

NOVEMBER 1983

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volume 13, number 142

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NOVEMBER



1983

volume 13, number 142

621 West Nineteenth St., Box 10335, Costa Mesa, CA 92627-0132 Phone: (714) 645-8830

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Cover: The aircraft on this month's cover are Hawker Furies (Mark II versions). Model Builder's cover artist, Bob Benjamin, had to conceive and execute the painting on very short notice, and actually received part of the necessary reference data after he began work on it. (Technical nitpickers will have fun with this one.) The markings are correct for the No. 25(F) Squadron, Hawkinge, for the year 1937. The black tail markings on aircraft No. 7270 denote the squadron leader's plane. If this painting has inspired you to build a Hawker Fury Mk. II, you are in luck, for Don Prentice has prepared plans and construction article for a quarter-scale version of the Fury. See page 10. Detailed scale drawings are also available for the Fury through Model Builder... see the Westburg ad on page 79 of this issue. STAFF

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KIT CL-21 MUSTANG STUNTER SPEEDY CONSTRUCTION! WITH MOLDED PARTS AND FOAM WING CORE

The classic lines of the P-51, top fighter design of World War II, have been blended with the ideal control line stunter layout to produce this aerobatic show-stopper. Low work-shop time because of the precut foam wing, ready-made molded plastic fuselage top, molded lower scoop and molded plastic cowling. It's easy to duplicate the realistic appearance of the prototype model. Responsive flight performance makes the Mustang a tough competitor.

ENGINES: .29 - .40 WING SPAN: 50 In. Designed by MIKE GRETZ WING AREA: 480 Sq. In. WEIGHT: 41 Oz.

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We've been selling this model for many years and it has become a classic in the CL Aerobatic field. Dave Fitzgerald took 1st place at the nationals for five straight years (1976-1980). Others have won with the design regularly at contests. That doesn't mean you have to be a top competitor to fly the Super Chip for it is not difficult to handle. Plastic cowl, plastic wheel pants and a colorful decal sheet dress up the aircraft without a lot of extra workshop time. Heavy duty nylon bellcrank is supplied. KIT CL-19 Designed by WING SPAN: 53-1/2 In.

KIT CL-19 ENGINES: .29 - .40 Designed by MIKE STOTT





THE BIGGEST LITTLE STUNTER AVAILABLE

WING AREA: 575 Sq. In.

AKROMASTER

If your need is for an economical start in CL aerobatic flying, you can't do better than this little gem. Patterned after larger CL stunt models and incorporating the lines of a famous full-scale aerobatic aircraft, it is one beginner's design that doesn't look as if it was made from part of an orange crate. All of the features and fine performance found on other Sig CL stunters. Supplies are: Shaped fuselage, die-cut parts, shock absorbing landing gear, formed clear plastic canopy, nylon bellcrank, nylon elevator horn, hardware, etc.

KIT CL-20 ENGINES: .15 - .19 Designed by MIKE GRETZ WING SPAN: 34 In. WING AREA: 250 Sa. In.

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AN EASY-TO-BUILD PROFILE MODEL FOR AEROBATIC TRAINING

While this model goes together faster than competition type stunters with built-up fuselage, it yields little to them in the way of performance. The coupled wing flaps deliver the same responsiveness and precise maneuvering capability. Kit features include a pre-shaped balsa fuselage profile die cut fuselage doublers, die cut wing ribs, plywood wing tips and a hardware pack. You'll get into the air fast with a Twister and soon will be doing the full pattern.

KIT CL-22 ENGINES: .29 - .40 Designed by MIKE GRETZ WING SPAN: 48" In. WING AREA: 490 Sq. In.





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KIT CL-16 ENGINES: .29 - .40 Designed by MIKE STOTT WING SPAN: 5.1 In. WING AREA: 550 Sq. In.

See your dealer first! For direct orders, call toll free 1-800-247-5008. For mail orders, add \$1.50 postage under \$10.00. Over \$10.00 postpaid. No C.O.D. Catalog 45 - \$2.00 SIG MANUFACTURING CO., INC..... Montezuma, IA 50171 ESIGE

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DEALERS: Write For Details On How Your Name Can Appear In This Column



om Bill Northrop's workbench

A SALUTE TO SIG

Model Builder magazine has always believed that the future of the model industry, and therefore the hobby itself, depends on the continuance of legitimate and healthy local hobby shops. It has always strived to support the dealer, even to the point of passing by valuable advertising revenues from companies that provide stiff competition to the shops, but do little to promote and develop the hobby in the grass roots, where it gets its start. For this reason we are "letting the modeler in" on an open letter to hobby dealers which was recently issued by Sig Manufacturing, explaining the facts about Sig marketing policies. We felt you all should read it. "We have received several inquiries

recently asking if our discount policy was still the same as in the past. The calls were evidently triggered by the ads of some Sig mail order dealers who offered larger discounts than usual on Sig kits. These unusually large discounts were made from the same base prices available to all Sig dealers. No special consideration or 'extra' discount was given by the factory to the dealers who advertised these low prices. We assume their philosophy in doing this is similar to the so-called 'loss-leaders' common in supermarkets, where an unusually low price is used as an eye-catcher and traffic producer.

'The following are long established and continuing Sig policies.

"1) We have one discount schedule only. All Sig dealers, from the smallest to the largest, receive exactly the same terms. When you are a Sig dealer you have assurance that no other dealer anywhere can get a lower discount on our line of products.

2) Sig does not sell at wholesale prices



At the close of the R/C Scale event during the 1983 Nationals at Westover AFB, Chicopee, Mass., Granger Williams (second from left) donated his Gee Bee "Z" model to the Springfield Science Museum. Gladys Granville Jones, sister, and only remaining member of the Granville Bros. generation, accepted the model for the museum. Granger's brother Larry is third from left, and Don Foster, who has campaigned vigorously for the museum is at far right.

to just anyone who writes in on a letterhead. We have what we think are reasonable requirements for dealership and safeguards against false dealers. Sometimes dealership applicants are irritated by our 'red tape' forms and the information they must provide to become a franchised Sig dealer. In the long run, thoughtful dealers are convinced that this process is in their own best interests. We believe that no other model wholesale operation takes more positive actions than Sig to insure that only legitimate hobby dealers are served.

3) Occasionally we receive a comment from a dealer who feels that Sig should not sell direct from the factory to retail customers. We would prefer not to do this if a Sig dealer were available to every model builder. But in rural areas, overseas and in towns where there is no Sig dealer, there are many modelers

Continued on page 100



Dear Jake:

I quit. Yesterday, I was on my way home from the flying field. I had my airplane, transmitter, and field box in the back of my pickup truck. I came across a young sailor hitchiking, so I stopped to give him a lift. He smiled, picked up his duffel bag, and tossed it into the back of the pickup. Needless to say, it squashed my airplane flatter than a fritter. I give up! That's the fourth airplane this month. I don't need all this aggravation. As of this moment, I'm out of the hobby, and all my stuff is for sale.

-Dropping Out in Delware

Dear Dropping Out:

How much do you want for the pickup? -lake

Dear Jake:

Do you accept letters from modeler's wives? I hope so. My husband is the original Vanishing American. Every night, after supper, he vanishes into the basement, and I don't see him again until Johnny Carson's monologue. The kids don't recognize him anymore. They keep asking who the stranger at dinner

Continued on page 70

OVER THE COUNTER



All material published in "Over the Counter" is quoted or paraphrased from press releases furnished by the manufacturers and/or their advertising agencies, unless otherwise specified. The review and/or description of any product by R/CMB does not constitute an endorsement of that product, nor any assurance as to its safety or performance by R/CMB.

• Buzz Waltz R/C Designs, 403 Industrial Pl., Palm Springs, CA 92262, is proud to announce the second in its series of trainer kits, the Begin/Air .40 Trainer.

The Begin/Air Trainer has been designed around the H.B. .40 R/C engine, which provides plenty of power for this 72-inch trainer. It can be flown with either three or four channel control, (rudder, elevator, throttle; or rudder, elevator, ailerons and throttle). With its flat-bottom airfoil it is an excellent trainer for the first time pilot. The wing span measures 72 inches for a total wing area of 760 sq. inches. The fuselage is 53-1/2 inches long and three inches wide at the cabin, giving ample room for radio gear. Flying weight is 6-1/2 lbs.

The kit includes precision cut balsa and plywood parts, glass-filled nylon engine mount, dural main gear with axles, assorted hardware, plus full-size rolled plans and step-by-step instructions.

Kit price is \$44.95 and is available only from Buzz Waltz R/C Designs. For information, write to the above address.

Attention R/C scale modelers! Repla-



Buzz Waltz R/C Designs Begin-Air Trainer for .40-size engines.

Tech International, 48500 McKenzie Hwy., Vida, OR 97488 has just announced the first of a new series of scale documentation packets with the introduction of the Mudry CAP-21.

The CAP-21 document packet includes three 11 x 17-inch three-views (on four sheets) which show the paint schemes for three CAP-21s: F-WZCH, F-GAUP, and F-GAUK. These drawings include cross-sections and other details. Other total packet items include:

Photo Packet No. AMC-9: thirty color photos of CAP-21 No. F-WZCH, an extensive study.

Photo Packet No. AMC-10: five color photos of CAP-21 No. F-GAUP.

Photo Packet No. AMC-11: seven color photos of CAP-21 No. F-GAUK.

Photo Packet No. AM-7: six black and white detail shots, including instruments.

All photo sizes are 3-1/2 x 5-1/2-inch. If you were to order all packets separately, you would have a \$37.60 value ... however. Repla-Tech is now offering a "Special Total Packet Price," No. AMSP, for only \$29.50 postage paid.

For more information on this packet or other available from Repla-Tech, write to the above address or call (503) 822-3280. Ask about the various catalogs available for planes, ships, armor, card models, books, combination of all catalogs (\$6.00), and MAP drawings.

* * *

Now let's hear some good news for our R/C boating friends! K&B an-

REDI-HINGE



Fourmost Products new Redi-Hinge gapless hinge material.



Fourmost Products Redi-Hinge, 1/4-inch size.





K&B Manufacturing, Inc., 11 cc (.67 ci) Inboard Engine.

Engine mount for the Enya 4-cycle .90 by Tatone Products.



Kimbrough Products Tire Truing Arbor.

nounces its newest marine engine, the K&B 11cc (.67 ci) Inboard Engine. This new engine is also K&B's largest marine engine.

Here is a list of the Inboard's features: a rugged, investment cast, one-piece crankcase with a built-in, water cooled exhaust flange; water cooled cylinder head; ABC piston and sleeve; K&B's Quintuple Schneurle Porting; a brandnew carburetor with snap-in detachable venturi; brass flywheel (an aluminum flywheel is an available accessory. Standard equipment includes: two exhaust adapters (12 degree and 20 degree); a collet-type cable drive nut; and K&B's super high speed ball bearing.

As you can see, the new K&B Inboard Engine (#5100) has a lot to offer the R/C boat modeler. If you would like additional information, please write to K&B Mfg., Inc., 12152 Woodruff Ave., P.O. Box 809, Downey, CA 90241.

* * *

Are you wondering where in the heck you are going to find a spinner or a cowling to match your latest scale R/C airplane? Have no fear, Jersey Metal Spinning, 1400-G East St. Andrews Place, Santa Ana, CA 92705, (714) 957-0794, can custom make it for you!

Jersey Metal Spinning would like individuals and kit manufacturers to be aware of the service it is offering. JMS will be manufacturing custom made spinners and cowlings with backplates out of lightweight durable aluminum for your model airplane. Your spinners and cowlings will be made according to your drawing and instructions by highly skilled craftsmen. Modelers will be pleased with the authentic appearance of the aluminum spinners and cowlings which can be finished to your liking.

For more information and prices, please write or call Jersey Metal Spinning.

Literally a stone's throw away from Jersey Metal Spinning is Kimbrough Products at 1430-E East St. Andrews Place, Santa Ana, CA 92705, (714) 557-4530. Kimbrough specializes in products for the R/C car enthusiast. This



The Tire Truing Arbor in use.



Kimbrough Products Servo Gear Saver kit.

month the folks at Kimbrough are introducing two new products: a Direct Steering Kit for Tamiya off road buggies, and a 1/12 scale R/C Car Tire Truing Arbor.

