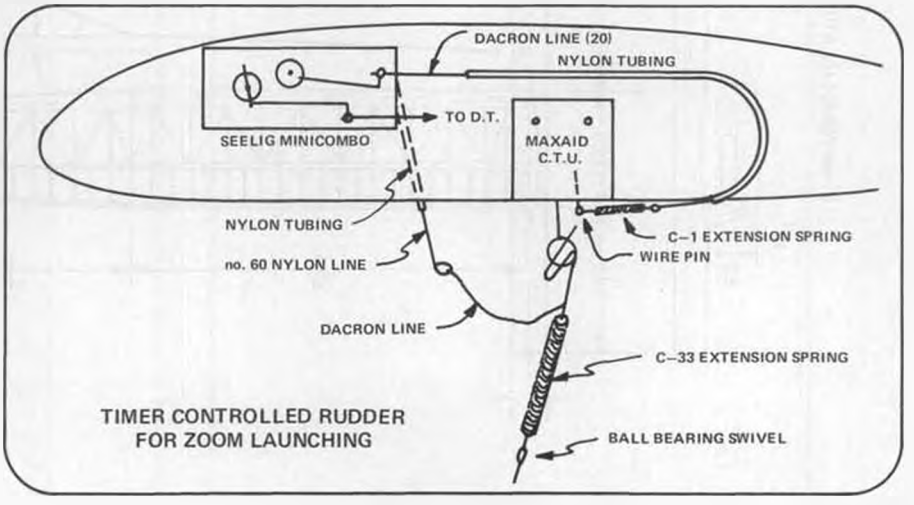
"Have you been double-covering with Japanese tissue by laying the second layer over the first and then bonding it directly with a thinner-wetted brush? End up with wrinkles? If so, consider the following method.

"Give the wing or stab frame 2 coats of clear dope thinned enough to brush fairly easily. Coat only the areas where the tissue is to be attached. Place the first layer of tissue with the grain spanwise over the area to be covered and tack in 3 places, forming a triangle. (Tack one spot at the leading edge at one end and one spot at the trailing edge of the same end by touching a brush of thinner to the tissue. When the first 2 spots are dry, in about 30 seconds, pull the tissue out to the other end and tack in the center. Try to get equal tension wrinkles.

"Now, hold the tissue down at the leading edge and at the trailing edge

Continued on page 100

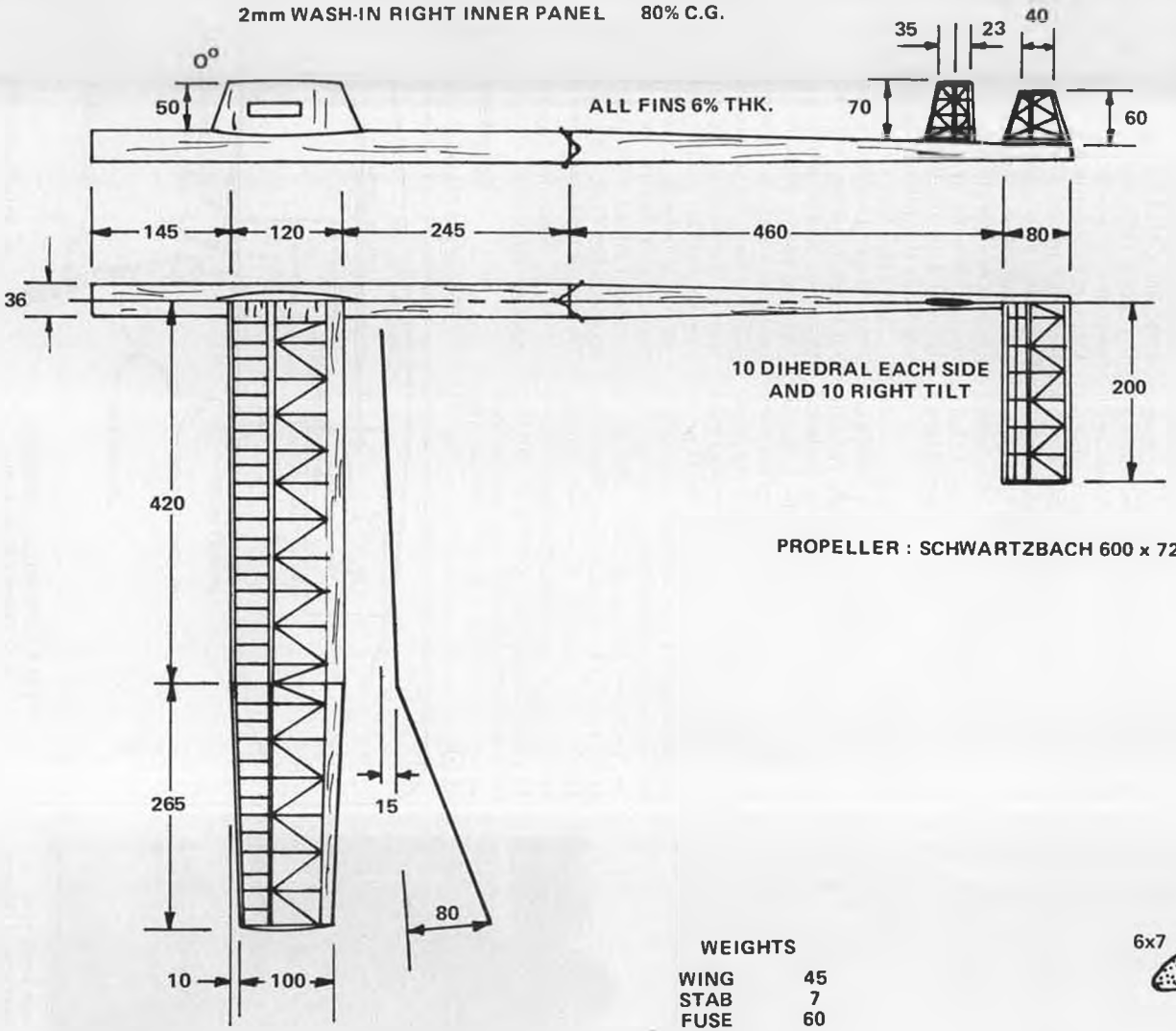
(Wakefield 3-view on next page)



TIMER CONTROLLED RUDDER FOR ZOOM LAUNCHING

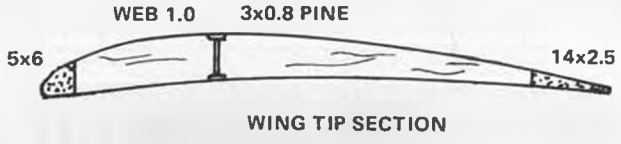
WAKEFIELD F1B

BY: BJORN SODERSTROM, SWEDEN

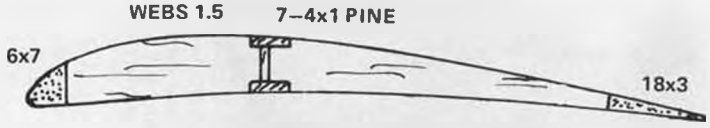


PROPELLER : SCHWARTZBACH 600 x 720

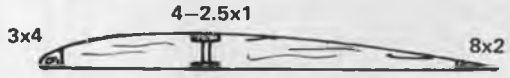
WEIGHTS	
WING	45
STAB	7
FUSE	60
TIMER	10
PROP & BALLAST	55
BOBBINS	5
	191 gm



WING TIP SECTION

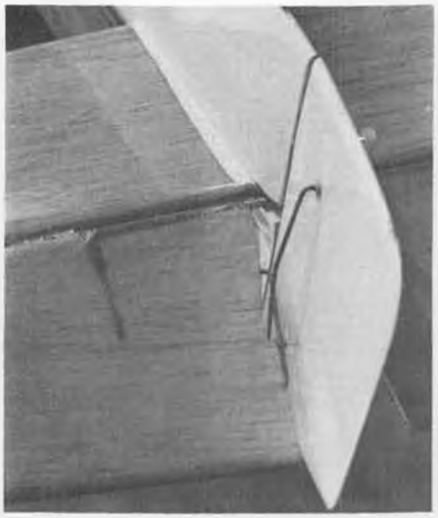


WING SECTION B 8356 b



TAIL SECTION

The "Mod Twister" built by Jim Thomerson. Basically a stock Sig kit, but changes to rudder, fin, and canopy give it a new look. Photo by Don Taphorn.



Linkage for "wiggly rudder" on Mod Twister. Wire on rudder translates up/down elevator to right/more right rudder. Taphorn pic.

Control line

By "DIRTY DAN" RUTHERFORD

• Although the letters I receive in relation to the C/L column don't equal the column in numbers of words, I do indeed hear from some of you guys once in awhile. Jim Thomerson wrote recently about flying some Stunt, and his letter follows.

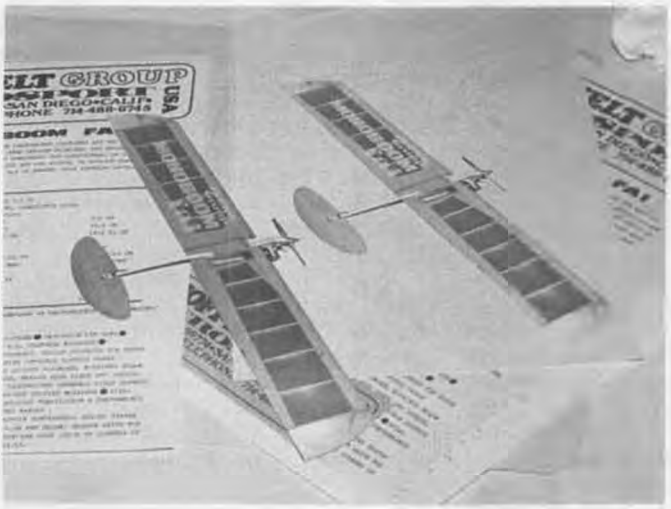
Enclosed are a couple of photos you may be able to use to flesh out your C/L column in **R/C Model Builder.** *Please use them before your column is pushed back behind the World Engines ad. Spring of last year, I got tired of breaking engines and all the going round in circles that goes with C/L racing and decided to give Stunt a try. I have sort of a hang-up that I really can't afford the time to go out and sport fly, so it has to be mostly practicing for contests. That I can do on a daily basis without feeling bad about it. Anyway, I got a Fox .35 and a Magician and did a lot of practicing and got good enough to take a 2nd in Beginner at DeKalb and a 3rd in Intermediate at a St. Louis contest last year. I did no trick stuff except to put flaps on the Magician. I did put a wiggly rudder on it for a bit and was well impressed. The Magician has well over 300 flights on it and has lost the rudder 25 or 30 times in inside squares and flies fairly crummy by now.*

I had started on a zoot airplane but decided that I needed another profile NOW. Your fine column on let's all fly some Stunt decided me to try a Twister, as you see in the photos. I changed the body and rudder profiles, put in turbulator spars on the wing, moved the controls to the inside for easier cleanup, and put on a simple but fine working wiggly rudder as per the second photo. The leadouts and wing weight are adjustable. Finish is transparent orange Monokote wings and stab. Sig red and blue trimmed yellow body. I don't have it completely trimmed yet but it looks like it is going to be real fine.

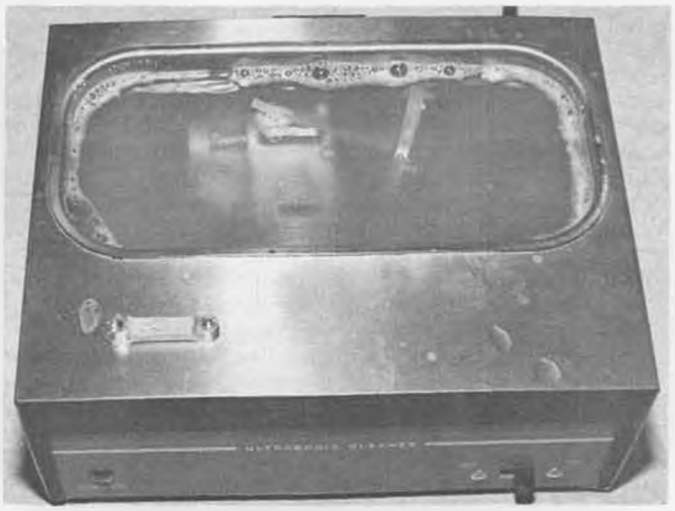
Anyhow, keep up the good work as long as they will let you. Sincerely, Jim Thomerson.

Going by the pictures and the letter, Jim likes his Twister and I would like to again suggest that if you want to fly some fairly serious Stunt, yet not be bothered with building a full-bodied Stunt plane, the Twister is a very good choice.

Mine is still in stock kit condition and I don't feel the need for the movable rudder combination Jim worked up. Still, if you would like to try it, go ahead. If you don't like it, it is a simple thing to lock the rudder in place. Better yet, as



Mike Hoffelt and Charlie Johnson train their nasty Combat planes to chase each other as shown by the FAI Monoboom clones going nose-to-tail on paper. Photo by Charlie Johnson.



Charlie Johnson's Fox Combat Special getting the full treatment in his ultrasonic cleaner. These cleaners are the hot tip for getting engines really clean.

long as the rudder would already be hinged, it would be interesting to try making it adjustable while still being locked in place during flight. The way to do it would be to fit the usual control horn to the rudder; it needn't even be aligned with the hinge line. A threaded rod could then be attached to the fuselage a couple inches forward of the rudder hinge line. A neatly-faired block would be tricky, but just as effective is a 90° bend in the forward end of the rod, punching this end in the fuselage and gluing it solidly.

A nylon or metal clevis would then go on the aft end of the rod and be connected to the rudder horn. For rudder offset, it would probably be best to use the kit dimensions at first, as it is safe. A few test flights, then start taking out or adding rudder offset and note the effects.

As with any adjustments made to a flying model, play with just the rudder offset and nothing else. Making multiple adjustments before each flight is simply a waste of time. Another thing to remember when trimming is that although you might get to what seems like the perfect rudder offset position, doing other little things like changing line rake, tip weight, motor offset, center of gravity, line length and so on can have interesting effects on rudder settings. Until all of those items are in balance, your machine is not trimmed and if you are really picky it will take considerable flying and adjusting to get everything just the way you want it.

ON THE OTHER HAND. . .

Whenever a group of Stunt fliers, rather a group of SSF's (Serious Stunt Fliers), converge to help others with trimming a model, these "others" get laid low by all the talk about trimming. If confusion is the desired result, it is very easy to get so wrapped up in trimming a Stunt plane that it comes off looking like an almost impossible job. The adjustable features of many models (line rake, tip weight, rudder offset or rudder deflection if movable, engine offset and the rest) means that there are literally hundreds of combinations of settings. If you were to try every single one, the model would be worn out by the time it was trimmed.

So what do you do?

The answer to that question is up to you, but what I feel SSF's are really doing is using middle-of-the-road trim settings on models that are basically "right" in the first place. Being "right" means without obvious flaws in design, no warps in flying surfaces, proven engines, and so on.

Although most do go to some trouble to trim these models, the biggest gain (usually) is not in arriving at the ultimate trim combination but in getting in lots and lots of flying time. This generally results in a flier that is trimmed to the model instead of the model being trimmed to exactly match the flier.

I know that a lot of people will argue with that, but I feel that familiarity with a basically sound but slightly flawed model is much better than trying on a perfectly trimmed model, flying it twice and going to a contest.

Remember that the best, most compact computer around is laying there between your ears, and while flying it is being fed input by all of your senses, most of which are of great help in guiding the model through the various maneuvers. The answer is to approach the trimming of a new plane with the idea that accumulated flying time is the desired result, but as long as you're flying anyway it can't hurt to try different trim adjustments every few flights. Just be sure to note what you change, so you can go back to original settings.

If you're not convinced that familiarity with a model is more important than the UTC (Ultimate Trim Combination), look around at some of the fliers and models at contests. Some of the models have been around for awhile and the guys flying them have won or placed in numerous contests. Back somewhere in the model's past it was probably judged as completely trimmed and has not had a change made to it in months or years. If asked, the owner of the model will no doubt tell of all the changes made early in the model's life and how it is now "perf," not needing trimming for some period of time.

The question to ask yourself concerns how this could be possible. Wood ages and changes dimensionally. Some coverings continue to shrink, others loosen. Linkages get worn. Motors lose some power, or may change slightly in power characteristics. Props do get broken, and surely the model doesn't have the same exact prop now that it did when in UTC.

See what I'm saying? If our anonymous flier were really trimming his plane to match his tastes, he would have to almost constantly be trimming it to compensate for aging and wear and tear.

If you want to really get into flying Stunt, keep this in mind. Don't go overboard trimming the thing. Get it close and then fly a lot . . . the more the better.

RON DULY GETS UNRULY

Although I have met many of the C/L people who have always been regarded as interesting folk, one whom I have not met and would like to is Ron Duly. Ron does the newsletter for the Carrier guys and it comes off a little wacko quite often, so I think Ron and I could get along just fine. Anyway, Unruly Duly wrote recently and I have decided to use his letter, as it points out the problems you get when rules are either not well thought-out in advance and/or changed often.

Hi Dan,

Thanks for printing the picture of my Swee' Pea Big Goodyear in **R/C Model Builder.** *Charlie Johnson sure is a good local P.R. man!*

Pictures of the plane also showed up in Aero Modeller *this month. Before someone gets hot to build one for the Big Goodyear event, thought I'd give you (and Dave Clarkson of* Aero Modeller*) the sad but true story on the plane.*

Since Big Goodyear was a "fun" event I thought I'd build a pretty plane . . .

something different. I took a Goldberg Shoestring and changed the fuse shape and made up the V-tail. Paint was in scale colors (cream and green).

At the 500 lap race last year I took first by over 4 minutes. The Tune/Hill O.S. .36 engine worked very well indeed. Don't believe the shape of the model had anything to do with it winning.

*Well, guess what? At the contest, a SCCA (Southern California Controline Association) meeting was held and the rules were changed! Did they outlaw the super O.S. .36? No, they outlawed the modified kit!! *'%$&#. . . .*

For Buckeye this year I built a stock Sterling Ringmaster but called the Big Goodyear Event Director to make sure SWCLA rules would allow the O.S. .36. They said OK! I told Joe Klause and he and Charlie Johnson blew everyone away with Joe's O.S. .36 Ringmaster . . . beat 2nd by over 36 seconds, as I remember.

Well, now! Guess what SWCLA is about to do? Change the rules and outlaw special engines such as the O.S. .36!

I was so happy I vented my spleen in a letter to Patty's Pinkie, which should be out soon.

Perhaps Big Goodyear should be put under S.A.M. sponsorship in keeping with the Old Timers desire "not to advance the state of the art."

It's times like this when I remember why stamp collecting was fun. With stamps you can just lick 'em and stick 'em. In Big Goodyear, if you lick 'em, they stick 'em right where it feels ungood.

Enjoy your column, keep up the good work. Yours truly, Ron Duly.

Not being totally familiar with the C/L scene in the Southwest, I'll choose not to elaborate on Ron's letter. But maybe you can pick up on what he is saying and keep it in mind when coming up with local events and rules for same.

SWAP MEET

Over the years there have been many circumstances like the one Ron now finds himself in; that of having an expensive, custom-built engine but no event to use it in.

In an age where recycling is popular, we need to apply this thinking to these expensive engines.

Ah, you're ahead of me already, aren't you? You're thinking I'm proposing a TES (Trick Engine Swap) between all of us who have them. Almost. Let's take the idea a bit further.

What we need to do is come up with several "local" type events for Combat, Racing, Stunt (maybe), Carrier, and a strange one like Restricted Balloon Bust. To really be in on the fun of things (indeed, to even make this scheme work at all), each event's rules will need to be logical sounding, but basically flawed. Or we could have good rules, but plant a "win through rules change" modeler in each area the rules are used.

To take a Racing event as the example, we would foist these rules on the modelers in a certain area of the country. They would accept them and start promoting contests featuring the event. The local racers would read the rules and try to come up with the trick set-up. For a year or so, everything would be fine with lots of experimenting taking place, some good racing being had, and the event would grow in popularity. But sooner or later, somebody would finally come up the Magic Combination and blow 'em away.

At this point in time the rules will be changed and a lot of good equipment will be outlawed.

But in the meantime, before this Magic Combination has come forth, we have gotten this very same event started someplace else in the country. Due to having gotten a late start, they are months away from developing said Magic Combination.

Now it gets fun. In one area are a lot of modelers with high-zoot equipment, but no place to use it. In the other area are people ready to buy stuff known to work. The first group gets together, sends out a list of the equipment and prices being asked. The second group looks it over and they send the money for whatever looks good.

Naturally, this event also gets blown out in the second area within time, but we are busy getting a third area going on our short-lived event. When modelers in the second area get to the stage of getting out of the event, the people in the third area are ready to buy their stuff.

With care and planning, it ought to be possible to get the event to go full-circle, starting in one area and going completely around the U.S., finally coming back home to the originating locale. Along the way, some of the motors will have been blown, a few planes wrecked, but wouldn't you rather pop a third-hand Custom Motor (that you paid a third-hand price for) than a brand-new one? REALLY?

Yes, the above is just typewritten extensions of the strange meanderings going on in my mind, but it occurs to me that such a scheme would be at least as

logical as many other rules happenings observed in recent years.

In fact, could it be possible that somebody else long ago hit on what I just did and is even now starting an event like the original Big Goodyear in some part of the country? Maybe he is a lot smarter than I, and instead of telling the world of his idea, makes a good living buying Trick Stuff from those who used to fly Big Goodyear and then selling (at a nice markup) the same stuff to others just getting into Big Goodyear.

I've got it! It IS a plot and somebody really is jacking us around with funny events and rules for same. But we are not the real target.

This fellow is proving out his idea on us C/L fliers. Now convinced that the concept is basically sound, he will next be moving into the area of R/C, as everybody knows that is where the real money is. . . .

I for one will not miss our little rabble-rousing event maker/rule changer. •

Synchro . . . . . *Continued from page 17*

sheets *(heat-shrink plastic)*. That is according to the way you prefer.

FIG. 3

The rotor central arms are made of plywood 3/16 inch thick. The tips are slightly cut in such a way that the blades are set at a small negative angle: 2°. So, the rotor is somewhat helicoidal, which helps to build up the revolutions. Under the arms, shrouds are cut from 3/64-inch dural sheet, then shaped and screwed to the plywood. In the middle of the arm, the collar holds the long screw which is fitted inside the 'L' plate, of which we have already spoken.

It is very important to check that the rotor is perpendicular to its shaft. Don't forget that each blade must pass over the head of the neighboring rotor!

A drop of oil on the gears, and the rotors must turn easily.

Now about the rotor positioning. You will see that the holding *(mounting)* system is perpendicular to the top of the cabin. This top is set at 10° incidence, so the rotors have the same 10° of incidence. Don't hurry to settle *(mount)* the rotors on the fuselage. You'll first have to do some trim with the center of gravity. We'll see this later on.

FUSELAGE

I have probably drawn one thousand sketches before coming to this shape (I must own [*admit*] that I design autogyros EVERY day, between two typewriting sessions. My job is writing books for children.). The fuselage incorporates only flat surfaces, to make the building easier. It is all made with 1/8-inch balsa sheet, with inside 5/32 sq. stringer. There is just one former which holds the undercarriage.

A classic balsa block is in the nose, and another one forms the top of the cabin. Three hardwood bars are inserted in this block, to hold the plastic windscreen. It covers only the front part of the cabin. The sides are left opened, to permit access to the tank and the electronic items.

TAILPLANE

It is cut from light 3/32 balsa. Nothing particular to say. There is just rudder control, no elevator.

CARRIAGE

The 3/32 steel legs may seem somewhat weak. In fact, the Synchrogyro lands very gently (if there is no piloting mistake, of course), and the carriage has no hard efforts *(loads)* to stand. So, it may be kept very light. The wheel coverings are optional. If you plan to take off from grass, they are not adequate. But taking off from a concrete runway has been done.

MOTOR

A current .35 or .40 is quite good, driving a low pitch 11-inch prop.

It is mounted 2° right and 5° down on a plastic holder, with elastic rubber blocks. If there's a tendency to stall, the motor may have a downthrust to -10°. This holder is not shown on the plan, because each modeler has his own way to put a motor in the nose of a model. Just behind the balsa block is the battery, then a 10 cubic inch *(6 oz.)* tank is positioned at the center of gravity. Then the receiver and the two servos.

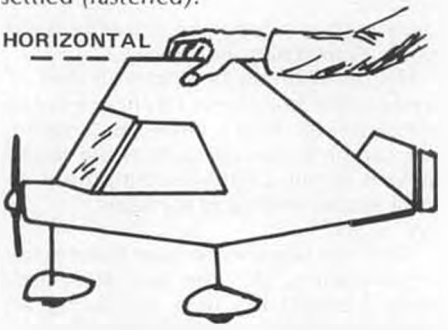
The model is covered with modelspan paper, then three coats of dope, and three coats of cellulose yellow paint. But you may Monokote or Solarise. . .

C.G. LOCATION

This is a problem which brought me innumerable headaches, during years! At last I went to a solution which may be used for every kind of autogyro. The center of gravity of the model is spotted at a point which is the intersection of two lines. One is the axis of the engine, i.e. the thrust line. The other is the OG line as shown on the sketch. This line is set at an angle which is half of the incidence. For instance, if we have 10° incidence, as on the Synchrogyro, the over angle is 5°.

Correct positioning of the CG is done by moving the battery fore or aft.

But before settling *(mounting)* the rotors holder on the top of the cabin, do this test: when everything in the fuselage is in place, hold the fuselage by the point where the holder *(mount)* is to be settled *(fastened)*:



The top of the fuselage must be horizontal. This gives you a first idea of the repartition *(distribution)* of the weight. You will see immediately if the tail is too light or heavy, and how to correct by moving the battery. If it appears that this will not be sufficient to obtain a horizontal attitude of the fuselage, then you may modify the position of the rotors. If the motor is too heavy, for instance, bring the holder a half an inch or so forward. With a low tailplane *(tail heavy condition)*, bring the holder aft.

Once the model is correctly centered *(balanced)*, it will fly with good stability, without the help of an elevator. This reminds me of the word of Henry Ford: "What you don't put into a car won't disturb it." Or something like that. Or said: the simplest, the best.

TESTS

These are to be made, of course, in calm air, or with a very gentle breeze. If

there is no wind at all, just run a few yards until the rotors build up revs. If you have some wind, the rotors will start running without moving at all, and you can throw the model like an airplane. The Synchrogyro flies straight and up at a 10°/15° slope, according to the power of the engine. The stick does not require large movements for directional control, the rudder being quite effective (even with this short fuselage). Facing a moderate wind, with the engine at half power, the model will hover like a helicopter.

When you want to land, you put the motor at idle, and the chopper comes slowly down. You don't meet the problems which happen with a plane, such as looking for a good position according to the runway or fighting with the elevator to have the plane at a good attitude for landing. A gyro is much easier to pilot than a plane. And when you run out of gas, all you have to do is to switch off the transmitter, light a cigarette and go quietly to pick up your chopper which has slowly landed. •

SAFE FLYING

IS NO ACCIDENT

Choppers . . . . *Continued on page 21*

immediately results in a dissipation of rotor speed while the airflow through the rotor system is changing from the "downward" flow (in powered flight) to the "upward" flow (during autorotative flight). Rotor rpm decreases at a very rapid rate if immediate action is not taken to decrease the pitch angle of the rotor blades. It therefore becomes necessary to quickly lower the collective pitch to maintain an acceptable angle of attack to the upward-rushing relative wind. The actual amount of blade angle at low collective (angle of incidence) is not fixed and varies with the particular model helicopter, but usually is around -2 degrees to +2 degrees. When you first sense the engine failure and you throw the collective pitch to "full low," you will probably notice an immediate loss of altitude of 15 to 20 feet. This is actually desirable because it is this drop that puts your chopper into "instant autorotation." After this sudden loss of altitude, you will experience the flow of air being forced upward through the rotor disc which causes the blades to keep a constant rpm. The helicopter is now acting like an airplane, and a slight amount of forward cyclic stick is maintained throughout the descent to keep it gliding forward.

A constant glide angle is very desirable to maintain a constant rpm. Too steep a glide angle and the rotor will speed up unnecessarily . . . it also increases the rate of descent rapidly, which leaves you with less time to plan your touchdown. If the glide angle is too shallow, the rotor will lose rpm and control can only be regained after another steep dive. Just remember, there is an optimum glide angle for your particular chopper . . . find it and strive to keep it there. Changes in rotor rpm can easily be heard in a reasonably quiet flight environment and can be used to advantage if you listen closely. Another very important point to remember is that every control movement absorbs energy out of the rotor system and slows it down. The less the control inputs such as fore/aft, left/right, the more constant the rotor rpm will be.

Earlier, we spoke of altitude and forward speed as energy sources for maintaining rotor rpm. Well, how much do we need? Generally speaking, there are trade-offs involved . . . the higher the forward speed, the less altitude is required (within limits). I believe a safe minimum altitude for an expert chopper pilot would be in the vicinity of 30 to 40 feet, but 75 to 100 feet is definitely recommended when practicing autorotations! Full-size helicopters are operated within the confines of a chart known as the "dead-man's curve," more commonly referred to as the "height-velocity curve." The actual numbers are of no value to the model R/C helicopter pilot, but the charts do verify that a certain minimum altitude is necessary to complete the transition from normal flight to autorotation before the helicopter strikes the ground. It is strictly a judgment decision on the part of the pilot, based upon his skill, experience, and knowledge of his helicopter and the altitude-airspeed combination at the time of engine failure.

Now that we have our chopper in a solid autorotative descent, how do we land it? Well, what would we do in an airplane when we reach the bottom of the glide? We flare it . . . bring the nose of the ship back up to convert our forward speed into lift. As the lift decays with the reducing airspeed, we settle gently to the ground. And in the helicopter? Exactly the same. As we near the ground (approximately 5 to 6 feet), we apply a back-stick command which actually does two things. First, it slows the forward motion of the helicopter to almost zero ground speed. Second, it tilts the rotor disc area upward (nose up) and creates a sudden rush of air flowing upward through the blades. This, in turn, causes a very rapid increase in rotor blade speed . . . in fact, enough so that you can now add collective pitch to cushion the final drop for the landing. This flare maneuver actually utilizes the aerodynamic principle that any wing, whether fixed or rotary, will glide at a faster speed if the wing loading is increased. Thus, if we were able to somehow increase the wing loading, the rotor would speed up. We *are* able to do this by flaring hard around 5 feet off the

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ground. This momentarily pulls some G's, making the helicopter seem to weigh more, so rotor speed increases and more kinetic energy is stored as rotor momentum, giving the pilot an additional second or two in which to apply the last bit of finesse . . . the final touch of collective pitch. If you don't have enough collective left to make a soft landing, you either flared too soon or not hard enough! It does require skill and much practice to perfect this final control input. Fortunately, you can practice autorotations with the engine at idle power (with the appropriate throttle/collective ratio) and autorotate into a powered recovery, or hover. Just make sure that you start your practice from 75 to 100 feet of altitude and about 100 feet downwind from your standing position. This is to make sure the landing is in *front* of you and not to your rear (unless you can land "nose in").

Now for the final bits of info which can make or break a successful autorotation:

1) Successful autorotations require good maintenance. The engine must have a good, solid idle for practice autorotations to a powered recovery. Bent shafts, blades out of track, etc. are all causes of vibration which can reduce rotor rpm drastically!

2) Blade finish is also important. A smooth, well-finished blade has minimum drag and permits higher rotative rpm.

3) Rotor blade tip weights can often be advantageous, since the increased mass has the capability of storing more kinetic energy and helps to maintain a more constant rpm. Tip weights also provide a stronger reaction during the final flare maneuver due to the increased G's.

4) Atmospheric conditions are important, too! Autorotations are better and more efficient at lower elevations and on cool days. High elevation (above 2000-3000 feet) and high temperatures (above 65°-70°) do not promote good autorotations.

5) Keep your helicopter light in weight. A heavy chopper increases the descent angle and speed, and reduces your time to maneuver before landing!

6) Do you need a clutch? The answer usually depends upon your particular chopper. Those with high-friction transmissions or drive units will probably need a clutch to permit a completely free main blade rotation. The normal clutch used between your engine and transmission is generally acceptable, provided there is practically no friction in the rest of the drive system. If you drive the tail rotor with a high-friction drive, such as a belt, then you will probably need an additional specially designed clutch to isolate the main rotor from the rest of the transmission. In this case, you will lose tail rotor rotation; however, a reasonable forward speed will not require tail rotor control for autorotations . . . satisfactory control can be provided with cyclic only. Just remember, tail rotor drive friction and tail rotor blade pitch changes (as in turns) can eat up your main rotor rpm at an unbelievable rate!! Avoid either or both!

7) Contact your manufacturer directly for special clutch requirements, availability, and basic chopper set-up specifications. His advice should be followed explicitly if you want to avoid crashes.

MCAS(H) WEST COAST HELICOPTER CHAMPIONSHIPS

The first annual West Coast Helicopter Championships were held May 18, 19, and 20, 1979, at the home of the U.S. Marine Corps Air Station (Helicopter), Tustin, California, only minutes away from the excitement of Southern California's famous tourist attractions . . . 10 miles south of Disneyland and 5 miles from the Pacific Ocean, as examples. With the unprecedented cooperation of the Commanding Officer Col. Glenn Shaver Jr. and his men, the meet qualified as an outstanding success . . . full-size heli-pads to fly from, good weather, and a military helicopter squadron atmosphere really make it nice. Handling of information, registration packets, refreshments, and general planning were under the direction of Marvin Copfer, while Joe Bridi acted as Contest Director. Judges were naval aviators (helicopter pilots) and were quite adept at giving points in Novice, Intermediate, and Expert categories. All day Friday and Saturday morning was reserved for test flying and an R/C model helicopter clinic for those who needed help. A 24-page rules and maneuvers booklet was given to each of the 10 Novice, 10 Intermediate and 7 Expert entrants . . . this really set the stage for eliminating the usual misunderstandings so prevalent at

contests.

Winners were as follows:

NOVICE
1) Curtis Croker
2) Bob Mearns
3) Wayne Sakomoto

INTERMEDIATE
1) George Croker
2) Mike Yamashiro
3) Craig Hall

EXPERT
1) Mike Mas
2) John Simone
3) Larry Jolly

In addition to the contest flying, where some fantastic performances were observed, there were large numbers of static display models as well as R/C aircraft flight demonstrations between rounds. And, of course, the old master, Dieter Schluter, put on his usual spectacularly smooth demos with his latest Bolkow helicopter. Incidentally, Dieter introduced his own personal method of awarding prizes (in Germany) by drawing lots. The only requirement was that the winner had to have at least 10% of the highest number of points attained by any entrant in the contest. This really makes for an interesting situation where a "low-pointer" has an equal chance with the expert for top prizes! A future article will give you some idea as to how they conduct Fun-Fly events in Europe . . . rather unconventional, but loads of fun for the participants!

FINAL APPROACH

If this issue's column isn't chopped up by the editor (wcn), we'll all be lucky. Next time, I'll try to keep it shorter and more to the point! BCNU next month, and keep the mail coming in with your questions and answers. •

Electric . . . . . *Continued from page 23*

grasp the plane by the top and sling it forward in an underhand throw, just like pitching a softball, and away it goes, no problems at all.

The climb is steady but slow, with a ceiling of about 300 feet under power, and a total flight time of five to six minutes. I have seen and flown the gas-powered Sportavia, and its performance is identical, except that it doesn't run as long. If there is a thermal around, the Sportavia goes right up; I got up to about 900 feet via thermals quite easily. However, once the plane leaves the thermal, it is hard to keep it up long enough to catch a second thermal. My conclusion is that the slow and docile flight of the Sportavia is well suited for beginners, and there is enough thermalling ability to give some extra fun, but I also felt that the motor didn't have a chance to show off its full abilities in the plane. So, I got a Cox Centurion, which uses the same gas motor as the Sportavia, and installed the motor and battery pack. This was easy, it was almost as though the Centurion had been designed for electric power. I used Midwest 1/2A beam mounts and put the battery pack in the space molded for the receiver pack. The all-up weight for the 250 sq. in. plane was 25 oz. with the Cannon receiver, Bantam Midget servos, and 250 mah receiver pack.

Wow, did that combination fly! It flew fast, climbed fast, and stunted like crazy. A full five-minute flight included altitudes over 600 ft., loops, rolls, spins, and inverted flight! It is also capable of thermaling! Cox doesn't sell the Centurion separately, unfortunately. As parts, it comes to $63, or $69 with the gas engine mounted. I would bet that the Q-Tee would give similar performance; at $22 it is a lot less costly. The batteries should be well cooled; I have found that after two flights they do need to cool down.

My conclusion is that the Cox unit is very good indeed. At 10 oz. with wiring, it makes 23 to 25 oz. 1/2A electrics quite practical with very good performance. I recommend it.

Dick Henderson sent me photos of his pretty Electro Flea, a little plane I designed for the Astro 020. I'll have to admit that Dick did a much nicer job than I did on mine. Of course, mine is four years old and an old weary veteran now. Its forte is flying from small lots; it climbs fast and descends fast when the power cuts out. Nice job, Dick.

Dick has many talents. He is also author of the Hendertoons in *Model Aviation*. I enjoy his sense of humor. This is a hobby, so it pays not to take it too seriously all the time! Enjoy the electrics, until next time! •

Instructor . . . . *Continued from page 26*

ness ranges all the way from slight twinges to full-scale knee knocking), and you owe him the courtesy of not doing anything to upset him even more. Secondly, give the pilot's flight your complete attention. I know as well as anyone that after a full day of judging, the old neck muscles get stiff and your attention tends to wander, but hang in there until the end. Every pilot from the best to the absolute worst deserves the best you can give him, so pay attention. Thirdly, don't be a nitpicking old grouch to these guys. A contest can be run very efficiently with politeness and smiles instead of yelling "next," "here is the clip," "you're on the clock," "where the h--- are the score sheets," etc., etc. If you see a pilot deliberately stalling or holding up a contest, then a polite comment may be in order, but be nice, it doesn't hurt and sure makes the job more enjoyable. Lastly, occasionally you will get an old grouch for a pilot or come up with a problem or complaint of some kind, and my theory about that is to send him directly to the contest director. I believe that the CD should handle all problems with grouches, complaints, or uncovered questions. You as a judge should not have to be responsible for any of that. If the problem involves you, the contest director should approach you and decide what to do, and he is the only one who has that right.

So dig out your rulebooks, read, then go find some likely pilot to start watching. It is fun!!

* * *

Dear Mr. Brown:

I've just opened the pages of June's **R/C Model Builder,** *and I read the letter from Mr. Lonnie J. Barlow. Without going a single page further, I got out the typewriter to put in my two cents' worth, to let Mr. Barlow know that he is not alone . . . and, perhaps, to cause some soul-searching in the R/C model aircraft fraternity.*

For years and years, I've loved aviation, to begin with. I spent almost eight years in the full-size jobs as a navigator; from C-47's and T-29's, to B-52's, and some time in HU-16's. I've always had a deep yen to learn to be a pilot myself, but I just can't come up with a justification for the cost that my wife will accept! The next best thing, I figured, is R/C flying, and that's what I'm trying to get into.

You'll notice that I said "trying." I've built myself a Top Flite "Freshman Trainer," outfitted it with all the necessary gear, joined the AMA, and obtained my FCC license. The only other step to take has been to join a club and avail myself of flight instruction. I'd been spending a small fortune at two hobby shops over the thing, and the owners of both shops were extremely helpful in putting me in touch with one of the local clubs. On a meeting night, I went over to the clubhouse, application for membership in hand, joyously anticipating getting started in R/C flying.

First of all, I stood around in the clubhouse searching for someone who looked like they were in charge. Barring that, I would have settled for a friendly face, and someone saying, "Hi, I see you're new. Can I help you?" Unfortunately, neither of these materialized. After a while, I saw some people gathering at the table in the front of the room; so I made my way up there. Again, I couldn't seem to find anyone the least bit interested in helping me out. The president of the club (although I didn't know it was he at the time) even looked at me, and it didn't seem to occur to him to so much as wonder who this perfect stranger was standing around in the clubhouse. By then, the meeting was getting underway, so, in disgust, I walked out, depositing my application in the trash can by the door.

Just then, in came one of my acquaintances from the hobby shop, and he invited me to come on in and said that he'd introduce me to the club's officers at break time. This he did, and, as I was trying to present my application to the club treasurer, another member barged in front of me to give money to someone selling new keys to the flying field gate. After retrieving my application, I finally got it to the treasurer's attention, and when I asked what might be the next step, he replied that all he needed was a

check for the membership dues. I turned this over, and that was all there was to it . . . no handshake, no welcome, no membership card, no suggestion that I would need a key to the flying field gate now that I was a member, no nothing!

An announcement was made during the meeting about a builder's contest to be held the following weekend, and that sounded like a good opportunity for me to get my plane out to the field and have an instructor check it out for me, and, with luck, see if the thing would actually fly. I even met with one of the instructors following the formal meeting, so my thoughts were that things were going to be great after all, despite the sour beginning.

On the Saturday of the builder's contest, I showed up with my plane and once more looked in vain for a welcome or a friendly face. At last, someone stepped out onto the flight line and announced the contest. I took my plane to the area designated for students, and set it on the ground with the others in that category. Saying "Hello" to another member in the area with his plane, we chatted for awhile until the judging was to start. I was a little concerned that nobody seemed to want my name or to know what plane I was entering, but I then assumed that this was deliberate so as to make the judging impartial.

After the judging, everybody gathered to hear the results and I discovered that the names of people and the planes they had built were already known. I don't mean that the results were known in advance, but simply that everybody already knew everybody else and their planes. At no time whatsoever, though, did anyone associated with the club ask, care, or show the least interest in knowing my name, who I was, what plane I'd built, or even whether or not I was a member and entitled to enter the contest in the first place!

Following this, I went over to the instructor that I had talked to earlier in the week at the meeting. He was busy with someone else's model at that moment, so I didn't want to interrupt; but as soon as he stood up, I stepped forward to reintroduce myself to him and ask if he or one of the other instructors could show me around, check out my plane, and see about flying it. Unbelievably, he merely looked right through me as if I weren't there, and walked elsewhere.