R/C car racers worldwide know that direct hookup from servo to steering arms gives the most positive steering control. We think using a K.P. Servo Gear Saver is the safest way to do this. Now, we have a complete kit containing our large servo gear saver #121, servo mount #123, four Rocket City ball ends, two 4/40 tie rods, four 2/56 screws, two 2/56 locknuts, washers, Allen wrench, and instructions with pictures for installation in Tamiya's off road buggy. (Catalog #127, \$15.00 per kit.)

The Kimbrough Product Tire Truing Arbor is a handy tool for mounting 1/12 scale wheels in a lathe, drill press, or drill motor, so that you can file, or sand tires true. It has a 3/8-inch diameter shank; is 1/4-inch diameter on one end for rear wheels, and 5/16-inch diameter on the other for fronts. Wheels are held on with a 5/40 cap screw and washer (same hex wrench size as wheel and motor screws). Catalog #128, price: \$2.50 each. Mini-mum order \$10.00. California residents add 6 percent sales tax. +

*

Tatone Products Corporation, manufacturers of model airplane accessories.



Plans for this award winning Curtiss Fledgling are now available from PAS-M-CO.

introduces its latest product, an Enya .90 Four-cycle Engine Mount. The mount comes factory drilled and tapped for easy mounting . . . just bolt the engine to the mount with the four hardened steel cap screws provided. The engine mount is cast in high tensile aluminum, and is machined and polished to a bright finish.

Tatone's Enya mount is now available at leading hobby shops for just \$12.95. If a hobby shop is not convenient, order direct from Tatone Products Corp., 1209 Geneve Ave., San Francisco, CA 94112. \star

Pierce & Sons Model Company, a.k.a. PAS-M-CO, 25260 153rd Southeast, Kent, WA 98031, has introduced its latest

scale R/C plan, the Curtiss Fledgling. The photo shows an award winning model made from these plans.

To aid you in understanding the size and details of these plans, we offer the following data: model span: 80 inches; scale: two inches equals one foot; details: lights, shocks that work, throttle mixture control that moves, winddriven generator that moves, seat belts and buckles that work, and working vents, drain holes, and inspection covers. The pictured model flies with a geared Webra (2 to 1) turning an 18-10 prop.

If you are interested in this two-sheet, super-detailed plan, send \$40 directly to

Continued on page 90



Spinners made to your specifications from Jersey Metal Spinning.



Repla-Tech International has all kinds of documentation for your next scale project: photos (above) and three-views (right).





HAWKER FURY MARK II

By DON PRENTICE... The Hawker Fury is a quarter-scale replica of the pre-WW-II, Golden Age biplane. Highly detailed scale drawings are also available through *Model Builder*. See Westburg ad, page 79.

• One of the prettiest biplanes designed during the "Golden Years of aviation" was the Hawker Fury. Its silver and chrome finish, large rondels, and red stripes on the fuselage and wing made it a very flashy airplane. It was a sight to stir the soul of most aviation buffs of the day. For those of us who are old enough to remember, the soul is still stirred. The Fury is the ancestor of the Hawker Hurricane which took a major part in WW-II.

Peter Westburg wrote several fine articles on the Fury and provided us with exceptional scale drawings. Anyone contemplating building this model should acquire the Westburg drawings from **Model Builder** (see ad this issue), and send for the back issues containing the Westburg articles (August and September 1976, \$2.00 each). A wealth of detail is provided by Peter and readily augments the plan provided in this issue.

The one-quarter-scale model came

out at about 25 lbs. and was powered with a Quadra. Originally, it had a symmetrical wing. The Quadra was marginal, and in fact, the model flew into a tree, broke branches on its way down, and hit, spinner first, into the ground. The only damage was to the spinner and one ego. The model was reengined with a Kioritz 2.3 and flew successfully. Later at the STARS rally in Olean, New York, with an untried fiberglass propeller (unfortunately oversize), and with nerves flailing, the model again suffered a setback, but with very little damage.

This time it was decided to build a new set of wings with a Clark Y airfoil, and to put the Fury on a weight reduction program. The model now flies as it should, and is very realistic in flight. To my knowledge there is only one other quarter-scale, flying Fury in the country ... and it is in Kitchener, Ontario.



Profile view of the Hawker Fury reveals streamlined fuselage shape, wheel pants (which were not found on the Mark I version), and lightweight tail structure. Quadra powered.



This is not a beginner's project, nor is it a project for anyone building their first guarter-scale model. It is a model of an airplane from the Golden Age, a model that will attract the cameras of all who see it. A lot of construction detail is not included, but can readily be accomplished by the modeler who has a background in guarter-scale. The control linkages are not shown, but are left to the builder to design. Every quarterscaler has his pet method for connecting up the controls to the servos. I'm sure that in addition to reading "BIG Birds," everyone reads Don Godfrey's column, "Giant Steps," and "Big is Beautiful" by Dick Phillips in other magazines. Both have offered many systems for servo connection to the control surfaces.

A step-by-step procedure for the construction of this model is not provided, as it is meant for an experienced modeler. However, certain pertinent details of construction are provided. **WINGS**

Before starting wing construction, obtain two bi-fold plywood doors from the local lumber dealer. Cut one in half and assemble a construction jig as shown on the plan. Attach the two halves to the uncut door separated by the flat center section of the wing. Prop up each end to obtain the necessary dihedral. This jig will permit the assembly of each wing as a single unit.

The spars are of sitka spruce. They should be cut to length, and the outermost portion bent as shown. Many small cuts with the saw almost through the spar will ease the bending, and glue will



Strut installation, rigging tensioner, on/off radio switch, and servo connector setup in fuselage are visible here.



Radiator core is made from corrugated cardboard sprayed black. Also note undercart fittings required. Radiator mounts to fuse.



No fancy spinner needed for this rig. Author used metal funnel with 3/4-inch ply backplate. Note huck starter fitting.

Undercart fastener details. Round head screws hold wheel pants to mounting plate.

hold the bent shape. Assemble each lower spar to the doublers (joiners) using the jig for correct dihedral. The top spar will be added after the ribs are glued in place.

The wing tips are made by using a quarter-inch piece of scrap plywood form-shaped to the inside curve of the tip. Attach the form to a larger back-up plyboard, cover the assembly with saran wrap, and lay up the 5/16 balsa laminations with white glue or Hot Stuff.

In assembling the wings, cut the 1/16 by two-inch lower balsa sheet to shape, mark the locations of the ribs on each half, and attach them to the jig. Lay the lower assembled spars in place using scraps of the 1/16 balsa under them to establish their correct height above the job board. Now, using a square, lay the ribs in place followed by the 1/8-inch sub leading edge. The center ribs must be cut to fit between the spars, etc., as the doublers must not be cut. For the top wing, assemble it as if there was no aileron. After assembly, before cap stripping, cut the ribs associated with the aileron and fit the aileron leading edge in place.

The aileron hinges provide for a froese type installation and are installed after the wing is completely framed and cap stripped. The inner nyrod used is from the flexible red type, and the 1/16 welding rod fits it nicely with no play. More detail is shown on the plan. The sewing of the parts is accomplished with

the use of a .060 or smaller drill providing the thread holes. The aileron is held in place with a 1/16 collar. Slots must be cut in the balsa to permit aileron removal and clearance for the collar. The ailerons are balanced using strips of wire solder imbedded in the lower part of the leading edge.

EMPENNAGE

The outer edges of the empennage are laminated in a similar manner as the wing tips. The surfaces use a sandwiched 3/32 sheet core on which are mounted the ribs which start out as rectangular strips of $1/8 \times 7/16$ balsa and are later sanded to streamline shape.

The spars are pine or spruce, and it is a good idea to mount the hinges before assembly begins. Further, if the hinge pins are removed it is possible to use a length of wire through all hinges. This procedure will make it possible to remove the surfaces for covering, painting etc.



Close-up view of landing wire fittings. Alternate method of attaching struts to fittings shown.



Aileron pushrod assembly. Hinges have been changed per the plans. Bellcrank inspection made easy by removable panel.





Two methods of surface control are shown: cable and pushrod. For the large models, and for realism, cables should be used which tie into plywood bellcranks just behind bulkhead six. To provide for cable adjustment, cut the 1/16 wire of a Du-Bro Kwik-Link about a half-inch back from the thread, flatten it out with a few hammer blows, and drill a small hole through it to accommodate the cable. Use a lock nut and rubber tube on the adjusted Kwik-Link!

Two stabilizer braces are mounted under the stab and are made of Sullivan streamline tubing.

FUSELAGE

The basic framework of the fuselage is made from 5/16 pine or spruce with balsa cross-braces etc. The formers are Sig Lite Ply and balsa, and slide onto the basic framework holding the whole assembly in a rigid structure.

The firewall is half-inch plywood, and after seeing the Byron Pitts fly with a 1/8 firewall, it is felt that a quarter-inch plywood firewall is adequate. (One might also consider making the basic framework of quarter-inch square spruce). The firewall is fiberglassed on the inside to ensure that it will stay in place. The metal mounting parts for the cabane struts and undercart are installed on their plywood parts before assembling the parts to the structure.

The 1/8 balsa skin is covered with a half-ounce fiberglass cloth to add strength to the forward part of the fuselage.

The tail skid which is shown as 1/8 wire should be a size larger and contains one loop for springing. The tail skid is steerable using cables to the bellcrank used for the rudder. Springs are installed on these cables to reduce the load on the bellcrank during taxiing, etc.

The cowling is made of fiberglass using a foam plug to establish the shape. A block of foam is cut to the length of the cowl less one guarter-inch. Next, cut one-eighth plywood forms, one the shape and size of the firewall, and the other a circle 5-3/4 inches in diameter. These are glued to the front and rear of the foam in their correct location to each other. The foam is now cut, sawed, and sanded to the shape of the finished cowl, but slightly smaller in size. A handle is glued to the rear plywood former to make it easier to handle the foam plug. Saran wrap is now draped over the plug, and resin and fiberglass



Shown here are the wing hold down bolts and rear undercart strut fitting. The lower rear wing spar is shown rather than being cut off as per the plan. This allows it to hold undercart fitting in place.

are now formed around the plug to bring it up to the required size. A lot of sanding, etc., will be required to finish the cowl and should be completed before removing the foam plug. The plug drops out easily and an adequate cowling is produced.

The spinner is made using a six inch steel funnel. Cut the ring off the large end and back the spinner with a threequarter-inch disk turned to fit inside the spinner. The spinner is attached to the



Stabilizer struts and cable controls. Note brass tube for changing lower cable direction.



Fuel tank access door and cooling channel.

Access door removed. Note stabilizing 7/32 wire.



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disk with flat head screws. The front of the funnel is cut away to accommodate the mechanical "Huck" starter fitting.

The firewall and the lower fuselage behind the firewall is cut away to permit cooling air to escape. This area also contains a cooling hatch to permit entry into the front of the fuselage. UNDERCART

The model uses a spring-loaded undercart. This is essential as there is no way a springing action can be accomplished due to the axle which extends to both wheels. Detail of the shock is included on the plan. The tube is halfinch electrical conduit, and the necessary parts have been turned on a lathe. One might consider the use of the spring-loaded hydraulic mubbers used on the hatch of the small hatch-back cars. They must be available from auto wreckers. Fortunately, at the Toledo Swap Shop, snubbers (just the right size) were available last year, and I am sure the quarter-scalers who saw the potential of these snubbers purchased a quantity of them at 50 cents each.

The fittings at each end of the axle are silver soldered to the axle plates. Do not solder the axle directly to the plate as the temper in the axle will disappear. The 7/32-inch rear undercart strut is silver soldered to the plate, and at the upper end it is held by a sheet steel or hard aluminum fitting held in place by the aluminum wing bolts. A stabilizing 7/32 wire is attached to the rear of each shock. strut by sliding into a brass tube wired and soldered to the strut. The gear works fine, and when oil damped, provides an excellent undercart. **CABANE STRUTS**

The struts are made using Sullivan streamlined tubing and inserting lengths of hard aluminum in each end. Before sliding in the aluminum, thicken some five-minute epoxy, and jam it in first. After the epoxy completely hardens and firmly anchors the aluminum strips, add 1/16 aluminum rivets as shown. The true length of the rear strut is 6-1/2 inches hole-to-hole. The N cross-strut is seven inches hole-to-hole. The length of the front strut is adjusted after installing the upper wing and propping it up to the correct incidence.

WING STRUTS

The wing struts are made the same way as the cabane struts. Their lengths are estabished after the cabane struts are installed and both wings are in place. Prior to establishing the strut length, install the strut wing fittings using 6-32

MODEL BUILDER



socket head bolts which fit into the blind nuts anchored into the wing. After the struts are finished, it is best to leave the

The finished product ... stuffed into the the rear end of a wagon for fun.

struts attached to the strut wing fittings and remove the complete N strut assembly as a unit.