Totally fed up, I threw my plane back into the car and went home. I thought it over a little and decided that perhaps I shouldn't let this one experience color my whole notion of R/C camaraderie. With that in mind, I contacted another club in the area and found out where they flew. The next Saturday afternoon, I took myself out to their field to introduce myself and see about joining. One of the members pointed out the club's treasurer, and I went over to him. He was engaged in a conversation with someone else, so I stood by waiting for a polite moment to break in and say that I was interested in joining the club, or for him to ask if he could help me. Would you believe that neither happened? Here I was, a total stranger, obviously waiting to have a word with him; and he simply kept on wiping the exhaust residue from his airplane while this other person talked on and on and on, both of them ignoring me completely despite their having looked up at me from time to time.

I now feel much the same as Lonnie Barlow. I went and bought a cheap little foam trainer for 3 channel operation with a .10 engine, and I'm going to teach myself how to fly it, rather than try to handle the Freshman Trainer with 4 channels and a big .40 engine. I doubt very much if I'm going to get much help from the club members around my area. I am rather disappointed, to be sure, but I blamed it on myself, thinking that I just didn't fit in with the local crowd for reasons that I couldn't figure out.

Reading of Mr. Barlow's experience has given my spirits a lift, however; at least I know now that I don't carry bubonic plague, or something like that. On the other hand, it's caused me to wonder if this ostracism of newcomers and raw beginners is something endemic to R/C fliers and instructors . . . unless one happens to be a close friend already, or can fit their mental definition of one.

Perhaps what is needed is a club especially for us "loners" and people who aren't particularly outgoing "joiners." Or perhaps the kit manufacturers should be encouraged to come up with a really foolproof design that we can safely teach ourselves to fly. When you come right down to it, I'm tempted to wonder just why I can't teach myself to fly the Freshman Trainer; after all, neither Orville nor Wilbur had an instructor, and all the experts told them that you couldn't learn to fly! Sincerely, Jack Liskey.

Dear Jack: I'm very disappointed to hear of this happening, as I've always thought of modelers as a kind of fraternity. COME ON, GUYS, LET'S GET OUR ACT TOGETHER AND HELP THESE BEGINNERS. Being friendly is of the utmost importance if we are to enjoy our sport to its fullest. I guess I'll just have to start a series on how to teach yourself to fly, as much as I don't recommend it.

[Typist note: seeing as how I have written most of this article, I might as well jump in with both feet here, too. I have found that modelers, as in all other walks of life, can be categorized into all types: helpers, ignorers, friends, stand-offs, etc., etc. By far, there are more friends than any other, but I will say that, as in all other places, it sometimes takes a lot of time to make that friendship. Yes, I have seen people ignored and it bothers me, but on the other hand I have seen someone give a beginner a helping hand, only to be told where to go for his trouble. Neither is frequent, but both happen. I have always been more of a stand-off type person, whereas Dave is just the opposite and will talk to anyone who speaks the language (and some

who don't. For example, we spent over an hour trying to talk to the Japanese people at the Tournament of Champions last year . . . don't know how much they understood, but we sure enjoyed it.).

My point is that had I not had Dave to lead the way to friendships, I sure would have missed a whole lot of joy in my life. The people I have met and enjoyed are treasures for a lifetime. New fliers, please ask and listen, and old fliers, please don't ignore someone who is trying our hobby, as not only will the hobby suffer but so will you. That next person who asks for help may just become a friend for life and a joy to your whole family. It has happened to me many times and can happen to you, too.]

ERRATA

In the drawing of Dick Hanson's Mixer in the May '79 issue, it shows both a "V" tail mixer unit and a sliding servo. It should not use both, although either will work.

Believe it or not, I had no letters to answer this month until after Sally had written her contribution, and then I only received the one above. Come on, guys, I need some input or this column will die. •

Fuel Lines . . . . *Continued from page 27*

with one hand, and push and pull on the con rod with your other hand. If you feel any play, then tighten the joint with a resetting tool. There are several brands available, and you should be able to find them in any good hobby shop.

OK guys, now that you've got some of those junk parts problems under control, you're ready to confidently move ahead with that original design you've so often planned. Right? Sure, why not. Well, here's a closing thought to go along with your enthusiasm. I believe it came from a pioneer in aviation design by the name of Stout, and it seems particularly appropriate to 1/2A: "Simplicate, and add lightness." •

ALDRICH

• We had an interesting conversation a few days ago with one of the top C/L stunt fliers in the country. Ted Fancher called to talk about stunt engines. He, as so many others, has been using the O.S. .40 FSR engine. This super quality mill pulls big .46 size models just fine, and you don't have to pay the penalty of the .018 diameter lines required for the .46.

The problem is that the O.S. .40 FSR has its timing rather on the "high" side and tends to run away and build up too much speed in maneuvers. This engine delivers a lot of power when allowed to rev up and really breathe. It's not hard to see what happens when a big . . . no, really big prop, say a 13x5, is stuck on such an engine. It's loaded down way below the rpm it was designed for and then allowed to unload on the end of the lines where centrifugal force will let it build rpm in maneuvers.

What we want in a stunt engine is one that will run steady and smooth without breaking back and forth from rich to lean. This not only involves the exhaust timing but the intake timing (bypass ports) also. (There are other factors, such as venturi opening, shape, etc., but for now we will concern ourselves with the cylinder port timing.) An engine with a lot of blow down, that is, a lot of difference between the exhaust and intake port timing, will tend to be "peaky" and want to run leaned out. It also does not deliver a lot of power in a four-cycle.

Just for the record, let's consider one cycle of the O.S. .40 FSR, in relation to its exhaust timing. The engines we have checked have been in the 140°-145° range. Subtracting the total time the exhaust is open, let's say 142°, leaves us with 360° — 142° or 218° from the time the exhaust closes, through TDC, and back down until it opens again. Divide 218° in half and we have 109° of power stroke. If the exhaust timing is dropped to 132°, total open, we then have 114° of power stroke.

To illustrate what we are getting at, back in the mid-1960's we were turning a consistent 180 mph with a Rossi .60 timed at 132° exhaust and swinging a 9x14 prop. Raising the exhaust timing to 140° dropped the speed to the low 170's and although we got it back to around 177 mph by dropping the prop to a 9x12 (extra revs to give more power strokes), only when we dropped the sleeve back to the 132° exhaust timing could we get back to the 180 mark, using the 9x14.

That covers exhaust timing, and it's pretty easy to get .025 turned off the top of the crankcase to drop the cylinder 10° or so (.0025 to .003 = 1° of timing).

But what about that blow down period we talked about earlier? Well, that's touchy, modelpersons, 'cause it involves raising, yeah that means cutting, the intake ports higher in the cylinder to reduce the blow down period. If we're messing around with a Schneurle ported engine such as our O.S. .40 FSR, this ain't no game for hackers or amateurs. Get someone like Nelson or Garner to do it for you if at all possible. If you give it a go yourself, proceed very carefully, taking only a small amount at a time. We'd recommend a small Dremel, garnet stone, and a rubberized abrasive stick on a Dremel mandrel to smooth the inside port edges.

It is most important that the port angles are changed very little, if any. As a starting point we'd say about 3°-4° at a time (.009 to .012) would be ample. It will cost some time, *flight testing* every change, but after you get it right the modification can be duplicated for a backup engine.

There are other factors, such as compression, to consider. This is pretty easy; add about 2 or 3 head shims and fly it . . . the idea is to see if it broadens the range. Get a change! If you lose too much power, pull a shim at a time until you get enough back. You may be surprised at how nice a lot of engines behave by reducing the compression. •

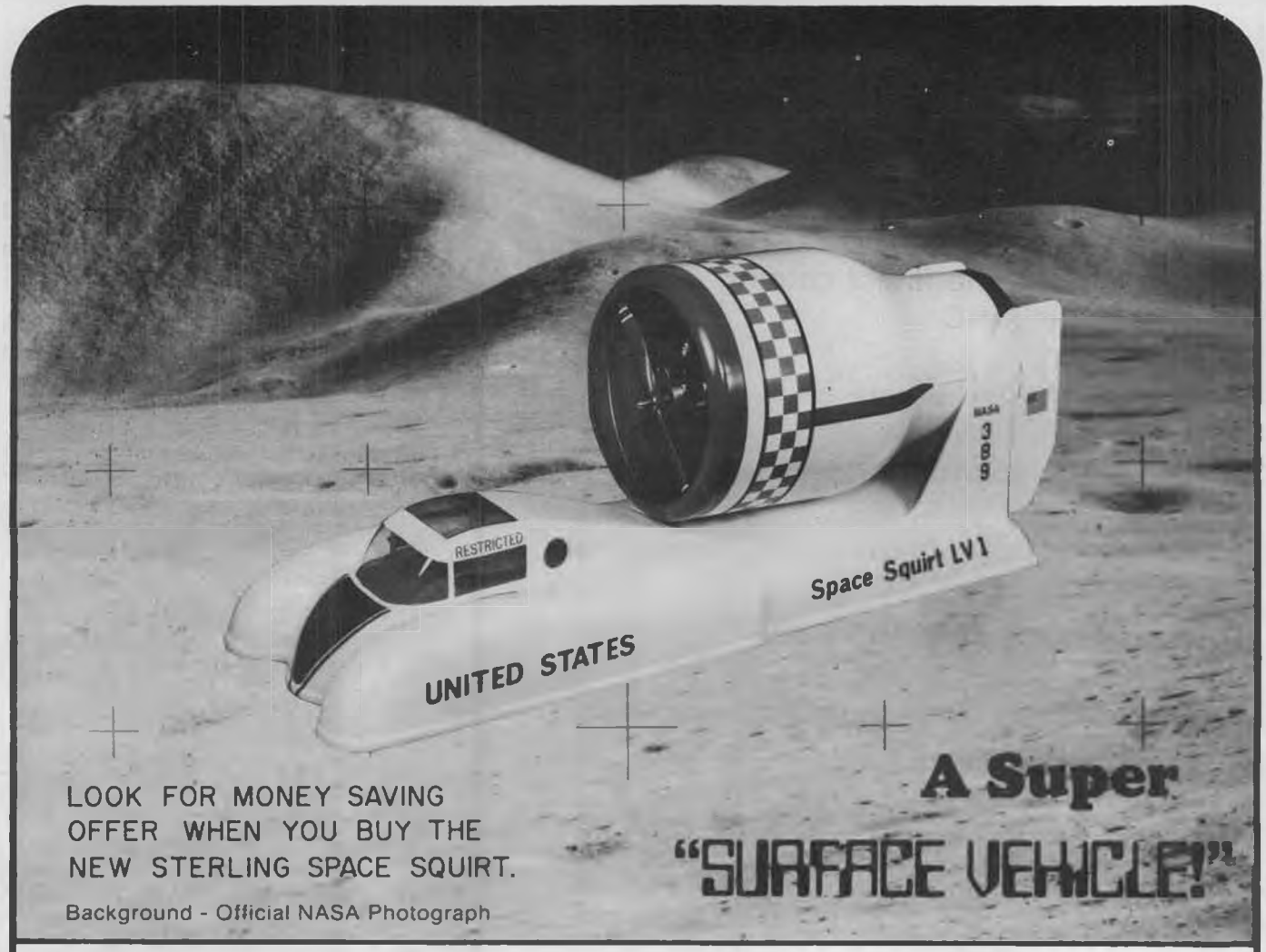
Hand Launch . . *Continued from page 29*

19	Max
Max	100
(413=1000)	(345=835)
WURTZ	REAGAN
Max	30
12	0
117	46
29	Max
0	32
(278=673)	(228=533)

As George Moffat would say, Rawdon "won by not losing." Everybody else swallowed a zero by landing outside the qualifying zone on one of their five flights. Blaine made it home every time, maxed twice, and lacked only ten seconds of pulling a third max out of the round! Now that's good flying!

The rules required that all flights begin and end within the 300-foot square area, which happened to be bounded on the downwind side by a six-foot fence! When nobody complained about this fence at the pilot's briefing, I knew for sure that only the real pilots had showed up! Under these rules, a zero flight isn't necessarily fatal (one zero plus one max still averages out to sixty seconds a toss, remember), but a goose-egg sure can be demoralizing. Especially when everybody else is busy maxing out, and you're wasting good launch time climbing the fence! I believe this was the round that Wurtz snapped his vertical fin, and no less than four people scrambled around getting him Hot Stuff and baking soda to put it back together before the 10-minute clock ran out. It was a great exercise in sportsmanship, and typical of the way the entire contest went. The San Fernando club came down with a ton of enthusiasm, and had us all standing on the sidelines cheering our favorite pilots.

In fact, the spectator participation



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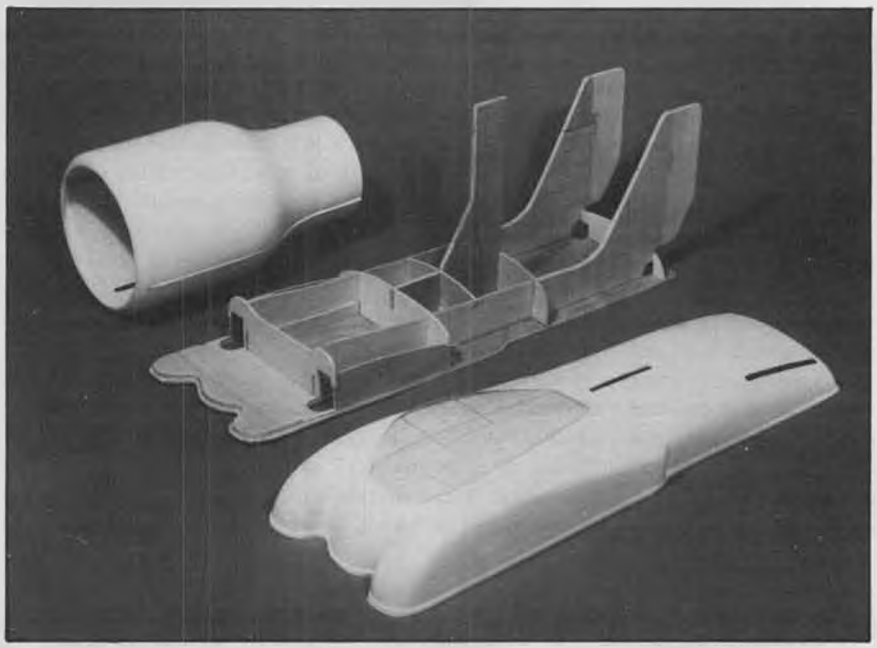

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KP-2AS (1 Stick) w/15IIA's	145.95	95.98	MBM349
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KP-4A w/KPS-15IIA's	321.95	200.98	MBM351
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proved to be an unexpected bonus to this type of contest. Very few people put up their flights and then retired to their cars to wait for the next round, as they do in most glider contests. All the action in handlaunch takes place right at eye level, and since it's all contained within a 300-foot square, the competition is easy and exciting to follow . . . especially when three or four pilots decide to work the same thermal! The emphasis is on flying skill, and you make your blunders right out there in front of everybody. At the present level of competition, at least, there's no need for landing points to serve as tie-breakers.

If I sound like a handlaunch fanatic, it's only because I am. In five years this is going to be an official AMA event! You can practice in a schoolyard, a parking lot, a little league field . . . anywhere. You don't have to have an arm like a leg to do it: Blaine Rawdon never put his Mirage up very high, but only once did he pick really bad air to toss into, and that's the whole secret to winning. By far the highest launches were made by Chris Adams. He throws with his shoulder and back muscles, holding the plane like a javelin. On my very best throws, I can put my little 54-inch ship up about 30 or 40 feet. Chris can put the same airplane almost 50% higher every time.

But I'm still willing to compete with Chris, because launching is only one of four key elements in R/C handlaunch. The other three are design, flying skill, and (as mentioned above) ability to pick air. The last is the most important: it's not what you throw, or how you throw it, so much as *when you throw* that counts. The best design in the world, thrown to a full hundred feet, still can't ride a downer!

A lot of people asked about proxy launching . . . letting someone else throw the plane for you. In this first contest I disallowed it, partly to keep down the number of entrants, partly for safety reasons. Since so much of the flying takes place down low, the four pilots were more than enough people to clutter up the launch area (we kept timers and spectators outside the square). If proxy launching is ever permitted, I feel it should be as a separate class. I'm willing to compete with Chris, knowing that he has twice the arm I do, because after all Blaine and Rick Pearson beat him this time with lower launches, didn't they? But I wouldn't travel very far to compete with some top-notch flier and air-picker who had a human gorilla from the local gym out there doing his launching for him. Then I'd feel that it was no longer a man-on-man contest, but had suddenly become two against one.

The biggest virtue of a handlaunch contest is its utter simplicity. Tom Williams and my wife Jan ran the scoring table, I called people to fly and time, and Chuck Moore started the flight rounds and called time elapsed with his bullhorn. With only twenty-four pilots, the transmitter impound ran itself. By having the next flight group time the group just launching, we never had to hold up the contest while all the pilots were rounded up; they were standing just outside the launch zone with a stopwatch in one hand and their airplane in the other!

In case you'd like to try a handlaunch contest in your area, here's a copy of the rules we flew under:

1) No restriction on aircraft size, shape, or controls. It must be an R/C glider.

2) All aircraft must be hand launched, by the pilot, per AMA free flight rules (Section 5, paragraph 3.1).

3) Pilots will be assigned to flight groups according to frequency. Each group will have a 10-minute flying period per round. Each pilot has five official launches within that 10-minute period. Each launch will be timed in seconds up to a max of two minutes, and the time recorded on the pilot's scorecard. Total of all five flights will constitute the round score. Scores in each flight group will be normalized to 1000.

4) Flight time begins when plane leaves pilot's hand, ends when plane strikes ground or ground-based object. In the event of a midair, clock stops when plane (or its heaviest fragment) touches ground or GBO. Plane must be launched and landed/caught by pilot within qualifying zone, which will be at least 300 feet square. No helpers are permitted. Spectators and timers must

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remain outside of qualifying zone during flying.

5) All flights in progress at the end of 10-minute period may continue to termination (ie, if you launch at 9:59, you're still entitled to fly to a max if you can).

6) No reflights for midairs or any other reason. Every launch is official; no practice flying during 10-minute launch periods.

7) No tool kits, thermal-detecting devices or other obstructions permitted inside of qualifying zone.

That's all there is to it! Just pick yourself a warm day, and have at it. Don't worry if the wind starts to blow; you'll get higher launches, and the best pilots will still come out on top. Everyone came away from our contest convinced that small planes can't hold their own in the wind, so now I'm off to try to prove them wrong. I'm stretching my 54-inch ship to 60 inches and adding a ballast box, and just waiting to get another lick at those rascals from the San Fernando Valley, with their big grins and their open-class monsters. Kill! Kill! Competition is what keeps us all from eventually going back to golf! •

Soaring . . . . . *Continued from page 31*

root chord tapering to 9 inches at the tip, 10% thick at the root and 8% at the tip). The wing is 1/64 plywood over foam. The fuselage is fiberglass. Ordinarily this bird flies at 8-1/4 pounds, but it can be ballasted to 11 pounds for extra speed. Jerry uses inboard flaps to ease the landing.

Rich Fernandez entered his original design, the Poseidon II. This 11-pound bird features a high-density foam wing covered with 1/64 plywood. The span is 8-1/2 feet with a 10-inch constant chord. Rick Pearson and Bob Worley joined the fray with their heavy birds. Rick Schrameck entered his own design for boring holes in the sky.

Roger Sanders entered his Super Ridge Runner, which is an exceptional design in many ways. The fuselage is "wrapped around" the servos. Roger uses mercury for ballast because it is denser than lead.

It's remarkable how easily these heavy craft handle at high speed. It was windy enough for an exciting contest, but there's never too much wind for these birds.

John Bruner of the Torrey Pines Gulls uses a different mode of electric winch control. He mounted a microswitch on top of his transmitter for left-hand operation of the winch motor (with a safety cap to protect against inadvertent closure of the switch). This technique works well and removes some of the uncertainty about a footswitch slipping and sliding on the gravel.

Dr. Walt Good tells me that the Thermic Sniffler rate-of-climb sensor (offered by Soaring Products, Box 119, Kensington, MD 20795) will soon be available on any of five channels in the 49 mhz band (with plug-in crystals). This permits operating the senor with FCC approval. It's a sensitive device, well worth having on board your thermal-seeking sailplane.

And on the bad news side, Frank Navarro of Burbank, California tells me that while he was watching full-scale sailplane operations at Torrey Pines, someone broke into his car and stole a Graupner Cumulus and Super-Pro radio (EK Logictrol, model no. SP 2-7, serial no. 110840). The Cumulus is white with yellow Monokoted wings and stab. If you know the whereabouts of this plane, please let me know.

Don't let anyone tell you that thermals exist only in the warmth of midday. I've flown at sunset with some success and a great deal of personal satisfaction.

I recently attended a conference at the Air Force Academy, Colorado Springs. The meeting ended at 5:00 p.m. By 5:15 I had my Olympic 650, transmitter, and hi-start in hand. I hopped in the car in search of an open field. Unfortunately, snow still covered the grass, but the asphalt parking lot of Falcon Stadium was clear and dry. I stretched the hi-start and launched from an elevation of 6500 feet into a brisk chilly wind from out of the southwest. I wondered whether the thin air would allow thermal performance even at midday.

Slipping off the hook, I headed upwind over the stadium in the hope of latching onto a standing wave, but I found none. Circling back, I ran into turbulence. Then up she went. Light clouds set an ideal background for monitoring my black spot in the sky.

Soon the sun went down behind the mountain range and I started to circle downwind with the red of sunset reflecting off my bird. I then decided to get down before it would be hard to see the plane against the darkened background.

A few days later, I was waiting for a friend who was visiting the San Diego Zoo. It was late Sunday afternoon. With an hour to spare, I went over to Crowley Field and stretched my hi-start, launching to fly well in view of the Zoo. I hoped he would see my plane. I caught the expected wave and headed upwind, then returned to explore any thermal activity in the local area. Sure enough, they were there . . . not everywhere, and somewhat mushy, but sufficient to allow circling the horizon several times. I recall standing alone in the field with my shadow five times longer than I.

There are times to be together, and other times when it's best to be alone.

Moral of the story: get out there any time of day and any season of the year, if you want to find some exciting thermal activity. Here's a way to improve your skill and derive a great deal of personal satisfaction at the same time.

Say, if you haven't as yet joined the National Soaring Society (the voice of R/C soaring within the Academy of

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FOKKER D-VII:

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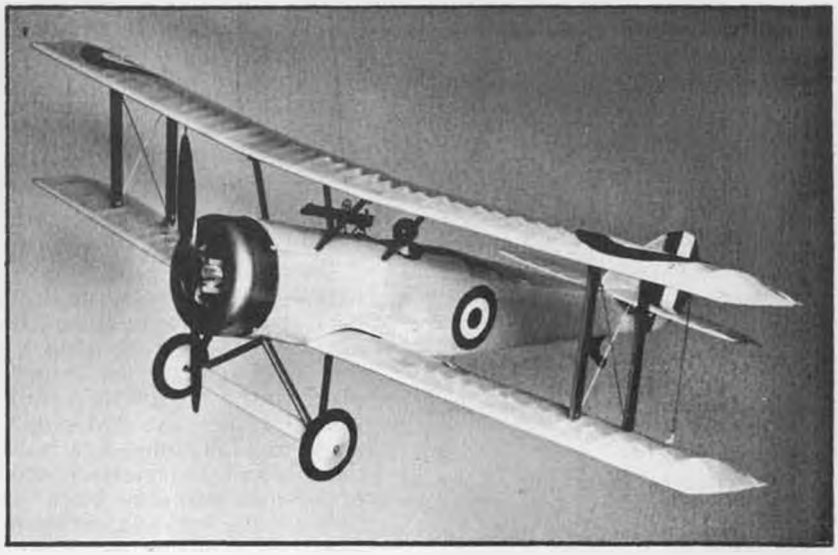
Wing area 1488 sq.in.
Weight 10 lbs.
4-channel radio required

Sopwith Pup

Quick build up
Kit OL792 $119.50

SOPWITH PUP:

Engines .60 size
Wing span 67½"
Wing area 1586 sq. in.
Weight 10 lbs.
4-channel radio required



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Hardware package includes; aluminum motor mounts, pinned hinges, snap links, control horns, nylon bolts, landing gear strap, socket head bolts and blind nuts, plus all necessary fittings.

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Cricket . . . . . *Continued from page 33*

now, but only the left-hand side should be glued into place at this time.

ENGINE MOUNT

The firewall is made from a scrap of 3/16 ply, then drilled to accept the 2-56 blind nuts for the engine bolts. Epoxy these nuts into place, taking care not to get epoxy into the threads. Sand the front of the body to the correct down-thrust angle, then epoxy the firewall into place.

TAILPIECES

The stabilizer is made from a piece of lightweight 3/16 sheet, and consists of a parallel chord centersection and two tips. Glue these three items together, then sand to the section shown on the plans. The fin and rudder are both made from 1/8 sheet, sanded only on the edges to a full radius. Attach the fin to the stabilizer, and reinforce with a scrap of 3/8-inch triangular stock, which is only on the left side. When dry, this assembly can be attached to the fuselage.

RADIO INSTALLATION

The battery is installed in the forward compartment in the radio box; check the fit, then cut a space for the ON/OFF switch. The central compartment is for the receiver, and the actuator is fitted in the rear space. The plans show how the actuator is bolted onto a scrap of 1/16 plywood, which is glued to the side of the radio box. A nut epoxied outside the radio box anchors the actuator.

Before installing the actuator in place, make the torque rod from 1/16 wire and tape the forward end to the actuator arm. Now slide this complete assembly into the rear compartment, with the torque wire trailing aft and on top of the stabilizer. Epoxy a scrap of inner Nyrod on top of the stab for the rear bearing for the torque wire, then carve a slot in the right rear cabin fairing block and glue this into place. During all of these operations, keep checking to see that the torque wire can operate freely. Now remove all the radio equipment, and the torque wire, and sand the fuselage to its final contours.

PAINTING

The fuselage can now be painted as required. On my first prototype I used K&B Superpoxy (blue), but a later model was sprayed all white, then dressed up to look like a Fieseler Storch. After the painting is complete, the rudder can be sewn onto the fin with carpet thread, and the small wire loop can be made and bolted to the rudder.

Reinstall the radio, then solder the rudder arm to the end of the torque wire.

BALANCING

On my prototype it was necessary to add a little nose weight to correctly balance the model. This was mainly due to a rather short nose moment on the first model, and so I corrected this on the plans by making the nose a little longer. However, a small amount of nose weight may still be required, and so with the model assembled and the radio installed, check the center of gravity location, than add lead as required. Be sure to attach this weight securely (I bolted a fishing sinker inside one of the nose fairings). The addition of the nose weight on my prototype made little difference to the flight performance, and the model will still climb almost out of sight on a full tank of 12% nitro fuel. The all-up weight of the model, in flying trim, should be around 16 oz.

FLYING

Now that the model is correctly balanced, flight checks can be made. Make sure that the rudder is pulsing correctly, then try a flight. Hand or ground launch are both satisfactory, and I've used both methods.

Using the Sepulveda Basin runway showed that the takeoff was quite smooth, the tail lifting quickly, with no tendency to ground loop. If left to its own devices the model will climb until the fuel runs out, at a ceiling which I guess is around 400 ft. The return glide is not too steep and is easily controlable, and landings can be made back onto the tarmac with no difficulty.

A quick clean-up with a rag, and the model should be ready to fly again. One thing to keep in mind is to make certain the battery is charged, and to "top it up" with a quick charger during the day, if one is available. Otherwise there's no reason why you shouldn't fly from dawn to dusk with the Cricket. Happy flying!

TWO-CHANNEL VERSION

As a final word, here are a few suggestions about using a small two-channel radio in the Cricket. The first comment is possibly to increase the wing area a small amount by adding a balsa trailing edge to the Ace foam wing. The instructions in the Ace kit show how this is done. The reinforcing tape under the wing should also be incorporated.

With the increased wing chord, the radio box can now be elongated, and this provides a lot more room for the radio components.

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Rather than using a torque wire, small pushrods will be needed, and Nyrods or their equivalent are suggested. The rudder size should be about the same as the single-channel version, and for the elevator I would suggest cutting a strip 1-inch wide from the back of the stabilizer. Control deflections on the order plus or minus 30° should be used. Balance the model at about the quarter chord of the wing. •

Power Boats . . *Continued from page 37*

Marianne thought she spotted Jack Benny walking through the lobby. Grabbing Maren, she took off following the fellow until they finally came to a restaurant where he was dining. They were both tremendously excited when one of the restaurant personnel informed them that, indeed, it was the real Jack Benny sitting there having something to eat.

It was Marianne and Gary who served as my hosts and tour guides of Chicago when I happened to be passing through that area in 1972. When I had occasion to be in the Chicago area in 1975, once again the Preusses were my most gracious hosts. Marianne is no longer with us. But many cherished memories will long remain with this writer of her love of family and friends, her humor and enthusiasm for life, and her willingness to help other people. Marianne Preusse . . . a wonderful, beautiful woman who truly enriched the lives of all who knew her.

* * *

As mentioned in last month's column, I'm hoping to be using some pictures and information sent in to me in this column. Photos, race coverages, and results can be sent to me at 6702 Mt. Tacoma Dr. S.W., Tacoma, WA 98499. Since no one has had an opportunity to send me anything for this month's column, I'll just have to use my own material. If ya'll wanna read about somethin' 'sides Northwest races and outboards, ya'll better help me out.

The N.A.M.B.A. District 8 points race chase commenced in Longview, Washington on May 6 and 7 with a total of 64 boats participating. Unfortunately for the boaters, the weatherman didn't prove all that helpful and there was plenty of rain to go along with some good racing. The highlight of the meet was the establishing of a new record in the .21 hydroplane class by Randy Seiser of Spokane, Washington. Randy set the new record of 1:25.3 with a Gator 20, using a K&B 3.5 turning a reworked Octura 2.0 propeller. A Kraft radio was the guiding influence for this record run. As can be seen from the picture of Randy and his boat, the Gator is very clean in appearance. To achieve this very low profile, Randy installed the K&B .21 so that it lies down in the hull. This writer has known Randy for a number of years and he is very deserving of this new record. The results of the Longview R/C Boaters' race are as follows:

.21 MONO
1) Ron Erickson, Schoeff Vee
2) Don Nauditt, Schoeff Vee
3) Jack Peters, Schoeff Vee
4) Dave Austin, JVS Vee
5) Jesse Shehan, Original Outboard Vee

.40 MONO
1) Bill Hornell, Wardcraft
2) Dave Jensen, Wardcraft
3) Ron Erickson, Wardcraft
4) Jack Peters, MacJak Vee
5) Dough Smith, Wardcraft

.21 DEEP VEE
1) Dave Blacksten, Original Vee
2) Don Dees, Hole Vee
3) Jesse Shehan, Original Outboard Vee

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Aero Sport Six Systems Include: 6 channel receiver, 6 channel transmitter, all Ni-Cads for both transmitter & receiver airborne, dual charger (charges both sets of batteries at the same time), 4 Aero Sport NS-IC servos, servo trays, extra servo wheels, instruction book, frequency flag and full 180 day warranty. 72 mHz only.

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3) Doug Smith, Wardcraft
4) Jerry Dunlap, Mighty Dolphin
5) Jack Peters, MacJak Vee

.60 DEEP VEE
1) Mae Dees, Voyager Vee
2) Chuck Gray, Dumas DV 60

.21 HYDRO
1) Jack Peters, Original
2) John Moss, Gator 20
3) Jerry Dunlap, Hustler MkII
4) John Havens, Excalibur Outboard
5) Tom Dudley, Hughey 20

.40 HYDRO
1) Jack Peters, Peter's Hydro
2) Don Nauditt, Peter's Hydro
3) Randy Seiser, Gator 40
4) Stan Hoagland, Hughey 40
5) John Howell, Gator 40

.60 HYDRO
1) Randy Seiser, Gator 60
2) Don Nauditt, Wing Ding 60

.21 OUTBOARD TUNNEL
1) Jerry Dunlap, wooden Excalibur II
2) Dennis Caines, wooden Excalibur II
3) Kathy Moss, Klampon-Kai
4) John Moss, Klampon-Kai
5) Howard Hartzog, Original Tunnel

The last race I have to report on is the second Hobbytown Outboard Regatta, held May 19 at Tacoma, Washington. Sponsored by Ruth and Bill Brazzle, owners of Bill's Hobbytown, this event drew thirty-two outboard tunnel racers. The event followed N.A.M.B.A. District 8 Outboard Racing Rules which requires a stock .21 outboard (the K&B .21 Outboard is the only engine presently available), a tunnel hull, and a driver. The event was divided into two separate types of racing: 10-minute enduros and six-lap heat racing. The final standings were determined by how well the contestants scored in the two racing events. A special treat for all contestants and their family members was a potluck luncheon held during the break between events. Ruth Brazzle, assisted by some of the other contestants' wives, made the arrangements for this delightful break in the day's racing. The 10-minute enduros featured a required pit stop with the engine being stopped and fuel being added prior to relaunching. This made for exciting and frantic action during the course of this event. The results of the Hobbytown Outboard Regatta are as follows:

10-MINUTE ENDURO
(total for two enduros)
1) Mike Wight, wood Excalibur 44½ laps
2) John Moss, Klampon-Kai, 39½ laps
3) Kathy Moss, Klampon-Kai, 38¼ laps
4) Dennis Caines, wood Excalibur, 37¾ laps
5) Leo Dreith, wood Excalibur, 36¾ laps

HEAT RACING (total of three heats)
1) Tom Dudley, fiberglass Excalibur, 1100 points
2) Ron Fisk, Klampon-Kai, 900 points
3) John Moss, 825 points
4) Mike Groul, fiberglass Excalibur, 825 points
5) Mike Wight, 800 points

FINAL STANDINGS
1) John Moss, 45 points
2) Mike Wight, 44 points
3) Kathy Moss, 41 points
4) Ron Fisk, 38 points
5) Leo Dreith, 36 points

A special visitor watching the Hobbytown Outboard Regatta was Jim Gale, from Los Angeles, California. For those who may not be familiar with the name, I imagine many of you have heard of J.G. props. Well, Jim Gale is J.G. Products and the source of many fine propellers used by model boaters all over the nation. Jim presented a most informative session on the whys and wherefores of propellers following the racing action. I always enjoy asking people how they decided to become involved in model boating and had the opportunity to visit with Jim following his presentation.

Jim built his first radio controlled model boat some sixteen years ago. It was an electric-powered semi-scale shrimp boat. The radio was a superregen Orbit 4-channel reed system. For those of you who have never heard of superregen or reed radio systems, I'll attempt to give you a quick explanation. A superregen system was a radio that worked on a certain frequency, but would not screen out other frequencies. So you had to run or fly just one model at a time. A reed radio system used reed-like strips of metal in the receiver that vibrated when the transmitter was keyed in certain ways. Reed system transmitters had toggle switches that one pressed to cause the servos to actuate. Believe me when I tell you that today's proportional systems are a much better way to control

models. Jim's first powerboat was an original design ski boat that resembled a California type flatbottom ski boat of the early '60s. For power, Jim installed a K&B Series 67, .40 engine. During the early '60s, there wasn't the type of heat racing or enduro racing that dominates our hobby/sport today. Since it wasn't possible to race more than one boat at a time, the events were individual in nature. The popular events were the I.M.P.B.A. 1/4 mile oval, speed obstacle, and precision steering. Boats participating in the precision steering and speed obstacle events were required to be able to steer both left and right, and a reliable low speed was necessary to maneuver through markers spaced only a couple of feet apart. Jim designed a cabin cruiser, the Avalon, that was later released by Norco that proved very good at these steering events.

Jim's entry into the model boat propeller business was related to his interest in obtaining propellers for the boats he was running. He began making a few props for himself, and when friends saw that his props were working well they wanted some for themselves. Out of this supplying props for his own needs, J.G. Products was established twelve years ago to supply props to other model boaters. As Jim tells it, he retired from 32 years of working as an engineer for Rockwell International to take on a part-time job that is becoming more full-time than he had expected. Since his retirement in 1974, Jim and his wife Lillian have spent time traveling around the United States visiting model boat races and talking with model boaters. With Lillian assisting him, Jim has given his presentation on propellers to model boaters on both the east and west coasts of this nation.

Jim's modeling interests have changed in recent years from powerboating to sailing. He started sailing a half dozen years ago and attends many sailing events up and down the West Coast. Jim participates in the 36/600 and 50/800 classes. He is currently racing a Magic Dragon in the 36/600 class and a Dumas Bingo in the 50/800 class. Jim still enjoys the challenges of model boating competition. I saw Jim sail during the 1977 N.A.M.B.A. Nats in Reno, Nevada, and if my memory serves me correctly, he won the 36/600 class. Don't be surprised if you hear someone say that Jim Gale is visiting a contest you are attending. Jim and Lillian plan to do more traveling. I hope many of you will have an opportunity to meet and talk with Jim Gale. He's a wonderful gentleman and a real asset to the hobby of model boating. •

Halt-A . . . . . *Continued from page 48*

number of channels (up to 9 are available) and the connector type, the weight ranges from 1.0 to 1.2 ounces. This puts Bob's new receiver right up there with the other small receivers that are now available. Knowing Bob, I'll bet that it is unusually reliable, even in these days of good system reliability from all manufacturers. Just to be sure of what he is selling, Bob is flying his complete airborne systems in both Formula One and Quarter Midget racing models. I think that should be indicative of an adequate safety margin for us Half-A fliers!

Send an SASE to Novak Electronics, 1915-A S. Evergreen St., Santa Ana, CA 92707. Ask for his brochure of radio control electronic products.

BEGINNER'S WORKBENCH

Eventually, as a flier of small models progresses, he will want more power from his Tee Dee engines. For the

ultimate in power, you can, of course, go to a lot of trouble and/or expense to build, or buy a fully modified engine from someone such as Joe Klause. It happens, though, that you can get at least 80% of the improvement possible by simply drilling out the venturi of the engine and running a pressure tank.

First, it is important to use an engine which has been carefully broken in. Second, remove the venturi and drill the bore to 3/32 inch for an .020, 5/32 inch for an .049/.051, and 7/32 inch for Tee Dee .09 engines. After the drilling operation, clean up the bore with 400 grit paper, then clean out the fuel metering holes but don't enlarge them. Wash the unit thoroughly and reinstall it.

Your engine will now require a pressure feed system. I recommend that you use a bladder tank. The advantages here are the simplicity, consistency of run, and elimination of all possibility of fuel foaming and air bubbles.

Alternative systems are available, though they require some sort of pressure tap into the engine to use a small portion of the crankcase pressure to run the tank. Air leaks, small bits of goo or dirt, and greater plumbing complexity all combine to render the pressure clunk tank an unnecessary hassle for an unthrottled engine.

There is one drawback to a pressurized fuel system: the needle valve setting becomes a bit more critical, and with a bladder system, when the engine is not running, the fuel line must be clamped to prevent flooding the engine. Oddly enough, the engine can be made to run at a way over-lean setting. Be careful to avoid this past-peak condition, as you will ruin your engine by overheating, and the power output is lower, too.

An advantage to a high pressure bladder is that you can set the engine's needle valve exactly on the ground. Flight speeds, climbs, dives, rolls, high "G" turns all cause negligible variations in fuel delivery.

Where do you get a bladder tank? There are two companies making them: Tatone, with a pen bladder system, and Midwest has a unit based on surgical rubber tubing. Tatone makes a couple of sizes of tanks, Midwest has only an .049 size.

When you are ready to fly, you will need one more item: a good syringe or a large glue gun with a rubber seal. The fuel must be put in the bladder under high pressure, and I haven't seen a fuel bulb yet that can do it without blowing its cap off.

Be sure you have the correct glow plug for the engine. On the .049/.051 it is the No. 1702 (look for a knurled ring around the top of the head). The .09 uses a No. 2102 plug. There is only one plug available for .020's, and it is used on both Tee Dee and Pee Wee engines. Be sure to use a high nitro content fuel; 30% is the minimum for really good performance in small engines. Cox Racing fuel, K&B 1000, Ace 1/2A fuel, and Fox 40-40 are just a few of the acceptable 1/2A high performance fuels available. Starting at about 50% nitro, you can expect to blow a plug each flight, so beware. It isn't worth it for sport flying, although such expenses are seemingly mandatory in racing competition.

Although you get a power boost all across the rpm range, I have found that a slightly smaller propeller size gives even more power when running with an opened-up venturi. Engines seem willing to unload more in the air with a small prop. For example, on my .049 2-channel aerobatic models, I have consistently gotten better performance with a 5x3 than a 6x3 when running a modified engine. The performance is about the same with either prop on a stock engine and suction fuel feed.

If you are modifying a Tee Dee .049/.051, you may find it beneficial to use a replacement needle valve assembly. Both Kustom Kraftsmanship and Ace make a fine-thread needle valve and body which greatly help in controlling the fuel going into the engine. Reaching and holding your exact needle setting is made much easier. Unfortunately, these assemblies are not available in .020 or .09 sizes.

By the way, a bladder shutoff device is made by Fourmost Racing Products. It is basically a wire spring which pinches the fuel line when it is held under a catch. This unit is simple, light, and can be built into your model.

OK, enough on pressure running, let's look at some pictures! David Unruh lives

way up in Kenai, Alaska. He sent in some photographs of his "scale model" Buzzard Bombshell. With a 42-inch wingspan, it has a scale factor of 7 inches to the foot. Take that, you quarter and third scale people! And powered by only a Tee Dee .049, too. David says that the model is a fair glider and can provide aerobatic fun, too. Seems to be a really cleanly built model from close scrutiny of the original photo.