RIGGING

The rigging technique used is the "Don Godfrey Method." Obtain 3/32 nylon woven cord from a sail maker. You can buy it by the foot or by the spool. This cord has little stretch and is very strong. It can also be screwed into Kwik-Links if it is first stiffened with Hot Stuff. Fit a Kwik-Link on one end of a piece of the cord, attach the cord to one of the rigging fittings. Attach a Kwik-Link to its opposite fitting and cut the cord to the length required, shortening it about 3/16 of an inch to ensure it is tight when installed. The plan shows a rigging tensioner which is mounted across the rear cabane struts. Tightening this tensioner tightens up the landing wires and

also pulls the flying wires tight. **RADIATOR**

The radiator is a box-like structure held in place by sliding it into two L-shaped brackets at the rear and securing it using two screws at the front. The radiator core is simulated using halfinch strips from a corrugated box laid on top of one another and painted black. FLYING

The model, like most quarter-scale models, cannot be "horsed" off the ground. It flies on its wings rather than on power. Loops and stall turns are pretty, but one must be cautious in attempting a roll. On landing, as the wheels and skid touch on three-point, add a little power to make the elevator effective in reducing the possibility of nose-over.

Happy Landings!

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The U.S. Air Force more than deserves the lead photos for this Nationals report. Westover AFB, under the command of Col. Roy Ayers, was a tremendous host, and very willing to do it again in the future. The A-10 and C-130 were two of many aircraft on static and flight display.

CHICOPEE '83 NATIONALS

By BILL NORTHROP . . . Model Builder's Editor/Publisher reports on the events and happenings at the 1983 AMA Nationals which were held in Chicopee, Massachusetts . . . "Back east at last!"

• It was the first Nationals to take place in the eastern United States since 1969. That means about two or three new generations of modelers have been created, and anyone who didn't predict the Chicopee/Springfield Nats to be the biggest since the 1969 Willow Grove N.A.S. extravaganza simply didn't understand the model airplane hobby.

Statistics obtained from AMA headquarters leaving Chicopee on Monday morning, following the Nats, indicated that 990 contestants entered an average

As always, Carl Goldberg on hand to get in an official flight, this in 1/2A Gas.

of almost 24 events each, for a total of 2,207 entries. And that does not take into account the many unofficial and FAI events that were not included in the tally. (Further checking on results sheets indicate the 2,207 figure is high, and probably the 990, as "no shows" were not deducted from these total figures.)

As usual, the sad statistic is the continuing drop in Junior and Senior entries. Only 139 Junior and Senior contestants (69 and 70 respectively) appeared, averaging about three events each.

Covering the Nationals thoroughly for a publication would be a tremendous and expensive task, requiring many reporters and photographers, and taking every editorial page of at least one issue of a normal size magazine, if not more, to pass it on to the public. Over the years, we have come to realize that with most of our readers being sport modelers, a detailed report of competition at the Nationals, or any contest for that matter, is somewhat less than what they are looking for in a model publication. Because they were attending anyhow, and were willing to cover a few events for us, we will have photo/reports from John Smith, on R/C pylon, and Rich Lopez, on control line in general. These will appear next month. Other than that, this writer visited all areas, at one time or another over the competition week, and took photos that would hopefully sum up Nats activity in as painless a manner as

possible. And so . . . a one-man's review of the 1983 Nats from photos and random notes made while wandering from site to site. We'll let AMA's magazine fill you in on the details.

On Monday morning, we first stopped in on Q.M. Pylon, where 33 contestants officially flew . . . some only once. The original winner was first disqualified for an oversize engine, but then later reinstated on a technicality. We'll let John Smith untangle that one in his report.

From pylon, we went to Base Hangar, one of many hangars at Westover, to

Leon Bennett, Bronx, NY and his magnificent Moth Minor rubber scale. Span is 91 inches!

Pair of "Brushfires" from MB plans, by Stan Rautkis (Expert), Easton, PA. Powered by YS pumper engines, Kraft Signatures.

E-2 Cub, built from Megow plans by Walt Balcer, Norristown, PA. Plans from Golden Age Reproductions. Span 50 inches.

The beautiful Base Hangar site for indoor at Westover. White epoxy floor, 60 foot ceiling. Very few models hung up. Don't miss it next time!

Bob Champine and his giant, pylon glider placed 3rd in Unlimited Sailplane.

watch indoor. What a fantastic site, and that is not only my opinion, but the comment by many experts who happened to attend. We say "happened", because apparently one or two misguided individuals spread some bad words about the site, that quite possibly discouraged some modelers from appearing.

We don't recall the exact dimensions, but the usable height was about 60 feet, and according to the experts, the air behavior was excellent, actually keeping the models centered in the highest area. A flush balcony along both sides held spectators, and kept them clear of both models and contestants.

The hangar preparation was typical of the attention given by the Westover Air

Yes, it does fly. Leon Bennett's giant rubber scale Moth Minor cruises overhead.

Beautiful little Curtiss SOC-1 by George Meyers, Warminster, PA.

Force personnel in meeting, and in some cases, surpassing the modelers' requirements. During preliminary investigation of the hangar, it was indicated that the low hanging lights would have to be raised. OK, says the Air Force. But when they began the job, it was discovered that the 40-year-old wiring was brittle and the insulation shot. Without hesitation, the lights were totally rewired and then pulled up to overhead beam level! And get this ... the concrete hangar floor was thoroughly cleaned and then coated with white epoxy paint. Upon entering the hangar, you felt as though you were

"No, you be the girl!" The "Champagne Waltz" as performed by Ivan Kristensen and Dave Brown, at the awards ceremony following pattern competition.

Latest starter being used by Circus Hobbies' fliers. Write to new CH President, Ron Gilman, for more information.

Jim and Pamela Kaman, Hurley, N.Y. tangle with rubber motors in his Fokker D-23.

Guenther Nowak, Chicago Aeronuts, cranks turns into his Wakefield. Placed 6th.

walking into the "clean room" of a science lab!

It's unfortunate that the turnout, as compared, relative to other events, was small. The previously mentioned false rumor, and the recent indoor championships at West Baden both cut into the attendance. Incidentally, the hangar was open to unofficial model flying all week, even after the indoor events,

Gee Bee Supersportster (Model 'Z') by Henry Haffke, in quarter-scale.

were concluded on Tuesday.

Finally for Monday, it was back to the R/C site, Pattern. As with most events at this eastern Nationals, the contestant turnout was higher than normal ... 151 contestants/entries (no multiple entries per contestant here!); 49 in Sportsman, 22 in Advanced, 28 in Expert, and 52 (!) in Masters.

With so many entries, three sites were in operation, with two lines at each site, and three judges per line. Looking downstream at the large R/C Scale entries, it was hoped that Pattern time could be shortened, and it did work out this way, with six rounds being flown in four days, starting at 1300 . . . er, 1 p.m. and cutting off by 8 p.m.

The urgent need for the turnaround pattern (in all categories) was obvious. Aside from its essential need at local contests, where flying sites are continually in jeopardy because of noise,

Sal Taibi tunes the Ohlsson .29 in his Pacer before release at O.T. events.

and where the turnaround prevents overflying of neighboring homes and businesses, the highly dangerous (and confusing to judges!) problem of overlapped flying area was prevalent at Westover. On numerous occasions, standing at the middle site (No. 2), one could look directly over the center of the flight area and spot six airplanes, any one of which could belong to any of the six flight lines!

Typically, at any Nationals, and particularly in this high population density section of the country, many unseasoned contestants appear. ("Never flew in a contest before, but what the hell, it's only a two-hour drive from home!") Consequently, it is extra trying for

Most outstanding R/C Scale, in our estimation, was this 1/10-scale PBM-3 with Jato assist for takeoff, by John Nicolaci, Marion, Mass. Super Tigre .75s, Eastcraft starters, 38 pounds. All foam construction with balsa/fiberglass skin. Over ten years old. Has had many flights.

Handley/Page "Gugnunc", 20-inch span, by Paul Gaertner, Charlottesville, VA. Original in 1929 "Safe Plane" competition.

Farman Sport, by Walt Eggert, Huntington Valley, PA. Note allmoving rudder.

George Rose holds while Cliff Tacie meters the rpm on the O.S. 120 twin in his Clip-Wing Cub from a Sig kit.

Cliff Tacie again, with his Precision Scale Spezio TuHoler, recently featured in M.A.N. Harold Parenti holds on.

Line-up of Schluter helicopters waiting to do battle at the Smith & Wesson off-base site.

The Gorham Model Products group, including Bob and John Gorham, their helicopters, and the GMP motor home in the background.

The beautiful Smith & Wesson field site, with golf course quality grass, was used for R/C Soaring and R/C Helicopters. This shows the huge turnout for over 80 competitors in the helicopter events. A Westover C-130 can be seen in its landing pattern.

officials, who have to deal with the uninitiated who has not yet learned to handle the various minor but nevertheless upsetting foibles of contest operation. "I was eating a hot dog when you called me... just put me at the end of the line." "It must have been interference. I've had 10 flights on that plane, and it never snapped at the top of a loop!"

First appearance of long-awaited Shereshaw engine, in Pete Reed's Giant Scale Starduster bipe. He placed second, out of 34 entries.

There was some interference. In spite of careful checking, both 75.64 and 72.16 shot down or bumped 11 aircraft on Monday afternoon. The 75.64 problem was never really solved, but those fliers who did not change frequency managed to continue without further incident. But 72.16 was different. Higher tech monitors that were brought in finally discovered a local cement plant that was using 72.16 to communicate with its truck drivers. It had not shown up during pre-Nationals testing by the local Pioneer Valley R/C club. In spite of these problems and temporary delays, 307 flights were recorded on Monday!

From the contestant's point of view, and we're totally aware of the logistics problems involved, it would have been fairer if they did not remain at the same site for all six flights. It was certainly much easier to juggle six judging teams than it would have been to move 150 contestants, complete with all of their equipment, fly-tents, and family entourage. However, conditions were different at the three sites, relative to visual background (for referencing maneuvers), turbulence and wind conditions, and as mentioned before, the Grand Central Station traffic conditions at Site

Melinda Anderson, age 13, gets help from her father in starting her Conquest .15 powered 450 Satellite (stretched to FAI size). When it fired up, she was really shocked!

Top Nationals Masters winners (I to r): Tony Bonetti 3rd, Ivan Kristensen 1st, and Dave Brown 2nd. Steve (Brushfire) Rojecki was a close 4th. 2.

As for judging, this writer is probably as much or more familiar with its strong and weak points as anyone involved, and to make detailed comments would be highly out of order. In general, we could only discern one weak link in the judging chain at Westover. The USPJA should thoroughly investigate the level rating of a judge who scores, more than once, the maneuvers of highly skilled Masters fliers, as practically unrecognizable, i.e., a three or four, when the other two judges in the same team rate the same maneuver as an eight or nine. Consistently scoring low, such as one or two points below average, is certainly

Californians Anita Northrop and Bert Baker on the ready line during R/C Scale. Bert's P-47 placed third in Giant Scale.

acceptable and consistent with USPJA standards, but being confused about the validity of a maneuver is not acceptable.

Tuesday morning we drove just a short distance from the headquarters hotel (Quality Inn) to the off-base site used for R/C helicopters and R/C soaring (on different days, of course). Actually closer to the motel than the Air Force base, the field is on the property of the Smith & Wesson (yes, the gun folks) Company.

Today was the second, and last day of the helicopter event. As with most others, the contestant turnout was more

George Armstead and Henry Struck at the Old Timer event. Hank's 1937 Wakefield will be featured as O.T. of the Month soon.

than ever. There were 71 entries in AMA competition and 10 in FAI-F3C. A good sign was that the 18 in the Expert category were outnumbered by Novice (19) and Intermediate (24).

Bob Gorham, of Gorham Model Products, Calabasas, California, and Yoshiaki Nagatsuka, of Japan, representing Kalt, had two nip-and-tuck battles going, in AMA Expert and in FAI-F3C. Yoshi's caller was our old Japanese buddy of many years, and chief honcho of Kalt Sangyo Co. Ltd., Hiroyuki Oki. Kalt helicopters are distributed in the USA by Circus Hobbies. In the final tally, Bob

Dave Rees, Rawleigh, N.C., first in Scale Gas with his Brown CO2 powered, 18" Hyperbipe.

Don Srull, McLean, VA., tells the judges what his R/C Swedish "Schlepp" is gonna do.

Don Srull again, but he can only guess what his F/F rubber scale Alco Sport will do!

Never a Nationals without a Korda Wakefield! Dan Belieff finishes winding his as Ray "Trip the D.T." Factor looks on.

Mike Gretz fires up the O.S. 4-stroke in the Sig version of the Astro Hog, a multi classic of bygone days. Kit to appear soon.

Bob Hanft, Elberta, Alabama, winds up the Titan in his Giant Scale Fokker D-VIII. The "Flying Razor" placed 9th.

Of course it's a biplane! Gordon Wisniewski, Milwaukee, Wis., launching his Penny Plane. Took first with 13.02 in Open.

Bill Wargo, Redding, CT., said engine in his Douglas 0-46A ran better in the basement.

outpointed Yoshi for first place in AMA Expert, and Yoshi captured first in FAI, over Tom Dalusio of Woodbridge, Connecticut, and Bob placed third. Horace Hagen and his fellow officials certainly ran a well organized event, making it appear that there were no serious obstacles to overcome (don't you believe it!).

After stopping by the motel restaurant (the best in-house motel eatery we can ever recall!) for a generous bowl of real, genuine New England clam chowder, we headed for Westover to watch some more indoor (Pennyplane, Easy B, and FAI Stick) in the "clean room." There's a hypnotic effect in watching these silent, weightless wonders as they circle just under or in amongst the beams and lights, 60 feet overhead, the huge propellers turning at 60 rpm or less (yes, one revolution per second!). No one who has observed this indoor phenomenon; the meticulous record keeping of every flight, the wind counters, the torque meters, the careful selection of rubber

"Quick, Henry, the Flit!" Mass launch of the FAC Greve Trophy Race. First one down is eliminated in next round, etc.

Gee Bee Senior Sportster, by George Woods, Fairfield, Conn. Quadra power, with 18 x 6-10 Zinger prop.

Some of the R/C gliders waiting for a winch at the R/C soaring event. Scott Christensen's "Antares" is in the foreground.

George Rose cranks the engine in his Precision (FAI) Scale P-6E. Placed Third. Suffered from premature tank drop.

Circus Hobbies' new president, Ron Gilman, and his 825 sq. in. "Hippo" Tipo. Ron placed 16th out of 52 Masters contestants.

Tony Bonetti, Emerson, N.J., and Circus Hobbies representative, always uses trademark black and white paint job on his pattern birds.

Aeromaster II entered in Sportsman Pattern by Ed Andrews, Pittsburgh, PA (no relation to Lou), held by helper/brother George.

motor for section size and loop length, the slow measured walk when carrying a model in order to avoid destroying it by moving too fast...yes, no one will deny that it's the most exacting category of this modeling hobby.

Well, back to the roar and the exhaust fumes and the close scrutiny of precision aerobatics, still described by the ancient and outmoded word, "Pattern." There was one interesting exception to the roar. If for no other reason than to prove a point, Mike Gretz, representing Sig Mfg., from Montezuma, Iowa, flew in Sportsman Pattern using the show model of one of Sig's latest kits, the Fred Dunn "Astro Hog."

Tom Thompson, Minneapolis, Minn., cranks up for 1/2A Gas flight. He got a max.

When the Astro Hog was introduced in kit form by Berkeley Models in the late '50s, it was the hottest pattern plane going. The first successful lowwing multi-R/C model, its fame was established by Bob Dunham, who, with his equally famous Orbit reed radio, won many contests, including the Nationals. The Astro Hog was to R/C what the Zipper was to free flight ... everybody who was anybody or nobody had one.

To take nothing from the 'Hog', it was the engine that really turned on many contestants at Westover. It was powered by an O.S. 76 four-cycle, and in the air, it could almost pass for an electric motor.

George Perryman puts winds into his...get this... "Fludy Coop". Placed Second.

The significant fact, however, was that although the engine didn't turn high rpm or pull the model fast, it pulled it consistently, and would keep on pulling, even at steep attitudes. The perfect type of engine for the turnaround pattern and for noise-conscious fliers . . . as we all should be (hmmm . . . four-cycle pylon, anyone?).

We spent the rest of the day at Pattern, as it was like "Old Home Week", meeting up again with the many friends we made during the '50s and '60s as a more active flier than in recent years. Many a conversation started with, "Remember the time when..."

Wednesday was free flight rubber and

Kids from a Chicopee day care center enjoyed watching free flight activity. Bob Sifleet gets his Wakefield processed.

Bud Atkinson (kneeling), Blue Springs, MO., and his Giant Scale Varka Kachina. Yet, it used to be a Shinn, until the company was sold.

Some of the 252 gliders entered in R/C Soaring competition! The largest turnout ever.

Engine and stinger on KC-10 tanker (DC-10) make a weird photo from a low angle on the ground.

George Perryman launching ... what? ... straight wings? .. his Lanzo stick O.T.

gas scale day, and this was a "must attend" from our personal viewpoint. We don't remember a Nationals when the wind didn't blow mercilessly from dawn to dusk on the day these events came up. Well, not this time! It was almost comical to watch a contestant wind up, hook on the prop, and then stand there trying to figure out which direction to launch the model. It really didn't matter! They could just about fly outdoor Easy B!

It was a pity that these events weren't better attended. For the three events: AMA Rubber Scale, AMA Gas Scale, and Peanut, only 51 of the 87 pre-registrants

Art Johnson's P-43, Bert Baker's P-47 and a Sopwith Pup on the flight line.

showed up. We have to take just a little dig at the FAC for not joining in to bolster these categories . . . well . . . the rubber events, anyhow, particularly when it was right in their backyard. They did have their own, unofficial FAC contest on Friday, and it blew kinda hard that day.

From scale, we wandered over to the general free flight area and helped time some 1/2A Gas and Wakefield contestants. Happened (by plan) to be on hand for Carl Goldberg's official 1/2A Gas flight. It's a tradition with Carl to fly in at least one event at every Nationals ... always in free flight.

Continued on page 90

Judges and line officials who operated the six pattern flight lines for four long afternoon/ evenings to finish ahead of schedule in spite of large contestant turnout.

Scale judging and processing took place in a grass court at the Quality Inn, AMA Headquarters.

Pioneer Valley R/C Club field, where R/C Old Timer was flown. Tree provides shade, protection, and a landing place for errant models.

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The Double Nickel Squadron has some quaint customs. Carl Bopp demonstrates one. To prevent people from joining the squadron and overcrowding the field, Carl assumes the required "grimace" while readying his Bucker Jungman. He's not really enjoying himself, you see!

THE ULTIMATE CONVERSION

No, I'm not talking about religion ... nor the electronic wizardry it takes to update our radios. What I am referring to is actually a who ... my dear, sweet, silver-haired old mom who's never been quite able to understand my continuing love affair with model airplanes. Mom sez I should have left my models behind when I reached the age of puberty; at that point in time going on to more grownup pursuits. However, mom (nor dad) never really spelled out what those pursuits might, should, or could be ... although, in spite of being naturally shy and bashful, I eventually found that girls were almost as curious and fascinating to explore as airplanes.

Anyhoo, for well over forty years, mom has remained steadfast in her belief that any size model was a toy (and believe me, my mom's not one to give up on any idea too easily). So that's why I was left speechless during and after her call telling about finding "pilots" for my BIG Birds . . . and how she was going to knit matching berets for them. (How many other guys have pilots with colorcoordinated outfits?) Then, this morning, 1 received her carefully wrapped package: both dolls look great, they're the right size and very nattily dressed, and being articulated, fit nicely into my new big Cub's seats (if 1'm not careful 1 may get to like making these scale-like touches).

I'm still not sure what made mom change her mind and get involved, but after holding out for all these many years, her sudden "aiding and abetting" is like getting the Good Housekeeping Seal of Approval; we've definitely taken a great stride forward. Let me tell you that talking a stubborn friend into finally coming down to the field to get some buddy-box time is nothing compared to this achievement... which has to be my finest hour. I never even dared to hope for, what has to be the true "Ultimate Conversion." I still find it hard to believe that my mom has, in essence, given us her blessing.

So, take heart, all you guys with moms who don't seem to understand or appreciate what you're about. With a little hope, and a LOT of patience (about fifty years worth), you, too can make a major contribution to modeling ... 'cause a mom's sanction carries one helluva lot of weight.

TRUE CONFESSION

There's nothing wrong with a little catharsis every once in a while; its cleansing action is most beneficial. Now you wouldn't think that a 250 pound cherub like me would ever have any repressed material that needs airing, but even us angelic types do go astray ... sometimes. You see, back in the "dark ages" of BIG Birds (about 6-7 years ago), I drew an erroneous conclusion about oils and lubrication. But now, thanks to friend Bert Striegler, of Houston, I've finally seen the light . . . and because the longevity of your engine (and aircraft) depend on adequate lubrication, I'm passing on these words of wisdom.

Back then, when I was repairing and test running Quadras, it appeared that outboard motor oil had ruined a number of engines... and so, as far as I was concerned, outboard motor oil became a big no-no. Since then, I've never missed a chance to point out that feeding this oil to your gas burner was a mean, spiteful, and underhanded thing to do ... and

Plans for Bob Seng's Akro will soon be available from Mammoth Scale Plans. This plane has won many awards at shows, including the '83 Northwest Model Expo. It flies as well as it looks!

Bob Siegelkoff's Shoestring, built from Mammoth Scale Plans. This pretty bird flies like a dream at 28 lbs with a Kawasaki 3.15 for power. These Bob Morse plans are outstanding in every way.

Ikon N'west's 5-year-old Monocoupe 90A about to take off for the 2,561st time (plus or minus a dozen). Emil Neely's airframes will stand the test of time. Model weighs 17 lbs, uses Quadra.

branded anyone who did it as a 100% low-life.

Well, the truth is that, at best, I was only half right. According to Bert, who's been a lubrication engineer for over 27 years, just about any brand of petroleumbased two-cycle oil is basically outboard motor oil ... and, of course, not all of these are up to industry standards. Sooooo, the BIG question is: how do you tell the good from the bad... and the ugly.

It's simple, Bert sez. "Just read the label. Look for the Boating Institute of America (BIA) seal of approval; it's your guarantee that the oil will give you maximum protection."

Seems that the BIA test all these oils at 100:1. Why 100:1? Why not 50:1, or 75:1? Because it's a fact that too many of us don't mix our oil and gas together anywhere near as well as we should. There's been a fairy story going 'round that by pouring the oil into a can, and then pumping in a gallon of gas, the mixing will be almost complete and only a few shakes of the can are needed to achieve a perfect blend.

"Unfortunately the oil won't mix up so easily," Striegler pointed out. "Even with additives to help, proper and uniform mixing takes a little time and deliberation. If you follow the directions on the container, you'll do all right. We found out that at 40 degrees, it takes 28 inversions to properly mix the oil with gas. So even at warmer temperature, it's going to take much more than just a few shakes."

So, because many people unknowingly run their chainsaws and weedtrimmers on a mostly thin mixture, the BIA simulates this condition by testing at 100:1. Does this mean that you can or should run any of the BIA approved oils at 100:1 also? Bert sez no!

"That test is set up to destroy the oil ... to determine how much engine protection you get from an oil with that kind of mixture ... so it's not going to exactly give you perfect engine protection. The test was designed to screen oils. About a 50:1 mix is as lean as 1'd go on any aircooled engine ... ever."

I was also curious about the possibility of using Klotz Oil for gas engines. I'd been using Klotz in my 5% homebrew glow fuel for about 15 years and have been very happy with it... so asked Mr. Bert was he thought. Not too surprising, his recommendation for a gas-to-oil

Another Ikon offering is this Super Cub with floats. Model is an excellent flier, and can be used as a trainer. With floats, the bird weighs a tad under 19 lbs. Quadra engine pulls her along just fine.

The boys from the aloha state (Hawaii) really like those R&R airplanes. Here's Jim Miura's version of R&R's new Snapper Twoo bipe with a BIG Quadra in it. "It's really a winning combination," says Jim, "... very agile and very aerobatic." Zinger 22-10 cut to 20-10.

ratio was the same. "I would not go leaner than a 50:1 mix, regardless of the type of oil used . . . petroleum-base or synthetic like Klotz."