By the way, David wanted to let people know something about radio gear which I found interesting. I'll quote from his letter directly:

"I've been meaning to write for some time because of something I see over and over again in the magazines that I believe you can set straight: namely, that "bricks" are heavier than systems with separate servos. Your readers should know that an EK brick could be used in some installations where one of the new sub-miniature sets is specified. My EK 3-channel brick, switch harness, and 100 mah batteries weigh less than five ounces. That weight should be within half an ounce of any of the super-light systems. It could also be that some weight could be saved by modifying or eliminating the case, but I try to keep my hands off the electronics. Anyway, I have used my brick in a 26-inch seaplane, Cox .010 powered, and although the climb was not fantastic, I was using 450 mah batteries! This was before the 100 mah batteries were available."

Next photo is from Bob Parks of the MIT "Tech Model Aircrafters" club. This model is a modified Sure Flite "Baby Birdie." Wings have been clipped to only 170 in² area! It uses a large Cannon brick with an extra servo for ailerons, rudder and a flying stabilizer. Weight was 17.5 ounces, powered by a Tee Dee .049. Bob admits to having destroyed the model when he launched it without turning on the receiver. Must have been interesting while it lasted.

Third photo is of Addie Naccarato, of T&A Hobby Lobby in Burbank. She designed and built that delta around Midwest's new ducted fan unit. The model is called the "Fan Dancer." Weight is 27 ounces, area is 300 in². Addie used a Milcott radio with built-in mixer for the controls. Would you believe that it has steerable *main* wheels and is a taildragger? If you ever get to Beautiful Downtown Burbank, go see Tony and Addie . . . they's nice folks. •

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1 to 1 . . . . . *Continued from page 49*

was held at Rough River, Kentucky, on the last weekend in April. This is the second year that the Mint Julep meet has been split into two sections, with scale and pattern sharing different weekends. This year some 38 entries graced the beautiful grounds of the park, showing an increase of a dozen and a half over 1978. A different approach was utilized by Dale Arvin and his crew in dividing the pilots into two classes as he had done the year before with Sportsman and Expert classes.

New this year was that each of these classes were in turn divided into aircraft divisions. Basically, the models that portrayed racing planes and aircraft that carried options such as retracts, flaps, bomb drop, etc. were placed in one division and lightplane types in the other. While there were possibly a few that were not clearly enough defined to really belong in one or the other, the basic idea seemed to work reasonably well.

Lest you wonder why the title of this section spoke of crayons, let me tell you how it fits as I expound on how not to approach competition.

Two weeks prior to the contest I had completed my new Russian twin engined bomber and sought eagerly to launch it into the wild blue yonder. Unfortunately, in St. Louis, as other parts of the U.S., we were swamped with a mess of water from heavy rains and swollen rivers. As a result, the only flying field with paved runways was under 10 feet of water. Since the fins and rudders are only an inch or so off the ground, the local grass fields were questionable.

As time slipped away, however, it became evident that grass it would be. A test flight finally came on Sunday (following a rudder-breaking attempt on Saturday) just a week before the Julep.

On Monday, your intrepid (or stupid) writer fulfilled his occupational obligations as a fifth grade teacher by going to our school's outdoor education program. This consists of five days at a remote jungle camp surrounded by rain, bugs, snakes, 93 fifth graders, and 14 high school "counselors" (that word is used lightly!).

What was left of me came home Friday, rapidly packed and beat my weary way toward Kentucky. Now, Rough River is a beautiful spot and I really enjoy the tremendous hospitality and the contest, but it is located in the middle of "you can't get thefe from here." Since it's always about 9:30 p.m. by the time we turn off of Interstate 64 in Indiana and head south, there is nothing much to drive through but darkened countryside. It was somewhere around the Ohio River that I remembered that the chairs and my camera gear were at home.

Saturday morning dawned rather cool (cold?) and windy but everything proceeded beautifully. The PE-2 went together right and all the accessories worked; the bombs dropped, the flaps flapped, the retracts retracted, the dive brakes braked, and things were all set for competition. Then a big gust of wind came along and blew the airplane off its stand and onto its back, breaking both fins, the stab, and part of the fuselage! To compound the felony, as I saw it going, I started running toward it and yanked a muscle loose from its mooring and spent the rest of the weekend playing like Festus from "Gunsmoke."

With the help of some fantastic guys like Harold Parenti and Skip Mast, we put the model back together. Oh yes, this happened before it was static judged! But there were these little cracks which showed in several spots. Since it was a camouflage color scheme, I reasoned that a little dark earth and green grass would solve the problem and indeed it helped, but the saving grace came when a man commandeered his seven-year-old son's crayons and offered them to the cause. You know, they weren't really too bad. A little blending a la Van Gogh and the nasty old cracks all but disappeared.

Therefore, all ye who fly military, add the handy dandy box of crayons to your field kit. Better yet, don't be silly like me and set your model tail to the wind on a shaky stand.

Are you looking for a way of duplicating the stringer structure in a cockpit, but would rather not add a bunch of weight by using dowels or aluminum tubing? On several occasions, I have used straws to provide the visual realness. You'll want to exercise caution in your choice, since some of the plastic variety may prove hard to paint.

The "stuff" of the title of this section is a neat little item which I have used on several occasions. Permacell makes a tape called "600 mile-per-hour tape" that is used on the big aeroplanes. It is a soft lead-like metal which has a very strong adhesive on the back. When you

strip it off the backing, it looks like a prune; however, if you take a rounded wooden dowel and begin working it slowly into the fillet area around wings, engine nacelles, tail, etc., it neatly obeys your commands and becomes a super duplicate of the real material you find on the big ones.

If you place it in position just before the last primer shot, it will hold color great. One really great aspect is that if you are weathering the paint job, the material looks just right as you wear away the paint.

I have had no problem with it coming off; however, if you feel uneasy, you can always run some instant glue along the edges. Otherwise, without the glue you can strip it off if repair is required at a later time.

It is not light; however, it is generally only required in small amounts. Now the problem. Where do you get it? If you know someone who might be connected with the airlines, you may be able to get small pieces of scrap. It can be purchased from aircraft supply stores; however, a five-inch wide roll of (at this writing) unknown length costs somewhere between $50 and $80. That's a whale of a price, but if a group of guys go together you can get a lifetime supply for a reasonable amount.

IT'S FOR EVERYBODY

Last year, during the contest season, many of the "old timers" noted the appearance of a newcomer at almost every contest in the Midwest area. The young man, Lynn Elston, flew a yellow Hoover P-51 and seemed to have a great time at each event. Between the beginning of the season and the concluding events of the year, Lynn revealed tremendous progress in his flying ability and presentation of maneuvers. He proved the concept that working at what you're doing, paying attention and all those good things will bear fruit. He was eager to learn how he could improve and did so. This year, just a short time later, Lynn is a competitor to be reckoned with. It's a pleasure to see someone approach a task in a businesslike manner and have fun at the same time.

The second part of this notes the return of Dick Graham to the competition scene. I can't honestly say I knew Dick well back some years ago when I was flying the original badly built "Bonzo," but I was aware he was there.

Newer members of the scale fraternity will recognize his name when they look through the Sig catalog and note the designer of the Liberty Sport offered by that company. Dick and his gracious wife (pit crew) have been once again enjoying the camaraderie of the meets in the Midwest as he campaigns his crop duster that leaves the scent of perfumed talcum in the air after his flight.

Finally, one can't help note the dedication of a scale competitor at the very large pattern/scale event at Effingham, Illinois, on Mother's Day. The Zlin that this flier used flies quite nicely and the competitor shows every evidence of becoming a quite proficient scale flier. He was eager to learn and made every effort to follow "expert" help given him by this writer and several others. Strangely, upon following that helpful advice, his flight score went down.

Of course, part of the problem was that he opted to do such familiar maneuvers as rolling circles and the like. You might like to write to fellow **R/C Model Builder** writer Dave Brown for his views on scale. I wonder if it's the same as that of our old friend from Kansas City, Charley Reed, who says, "Scale? Something to do with fish?"

In short, guys and gals, I've got to say that's where the fun is for many. You see new faces, renew old acquaintances, and trade "insults" with the best of all worlds.

There was a young flier named Jack
Who hoped to fly the plane on its back.
It was "up" that he thought
But 'twas "down" that he bought,
Now he can carry the whole thing in a sack. •

Sailing . . . . . *Continued from page 39*

BONE 50/800, a series of towing tank tests of existing hulls were carried out at constant displacement. Figure 6 shows the results for the EPIC and the WIND II. The EPIC is a narrow, circular-sectioned hull, while the WIND II is a nearly flat-bottomed hull. At very low or very high speeds, the WIND II is the boat of choice, for in these regimes its resistance is less. In the mid-range, however, the EPIC shows less resistance. Note that at the higher speeds, planing will initiate at less resistance for the WIND II, as shown in Figure 6.

* * *

The next article in this design series will discuss lift: how it is generated, the drag it induces, and so on.

I will continue to field questions accompanied by an SASE. Rod Carr, 7608 Gresham St., Springfield, VA 22151. •

R/C Auto . . . . *Continued from page 52*

potentiometer ahead of the throttle/brake servo to control the amount of voltage across the solenoid to get proportional braking. Only a small amount of braking is really needed to make a noticeable improvement in car stopping. Jack Jacobs must have been interested in this idea, because in a couple weeks he had electric brakes on a car (all four wheels, I gather).

I won't go into any racing details because I'd just screw up the second-hand reports. However, just about everybody mentioned that Rick Davis, the eventual winner, was really doing great most of the time. Even though he didn't win any of his qualifying heats, he was consistently right behind the leader every time. Then when the "A" main came, Rick really showed everybody how consistent and reliable he could be by winning.

Well, racers, that's it for now. One more article to go before it's time to be off to the 2nd World Championships for R/C cars in Geneva, Switzerland. I'll probably miss at least one month while I'm preparing and gone, but then there will be a bigger reporting on all the activity in Europe. Until next time . . . good luck in racing. •

Hannan/Peanut . . . . *Continued from 63*

Model Builder this year, in addition to Head Instigator Bill Northrop, was Walt Schroder, who appeared to be enjoying the strange proceedings immensely. Coordinator was again genial Chuck Conover. We *know* he is genial, as he stood quietly by while we methodically damaged his proxy entry through a series of unlucky incidents! The judges and proxy-fliers are listed elsewhere and certainly deserve to take a bow for all their efforts and patience. All put in many long hours, rewarded only by the challenge and pleasure of sharing enthusiasm with others of like minds. First-hand participation has a strong educational value in that one has the chance to study at close range the techniques employed by other builders. Variations become particularly evident when comparing models built from the same plans.

Performance seemed to have reached somewhat of a plateau, with lesser durations than in some previous years, but many times were quite respectable indeed. For example, a DH-6 entry, quite a "draggy" biplane, turned high time of the meet. This was an entry in the one-design Walt Mooney category, which drew a fine response.

Site for the fifth year was the gymnasium of the Long Beach State College. As usual, the air conditioning had been turned off to eliminate any possible turbulence, but we were unprepared for the Santa Ana conditions which resulted in unusually elevated temperatures inside. This certainly contributed to the "heat of combat" and increased the pressure on proxy fliers.

A few words about the mechanics of the affair: Static scale judging takes place in a separate room, where all the entries and their shipping boxes are carefully arrayed. When the first group of models have been judged, flying commences immediately in the gymnasium. The usual approach for a proxy (or proxy team in some cases; a "pilot" and a helper) is to carefully read the entrant's instructions, if any, lube and install rubber motor, and recheck balance and adjustments if so indicated. Next come test flights at fairly low power. Sometimes a model will fly virtually "out of the box" the first time. However, many exhibit problems of one sort or another. Strangely, some examples that look as though they should be a cinch to fly, aren't. Conversely, others that appear to be potential "sticky wickets" haul off and fly perfectly on the first attempt!

Every year a few models with weird quirks appear. Some have been damaged in shipment and perhaps repaired in a manner that slightly altered previous settings, or maybe they have never been test flown prior to sending. There is also the ever-present possibility of warps occurring during shipment and storage. Regardless of cause, a proxy will give this sort of entry a fair trial, say 15 or 20 minutes of effort. If no success or encouragement, the model is returned to the tail end of the line, to be tried later by another proxy. This can be one of the most fascinating aspects of the entire meet. Every modeler seems to have his own unique approach to flight-trimming. The net result is that a model which may appear incapable of achieving a 10-second qualifying flight in the hands of the first or second proxy-flyer, may respond beautifully to the ministrations of a third! However, it is a source of extreme frustration that some models simply refuse to cooperate under any conditions (save possibly in the hands of their originators), and time will not permit truly comprehensive investigations into such cases.

It is difficult to single out only a few models for special comment from among the many remarkable entries, especially since one usually has a chance to carefully examine only a limited number, with so much action going on. However we were impressed by the variety and ingenious features, not only of the models but their packing cases, and accessories.

One surprise was an extremely light DH-6 equipped with a very small diam-

eter balsa prop. Most frankly didn't expect it to be up to the job of flying the model, but lo, it performed very well indeed. Evidently the craft was so light and the rubber motor so thin that the tiny fan was able to perform efficiently in spite of its small dimensions.

On the subject of propellers, Benno Sabel's highly-detailed 1909 Clerget Pioneer entry, all the way from Germany, almost didn't qualify because of the balsa version fitted to it. Perhaps it had warped enroute, but it produced a destabilizing reaction that no amount of adjustments were able to overcome. Finally, the prop was removed and replaced with a plastic one. Presto! Like magic, the model settled down into rock-steady flights. There must be a message here somewhere.

Another fascinating entry was the Dornier "Anteater" push-pull by Dr. Bill Harris, of Hawaii. The construction was quite novel, a plastic display model having been employed as a jigging device for the fuselage structure. The covering was green pastel "Scotties" tissue applied wet to conform to the compound curvatures. The spinners, cowling, wheels and canopy had been vacuum-formed using the plastic kit parts as molds. The landing gear parts were used "as is" from the kit. The three-blade propellers were made from aluminum beer cans. Dick Baxter and yours truly were the Peanutees for this craft, and it proved quite a challenge, being initially overpowered, resulting in a rather nasty "dork," which self-destructed the prop and crushed the front cowling. Curtiss Mooney came to the rescue with the idea of ballasting th nose and flying just on the rear prop. Voila! Instant docility from what had seemed an uncontrolled tiger.

Another charming model was the Glenny & Henderson "Gadfly" Peanut by Sherman Gillespie. Senior builders in our audience will remember Sherman's larger version of this gem which appeared in *Model Airplane News* "way back when." Featured in the mini version was an easily removable wing, which permitted the model to be shipped in a very compact box. Its flight performance matched its looks in the hands of Jim Lueken and Ken Hannan.

One entry absolutely defied all attempts to qualify it this year, which caused more than a little frustration, since this was the first entry ever received from Japan. It was a tiny, all-balsa Baka bomb, cunningly constructed in an abstract art sort of manner with delicate components, tiny cockpit, and hand-drawn markings. The inscrutable aspects of it were the large (longer than wings) propeller and the motor, which appeared to have been of the golf ball core variety. Spare propellers had been thoughtfully provided, but evidently, no instructions whatsoever! Apart from possible questions relating to the legality of this from a scale point of view (some charitably opined that the Bakas were equipped with a small fuse-arming propeller), the stumper was how is it supposed to fly? One wingtip was heavily weighted, which seemed to preclude any probability of it having been intended to fly like a regular aircraft in a horizontal manner, although a few attempts were made. Another flyer, convinced that the model must be some variation on the Dandrieux butterfly helicopter theme, tried to fly it vertically. Yet another proxy tried his hand. Along the way the C.G. was raised, lowered; the prop diameter was reduced, others tried . . . all to no avail, and the poor little craft was almost reduced to shambles in the process of trying to somehow squeeze 10 seconds out of it. One wag suggested taking it up on the roof and timing its fall. Another was convinced it had been intended as some form of practical joke designed to puzzle the occidentals!

Since the model was sent in an attractive wooden box and return was requested, this seems unlikely. We can only offer our collective apologies for the failure, and hope the builder will not be discouraged. His entry DID succeed in attracting a great deal of attention!

Ron Limbrick's delightful Demoiselle featured a simple, full-bodied profile pilot which added an extra note of realism to a smooth flying Peanut.

In terms of finesse, it would be hard to top Phil Cox's Nieuport 17 biplane, which appeared to have an airbrushed finish, and was immaculate in every respect.

In closing, a word of thanks to all the wives and proxy fliers' sons, most of whom have been on the working force for several years. In the final analysis, the most important "P" in the Model Builder Parcel Post Proxy Peanut Proposition, is the People! •

Peanut Results . . . . *Continued from 61*

overseas. And the challenge of getting a stubborn model to produce a couple of qualifying flights brings them back year after year.

Static judges this time were Fernando Ramos and "Mik" Mikkelson. They also flew models, along with the following fliers and helpers: Dick and Shirley Baxter, Chuck Conover and son, Hal and Jane Cover and son Scott, who scrambled up, down, and behind the folded bleachers to recover wayward models, Bill and Ken Hannan, George James, Ken Johnson, Andy Faykun, Jim Leuken, Walt and Carol and Curtiss Mooney, Roy Mayes, and Bob and Sandy Peck.

Carl Hatrak, CD, and Bill Stroman made up the scoring charts, and **MB**'s editor tried to untangle the myriads of paperwork involved.

It should be noted that some proxy fliers were also contestants. Strict rules did not allow a contestant to fly his own model, nor could he consult with the proxy who was flying his Peanut.

The final results are charted herein.

F/F . . . . . *Continued from page 66*

about 2 bays from the edge with 2 tacks. Smooth out the tissue and run the thinner-wetted brush along the leading and trailing edges. (I suggest working from the center to the tips.) Experience will tell you how much tension to have in the tissue when you tack down the first 3 spots and as you move along. Too much or too little tension can result in wrinkles!

"When the first layer is down, spray with rubbing alcohol. Don't spray directly onto the tissue. Let the mist fall down onto the tissue. Pin the structure down to dry (use a flat board and 1/8 or 3/16-inch packing to keep the tissue above the board). When dry, give it a couple of coats of 50/50 dope/thinner. Pin down to dry overnight.

"Now for the second layer. Simply go through the same covering procedure (three tacks, etc.). This time, the tissue grain runs chordwise and you don't have to pre-dope the frame since it has already been doped. When the tissue has been bonded around the outline of the frame, wet with a spray of water. It will look yucky and wrinkly when wet, but keep the faith! Pin down as before and let dry. Voila! It will pull tight and look OK. Now run a thinner-wetted brush over the whole thing. This will bond the 2 layers of tissue when the thinner softens the doped first layer. When this dries (a minute or so), give it 2 to 3 more coats of 50/50 dope/thinner, with a little plasticizer at this step if the structure is rather light. (You may need plasticizer at the first step, too.) Pin down with packing as before and let dry overnight at the minimum. Two to four weeks is better.

"If the structure is for a gas model, I'd suggest brushing or spraying on a coat of Hobbypoxy clear for a fuel-proofer (other fuel proofers can be used, but I've had good luck with Hobbypoxy).

"This method takes a bit more time, but the results are worth it!"

I'd like to add a few comments to Tom's very elegant explanation. I use the same method on flat-bottomed wings, but for undercambered Nordic wings, I go from rib to rib, sticking the tissue to each rib bottom first, then the trailing edge between them, and finally the LE. I usually use a very thin dope mixture (75% thinner) to bond the second layer to the first. I let this dry about 10 to 15 minutes, then apply thinner to complete the bond. If you end up with wrinkles, slit them with a new blade and stick down with thinner. Tiny wrinkles will disappear as the dope tightens over a period of weeks.

If you're trying to conserve on your colored tissue, the first layer can be plain white. Nobody will know the difference after the second layer goes on. Seems to give a little more brilliance to the colored layer, also.

MORE TWANGER DEVELOPMENTS

I talked to Jim Thornberry a couple weeks ago about last month's twanger

update, and he had a few comments to add. Jim uses a Maxaid twanger towhook, and has added the nylon monofilament latch suggested by Elton Drew. Works like a charm, too, with an additional benefit: the twanger won't detach itself from the model while your launcher is waiting for you to walk out to the end of the line. It seems to have solved the premature release problem. Jim's twanger spring is a No. C-119 from the Century Spring Co. in Los Angeles.

I'm also running a drawing from the *Batsheet* which shows how Jim sets up a Seelig Mini-Combo DT timer to get a good zoom launch, by holding full circle tow rudder deflection immediately after release. A piece of thick (60 lb. test) monofilament blocks the Sealig's air vane. (Unlike a metal pin, the nylon line will release at various angles, and the nylon tubing will not nick the line.)

Upon launching, the nylon line is pulled from the air vane, starting the timer. Circle tow rudder deflection is then held until the timer releases the 20 lb. dacron line attached to the stretched C-1 spring. The rudder stop (with wire pin) then swings forward to the glide position. The scheme is easily adapted to plunger-type rudder stops as illustrated last month. The nylon tubing is obtained from NFFS Supplies.