Additives were next on the agenda, and 1 found out that virtually all BIA approved oils have additives. Some have an additive that aids in mixing... but all have an additive of some sort that reduces deposits and minimizes scuffing and ring wear.

As I'd been helping perpetuate the myth that all outboard motor oils were insidious, I wondered whether my longheld view about using only a fresh fuel mix would also fail the close scrutiny test. But I never faltered... and pressed on in my brave, glorious quest for the truth... at any cost. This time, however, old buddy Bert (sound a little like the script from "Sesame Street") patted me on the head reassuringly... and pontificated. I had, indeed, observed rough running on stale fuel, and it is best to mix up only what can be used within a week's time. A rough running engine not only has a reduced power output, but it can, and will, take its toll on that airframe it's mounted on.

So there it is. For better lubrication, more RPM and engine longevity: select a BIA approved oil, mix thoroughly only what can be used for each flying session ... and enjoy.

SUPER STARTER SAFETY

I've been using, and purposefully abusing, P.K.'s "Super Starter . . . and in spite of me, this simple coil of wire mounted on my Quadra's rear shaft just keeps on truckin'. It works great, and it gets my engine going the first time, every time . . . and until a few days ago couldn't find a thing wrong with this "better mousetrap."

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Pou Du Ciel (THE FLYING FLEA)

By RANDY WRISLEY... Whether you call it Pou-du-Ciel, Flying Flea, Sky Louse, or H.M. 14, it's still an attractive "bug" of an airplane. Originally designed in 1934 by Henri Mignet, hundreds of "Pous" were built.

• I guess I'm just one of those guys who roots for the underdog. I built this scale model of the HM-14, just to see if all the horror stories I had heard about it were true. Using my junkiest engine, and oldest radio, I proceeded to construct what you see in the pictures in two days!

Boy, was I surprised when this little bug flew so well! It's stable and easy to fly. It's a pussycat on the ground. When I tried to get it to tuck under, it would get to 90 degrees and stop. A touch of up elevator brought instant recovery, usually with a loop. Oh, by the way, I used Henri's original form of control, and pivoted the main wing for elevator! My first trip out to Mile Square (a very

My first trip out to Mile Square (a very popular Southern California flying site) had many of the regulars there worried. As I fiddled with my junky engine, the braver modelers would walk by and ask if it had flown before. Most were amazed when they saw the wing pivot. As I walked to the runway for the "first" flight, modelers moved their belongings to the shelter of their cars for safety.

The little Flea ran arrow-straight down the runway, hopped into the air, and made several happy circuits of the field. I took it up a ways and let a friend fly it who had no time on powered models, only gliders. He had a ball! Like its fullsize counterpart, the Flea won't stall in normal flight attitudes, and it won't spin. Needless to say my buddy had no trouble! When the engine quit, I glided down to a perfect landing and was surprised to hear a round of applause! Hurrah for the underdog!

As you gather the materials to build

yours, you should be aware of two things. First off, keep the tail light. Finally, don't be tempted to over-power it. It flies just fine at 32 ounces with an Enya .09, swinging a 9-4 plastic prop. Read on McDuff, and we'll build yours. FUSELAGE

Select a soft piece of 3/32 by six inch balsa. Carefully cut two sides to shape. Don't mark on the aft ends of the sides as they will break when you try to bend them. Cut the formers from the material indicated.

Install the 1/8 x 1/2 inch bearing blocks for the joystick, and drill the 5/32 holes for the brass tube before you assemble the structure. Bend up the cabane struts from 3/32 music wire. Attach it to former "C" with Sig landing gear clamps. The 1/8 inch landing gear wire is also held in place on former "B" with landing gear clamps.

Assemble the fuselage by installing former "D". Pull the tail together and Hot Stuff it lightly in a couple of spots.

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Front cabane assembly as it meets top wing. Wing is free to pivot for "elevator" effect.

These twin tail wheels are from an old Comet kit, but can be turned on a wood lathe also.

Flying Flea model has simple engine mount. Forward part of cabane assembly visible.

Almost ready to fly, the Flying Flea waits for one more photograph. Engine installation is neat and simple . . . cute, too!

Side view of the Flooing Fly ...er, Fleeing Floo ... you know! Elevator pushrod clearly seen here. Darned unusual aircraft!

FULL-SIZE PLANS AVAILABLE - SEE PAGE 96

Mark Rebeck, of California Slope Designs, San Juan Capistrano, California, launches his highly aerobatic slope soarer over the cliffs of Dana Point, California. Model is called a Savage.

right, you can fly for literally *hours*. If it's a good slope, lift abounds, and both beginner and expert alike can get in some quality stick time.

I spent a few hours recently at a couple of good sites. By design, I met with Mark Rebeck, of San Juan Capistrano, California, at both slopes. Mark is the owner of a small outfit called California Slope Designs which markets two slope-oriented sailplanes: the Savage and the Son of Savage. If you checked out the photos before you began reading, you know what they look like.

Mark is a highly gifted pilot as evidenced by this low axial roll. The Savage is not a tricky glider to fly. It will fly very slowly or quickly.

Besides being an enterprising young man at age 20, Mark is a very good pilot. As 1 watched him fly the Savage (and later, the Son of Savage), I became very impressed. Mark is fearless and daring with his slope planes, frequently skimming the tops of the weeds at the slope's edge, and doing inverted maneuvers at perilously low altitudes. Mark is your proverbial "Hot Shot." Loops, rolls, hammer-head stalls, you name it, it's second nature to this guy.

Lest you think that the Savage is a design which requires much aerobatic pilot skill, let me tell you that *that* is just not the case. Having flown the Savage myself, I can report that it's a very stable, slow-flying, aileron plane with no bad habits to confound the beginner. It is light enough to fly slowly in the weakest wind conditions, yet when ballasted, is as fast as the best of them. When I flew it, conditions were marginal. "Floaters" were the only other planes able to stay up. My 12 oz./sq. ft. 2MWC plane, the old Goat Hill Special, ended up at the bottom of the hill as the Savage flitted about, performing astounding maneu-

• Slope flying can be a LOT of fun when your favorite site is blowing just right,

and you have come equipped with a

suitable R/C sailplane. When the wind is

The Savage flies in very little wind if necessary. Note flag on antenna. Author's 12 oz./sq. ft. Goat Hill Special (E-205) ended up at the bottom of the hill ... the Savage stayed airborne.

For those with quick reflexes and sharp eyes, Calif. Slope Designs has the Son of Savage!

Mark Rebeck poses with his CSD kit line: the Savage (left) spans 70 inches, and the Son of Savage spans 42 inches. Both use E-374 mod.

"Hatch" Manell and Scott Christensen, of Top Flite, show you what can be done with a Metrick kit: sailplane (right), or electric powered.

vers as if to flaunt itself in front of the GHS.

The Son of Savage was equally adept at responding to Mark's inputs. This one, however, might be a bit much for a beginner as it is so light and small that things happen rather quickly, and the "SOS" is more sensitive to gusty wind conditions than its larger "parent." The fact that it demands a little more skill to fly will probably attract the intermediate and advanced fliers. I will say that it sure would be nice to have one of these little gems ready to fly and waiting in your car so that you could stop just about anywhere and toss it off a slope at a moment's notice. It's small enough to land on a very small patch of weeds, bushes, etc., so that a big slope site isn't needed. The site possibilities are just about limitless with the SOS. In fact, you don't even need a slope if you just want to handlaunch the SOS at a nearby park or athletic field . . . as we did. We played a game of football with the SOS! Mark Rebeck was the QB, Steve Enright was the wide receiver, and the SOS served as the football. I'll bet that all professional QBs wish they had that much control over the ball! Imagine ... an R/Cguided football!

Anyway, here are a few specs on the Savage: span: 70 in.; airfoil: Eppler 374 modified by decreasing thickness and moving the highpoint forward (it works VERY WELL!); weight, ready-to-fly: 32 to 34 ounces; wing loading: six to seven ounces per square foot; control functions: aileron and elevator (ailerons have no differential throw as Mark flies it, this way inverted flight is identical to normal flight); radio: any normal-sized receiver and servo combination is okay, as are the "minis"; wing construction: one-pound polystyrene "bead" foam, 1/16 in. sheeting with cap strips, onepiece bolt-on wing, 1-1/4 in. strip ailerons.

The fuselage comes two ways, either

"Lemmie see now ... I think it goes this way!" Scott designed the Metrick ...

Mike Charles turns on the power to his IBA FAI/F3E contest model as Bill Northrop and Scott Christensen pretend to keep it under control. Bystander is obviously impressed!

When the wind is down and coming from the wrong direction, you'd better give it yer all!

Hatch heaves his heavy "Electrick Metrick" over the cliff in Costa Mesa, California.

built-up balsa and spruce construction, or fiberglass. The fin is actually part of the fuselage for strength reasons. There is no rudder, but one can be added if so desired. The stabs are very lightweight and strong with spruce leading edges, solid balsa spars, and cap strips. The stab airfoil is symmetrical. With the fiberglass fuselage, the Savage weighs in around 36 to 38 ounces, ready-to-fly.

The Son of Savage is a photographically reduced Savage. It spans 42 inches, weighs 11 to 12 ounces, is sheeted with 1/20 balsa wing skins, and is designed for the new, mini or micro radio systems. Mark uses the Novak NER-25 receiver, 100 mah battery pack, and World S 22-A servos. However, if you had a Cannon system, or one of the new Tower Hobbies systems, it would work just as well.

The going price of the built-up Savage is \$55, while the fiberglass version is \$75. If you want the SOS, it will cost you \$30. For more detailed information, you can write to Mark Rebeck, c/o California Slope Designs, 31932 Calle Winona, San Juan Capistrano, CA 92675, or call him at (714) 493-0843.

ELECTRICK METRICK

Scott Christensen, of Top Flite models and model products fame, was in the Southern California area a few months back for the Hobby Industry Association's annual west coast trade show. He stopped by **Model Builder** one afternoon during a break in the action at the HIA show, and brought with him one of his two-meter Metricks. Bill Northrop and I took a break from our office duties and took the afternoon off with Scott at the local slope site. We were joined there by two more R/C modelers ... Mike Charles with his IBA F3E plane, and "Hatch" Manell with his *electric* Metrick.

Unfortunately for Scott, the wind was down and coming from a bad angle, so he wasn't able to fly very much. Hatch, however, was able to fly ... all he did was switch on that motor of his and off he went!

I just thought you'd like to know what Hatch used in the Electrick Metrick in case you wanted to make one up yourself. At the time the pictures were taken, Hatch's plane had a six-cell system. The motor he used was a Leisure Pattern Wind 05 with a Carrera 5:1 gear box (now out of production) and a Carrera 14-inch folding prop. His flight times averaged about six to seven minutes with this setup. Now Hatch uses the 3.6:1 Leisure Gear Motor and a Graupner 550 folder (14-inch prop) off of a seven-cell pack. He says that his motor run is down to about 3-1/2 minutes now, but the climb is phenomenal. "At 3-1/2 minutes you're so far out of sight it doesn't matter that the motor run is less," says Hatch.

CLARK	Y
X UPPER SUR	FACE Y
100.00000 95.00000 80.00000 60.00000 50.00000 50.00000 20.00000 15.00000 15.00000 15.00000 5.00000 2.50000 5.00000 2.50000 1.250000 1.250000	.12000 1.49000 2.80000 5.22000 7.35000 9.15000 10.52000 11.40000 11.70000 11.36000 10.68000 9.60000 8.85000 7.90000 6.50000 3.50000
V LOWER SUI	RFACE V
100.00000 95.00000 90.00000 80.00000 50.0000 50.0000 30.00000 20.00000 10.00000 50.00000 50.00000 10.00000 20.00000 10.0000 7.50000 5.00000 1.25000 .00000	.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .15000 .42000 .63000 .93000 1.47000 1.93000
.00000	3.50000

Dieter Althaus, of Stuttgart, F. R. Germany, has done extensive wind tunnel testing of various airfoils and has published them in a book entitled *Profilpolaren fur den Modellflug.* The above data is from this work. Wilshire Model Center (see page 74 for address) has this book.

THE VOLT-OHM-MILLIAMETER, YOUR BASIC TEST INSTRUMENT

Just as soon as the R/C hobbyist decides that he wants to learn more about what is going on inside our wondrous little boxes, and to start doing more for himself, he discovers that he needs some measuring instruments. The design, building, and upkeep of electronic items requires measurements, and the equipment to do it with covers a wide range of sophistication and price. Yet, even the best equipped labs depend on the basic VOM, or Volt-Ohm-Milliameter, for a large part of the required measurements. And, it is the first instrument that the hobbyist should consider.

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For certain applications, a digital readout is desireable. Simpson Model 470 shown.

As the name implies, this is a multi-use instrument, designed to measure the basic electronic values: voltage, current, and resistance (in volts, amps, and ohms, or fractions thereof). The choice of such an instrument is important, and must be made with care. Important features to consider are: Ranges: does it cover the actual values you will work with? Readability: which combines with accuracy; are the ranges spread out enough to permit observing small value changes. and is the display large enough to allow seeing them? Don't kid yourself into believing that you are reading from zero to 500 volts on a 1-1/2-inch meter face with any accuracy at all. Readability also includes the actual meter face ... can you look at it and locate the scale with which you are working, or is it lost in a clutter of lines and numbers? Accuracy again must be considered in another light. Can you really depend on what such an instrument is telling you, or is it

Simpson Model 260-6XL has been designed especially for solid state circuitry testing.

merely confirming that there is some life in the circuit.

There is also something referred to as sensitivity, stated as ohms-per-volt, which has to do with the loading effect of the instrument on the circuit being measured. The higher the ohms value, the better the instrument is considered to be. We need to also consider the company with which we are dealing, as this is not a \$7.95 item. It is reassuring to know that service, parts, accessories, and just plain information will be available to us in the future should the need arise. Price must be considered, some-

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Schematic for servo-signal triggered buzzer, which can be used as a down plane locater, and as a range check warning buzzer for preflight safety.

Bob Hilton's addition to his Tower/Kraft tranny to permit battery testing. The resistor within the dotted lines is added to provide a load.

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Team Electricus?!! Clockwise from right: Roger Roth, Dennis Brandt, Bob Boucher (Astro Flight), Larry Jolly (Electricus designer), George Boss, Dan Fink, Rick Schrameck, John Brown. S.E.A.M. spark plug, Frank Heacox, poses with his Electricus. Frank made the folding prop himself. Uses Cox 7X3-1/2.

BY MITCH POLING

 Bob Boucher wrote in with news from Astro Flight and on the contest sponsored by Astro on June 26. The contest was for sport electric gliders with seven cells, and was held at Magnolia High School in Los Angeles, Larry Jolly was the contest director. The rules for the event were one-minute motor run with manon-man launch, with the final flyoff an unlimited duration with the last man down the winner. The results were surprising! There was a five-way tie for first, and the "last man down" tie breaker didn't work because all of them were still up in the air after an hour! That must have been something to see! It also says a lot about the performance of the Electricus (MB, Mar. '83), which all of them were flying, and the altitude that the Astro 05 cobalt and the Leisure 05 can get in a minute. Finally, just to get the planes down, a one minute precision event was called, the man down in closest to one minute won. Rick Schramek won by one second! The final results are shown elsewhere.

Look at that run of Electricus planes, not to mention the 05 cobalt! I have ordered my kit, and hope to have it soon. Larry Bedford, who built the Leisure Playboy described in the October column, ordered the Electricus kit, and showed it to me. It is beautiful! Everything is cleanly cut, no die crunching, nicely packaged, and the wood is immaculate. It is up to the Airtronics 650 kit in quality, and that is the highest quality I have ever seen. I'm looking forward to mine.

Anyhow, Astro generously donated a cobalt 05 for the 1st prize, an AC/DC charger for 2nd, and a Monterey kit for 3rd. Rick generously gave the cobalt to Dennis in exchange for the charger, as he already had three cobalt 05's! Dunno,

Rick, Dennis may beat you later with that motor! The final word on the whole show came from Bob, who says that they are going to give up on the one minute motor run for flyoffs, and use thirty seconds. How times have changed...1 remember when two minute motor runs were the norm, then it dropped to 1-1/2 minutes, then one minute, now 30 seconds! This says, more than anything else could, how much performance has changed since the pioneering days.

Other news from Bob concerned the new super ferrite motors, which have

been under development for the past year. They are now ready to ship, and I'll bet they are good. They use the same brush and motor case technology as the cobalt motors, which will give much more power than the older designs. I am looking forward to getting one, and I'll let you know the results as soon as I do. Bob says the Astro 10 super ferrite turns a Rev Up 7x4 at 14,000 rpm on seven Sanyo sub C's, and the Astro 15 turns the Rev Up 7x4 at 16,000 rpm on 12 sub C Sanyos. These numbers look good to me. The Astro 40 cobalt motor is also in produc-

_	1983 ASTRO FLIGHT CONTEST RESULTS							
1st 2nd 3rd 4th 5th	Rick Schrameck Dennis Brandt Roger Roth Bill Boss John Brown	Electricus Electricus Electricus Electricus Electricus	Astro 05 cobalt Leisure 05 Astro 05 cobalt Astro 05 cobalt Astro 05 cobalt	7x4 Rev Up 7x4 Rev Up 7x4 Rev Up 7x4 Rev Up 7x4 Rev Up 7x4 Rev Up	7 Sanyo sub C's 6 Sanyos 7 Sanyo sub C's 7 Sanyo sub C's 7 Sanyo sub C's			

Winners of the Astro Flight sponsored contest (left to right): Roger Roth, Rick Schrameck, and Dennis Brandt. Three-way tie breaker was a real eye opener, see text.

Step 1. Trip on down to your friendly neighborhood Radio Shack and buy what you see here. "16 PIN WIRE WRAP SOCKETS," right.

Wilshire Model Center now carries this *excellent*, super flexible wire for electric power installations. Twice the number of strands!

Step 2. Remove contents of packets from Step 1 above. Simple, huh!

tion, with a brush twice the size of the prototype. The testing gave 350 hours of brush life, which would be good for thousands of flights. Bob didn't say what prop or cells were to be used on the 40. I would guess about a 9x6 to 10x4 on 18 to 20 cells.

Last, but not least, Bob also included a list of proposed rules (to the AMA) for electric events in free flight open, free flight junior, free flight old timer replica, free flight scale, control line aerobatics, CL scale, CL speed, CL carrier, open R/C sailplane, seven-cell sailplane, R/C old timer open, R/C old timer seven-cell, R/C seven-cell pylon, R/C aerobatics, R/C scale, R/C helicopter, R/C lighter than air, R/C indoor endurance, and R/C indoor scale. Whew! Twenty events! We could have our own Nats! The rules

Step 3. Cut apart headers and sockets to form four-pin connectors. Haven't lost you yet?

proposed by Bob are simple, if you want a copy, I think Bob would oblige if you include an SASE to Astro Flight, 13311 Beach Ave., Venice, CA 90291. These rules are not made up from thin air; Bob speaks from practical and hard experience. All of these events have been held (I have been at most of them), and the rules work. Of course, there will and always will be some points that will be questioned; that is the way rules get refined and developed. I do see that there is no six-cell class for sailplanes or pylon racing, and I think there should be, for duffers like me who aren't good enough to handle the hot performance of seven cells. I think there is room for both six and seven cells. That would make 22 events, but why not? The more the merrier! Thanks very much, Bob, for

Step 4. Solder power wires to two pins each. Use of heat shrink tubing would be recommended, but eliminated for clarity. Top to bottom: Astro, Leisure, Deans, Radio Shack.

the reports.

A few months back in the June issue of R/C Modeler, Clay Howe had an excellent article on how to make R/C connectors from Radio Shack wire wrap sockets and DIP headers. Bill Gilchrist

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Improved fuse installation. Step 1, solder to back of lug clip, then cut off clip shank. Easy, compact, positive connections for fuse.

Step 2. Just plug in the automotive type fuse! If you have a tight installation, this is the way to go.

Huron Park, near Centralia, Ontario, was the place to be for scale modelers last July. Here we see some of the 20 entries in this year's Nats.

R/C Scale at '83 MAAC Nationals

By CLIFF TACIE ... The 1983 Canadian Nationals R/C Scale events were dominated this time by two U.S. modelers from Michigan: Skip Mast and Cliff Tacie. H-m-m, Canadian Nats, U.S. winners ... read on!

• Scale enthusiasts from across Canada and the United States gathered together during the week of July 8 through July 17 at Huron Industrial Park near Centralia, Ontario, for the 1983 MAAC Nationals. MAAC, Model Aeronautics Association of Canada, is the Canadian equivalent of the AMA. Huron Park, at one time an RCAF training base, has become a traditional site for the Nats, boasting spacious flying areas with paved runways, and convenient large buildings for a Nats Headquarters and even the indoor Peanut event!

Two categories of events were flown in scale this year: FAI F4C, using the proposed 1984 "Stand Off" type rules, and "Canadian Stand Off", using recently revised rules and open to models up to 25 lbs. in weight with no limit in power. It's interesting to note that the rules for Canadian Stand Off begin with the following statement:

"The Aim of the MAAC R/C S-O. Scale:

An event designed to encourage participation in R/C Scale providing a less demanding class for modellers without the time to build Open Class FAI standard models. Secondly, an event to

This blue, yellow, and red Stearman PT-17 built from a Sterling kit by Al Denton, of Ottawa, was a very realistic flier. Model weighed 12 lbs., was powered by S.T. 71.

provide a large base of support for eventual participation in Open Class."

This "less demanding class" seems to be contradicted by the newly instituted rules for scoring static and flying. Under what is designated "Complexity of Scale", a contestant is awarded an additional 3% of his total score (Static and Flight) for each of: A) flaps, B) retracts, C) multi engines, and D) multi wing. As a result, a competitor with the proverbial "perfect" model, a multi-engined biplane with retracts and flaps is awarded an additional 12% of his static and flight scores, making him very difficult to compete against. This is similar to the FAI complexity bonus system, and is fine for a highly competitive, serious event, but hardly seems conducive to encouraging new scale modelers into competition with the simpler subjects.

This year's turnout for R/C Scale was

Bud Barkley's 1/4-scale Tiger Moth took high points in static and placed 5th in Stand Off. Model is Quadra powered.

Author's Spezio Tuholer took second place in FAI. Model weighs 10-1/2 lbs., powered by O.S. Max .60 Blackhead with 14-5 prop.

MODEL BUILDER




Close up shot of model at right. O.S. Gemini Twin 4-cycle engine fits nicely!

Author's 1/4-scale Sig Clipped Wing Cub. Would you believe it took two 60 yard rolls of Fine Line 3M masking tape to paint this beauty? Model weighs 13 lbs. 2 oz.. Second in Stand Off.



Fokker "Super Universal" by Grahm Ireland. Built for Canadian documentary film. Model weighs 9 lbs, has O.S. Max .60 Blackhead.

down considerably from previous Canadian Nats due primarily, it was believed, to the high cost of gasoline and travel in Canada, equivalent to about \$1.75 a gallon in the U.S.! What may have been lacking in quantity was made up for in quality, however, as many of the familiar names in scale modeling were in attendance. Among the Canadians were members of the 1982 Canadian Scale Teams: Sepp Uiberlacher, Don Paquette, and Ray Gareau. Jack Swift came not to compete, but rather, to offer his assistance in judging. This Nats was a team selection trial for the 1984 Canadian FAI Scale Team, and Sepp and Ray were joined by Grahm Ireland in what turned out to be a successful effort to qualify for the team.

Scale enthusiasts from the U.S. are also drawn to the competition by it's relaxed atmosphere and the warm hospitality afforded by our neighbors in Canada. Skip Mast came from Royal Oak, Michigan with his new Sig Skyhawk and his



As if first place in Stand Off weren't enough, Skip Mast also took first place in FAI scale. C-130 has four K&B 3.5s, weighs 13 lbs, 3 oz.

familiar C-130 Hercules. Skip put the "Herky Bird" on a diet over the winter months, and it's now down within the legal FAI weight limit of 6 Kg. Cliff Tacie, from Mt. Clemens, Michigan, brought his Spezio Tuholer for FAI, and a new Sig Clip Wing Cub in red, white and black colors. Pete Waters, a well known expert

This gorgeous Sig Skyhawk built by Skip Mast was good enough for a first place in Stand Off. Weighs 8 lbs, 5 oz, has S.T. .60 ABC.

on radios in the Detroit area, flew a cute little Sig Smith Miniplane, and modelers from the Buffalo, New York area, included Ed Zindle and Bruce Knox, flying 1/4-scale Clip Wing Monocoupes built from the Executive Design plans.

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Bruce Knox and Ed Zindle of Buffalo, New York, both flew Monocoupes from Executive Design plans. Note NC numbers on rudders. Original plane had two paint schemes.