NFFS TOP TEN MODELS OF THE YEAR

Tony Italiano, Chairman of the Selection Committee, has announced, on behalf of the National Free Flight Society, the 1979 selections for the 10 Models of the Year. They are as follows:

INTERNATIONAL CLASSES	
F1A: (Nordic) Wonder Bird	Jim Walters
F1B: (Wakefield) Les'Wake	Les DeWitt
F1C: (Power) Zell	Roger Simpson
AMA/OUTDOOR	
Small Power (1/2A)	
Lunar-Tic	Harry Murphy
Rubber — Stratomax	Frank Heeb
INDOOR	
HLG — Slo-Mo	Otto Heithecker
Cabin — Gemini	Ron Ganser
SPECIAL AWARDS	
Volksplane	Charles Sotich
Cox .049/.051	Cox Hobbies Inc.
P-30 Concept	Harry Steinmetz/ John Oldenkamp

FREE FLIGHT HALL OF FAME SELECTIONS

"The National Free Flight Society has announced the recipients of the Free Flight Hall of Fame Award for 1979. These noted individuals have in many ways contributed to the development and continuity of free flight model activities throughout the USA and the world. The Society is proud to recognize their achievements." Tony Italiano, chairman of selection committee.

Recipients of the Hall of Fame Award were: Willis C. Brown, Lt. Harold W. Alden, Bill Atwood, Chuck Broadhurst, Dick Black, Carl Fries, Charles H. Grant, Joe Bilgri, Bud Tenny, and W. Hewitt Phillips. They were honored at an awards banquet during this year's Nats.

COX DROPS PRODUCTION OF CONQUEST .15

Cox Hobbies has a sneaky habit of dropping items out of production without telling a soul. And they're usually things of utmost importance to free flighters. Like their Conquest .15, the only alternative to the Rossi, which is not usually available at your local hobby shop. I've heard good reports from up and down the West Coast about how box-stock Cox Conquests were turning in the Rossi league on FAI fuel. Most of the competitors at the prestigious WFFA Annual had a Cox in the FAI models. The idea of having an American-made engine that is widely distributed by a large manufacturer and that performs on a par with the imports makes lots of sense to a potential FAI Power flier, so it would be logical to see increasing use of such a relatively new engine.

Now, it looks like Cox has done it again! My local hobby shop showed me a copy of the latest Cox catalog, and the Conquest isn't listed (though glow plugs are). It seems the rumors we've been hearing over the past year about the imminent demise of the Conquest have come true. I tried to check out the status of the Conquest with Cox, but they didn't answer my letter. My advice, if you're a Conquest owner, would be to stock up on parts such as pistons, cylinders, cranks, rods, etc., while they may still be available.

MODEL OF THE MONTH

How about a triple-fin (going Bob White one better) Wakefield this month? This month's model came from Sweden via the Australian *Flypaper* newsletter

and the *Batsheet*. Let the designer, Bjorn Soderstrom, tell about it:

"This is a typical Scandinavian model with the intention to fly like a power model. It is trimmed with plenty of right thrust and left rudder for the climb. This means that when the model flies fast in the initial climb, the left rudder and wash-in should cooperate to give a straight climb; then when the torque is falling the model should start to turn more right because of the right thrust. I also have a rearward CG and so have small differences in angles, hoping to get enough stability with light extremities and the model layout (triple fins, small span, short fuselage, etc.). The autorudder operates when the prop folds and no VIT is used. Results with the model have been good in both Swedish and continental types of weather and my intention is to continue with even smaller and faster models in the future." Bjorn won 2nd place, 1976 Europa Cup with this Wakefield.

MYSTERY MODEL

This month's mystery model is an A/2 of more recent vintage than its looks would indicate. The designer was from overseas (representing his country on 15 World Champs teams), but the model was published in an English language magazine. If you think you know the design, send your guess to the **RCMB** office to see if you win the free subscription. •

Peanut . . . . . *Continued from page 57*

extra rib is used as a template while cutting the 1/64 ribs by the "stack" method, and is then discarded. If ailerons are built in, the ribs involved will have to be cut off. Build in the ailerons without cutting either the tip bows or the trailing edges. If the complete wing is covered, shrunk and doped before cutting the ailerons free, the whole process is much easier.

The model is covered with superfine tissue, applied with thinned white glue. Since the "Ace" is a homebuilt, the color scheme and license number can be whatever you wish, or you may be able to find an actual airplane to copy.

"It's the detail that makes it scale." The extent and finish of the details you apply will depend on your skill, patience, and the type of model you prefer. However, the engine and landing gear at least should be detailed, even on a stark model, as these features add weight to the nose, which is useful. For a completely detailed model, nothing will take the place of a set of photos, or a real plane to work from.

Baby Aces have been powered with various lightplane engines, so you can detail your own favorite and be correct. The landing gear is the trusty Piper J-3 unit. Note that this gear is outsized on the tiny Ace, which adds to the plane's cute charm. Shock absorbers, brake drums, and flush wheels all add good looks with little work.

The wheels themselves are made from soft 1/4-inch sheet, faced with a ring of 3/32 sheet, as detailed on the plan. The axle bushing is 1/16-inch aluminum tubing. After the wheels have been secured on the axles with a drop of glue, the wheels are finished with a disk of colored bond paper.

Block dimensions for a hand-carved prop are given on the plan, but if you would rather not tackle one, one of the excellent plastic props available will work fine. Power for a 1/2-oz. model is a 12-inch loop of 3/32 rubber. A 1/4-oz. model will fly on a loop of 1/16 rubber.

There are several trimming steps that can be built in and will guarantee successful flying. First, make sure that

the center of gravity is well forward. There should be two degrees of positive incidence in the wing. The wingtips should be washed out about 1/16 inch. There should also be about two degrees downthrust. With these adjustments built in, you should be able to get your model flying. Fine trimming with "tweaks" of rudder and elevator, maybe some additional thrust adjustment, will let you build up to maximum endurance. Fine trimming can also include changes in the length and size of the rubber motors. Remember that a shorter motor will give more power and shorter duration, and a longer loop will deliver less power over a longer time. Try for an initial climb, a long, steady cruise, and a landing just as the winds run out.

The Baby Ace is a fine flying model. The best of luck and lots of enjoyment with yours. •

Hannan . . . . . *Continued from page 56*

established for obvious reasons.)

Another potential gain would be in helping to equalize aircraft which may not have the capabilities for extended duration flying.

WATT'S THAT?

Captain Ed Toner reports a breakthrough in electric powered models. It may be recalled that Ed's giant trophy for a successful electric powered Peanut in **R/C Model Builder's** Postal Peanut contest went unclaimed. Thus Ed decided to attack the design problem himself. The basic limitation has always been the relatively low power-to-weight ratio of electric systems, coupled with the small wing area of the average Peanut. Ed preferred not to resort to "freak" designs, such as quadruplanes, in an effort to gain increased wing area. Rather, he decided to embark on an extensive investigation of electric motor and propeller combinations.

As a test vehicle, Toner chose a Walt Mooney designed Huntington monoplane. First tested with rubber power, it required a considerable amount of nose weight for balance, and turned in a best duration time of about 21 seconds. Next, Toner experimented with a variety of motor/prop installations in an effort to find a suitable combination. The unit currently fitted is from a Mattel "Chopcycle" toy. A 5-1/2 inch diameter plastic prop was epoxied directly to the drive wheel of the geared unit. Results have been satisfying, with a flight duration of 70 seconds and an altitude of about 35 feet attained.

All-up weight of the model is 36 grams, admittedly considerable for a Peanut. The motor/prop assembly itself accounts for 22 grams. Ed reports that maintenance is required, since the ni-cds build up some sort of acidic residue around the contacts which must be cleaned about ever 20 flights or so.

Ed is now trying a flying scale model of an ultralight plane called the "Utah Weedhopper," using the motor from a miniature Cannon R/C servo. Made in Switzerland, the unit weighs a mere 8 grams with propeller attached. Ed feels the Weedhopper design, which is a super-simple one, may replace the Fike as the ideal Peanut subject. His model covering is also unique, being a thin Spanish paper used for packing wine bottles. It is non-porous, requires no doping, and appears not to have any of the faults of condenser paper.

Toner also suggests that the tiny spring-wound motors featured in the newer plastic bathtub toys deserve investigation. Much lighter than the old all-metal type, they have already been employed in dethermalizers for for hand-launched gliders, but might find application as powerplants or landing-gear retraction drives for small scale models.

HOW'S THAT AGAIN?

The Aeroplane for May 30, 1912, announcing the delivery of a Caudron monoplane to England: "This second outstanding example of Mr. Ewen's enterprise, whose arrival was chronicled a short time ago, has unfortunately not yet been able to show real speed at Hendon, as it was violently eaten by cows within a day or two of its arrival."

NEW CATALOG RECEIVED

Oldtimer Models sent us a copy of its 1979 supplies brochure. Listed are all manner of goodies, including kits, model plans (both scale and non-scale), three brands of rubber (Filati, Pirelli, and FAI), balsa, condenser paper, Japanese tissue, and silk. Other difficult-to-obtain offerings include machined "I" beams

for twin pusher frames, Hinoki strip wood from Japan, imported piano wire, and goldbeater's skin. Prices are very reasonable, especially under today's economic conditions. No price appears on the catalog, but we suggest that you send at least a couple of postage stamps (unused, of course!) to help offset costs. Oldtimer Models, P.O. Box 18002, Milwaukee, WI 53218.

BROWNS AGAIN AVAILABLE

According to Bob and Sandy Peck, they have just received a good supply of products from Brown Junior Motors, including the long-awaited improved CO_2 chargers, as well as the various sizes of engine fuel tanks and hook-up line.

Another item which has not been available for a couple of years is also now in stock. This is the "Sharpie," a sort of artificial hone-stone, which is just the ticket for keeping a keen edge on your Uber Skiver knife. You *DO* have at least one of those, don't you? For more information on this and other Peck-Polymer products, see catalog ordering instructions in their **RCMB** adverts.

WHAT'S IN A NAME

The "Gossamer Condor" and "Gossamer Albatross" man-powered aircraft have already earned a lasting nitch in aero history. According to team biographer, Dr. Morton Grosser, the Shafter Airport location of the epic MPA prize-winning flight has been declared a State Historical Monument. The "Albatross," as of this writing, had stayed aloft longer than any previous MPA in history, with a flight of one hour, nine minutes and three seconds over the California desert. The crew may have already made their English Channel crossing attempt by the time this reaches print, either with the "Albatross" or the smaller "Gossamer Penguin."

We thought it appropriate to note some other intriguing names for aircraft along similar lines of thinking. The "Bamboo Butterfly" and the "Conduit Condor" were hang gliders created by Richard Miller some years ago, who credited his inspiration to the materials employed in their construction. And just this week we encountered Dr. John Martin's generic reference to microfilm models as "Gossamer Butterflies." As if to second the motion, Frank Scott and his son Chris established some new ornithopter records (during a control line contest yet!) with models called "Gossamer Guppies." A rose by another name. . .

FAREWELL TO RUSS

The toughest task facing any columnist is that of paying tribute to a departed friend. Words are simply inadequate for the purpose, especially when a fellow model builder of many year's acquaintance is involved. Russ Barrera was such a friend, and one whose dedication to model aircraft far surpassed that of a hobbyist. Unlike the majority of us, Russ maintained his enthusiasm for models continuously, and he had managed to hold on to his collection of memorabilia dating back to his early childhood. This became the nucleus of what was to become the Russ Barrera Model Aircraft Museum and reference library, perhaps the most comprehensive of its kind anywhere in the world.

Such was Russ' devotion to documentation of aviation history that he spent a high percentage of his waking hours in cataloging reference material, and we can clearly recall him sorting 3-view drawings, even while ostensibly watching television.

His devotion to model club activities extended far above the call of duty, and our guess is that he spent more hours as a scale judge than anyone else ever did. This included participation as Event Director for Nationals contests as well as countless local competitions. He virtually single-handedly steered the famous Flightmasters all-scale club through some of its tenuous years, and was an active member of many other model and full-size aviation organizations as well.

He also found the time to teach the art of model building to his daughters, who actively participated in competitions, and was well along the road to instilling a knowledge of modeling in his grandchildren.

Faced with the fact of his rapidly

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86851	Large Tuff Line 1' Pkg.	1.20
86885	Small Clear Plastic 2½' Pkg.	.25
86886	Medium Clear Plastic 2½' Pkg.	.30
86887	Large Clear Plastic 2½' Pkg.	.40
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As engine manufacturers we are acutely aware that a large portion of so called engine problems are in reality **fuel line problems.** Symptoms of fuel line trouble are going lean (air leaks), speed fluctuations, or inability to get rich enough high speed (restricted flow).

Fox Fuel Lines are of the best materials available and dimensions were carefully selected for model use. Fox Fuel Lines are the world's finest.

Tuff Line - Silicone - Is by far the strongest on the market - semi transparent: shows if bubbles are in the line: heat resistant. Like all silicone tubing, tends to slip off fittings unless care is taken.

Neoprene - Actually a complex compound. Ours is much more elastic than most - clings to fittings - main dis-advantage, not transparent.

Surgical Tubing - (Pure Rubber) Very flexible. Use when sharp bends are necessary. Semi-transparent. Shows if bubbles are in line. Holds on fittings well. Main disadvantage - tends to deteriorate more rapidly than silicone or neoprene.

Plastic - Glass clear. More flexible than most. Advantage - low price and transparency. Disadvantage - tends to collapse on bends and hardens with age and heat.

FOX PRESSURE FITTING

The Fox Pressure fitting is machined from 3/16ths inch hex brass bar. It is probably the smallest and most compact pressure fitting on the market. We offer it with either 4-40 threads or 6-32 threads. Pressure fittings are normally used to pressurize the fuel tank. For pattern type RC models pressure is usually taken from the muffler housing. For Rat Race type models pressure is usually taken from the crankcase.

90501 4-40 Thread Pressure Fitting ..... $.95
90502 6-32 Thread Pressure Fitting ..... .95

FOX FUEL BULBS

A fuel bulb is the simplest, lowest cost, most reliable way of transferring fuel from a can to your airplane. The Fox Fuel Bulb is the best you can buy. The bulb itself is molded from heavy wall rubber, thicker and more durable than others. The fittings are all metal, and the filler tube has a larger than average ID. The net result is a bulb that will fit the top of your can, reach to the bottom of a gallon can, and fill to its full 4 ounces in 8 seconds.

30500 Fox Fuel Bulb fits Pints and Quart Cans $2.98
30501 Fox Fuel Bulb fits Gallon Cans 2.98

FOX CARBURETOR ADAPTERS

The Fox Carburetor adapters is a simple casting made with a flange that will mount on a Fox Motor and has a vertical hole and two set screws to take the round-type carburetor. Due to the wide variety of carburetors available and the varying number of sizes and stems, we offer an adapter which can be drilled or reamed out to whatever size you desire. The base pattern fits our Fox 40, 45, Eagle and Hawk 60's and 78's. Each adapter is supplied with two set screws threaded 6-40.

90604 D Size $5.00

FOX FUEL FILTERS

We believe the Fox Fuel Filter is the finest that you can buy for several reasons:

1. Our filter element is an ultrafine stainless steel screen. The element is stainless steel which is immune to the corrosive attacks of fuel itself.

2. Our housing is a threaded two-piece assembly with a nylon gasket that can be taken apart for cleaning repeatedly.

3. Fox Fuel Filters have large diameter nipple fittings that are designed to hold tightly onto the relatively large diameter surgical tubing or silicone tubing that is popularly used today. We recommend using a filter on the line from your tank to your carburetor, and another filter in your filler line.

90701 Fox Fuel Filter - small $1.49
90702 Fox Fuel Filter - large 1.49

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declining health, Russ responded with characteristic efficiency by organizing an advisory committee to help assure the perpetuation of his life's work, the Model Aircraft Museum. Anyone who may care to assist the continuation of this institution may contact Mrs. Lorain Barrera, P.O. Box 670, San Martin, CA 95046. Donations of either financial or historically significant model artifacts will be gratefully received.

As has been said before, model builders are a special and precious breed of people. The message seems clear . . . appreciate each other NOW, while you may, for we are more fragile than the aircraft we fly. •

F/F Scale . . . . *Continued from page 55*

then fly your model with both the handmade and the plastic prop. See if you can detect any improvement. If not, it could be that your technique needs a tad more scrutiny. Experiment with different diameters and pitches. If you want to win, you have to make the best prop/power combination you can. The same problem occurs with full-size aircraft. One of the objectives of the test period given the homebuilder by the FAA is to find out which prop performs best with the engine and airframe. It stands to reason that the same applies to models.

To be competitive, you have to make these trials, otherwise you won't see much improvement. You may not be interested in competition, but how about giving your model the best possible chance for duration, just for your own self-satisfaction?

Of all the models entered, it is interesting that as a whole, the special one-design Walt Mooney DH-6 event attracted more high quality models than any of the other classes. Since I was unable to stay for the entire flying session, I do not know who won Grand Peanut, but I did have a couple of possible choices. One was a model of the Nieuport II. This model was absolutely exquisite. It was exceptionally clean, tastefully finished, and it even had a hand painted Indian on the sides of the fuselage. The sad note here was that the U.S. Post Office did a number on it, but the incomparable Walt Mooney had it repaired in no time with no visible signs of previous damage. The other little beauty was that of a Gadfly. This model was also tastefully done with exceptional craftsmanship and an outstanding job done on the dummy ABC Scorpion engine. The only flaw was that the landing gear was extended nearly 50%, but on this model it didn't detract that much.

So, as a whole, I feel that we saw another worthwhile Model Builder Postal Proxy Peanut Contest!

* * *

One area which is seldom ever mentioned is the tail skid. Granted, this isn't one of the most important areas of scale modeling, but certainly, a nicely-made leaf spring looks so much better than a

pin or wire dangling from the rear. I believe that too many of us spend little time worrying about this neglected area, since we have been "trained" by many drawings which show nothing more than a bent wire.

Well, there is a better way, and one which is easily accomplished. If you are building a light rubber model, then card stock laminated to represent each leaf should be used. If, on the other hand, you are building a gas or electric model, you should make the spring using brass shim stock. Once the leaves have been cut out from the brass, it is best to solder these together at one time. This is best done by using a soldering paste (this is a product that can be found easily where model railroad supplies are sold. So much work in changing brass locomotives is done by so many model railroaders that this is a fairly common product). Clamping should be done with something which is non-metallic; clothespins work pretty well. Metal clamps act too much like a heat sink and interfere with good soldering.

Once the spring has been soldered together (see illustration), a couple of small holes are drilled where the spring will attach to the fuselage. Next, clean the brass thoroughly with a solvent and some steel wool. The spring is then immersed in a product called "Hobby Black No. 1." This is another model railroad product that is used for turning many metals into a natural black finish. The change is immediate. A clean part is important, otherwise the chemical action will be spotty.

Ahead of time, cut out a triangular piece of plywood (thickness determined by the size of the model. Usually 1/32-inch thick is adequate.). This fits flush with the bottom of the fuselage and as far back as you can get it. It has a couple of holes drilled in it that line up with the ones in the spring. Attachment is simply done by inserting pins, used like bolts, through the spring and the plywood. Small brass washers are then soldered on the backside. I will usually bend the pins over, then solder. This system is simple, yet effective, and looks good. If you want to add the bracket that keeps the leaves together on the real thing, use card stock for this using white glue for attachment. This will add just a bit more character and class to your next model needing this type of tail skid.

Next month, I have a constructional type article to present, in order to help those just starting in modeling. I hear from many who have been away from the hobby long enough that they don't know what some of the latest techniques are. So, with many photos, I plan to start with a Flyline kit of the Stinson Voyager and follow it all the way through the test flying stage.

In closing, for those of you who have shown interest in my full-size machine, I will fill you in on a few of the latest details. At this point, I have 45 hours of time on it, and it gets better all the time. The restrictions have been lifted so that I can take it anywhere I want. I find that I can't get enough flying! Seems that it's over before I start. So often Jack McCracken and I take off to some adventurous place, are gone most of the day, and we only put a couple of flying hours on the aircraft!

Presently, Jack and I are preparing to fly the Charger back to the big EAA fly-in at Oshkosh, Wisconsin. It isn't until one lays out all of the sectional maps that you truly realize how far Oshkosh is from California . . . and all of that desert! It looks as though there will be at least three other planes which will be flying back together in some kind of loose formation. At this writing, it is only about a month away, and many small details have to be worked out. I'll give you a brief report to let you know how it turned out. •

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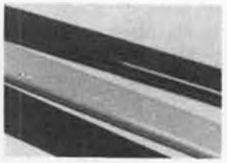

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CO_2 F/F . . . . . *Continued from page 55*

CO_2 engine is that the model size is just right for sport flying. The models are larger than Peanut Scale, so old "fumble fingers" can handle and build them (R/C flying will do that to you). The models are still small enough to store and carry, and fly nicely in your local park or schoolyard. Oh yes, one extra feature is that they sound good, but are so quiet that no one could ever complain.

Almost all of the above advantages hold for rubber power except for three drawbacks. First, is that rubber power is messy! Rubber lube, although not so bad as the goop from a glow engine, is still slimy and tends to get on everything, eventually making your model mushy and heavy. Second, to fly rubber power, you need someone or something to hold the model while you wind it. Third, when a rubber motor goes BLOOIE!, so (often) does the model. However, I must admit that even if you buy a good winder, rubber power is less expensive.

The choice of model should be pretty clear. The sheet wood rubber models come pre-decorated, assemble in less than two hours ready-to-fly, are rugged, and need no covering or doping. This type of model looks nicer than many stick-and-tissue models I have seen at contests. When you crunch the model it can always be fixed, usually very quickly. Hot Stuff can do wonders here.