Ray Gareau earned a place on the Canadian Scale Team for 1984 with this fourth place winning FAI model, a Norseman Mark V. It featured full interior. Webra .60 pulls all 9-1/4 lbs well.



Coverite's new Pocket Thermometer. This gadget can be used to test heat shrink irons, engine temperatures, etc. Only costs \$5.95.



The underside of the Pocket Thermometer reveals a coiled strip. Heat causes the metal to expand and move the pointer.

FUEL JOE KLAUSE

P. O. Box 2699 Laguna Hills, CA 92653

ANNIVERSARY TIME

In this issue five year ago, KK (my nickname) wrote his first "Fuel Lines" column for Model Builder. Frightening thought? Perhaps sobering? More likely it's incredible that YOE (ye olde editor) and 1 have managed to somehow get along for so long. That ought to be good for a parenthetical comment or two. (Sorry KK, ye young editor is reading this one! wrf) OK, I'll drop the whole subject with this mini-algebraic twister: At that time, my daughter was half my age, and now the difference is .545.

NEW INVENTIONS

At one time or another we have all heard the expressions, "The reinvention of the wheel." or "There's nothing new under the sun." Now, don't dismiss such comments lightly. Why? Because, they're indeed true. If you think about it, human beings never invented anything. Strong words? Not really. Those who are commonly called inventors, actually have only applied or adapted what already existed in nature. The operation of our model engines can be quite reasonably deduced back to the first person who discovered how to make fire ... other than lightning strikes and such. The basic principle is the chemical processes of heat and combustion.

Putting it mildly, that's a long lead-in to tell you about a new product for all internal combustion engine fans and fanatics. About ten days ago, I received a sample of Coverite's new pocket thermometer. Several of the accompanying photographs show the top and bottom of it, and another depicts its application as an engine thermometer. The principle of its operation is simply that heat excites molecules and causes expansion.

INES

In this instance, when the stem in the center of the underside coiled spring is placed in contact with a hot cyliner head, heat is transferred, and the resultant expansion stretches the coil. The end of it acts as a point, and thus it's only a matter of adding a calibrated dial in order to come up with a simple but effective contact thermometer. A fine application of an existing natural phenomenon. It's a similar concept to the automatic choke used for so long in automobile carburetors. Happily, Coverite adapted it to modeler uses. It can be most useful in checking the temperature of irons used to shrink coverings such as Super Coverite and Monokote, etc. In fact, the instruction

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This is a bent wrist pin. The most probable cause was electric starter and flooded engine.



Here it's being used to check cylinder head temperature. Red line area is at 400°F.



This piston crown has been badly damaged. Too much nitro? Bad manufacture? See text.



1. Max Starich's "Pacemaker" has had a remarkably long career of flying. This unusual lowwinger is still in excellent shape.



• We had hoped to bring you the results of the SAM Champs held at La Junta, Colorado, on July 19 through 21, but the lack of photos has prevented this. Some of the other magazines may "scoop" us but we always bring the "straight scoop".

When this writer was in Australia, he was a guest writer for the M.A.A.A. New Bulletin put out during the Nationals. The article written by this author was pointed directly at the membership pleading for some action in the formation of a SAM Chapter in Australia. Since that time, a considerable amount of reaction has resulted in a National SAM Chapter, with John Tidey as Secretary-Treasurer and Dennis Parker as Newsletter editor and promotional rep. The guiding lights, of course, are William Gordon, President, and that sparkplug, David Owen, Vice President.

In less time than it takes to talk about it, the initial group of 30 members decided to hold the First Australian SAM Champs at Goulbourn, N.S.W. over the Easter holiday. This contest was missed



2. Ohlsson powered Brooklyn Dodger by David Owen, N.S.W., Australia.

by this columnist due to lack of time and money. Would you believe time?? In any respect, we are pleased to publish this report as gleaned from the various letters and Airborne magazine. AUSTRALIAN SAM CHAMPS

Received two nice letters from Monty

Tyrrell and Dennis Parker, newsletter editor of SAM Australia, giving reportrs on the R/C and F/F ends respectively, of the First SAM Champs held at Goulbourn, New South Wales, Australia over the Easter holiday.



3. "Southerner" built by Barry Lee, of Victoria. English design by Bill Dean.



4. Paul Brown recreated this popular Keilkraft kit of the Slicker. Beautiful covering job.



5. "Sugarfoot", an English design, as built by John St. Clair. Good performer!

NOVEMBER 1983





6. Model Builder cover artist, Robert Benjamin, poses with two of his latest free flight O/T models (left) at Hart's Lake Prairie. (Chalker photo)

7. Gorgeous rebuild job of Thorall's 1936 Jr. Birdmen winner by John Drobshoff.

Both correspondents enthusiastically agree the "Champs" were a great success. However, the high winds did cause some anxious moments for the free fligt boys, as the models were being carried over the main Melbourne-Sydney highway. The thought of a four-pound old timer meeting up with a vehicle doing 100 kilometers per hour was not attractive. As Dennis reports, fortunately, there were no mishaps. He also said that after four fences had been negotiated, R/C was looking very good to him. As luck would have it, the wind finally died and any thoughts of R/C promptly evaporated.

Parker was rather pleased that his Lamb "Climber" won the rubber stick event, but the thing that sticks in his mind the most was the flyoff in Ignition Gas between his "Miss America" and Max Starich's "L.W. Pacemaker." With the engine quitting at 25 feet altitude, Max was very lucky his model emerged unscathed. Feeling he had used up all his luck, Max packed up his gear and took off for South Australia, 1200 kilometers distant.

Of course, in the wind, activity went unabated on the R/C side of the field. The only complaint Tyrrell had to voice was the arrangement of all cars 200 feet upwind, forming a tee to the takeoff area. Many of the new R/C modelers would simply plunk themselves down



8. James Buice, son of "Bo" Buice, is shown here with his hot-flying Playboy Senior (R/C assist).

anywhere (f/f style), in many cases interfering with people on the loosely drawn flight line. These are things that are eventually sorted out as more meets are held.

What really zinged Monty was the excellent layout of the landing circle, yet no real defined flight line. A line of 60 feet would have sufficed admirably. The grass was great, being close cropped, but the area needed grading, as you

never knew when your model would drop into a hollow. Made for an exciting meet!

Interesting enough, the Australia Texaco Event, which allows 3 cc per pound of model weight, has no 1938 date restriction like the American rules. This allowed more "modern" designs to compete, with Geoff Brown winning with an Enya FS 40 powered Playboy Sr., second going to Colin Parker using an



9. Bill Mackey, of New Zealand, sent this shot of his restored 1937 Tee-Tail design.



10. Very neat German design, HS-100, as constructed by Erich Punke. Saito 30 four-cycle powered.



11. Stan Ohlsson, of South Africa, built this beautiful Bombshell. Site is the Yisante Kraal Airfield. The "Buzzard" Bombshell was a big winner in the 1940 Nats, C Open: 1st, 3rd, 5th.



13. Crackerjack flying Jimmy Allen "Bluebird" as built by Sherman Gillespie, San Jose.

OS FS 40 in a Simplex, and third taken by Bruce Knight flying an OS FS 40 powered New Ruler. Looks like the Australians have discovered early in the game how economically the four-cycle engines run!

Merv Buckmaster, editor and publisher of Airborne magazine, donated three prizes for the most impressive airplane in each R/C power event, and one for the best free flight gas powered plane. Results:

Bruce Knight (New Ruler) Nel Gillot (Clipper) Max Starich (Pacemaker L.W) Duration F/F

The Most Impressive Overall award was won by John McCarthy, using a rubber powered model known as the "Club Duration".

This first meet was marked by quite a few odd-ball designs (we call them sport) as the "hot dogs" are not yet dominating the field with a few designs. This is readily observed from such designs as Monty Tyrrell's Torpedo powered Tuxworth "Baby Barnstormer"; also his Dennyplane, using a Webra for power. Might be noted despite the weight and lack of gas economy, Tyrrell's model placed 12th in Texaco, the highest of any of the Victorian boys!

Photos: Never thought we would get around to them, huh? Most of these photos were taken several months before the Champs, but the modelers are still the same, so let's take a look at what was used.

Photo No. 1 shows the Saddler "Pacemaker" low wing as built by Max Starich at least five years ago, and powered by a Brown Jr. Max has successfully demonstrated this model at all of the M.A.A.A. Nationals, hoping to arouse interest in old timers. His early articles in Airborne have helped immeasureably to expose the Aussie modeler to old timers. Max probably could have won the Most Impressive Model award but after being lucky enough to retrieve his model in one piece following a disastrous motor run, Max was last seen heading for home.

Photo No. 2 shows Dave Owens, SAM Vice President of Australia, with his free flight Brooklyn Dodger. Owen runs an engine distribution business and provides a service for spark ignition engines. In his last letter to this writer, he has started to gather up as many O/T plans as he could to form a "plan bank" for the newcomers to old timer activity.

Owen had a most unusual idea to prevent the rivalry that is so prevalent between the states of Australia. In this first meet, Dave announced there would be no state distinction of the modelers, only the idea of a unified SAM Australia organization. Great idea!!

Barry Lee has been around a long time in free flight and can be seen in Photo No. 3 with his "Southerner", a Pill Dean design. Bill, of course, is well known in



12. Good take off shot of Harold Munge's Ohlsson 60 powered Playboy Senior.

aeromodelling circles for this model designs, reporting, photography, and general all around interest in model planes.

Paul Brown is shown in Photo No. 4 with another Bill Dean design called the "Slicker 50". This design, as kitted by Keilkraft, was one of the most popular free flight kits between 1946 and 1952. Keilkraft must have sold a million of them!

For those interested in the Nostalgia Event (dates 1943 to 1956), one would do well to look at the English designs of the 1950 era, as many were extremely competitive. To show what we mean, John St. Clair is shown in Photo No. 5 with an English design known as "Sugarfoot". Good flyer!

Probably the best way to summarize the meet would be to take Monty Tyrrell's closing comments as published in the Pakenham & District Aircraft Radio Control Society (PARCS): "Those present had a good time overall, and everybody went away with some knowledge gained from the other guy to improve his performance next time. That's one





14. Ex-Californian, now Wyoming resident, Chuck Provance, poses with his California Chief A-2, P.A.W. 1.4 diesel powered. (Johnson)



15. The Beauty Event lineup of Antique models at the SAM Annual (that's Salinas Area Modelers). Dowling photo.

of the good things about aeromodelling. which besides the flying, makes for a splendid competition, good companionship, and satisfaction in a hobby we all are proud to participate in. ENGINE OF THE MONTH

This month we are indebted to Jim Crocket, who runs Crocket Replicas, P.O. Box 12600, Fresno, CA 93778, who has so kindly provided this columnist with a little seen German engine.

The "Kratmo", a 10 cc production engine, was to Germany what the Brown Ir. was to America. In experiences similar to Bill Brown, the designer, Walter Kratzsch of Gosnitz, Kr. Altenburg. (near Leipzig) made up several designs before he hit it big. The Brown Ir. engine influence can be seen in his design.

In starting out, Kratzsch was a diesel engineer who founded a small factory in 1936, initially employing two men. The first engines, of course, were meant to replace the Baby Cyclone and Brown Jr., the only engines available at that time.

With the National Socialist Party (Nazi) embarking on a tremendous aviation training program, it was only natural that models in ascending complexity would be developed for the Hitler Air Youth Program. All drawings this columnist has of the early German designs called for some type of Kratmo engine.

With a successful local product available, the German government immediately requested a tremendous batch of engines, and was even willing to sponsor Kratzsch to set up a larger manufacturing facility. The net result was a modern factory in 1939 employing 120 people. According to figures available, over 15,000 engines of the Kratmo 10 type were produced.

In addition to producing the finished engines, Kratzsch also made engine kits of the Kratmo 10 for school instructional use, and for those modelers wishing to machine their own engines. These engines, although built to the instructions, show some variances, hence, the slightly different models of Kratmo engines to be found.

Walter Kratzsch, himself, was quite a versatile engineer, as he not only designed the Kratmo engines, but served as technician, manager, and even tested his own engines in models! To keep the business rolling, he also designed machine tools for the manufacture of steel cylinders, alloy pistons, and other internal combustion engine parts.

At this time, we would be remiss if we failed to acknowledge the write-up on Walter Kratzsch by Gerhard Everwyn. appearing in the MECA Bulletin #78. wherein Gerhard sketchily traces the development of the Kratzsch engines. As we run into additional information. we will be sure to feature other German engines as produced by Kratzsch.