There are currently three brands of models available in the sheetwood type. Top Flite, Carl Goldberg, and Midwest make about a dozen different models from which to select. Way back in the late fifties, there were at least thirty more models made by Cleveland and a much extended Top Flite line. Airfix in England makes a line of models, but I don't know if they are imported.

I selected the Midwest Piper Cub for my first CO_2 project. The choice was arbitrary and based entirely on my preference for the full-scale aircraft. All of the current models which are available can be made to fly well, though flight duration will vary with design.

Let's get on to the actual adaptation required in construction and the flight trim techniques. In the case of the Cub, I put the tank at the rear of the cabin area and added a small former ahead of it for retention. The balance of the model still proved to be nose heavy, so next time I would move the tank completely behind the wing. The pressure tube was routed inside the fuselage and exits through a slot in the windscreen.

A very firm mounting is required for the filler nozzle. I drilled and slotted a piece of 1/16 plywood and set it in the fuselage bottom just behind the wheels. The nozzle sticks out of the bottom of the model. The fuselage may be gripped very firmly around the ply to give the force required in loading with CO_2.

The engine is mounted to a 1/16 ply firewall set just about 1/4 inch from the rear of the nose block. The exact position, size, and shape of this firewall will depend on your engine and airplane. Be sure to mount the engine so that you have about 2 to 5 degrees rightthrust and 7 to 10 degrees of downthrust. These settings will generally be in the ballpark for any sport free flight model.

A final modification which seems prudent, is the addition of some extra bracing to the landing gear mounting. I used a few scraps of the wood left over from the kit for all the additional balsa parts. R.O.G.'s are fun, so make sure that both wheels roll freely.

I have found that the center of gravity or balance point of kit models tends to be somewhat forward of the optimum position, since this makes for a "safer" flying model. A slight stall is much preferrable to a slight nosedive. Start with the specified balance location and then try to add tail weight and down elevator while keeping the glide stable. When the trim gets too sensitive for consistent flights, you have gone too far.

After doing glide tests into your local field of tail grass (The local one here in Los Angeles is somewhere near San Francisco, I think) to minimize possible impact, start flight tests at a low power setting. Trim the rudder to achieve a wide left turn, and warp the trailing edge

ne left wing down to keep the model
n spiraling in.
radually increase the power setting
il the model is either verging on
ontrollability in the climb, or the
nt duration begins to shorten due to
st climb but steep glide. With these
newhat small, heavy models, best
hts seem to happen when the engine
ntinues to run slowly until just a few
t off the ground. The prop has too
ch drag to allow good gliding perfor-
nce. Experimentation with clipped
ops would probably be useful here. I
e also seen some people use Cox's
op for the .020 on CO_2 engines. That
uld probably give sufficient thrust,
ile greatly reducing the air drag in
ding.

Try things out, experiment, learn. But above all, HAVE FUN FLYING! •

Plug Sparks . . . *Continued from page 35*

designed around one cylinder size, to enable the modeler to progress from one size to the next largest.

The engine we're featuring this month (the Falcon) had a cylinder bore of .875 inches and stroke of .625 inches. This gave a displacement of .376 cu. in. per cylinder or .75 cu. in. for the twin. Claims were made for the short stroke as the main contribution of high rpm and excellent low vibration characteristics.

Fergusson engines feature 4130 steel bar stock cylinders with the fins integral with the cylinder barrel. The transfer port was brazed (like Brown Jr.) to the outer cylinder wall. The cylinders in turn were bolted to the crankcase.

In the machining kits provided by the Fergusson Co., cast iron pistons were provided with an option for aluminum type pistons. The crankcase was machined from a solid steel billet.

The front of the crankcase was fitted with a ball bearing. Ahead of the bearing was a long bronze bearing with annular oil grooves. The rear bearing was also bronze with a felt oil retainer ring.

Ignition, using a 3/8-24 AC Spark Plug, was accomplished by means of a cam and breaker points at the rear of the crankshaft.

Fergusson engines were first advertised in *Model Airplane News* in 1935 after some desultory advertising in *Aero Digest*. Speeds from 2500 to 7500 rpm were claimed, with a weight of 27 ounces (a wee heavy for a .75 cu. in. size engine!). The twin was rated at .4 horsepower and sold for $35, less propeller. Propellers, incidentally, were also manufactured by the Fergusson Co., but that is another story for later.

All Fergusson engines came finished with red crankcases, black cylinders, and unpainted aluminum, making for an attractive looking motor. All engines came fully guaranteed with no charge for handling. Naturally, if the engine was abused, no engine manufacturer in those da,. would give an unconditional guarantee.

40 YEARS AGO, I WAS. . .

This columnist has heard the story many times before, but Sal Taibi recently repeated this one in a good old-fashioned bull session.

The scene was the 1940 Nationals at Chicago, and it was one of those unpredictable days that suddenly gets beautiful in the middle of the day with very little breeze.

Joe Konefes took off just before lunch and hooked a good thermal. Just after takeoff, the lunch whistle blew. At the Nationals, all contestants were provided with a box lunch and were required to eat it during the prescribed lunch period. All this time, Joe's Buzzard Bombshell drifted aimlessly around the field while everyone else chewed on their dried-out peanut butter sandwiches. No one could piggyback!

Needless to say, Joe's model remained in the air for 47 minutes, a time no one else could touch, as the weather (as in the Korda Wakefield win) deteriorated to the point where long flights could no longer be achieved.

Think that's bad? How about Wally Simmers letting his rubber model go on a test flight about the same time and unable to get it down for 55 minutes!

Remember fellows, anything in the air is a threat! Put an official watch on all flights!

AMPS BOWL

Once a year the Antique Model Plane Society of Northern California stages a

one-of-a-kind type contest known as the Amps Bowl. Previous contests have featured Comet Flying Fury R.O.G. models only, a "rubber versus gas" meet, and now, this year, a time target event.

Any type of powered Old Timer model was eligible. The object of this meet was to come as close as possible to a two-minute flight. Of course, this was to be repeated three times, taking the lowest total deviation as the winning score.

Most interesting thing about this meet, held at Madera this year, was that there was no engine run limit or limitation on the amount of rubber that could be used. The trick here was to know your model well enough to closely approach the two-minute mark.

Most of the boys got a real shock as they hit unwanted thermals, and the first round found Tom Keppler (the leader) with a penalty of 114 seconds! Imagine getting lift when you don't want it!

As the day wore on, Larry Hindergard, the eventual winner, put up successive flights that accumulated penalties of only 62, 8, and 31 seconds. For his first contest, Larry was quite excited and enthused over O.T. flying. This system of flying gives everyone a chance!

The perpetual AMPS Bowl was awarded to Larry, along with a nice Tee Dee .020 to alleviate the pain of having to display the trophy for a year. The trophy, incidentally, is a scaled version of a water closet found in most lavatories! Wonder what the wife said when he put that on the mantle!

50th ANNIVERSARY M.A.N.
OLD TIMER POSTAL CONTEST

SAM Chapters, and SAM itself, have never sponsored postal contests to any great degree. When John Haggart was active in England, several postal contests were held with the SCAMPS. Their annual meets were held for several years until Haggart's unfortunate death.

SAM 7 has been in close touch with SAM 32 (the large English club), but as of this writing, there has been no indication of a postal contest forthcoming.

To commemorate the 50th Anniversary of *Model Airplane News*, Dave Linstrum, VTO Columnist, has suggested a postal O.T. contest. Dave (after some exchange of letters) has outlined the following events: .020 Replica and Twin Pusher.

The .020 event will be governed by SAM Rules, with 3-minute flights. The Twin Pusher event will follow the standard Old Timer Rubber rules. Any design and/or size of twin pusher can be employed.

This postal contest will be held on any day of the Labor Day holiday weekend (Saturday, Sunday, or Monday). Results should be sent to Dave Linstrum, 2748 NW 47th, Ft. Lauderdale, FL 33313, during the month of September. Anything postmarked later than September 30 will not be honored. So go out and have some fun. Let us know how you enjoyed yourself!

LORAIN COUNTY R/C SECOND ANNUAL O.T. CONTEST

Here's a meet the writer didn't hear about until the second time around. Contest Director Ted Katsanis writes to tell us the 2nd Annual O.T. contest at North Ridgeville, Ohio, was a howling success.

Three events were staged: Antique, Class C O.T. Limited Engine Run, and Class AB Combined Limited Engine Run. The meet was held at the Lorain County R/C Club Field located about four miles off I-90 on the Hwy. 254 turnoff. Results look pretty familiar, with the same old models winning:

ANTIQUE
1) Bob Gott (Dallaire) 19:02
2) George Stephens (Miss America) 16:12
3) Bob Walter (Quaker) 11:48

CLASS C LTD. ENGINE RUN
1) Ted Katsanis (Playboy) 17:30
2) Dick Sturges (Bombshell) 13:11
3) Ralph Turner (Bombshell) 11:44

CLASS AB
1) Dick Sturges (Playboy) 9:13
2) Joe Elgin (!!) (Playboy) 8:03
3) Ralph Turner (Clipper) 5:59

Did you catch Joe Elgin's name in there? Joe, in case you didn't know it, is the designer of the Playboy. Good to see him back!

For the dope on next year's meet, contact Ted Katsanis at 16495 Parklawn

Ave., Middleburg Heights, OH 44130.

THE "DOUBLE F" MEMORIAL

That's about the way this columnist sees the latest announcement of a king-sized meet to be put on commemorating Ed Franklin and Jack Florenzie, two real great modelers.

According to Joe Beshar, former SAM President, this meet comprised of Free Flight and R/C O.T. events will be held at the site of the 1978 New Jersey SAM Champs, Coyle Drop Zone, on the south side of Rt. 72. Best way to get there is to take Garden State Parkway exit 63, four miles northwest of 539 and 72 Junction.

This meet, to be held on September 23 from 9:00 a.m. to 4:00 p.m., will feature 1979 SAM rules. Don Garafalow will be the Contest Director of the free flight events:

Cabin Rubber
Stick Rubber
Scale Rubber
.020 Replica Electric (Beshar rules)
Cabin Gas (comb A, B, C)
Pylon Gas (comb A, B, C)
.020 Replica

The R/C Old Timer events will be conducted by Joe Beshar and will feature the following events:

Class A Glow
Class B Glow
Class C Glow
.020 Glow
Antique
Class AB Ignition
Class C Ignition

An interesting gimmick in the entry fees is the charge of $10 for the first three events and a $2 charge for each additional event thereafter. Those who like to fly will benefit from this!

All contestants are asked to bring watches and be prepared to help time. (You're not going to find many volunteers in the boonies!) So paste the September 23 date in your hat. This is going to be one of the big meets in the New Jersey area!

OLD TIME HAND LAUNCHED GLIDERS

Here is a real simple Old Timer event that Robert Larsh, 45 S. Whitcomb, Indianapolis, IN 46241, is trying to promote. He has gone so far as to stage O.T. hand-launch glider events with the standard Old Timer meets put on by the Central Indiana Modelers.

To help all those fellows who are doubtful about which glider designs are available, Bob has drawn up quite a few already. At last reports, Larsh has over 30 drawings to choose from. Incidentally, all plans are documented. So, if you fellows are looking for a new kick in this Old Timer fun, here is a chance to enjoy!

FAVORITE ANECDOTES

When a bunch of the fellows get together with Sal and Nan Taibi in their house trailer, the bull sessions really get enjoyable.

Sal recounted an experience at one of the early Nationals at Chicago, probably around 1958, when Ron St. Jean's Ramrod design was in vogue. Most old timers and near old timers will recall the Ramrod featured a large amount of downthrust, in some cases as much as nine degrees.

To get on with the story, one modeler had a Ramrod on floats for the Hydro event that formerly was held at the Nats. Now, the Ramrod would fly fine from a VTO position or hand launched atitude, but no one (including this writer) had ever seen a Ramrod rise off ground. Sal and C.O. Wright were flying Hydro Stars (designed by Taibi, naturally) that would literally flit off the water. Wright and Taibi watched the fellow with the Ramrod attempt to make the model R.O.W. This proved to be quite a chore, as the model would constantly nose over.

Finally, one attempt resulted in the model running up on the front float clear across the pond. The model hit the bank, climbed over it and continued across the field merrily chewing up the weeds.

The irate modeler finally caught up with the model, grabbed it and flung it into the air in sheer frustration. Once headed up, the model zoomed up for the last of the engine run. When the engine quit, the model immediately dove into the ground.

The modeler, thoroughly maddened, immediately stomped all over the model, salvaging only the nose section containing the engine and timer. Sal and C.O. watched with some interest as the modeler came back with only a few pieces, swearing and cursing to the effect he would never again fly this event. C.O. Wright observed to Sal, "I've got news for that modeler; he has *yet* to fly the event!"

THE LAST WORD

We couldn't resist this one, as this seems to happen all the time. Try this for size: "Plagiarism is when you steal from one source. It is research when you steal from multiple sources." Haw-w!! •

"Fly them? Goodness no. He just makes them and polishes them."

Counter . . . . . *Continued from page 10*

It doesn't look all that big in the photo, but that Sopwith Pup from Balsa USA spans a whopping nine feet! Pretty big, especially for a bipe. The model is standoff scale and is designed for the larger chainsaw type engines such as the Homelite or Quadra. In addition to that 9-foot span, other impressive dimensions are a 21-inch chord, 34-inch height above the ground, and a ready-to-fly weight of 27 lbs. The model is designed to be fairly quick to set up on the field (Balsa USA says 10 minutes) and consists of fiddling with 8 bolts. Maneuverability and realism are said to be superb.

The kit includes rolled plans and a complete construction booklet with 3-views and photos. Most of the parts are die-cut from balsa and plywood; no foam is used anywhere on the model. A 13-1/2 inch diameter ABS cowl is also included. The spars, cabanes, struts, landing gear, and fuselage longerons are cut from redwood. The hardware package is complete (how does 190 pieces grab you?) and includes cable and brass turnbuckles. Retail price for the Sopwith Pup kit is a very reasonable $119.95 (sounds like the hardware package alone should sell for that much!), or if you order a Quadra with the kit the total bill is $199.95. Balsa USA will pay the freight.

Also new from Balsa USA is a float kit intended for the larger 1/4-scale models. The floats are 45 inches long and 7-1/4 inches wide. The kit has rolled plans and die-cut balsa and plywood parts. As in the Sopwith Pup kit, no foam is used in the construction. The float spreaders are included, however, no landing gear material is supplied as each model will require a different gear set-up. The kit includes dimensions for mounting the floats on the Balsa USA 1/4-scale J-3 Cub. Price of the float kit is $24.95.

Both the Sopwith Pup and 1/4-scale float kits are only available direct from Balsa USA, P.O. Box 164, Marinette, WI 54143.

* * *

R/C Sailplane fliers should check out the high-quality launch system parachutes being offered by The White Company. These chutes are made of lightweight, high strength marine quality reinforced nylon and are available in three sizes (81, 98, and 126 sq. in.) to suit your requirements. All three are larger than the minimum size specified by the FAI rules.

Each canopy contains eight panels and eight 75-lb. test shroud lines that are braided together to form a low-chafe loop for securing the towline. The chutes are available in red, white, blue, green, black, orange, or yellow, or any combination of these. Our sample chute was a "Coat of Joseph" and had a little of all the colors, plus a hand-painted **Model Builder** logo. The graphics are not standard, but may be ordered as an extra . . . your name or club emblem would really add the finishing touch.

The parachutes sell for $10 each, or if your buddies want some too, you can get five chutes for $45. To order a chute(s), draw a circle, divide it into 8 parts, and specify which color you want in each slice. Also, don't forget to indicate the size you want (as specified above). From The White Company, 19372 Worchester Lane, Huntington Beach, CA 92646. Don't forget to tell 'em where you read about it first!

* * *

As a companion item to the outstanding Prather Deep-Vee racing boat, Prather Products is bringing out a Running Hardware kit designed especially for its boat but which can be used on other deep-vees as well. As can be seen in the photo, the parts are nicely machined, and since it's from Prather Products, you can be sure that the quality and materials are top-notch!

The hardware package contains the complete strut assembly including the ferrule and needle bearings, strut brackets, stainless steel rudder, rudder brackets, rudder housing with needle bearings, rudder arm, stainless steel trim plates, shaft log with guide tube, flex cable, thrust bearing, drive dog, prop nut and required stainless steel bolts.

BYRON ORIGINALS

A product of Midwest Industries, Inc. Ida Grove, Iowa, 51445 Ph. 712-364-3165

Quick-Build

Exact Scale

Less than one year ago, Byron Originals introduced its Pitts Special with optional Byro-Drive reduction unit. We made some pretty strong product claims and were more than ready to back them up. We have since learned, from actual applications by customers both in this country and overseas, that the Pitts and drive unit have far exceeded our own ratings. Whether it be packaging, overall parts fit, ease of assembly, fidelity to scale, flight performance, materials quality, overall appeal or completeness, these firsts from Byron Originals have firmly established a new standard of excellence for the entire modeling industry.

No one will agree more than the proud and satisified Pitts and Byro-Drive owner. He'll be the first to recommend a Byron Originals kit for your next project. And you can count on him giving you a long list of reasons why.

We suggest you take his advise and look to Byron Originals for the newest and most intriguing concepts in recent modeling history. You'll agree it's like a breath of fresh air.

$89.95

Factory Direct Price

Prop. & Spinner Inc.

The Proven *Pitts* with *Byro Drive*

Order Byro-Drive model number for matching engine.

Model No.	for Engine
MFR-10-	.60 & .65 O.S. Max, frt. & r. valve
RR-11-	.61 & .65 Rossi, rear valve
RF-12-	.61 & .65 Rossi, front valve
WFR-14-	.61 speed Webra, frt. & r. valve
TFR-13-	X.60 Supertigre, frt. valve, r. exhaust
KF-15-	.61 Kraft
HPFR-16-	Silver Star or Gold Cup, frt. & r. valve
OPSR-17-	OPS .60 Speed, rear valve

$188.00

Factory Direct Price

Wing Span: 68
Wing Area: 1400 sq. in
Length: 62"

Weight: ready-to-fly, less fuel.
- *Under 15 lbs. with Econokote finish.
- *Under 17 lbs. with Epoxy/Fiberglass finish.

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Send me
- _____ Pitts Kit(s) at $188.00 ea. plus $8.00 shipping
- _____ Fiberglassing kit(s) at $36.00 ea. plus $2.50 shipping
- _____ Byro-Drive(s) Model No._____ (See chart at left) at $89.95 ea. plus $2.50 shipping.
- _____ Mig-15 kit(s) at $168.00 ea. plus $8.00 shipping
- _____ Fiberglassing kit(s) at $22.50 ea. plus $2.50 shipping

(Iowa residents add 3% sales tax.)

Foreign Inquiries contact:
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17835 Sky Park Circle
Suite E
Irvine, Calif. 92714
U.S.A.

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Address _____

City _____ State _____ Zip _____

☐ I have enclosed check or money order for $_____
☐ Please charge to Master Charge or Visa Account.

Master Charge #_____ Expires_____ Visa#_____ Expires_____

(Prices subject to change without notice)
Send to: Byron Originals, P.O. Box 279, Ida Grove, Iowa 51445.

Ph. 712-364-3165

Kits... Includes ALL ITEMS to complete models as shown!

Engine, radio, and final paint not included

BYRON ORIGINALS

A product of Midwest Industries, Inc. Ida Grove, Iowa. 51445 Ph. 712-364-3165

MiG-15

Wing Span - 57"
Lenght - 55"
Ready-to-fly wt. - 8½ lbs.
Wing area - 600 sq. inches
For .60 size engines and 4 channel radio

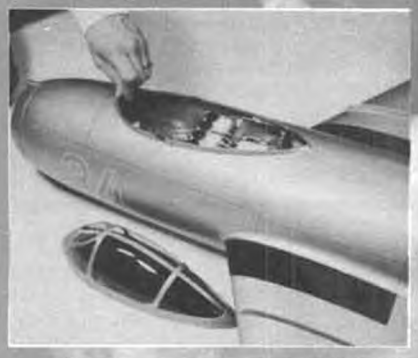
The First Practical Approach to Realistic Jet Performance That:

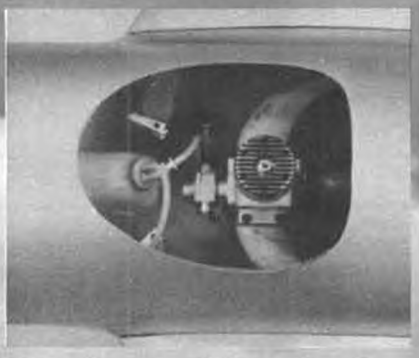
- Is designed for the average R/C enthusiasts.
- Allows short grass strip take-offs
- Offers fast and easy starting without having to remove and assemble hatches.
- Eliminates complicated belt-start procedures
- Readily accepts most standard .60 size engines
- Does not require high nitro fuel for satisfactory performance
- Arrives factory installed (standard equipment) and ready for engine.
- Produces up to 8½ lbs. of static thrust with Schnuerle .60 and low nitro fuel.

With factory installed

BYRON ORIGINALS **Byrojet** Ducted Fan

Quick Assembly
Scale Accuracy
Easy Access to Radio and Engine





Pat. Pending

Unlike other quick-build kits that often sacrifice authentic detail for fast assembly, Byron Originals has kept both authenticity and simplicity high on the priority list. All die-cut wood parts and 11 foam components needed for completion are designed with quick assembly, scale accuracy and minimized weight in mind. All foam modules consist of lightweight yet impact resistant injection molded polystyrene.

Fuselage consists of hand-layed fiberglass and arrives with fan unit, thrust tube, radio compartment and push rods already installed. All decals and color scheme templates also included.

All control surfaces utilize center point hinging requiring standard servos. Every last item, except radio, engine and final paint are included in kit. No shaping or carving required. No guesswork involved. Only quick, accurate and enjoyable building.

Optional epoxy/fiberglass kit for glassing wings and tail surfaces available for $22.50.

The ducted fan with exclusive quick-start capabilities.

Starter extension provided with kit.

Add $8.00 for shipping to any U.S. address. Items shipped by United Parcel Service.

$168.00
Factory Direct Price

nuts and washers, and a complete step-by-step photo instruction booklet.

The Running Hardware kit retails for $69.95 and can be purchased either from your dealer or direct from Prather Products, 1660 Ravenna Ave., Wilmington, CA 90744.

* * *

Remember the Petrel the neat 100-inch R/C sailplane that we featured in the April '79 issue? Well, the designer, Jim Ealy, has formed Archaeopteryx Avion Associates and is now marketing a handy little device that scratch builders will love. It's called the TRI-STRP, and was designed with only one purpose in mind: to transform square balsa strip stock into triangular strip stock, useful for fuselage corner gussets and the like.

Our sample worked so well that if we had been in a hobby shop we would have stripped up all the square balsa in sight, just to see the thing work.

The TRI-STRP is a simple tool consisting of two pieces of aluminum with V-grooves milled into each piece. When the two halves are put together the grooves form square holes, set on edge. The two pieces are aligned with a steel pin at each end and are held together with two bolts. The square holes are sized to fit 3/16, 1/4, 5/16, and 3/8 square balsa. To use the TRI-STRP, a cutting blade is clamped between the two halves so that it straddles the hole desired, then the balsa stick is pushed through the hole. It goes in as a square stick and comes out as two triangular strips, ready to use. Simple, huh? Jim says that harder woods such as spruce and redwood can also be cut in the 3/16 and

1/4-inch slots.

The TRI-STRP is available for $9.95 from Archaeopteryx Avion Associates, c/o Jim Ealy, Box 120, Pottstown, PA 19464.

• • •

An outfit by the name of B.J. Fiberglass, up in Federal Way, Washington, is producing a number of accessories aimed especially at R/C Unlimited Hydroplane enthusiasts. As shown in one of the photos, one of these items is a scale dummy Rolls Royce or Allison engine (both versions are available). All the parts are vacuum-molded from fuelproof styrene plastic and come unassembled and unpainted. Retail price for either engine kit is $18.95, which includes shipping. Looks like a painless way to get around this time-consuming task.

Other items from B.J. Fiberglass include steering wheels, helmets, instrument panels, and engine cowlings for Karelson type scale hydroplanes. Why not send an SASE for a complete list of accessories and prices? B.J. Fiberglass, 33212 26th Pl. S.W., Federal Way, WA 98003. •

R/C World . . . *Continued from page 11*

Another "first R/C" letter comes from reader Jim Alaback, Kankakee, Illinois. Unfortunately, the photos he refers to are unusable, but the "word picture" of his experiences with single-channel should bring back memories of those challenging "good old days."

"This is in response to your question about my first R/C. It was a 50 inch wingspan Midwest Esquire, which I modified in the cabin and fuselage turtle deck areas to improve its appearance, as shown in the enclosed photos. This was about 1959. Power was a 1958 Fox 15 Rocket. The radio system was a single-channel (rudder only) Citizenship CTX transmitter and SSTR receiver on the newly-available 27.045 mc frequency.

"The rudder operation was by a rubber band and escapement mechanism, in a fixed sequence of right — neutral — left — neutral, etc. I suppose it was called an escapement mechanism because, I found, if you forgot to wind up the rubber band, the rudder wouldn't work and the model escaped.

"Without throttle or elevator control, the plane climbed continuously unless I put it in a steady turn. This would make the model lose altitude in a fast spiral dive. Neutralize the rudder and the excess speed produced a loop or two. After which, the plane resumed . . . its . . . continuous . . . climb. . .

"It also turned out that my brain was not too well adapted to the rudder control system. To go left, for example, I had to remember what the last previous turn direction had been. If it had been left, then it took two pulses to go left again; if the last turn had been right, then it took only one pulse to go left. On top of that, if the plane was coming toward me, then left was right; if it was flying away from me (it usually was!), left was left. After the plane got out a little distance, I usually couldn't tell for sure whether it was coming or going anyhow. About then I'd just push the button to see what might happen, which was probably nothing because the model had gone out of range. I never chased a free flight model farther than my first 'radio controlled' model!

"Well, it's sure fun to remember the good old days, isn't it?"

Incidentally, Jim's description of how you flew with rudder-only control is quite accurate. More skill was required than to fly with elevator added, because your only means of controlling altitude was with the rudder. Slight "blips" of rudder would provide a gradual turn. Holding rudder slightly longer would steepen the turn, slightly less would flatten the turn. With practice, you could reach and maintain most any altitude desired. To kill the speed after a loop or two, as Jim describes, you punched in rudder at the bottom of the loop, then blipped it in and out until the model "calmed down."

The most agonizing flights were with a new model. Test glides were just about mandatory, because you had no method of trimming the model after it was once in the air. Today, with in-the-air "trimming" available, we venture to guess that more than half of the models flying would not do so if all controls and trims were neutralized.

LET'S NOT STEP DOWN

As a long-time believer in the Builder of the Model rule, but one who has accepted the "facts of life" when it comes to the "tools of the trade" concept of sport and pattern competition, we still rebel at any tendency to step down requirements for neatly built and appearing models. Thus we bring to your attention "Thoughts on Lottery Starts, by Bob Brogdon, in the latest NMPRA News Release, as edited by Art Arro, Ann Arbor, Michigan. We hope that as many pylon racing persons as possible will back up Bob's position.

"I believe that the lottery start degrades the quality of the airplanes seen at races. While some areas that do use the lottery system still have nice airplanes, they certainly haven't kept up with appearances in the rest of the country.

"If the lottery system is used, then I don't have to worry about being 'to scale,' as long as I meet the minimum size requirements. Under these conditions it would be easy to make a much cleaner airplane (small canopy, no left cheek cowl, trick wheel pants, etc.) and knock another 3 to 4 seconds off my time.

"Everyone knows that the start position can be very important in a close race, and most of us work very long and hard to make the airplane look the best we can. If there is nothing to be gained from this work, why go to the trouble? It would be much easier for me to paint my airplane one color and add a little trim tape; there is no reason to do more if the lottery system is used!

"To sum up things, I am against using the lottery system start. I work very hard on the finish of my models to enhance my start position because 1) I want the time advantage of starting first; and 2) the safety of starting off first gets me clear of other traffic.

"I like the rules as we now have them and don't wish to leave my start position to chance." •

Barrera . . . . . *Continued from page 7*

The no smoking rule shall be enforced at all times. No unescorted children shall be admitted."

Back in 1972, **Model Builder** published an article, written by Bill Hannan, with photos by **MB**'s editor, describing the Russ-Craft Museum, as Russ called his combination model museum, research library, and hobby shop. The article included a brief history on Russ up through 1972.

"Owner/Manager Russ Barrera is a dyed-in-the-wool model aviation enthusiast, having been bitten by the balsa bug during 1927. A rare native Californian, Russ attended the Los Angeles Times Playground League classes, which taught the fundamentals of model building. At the time, that organization was directed by Irwin Ohlsson, of O&R engine fame, and Norm Chandlee. Indicative of Russ's preservation mindedness, is the fact that he still retains the scrapbook of plans acquired there back in 1929!

"During World War II, Russ worked at Douglas Aircraft, and later entered into house-trailer construction, using for the first time the Russ-Craft name. In 1952, he became an active member of the Flightmasters, while they were meeting at the Inglewood, California city playground. Later, this group evolved into the now world famous North American Flightmasters, largest all-scale model aircraft club in existence. Without a doubt, Russ was the most vital "sparkplug" of the organization during their long history. In fact, the entire Barrera family participated in the club activities, including Russ's wife Lorraine, and their three daughters. Two of these daughters even managed to win places in Nationals events.

"During 1958, Russ ran the helicopter event at the Nats, and in 1959 he ran all the scale judging, two F/F events, plus helicopter. In 1963, he was Scale CD at Los Alamitos; in 1970, F/F Scale Judge; in 1971 F/F Scale Event Director, and he again served in that capacity this year."

We might also add that Russ also headed up the scale judging of the first 3 **Model Builder** Proxy Peanut contests.

Although Russ is no longer with us in person, he leaves behind his model museum, which must and will continue indefinitely. What more appropriate time to call your attention to the need for donations than now. Send checks for the Russ Barrera National Model Museum and Library (Russ Barrera Museum for short) to Lorraine Barrera, P.O. Box 670, San Martin, CA 95046. •

Workbench . . . *Continued from page 6*

Model Aviation. The dues of Corporate Members range from a minimum of $50 to a maximum of $500."

Oh well, standards change over the years.

THIRD QUARTER SCALE

The Third Annual Quarter Scale Association of America Fly-In at Las Vegas, that is . . . October 11 through 14 are the dates. During the four days there will be displays, food, sky divers, demonstrations, new products, sky writing, information, exhibits, rides in an original Ford Tri-motor, full-scale aircraft demonstrations, fun events, drawings, hot air balloons, perpetual trophies, loads of flying time, plus the night life of fabulous Las Vegas. The affair is being expanded to include 150 aircraft and 50 manufacturers.

Entry fee is $20 per pilot, which covers 3 days of insurance, plus a banquet on Thursday, Oct. 11, at the Stardust. Planes will be on display on Thursday at the Stardust Hotel Convention Center.

General model requirements are as follows:

INDEX TO ADVERTISERS

HOUSE ADS

1. Model can be scale, stand-off scale or semi-scale.
2. Model can also be an original homebuilt plane of the future.
3. Scale must be 1/4 or larger, such as a 1/3-scale Pitts.
4. Planes which would be too large at 1/4-scale, such as a 747, may be built to a smaller scale, but not less than 108 inch wingspan.

For those modelers who wish to ship their aircraft ahead, Q.S.A.A. has set up a depot in Los Angeles. Models will then be transported to Las Vegas at no charge. Contact Ray Baker, 155-12 Gridley Rd., Norwalk, CA 90650, phone (213) 864-4758. Deadline is October 1 for receiving of models.

For additional information, contact Ed Morgan, 2310 Cimarron Rd., Las Vegas, NV 89117, or phone (702) 878-1306 after 10 a.m., Las Vegas time.

CHALK ONE UP FOR NAMBA

According to a report by Andy Stiffler in the North American Model Boat Association Newsletter, the Central Florida Racing Team held a non-sanctioned race on a community development, April 29, for which the entry fee of $2.50 went to the American Heart Fund. There were 79 boats entered in four classes: Stock OB, 29; Open Hydro, 21; Open Mono, 20; and Scale Hydro, 9. In all, there were 46 heats, plus a celebrity race featuring members of the Tampa Bay Bucs football team and a couple of local disc jockeys. In all, over $800 was raised for the Heart Fund and the local youth soccer league and Teen Club. The club received excellent radio and TV coverage, and an invitation to produce a two-day race for the Muscular Dystrophy Fund next year. As a result, new boaters joined the club, it received good publicity, and it found a place to race in a populated community.

The pattern is here for all types of model clubs to follow. Don't become so involved in your activity that you only look up when someone tells you must cease and desist. Like it or not, we are all a part of our local community, and the more we consciously contribute to it, the more it contributes to us, if only in understanding and tolerance toward what we are doing.

WHERE ARE YOU, RON?

Ron Kirchner. Your letter of April 25, 1979 to Walt Schroder was forwarded from *Model Airplane News* to **R/C Model Builder.** Unfortunately, there was no return address. Please contact Walt at our address here in Costa Mesa so he may get back to you.

GOOD GRIEF!

Costa Mesa neighbor Lee Hines just dropped (DTed?) into the office and said, "What's with the Free Flight column in the August issue? I thought we got rid of Stalick!" (He didn't really say that, Bob.)

A quick glance at the title page, and we knew what happened . . . prize booboo for August. In pasting up that issue, Chuck Blackburn cut out a clean title from a previous issue and stuck it in place. Problem is, the issue he used went back to 1978, when Bob was doing the column. Oh well, Chuck's an R/Cer, so what does he know!? And besides, when we get around to mailing a check, it'll go to Tom Hutchinson, and that's what really counts . . . right Tom? •

CLASSIFIED ADS

Non-commercial (personal items) Rate is 25 cents per word, with a minimum of $3.00. Commercial Rate is 40 cents per word, with a minimum of $5.00. No mail-order discount house ads knowingly accepted. No advertising agency discounts allowed.
All ads are payable with order, and may be for any consecutive insertion period specified. Name and address free, phone number counts as two words. Send ad and payment to MODEL BUILDER Magazine, Classified Ads, 621 West 19th St., Costa Mesa, CA 92627.

WANTED: Old model airplane engines, gas model race cars, kits, magazines, parts, related items, 1935-55. Arthur Suhr, W218 N5866 Maclynn Court, Menomonee Falls, WI 53051.

HOBBY HORN, hobby specialties. Old Timer Kits, Y&O Props, Rubber models, Gas R/C kits, Electric Propulsion Systems, Accessories. Plans and more. Among plans available: 14' Power House ($14.00), 15' Dallaire Sportster ($12.00), 93" Gas Bird ($7.00), 66" Strato Streak ($4.00) and others. Bob Sliff. Write or call for free listing and ordering instructions. Hobby Horn, Post Office Box 3004, Seal Beach, CA 90740, (714) 894-6223.

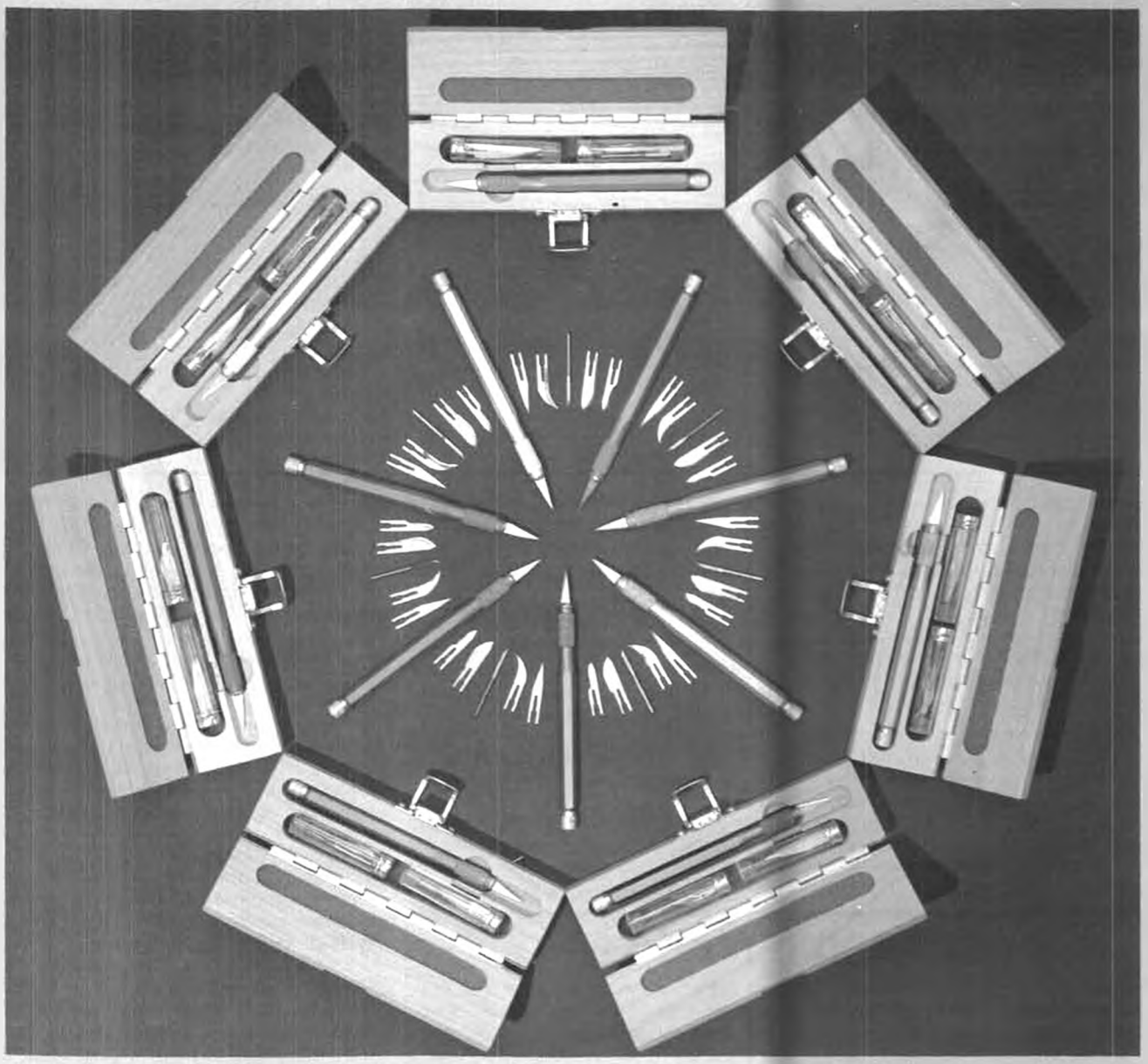
GLASS CLOTH. 0.6 oz., 38" wide, continuous length. 5 yds. $11.75, 10 yds. $21.50. Add $.75 postage, handling. R/C Consultants, 11809 Fulmer N.E., Albuquerque, NM 87111.

WANTED: Old-Time spark-ignition model airplane motors, magazines and gas powered race cars of the 1930's and 1940's. Russell Stokes, Rt. 1, Box 73J, Keller, TX 76248.

FOR SALE: M.A.N. magazines. Send SASE for list. Bob von Konsky, 5543 Drysdale Dr., San Jose, CA 95124. Ph. 408/266-9796.

PROPELLERS, proven easy carve method. Suitable for Quarter Scale to full size. $3.00. Mende, Box 180, Quitman, AR 72131.

IN THE BEST CIRCLES, IT'S **über skiver**



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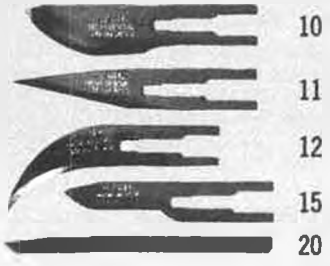

Available in seven satin anodized handle colors: silver, blue, red, green, gold, copper, violet. Complete set in fitted hardwood case; includes uber Skiver, together with two vials containing four No. 11, and one each of Nos. 10, 12, 15, and 20 . . . . . $14.95
Individual handles (specify color) $5.95
Vial of 6 blades (No. 10, 11, or 15) $2.10
(No. 12 or 20) $3.30

See your dealer, or order direct.
Dealer inquiries are invited.
All direct orders sent postpaid in U.S.
California residents add 6% sales tax.

MODEL BUILDER PRODUCTS
621 West Nineteenth St., Costa Mesa, California 92627

61 VF

O.S.

We are pleased to present the OS Max 61VF engine. This engine is a rear exhaust, Schnuerle ported, ABC engine designed especially for FAI and USA-type pattern competition. The engine features an extremely heavy 17mm OD crankshaft of special alloy steel with heavy duty shaft bearings. OS is employing their new 7D carburetor for exceptional throttle response. Specifications: Displacement .607 cu. in.; Bore .945"; Stroke .866"; Weight 18.6 oz. The engine is offered less muffler and pipe; however, the small pipe adapter pictured above is supplied with the engine. Extras will be available for this engine which include an exhaust manifold with an upsweep bend, a silicon tubing connector, and three different tune pipes. We stock the ED, the Supertigre, and the one that OS supplies.

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Year-after-year, in competition after major competition, whenever the champions compete, MRC-Webra comes out on top. There has never been a pattern engine that has so consistently compiled such a brilliant string of major victories. Fliers like Hanno Prettner reigning World Champion and Wolfgang Matt 1975's World Championship winner, who have their choice of any engine in the world, choose MRC-Webra for their most demanding challenges. They've come to depend on the solid idling, minimum vibration and of course, its big, responsive power.

They know these engines are advanced designs that are built to stringent specifications. Take the winning .61 for instance. Here Schneurle porting maximizes power output at over 1.2 HP. Our newest design has a sturdy connecting rod that transfers this power to a massive 17 mm crankshaft. Cylinder head clearance to piston is carefully maintained at its optimum spacing. The result: power and dependability to win the big ones.

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Whatever the size or type of engine you need, if you're ready to fly with the best . . . ask your hobby dealer to show you the line the champs use. MRC-Webra, Engine Of Champions. Send $1.00 for your new MRC Model Aircraft Products Catalog.

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