There's no other way to pronounce the name. And when you do it, you feel like saying, "Excuse me," and apologizing for not covering your mouth. Of course, if you were to say, real fast, "It's the Arup Flying Wing, designed by Dr. Snyder, South Bend, Indiana, vou might get by with no more than, "Good grief, whatta name!'

The August, 1936 issue of Popular Aviation featured photos and a description of not this model, but the "new edition" of the Arup, with a five-cylinder, 70-horsepower Le Blond engine and trike gear, plus what appears to be an additional stab and elevator mounted about two-thirds of the way up the fin. The original aircraft, which we can only guess must have been created in late 1935 or early 1936, was powered by a Continental A-40, 40-horsepower, two-

The Kratmo 10 was the big production engine of the Kratzsch plant, being most heavily produced in the 1937-39 era. The 10 cc Kratmo engines were distinguished by a bulbous spinner, a large circular mounting flange, enclosed timer with a neat locking arm, and a sheet metal brass tank. Of course, improvements followed, consisting of a more pointed spinner, three mounting lugs to reduce the weight of the large mounting flange. and a plexiglass tank. The heads, incidentally, came in two styles, flat fins (as

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cylinder opposed engine, and was the basis for the model presented herein.

The 22-inch span rubber model of the Arup ('scuse me) was designed by Gordon Englehart, and published in the August 1936 issue of M.A.N. Although my memory is vague, I must have built one, as the somewhat crude pencil lines from tracing the full-size ribs can still be seen in my copy of the mag.

The wing has to be built first, as the fuselage is built onto it. And right away we have a problem. The drawing shows a flat top spar in the front view, with the bottom spar dihedraling (new word?) up to it. However, the text says to crack the top spar at both No. 1 ribs and raise it 3/8-inch at each tip. The photos of the model don't help in solving the problem. If it's any help, the photos of the "next edition" in P.A. indicate a fairly thick airfoil with the leading edge at zero dihedral all the way out, and the tips tapering up or down to meet the edge. I'd be tempted to follow the plan. In any event, use a building board and shims. The instructions sort of imply that the wing was assembled acapella, which is risky

Balance point was not discussed in the flying instructions. "If the model stalls, add weight to the nose or turn the flippers down (the latter being preferred to get it trimmed, it should be fun to fly once it gets straightened out.

Hmmmm ... let's see ... throttle, rudder, elevator, "trimmer flaps", three times up to 66-inch span ... make an interesting experiment for R/C!





2. Yiu-Wah-Li, an eight year old chopper pilot from the San Fernando Valley of California, shows us what you can do if you put your mind to it. Imagine, he's only an eight year old!



• To start off this month, I thought I'd give you a little incentive. Now it's supposed to give you incentive to get out and practice, although I suppose some of you will view it as a reason to give up altogether...

Photo 1 shows Yiu-Wah Li, eight years old, showing off his Falcon 707 with a JR Unlimited Radio and an O.S. 50 FSR-H engine. Just this spring, he was in training gear, skidding around on the asphalt. Photo 2, taken in late spring, shows Yiu-Wah in a stabilized hover at the San Fernando Valley helicopter flying site, just northwest of Van Nuys. He and his father, Tat, have gone after helicopters with a passion, and must have nearly eight flyable helicopters at this time. And your wife thinks you have too many helicopters!

ROTOR HEAD YOKES

In the August and September '83

issues I reviewed the GMP Competitor, and mentioned that the Competitor's rotor head was much the same as the full size Jet Ranger's rotor head. Photo 3 will refresh your memory of how the Competitor's yoke is designed. Note the two bearings on the yoke for feathering action and the thrust bearing on the end for centrifugal loads.

Now have a look at Photo 4, where I've shown a full size Jet Ranger's yoke and blade grip. This arrangement uses roller bearings set in the grip for feathering action. They do not have an inner race, but rather, they run directly on the hardened yoke at the inner and outer positions.

Centrifugal loads are taken up by TT (tension-torsion) straps which run through each side of the yoke. Each strap is secured in the center of the hub, then runs out the yoke where it anchors



5. Here's a full-size Jet Ranger yoke ... just right for weight training and muscle building programs! This is a very expensive part, and not something to play around with.



1. Yiu-Wah-Li proudly displays his Falcon 707. Could this young man be the world's youngest chopper pilot?



6. Airtronics new helicopter radio. Single stick control, see text for details.

on to the blade grip. In turn, the blade grip holds the blade. When the blade feathers for cyclic or collective pitch, the TT strap is flexible enough that it twists along with the movement of the blade grip.

The U-shaped machined areas at the center of the yoke hold the trunion bearings which allow the hub to teeter and support the weight of the helicopter in flight.

Photo 5 shows the relative size of the yoke as it is held by a trusty Grand Canyon mechanic, Bob Pistorino. One thing for sure . . . you don't drop these components on the concrete!

NEW COMPETITOR ADDITIONS

While I'm thinking about the Competitor, I want to mention that Gorham Model Products has released a new canopy for the Competitor, which covers the main frames to the start of the tail boom. The Kalt Baron 60 and Schluter's Superior seem to have spurred the



7. Schluter's new Superior helicopter is distributed by Miniature Aircraft Supply. See text for a description of its features.



9. As you can see from this picture of the Superior without its canopy, the servo arrangement is very clean and simple.



8. Left side view of Superior. Visible are: 20 oz. fuel tank, cooling shroud, main gears.

development of this addition. It definitely changes the looks of the ship, and personally, I think it looks very nice with the canopy addition.

More important than the canopy in my estimation is the new ball bearing kit available for the collective system, which eliminates all bushings in the levers and bellcranks to the head. This makes a very fine collective system even better. I would recommend that those of you who have a competitor and have



10. A close-up view of the Superior's rotor head reveals its Heli-Boy heritage. The new head has many more bearings throughout.

advanced beyond the novice stage, should strongly consider this bearing update. Write to GMP for their latest information and price sheet — 23961 Craftsman Rd., Calabasas, CA 91302.

AIRTRONICS NEW HELI RADIO

At the MACS show this year I had the chance to stop in and talk with Cliff Weirick, of Airtronics. I had heard about their new single-stick helicopter radio, and Cliff showed it to me first hand. It has all of the features the discriminating single-stick pilot will be sure to appreciate...

Among the features are dual rate exponential on roll and pitch, automatic tail rotor mixing, collective trim, servo reversing switches, end point adjustments for servos, inverted capability, and throttle hold for autos. If I remember correctly, you can also set the high and low curves of collective throw.

In the next new few months, I hope to have a detailed report on the operation and flying characteristics of this radio. I've been frustrated for too long waiting for one of the new hi-tech radios with ball bearing servos to come out on the market in a *single-stick* configuration! Anyway, as soon as it comes, it's going directly into my Competitor for a thorough check out.

SCHLUTER'S NEW RELEASE

Also at the MACS show, Walt Schoonard was showing Schluter's new Superior. This is another of the high class, full ball-bearing equipped helicopters. It is basically a high-zoot offshoot of the Heli-Boy. Judging from Schluter's past quality of kits, the Superior will probably assemble easier and





4. Full-size Jet Ranger yoke and blade grip. Note the almost invisible six-inch ruler just below the yoke . . . without something for size reference, these parts could be mistaken for R/C parts.



3. GMP's Competitor main rotor head yoke. Note 2 feathering and 1 thrust bearing.

NOVEMBER 1983



Six A OPC Tunnels score up for the start of a heat in this year's N.A.M.B.A. North American Nationals, held in Brittish Columbia, Canada.

BY JERRY DUNLAP

B.C. '83 - WHERE CAN IT BE?

"B.C. '83" was the slogan for this year's North American Model Boat Association's big race. B.C. is British Columbia, as in Canada. This year's event marked the first time NAMBA's big race has ever been conducted outside of the states. "Where can it be?" is a question many of us asked as we wandered around the Vancouver suburb of Burnaby attempting to locate the running site. I came to find out that I'm not the only person who gets upset when he can't find something while driving around in an unfamiliar environment. To the best of my knowledge, however, all the model boaters who were looking for the "B.C. '83" running site eventually found it.

The running site itself was certainly worth the effort of finding. Burnaby Lake is a unique blend of preservation of nature and development for recreational use located amidst a bustling urban setting. More than one participant mentioned that the setting was possibly the most beautiful location ever to serve as a running site for a race of this type. The portion of Burnaby Lake used for the racing of the 1983 NAMBA Internationals was developed in 1973 as a center for training and competition in the sports of rowing, kayaking, and canoeing. The facilities available were the finest I have encountered for any model boating event. These included the large Burnaby Lake Pavilion, docks, starting tower, and bleachers. The Canadian Marine Modelers, the host club, is to be congratulated for their efforts in



Six C Monoplanes prepare for a start. This shot was taken from the top of the judges' tower, sixty feet above the water.



Well-known names in N.A.M.B.A. were winners in A Deep Vee/Offshore. Ed Fisher (r) first, Howard Power (c) second, and Wally Stewart (I) third.

The grandstand at Burnaby Lake provided excellent spectator viewing. With such first class facilities, it is not hard to see how both spectators and boaters alike would like to come from miles away.



Chuck McGaughy's R/C Unlimited "U-95" and Sport 40, Division I. Chuck is former N.A.M.B.A. District 1 director, and is now living in San Diego.



Tom Christenson pilots the chase boat in for another docking. "B.C. '83" was made successful by many hard-working Canadians.

obtaining this outstanding facility as the racing site.

The Canadian Marine Modelers, under the direction of Contest Director, Malcolm Fraser, did an excellent job of organizing and conducting the "B.C. '83'' event. Having done two NAMBA national events, I know from experience the time, effort, and frustration that goes into staging an event of this magnitude. Malcolm, Judy, Tom, Wendy, Chris, Dave, and all you other fine folks from Canada ... you did a super job. Any event of this size is bound to have some problems and there were a few at "B.C. '83." It was encouraging to see model boaters from Washington, Oregon, and California pitching in to assist the Canadians. It takes people to make events like this successful, and lots of wonderful people assured success for "B.C. '83.'



Jack Garcia came prepared for bad weather ... and got some! Jack works for K&B's R&D.



Jack "Mr. Needle Valve" Oxley's Prather 7.5 Tunnel took home the honors in B OPC Tunnel. Jack is from the Los Angeles area.



Joe Monohan's Prather 7.5 Tunnel was second in B OPC Tunnel. Same boat helped Joe place 2nd in the Team Marathon event.



Ed Fisher drove this Outlaw to victory in Sport 40, Division II. Hull is a modified R/C Glass hydro with K&B 7.5 and Kraft radio.

How does one cover an event like a national model boat race? One method would be to start with day one and give some type of accounting of each day's activities. Since I wasn't there for all seven days of racing, we can rule out that approach. Another way might be to give a glowing account of my individual accomplishments. My less-than-glowing accomplishments with my 3.5 and 7.5 tunnels eliminates that avenue. My individual accomplishments can be capsulated by relating my first heat of racing. While leading in a 3.5 tunnel class by half a lap, with only a half a lap to go to the finish, I ran over a dead boat that I managed to forget was in my path. My boat flipped, and I was disqualified for hitting a called dead boat. That was the highlight folks. It was all downhill after that. For those who want to know, a list of the winners of awards in each event will follow. My coverage of "B.C. '83" will focus on personal opinions and experiences other than my racing.

I find it interesting to observe how my



Richard Hazelwood managed to rear-end another tunnel and keep running. Richard brought both boats into the pits and relaunched into the race ... only to be disqualified for relaunching!



A propeller shield provides protection for human body parts like hands and arms from being eaten alive while starting R/C power boats. Get one or make one before you get hurt.



A view of the starting pits as a Class C Monoplane heat lineup was being readied.

own thoughts about competition at an event like this have changed. At one time, I'd have entered every possible class for which I could muster a suitable boat. After 17 years of model boating, that doesn't seem so important anymore. However, I'm still impressed by those people who bring a large fleet of boats and spend six or seven days engaged in model boating. That takes real commitment. A couple of groups that come to mind for this type of dedication are Bev and Howard Power, of the Gold Coast Model Boaters, Cathie Galbraith, Al Williamson, the Holland



N.A.M.B.A.'s newest Hall of Famers: Wally Stewart (left), and Chuck McGaughy.



Participants in B Deep Vee/Offshore dash for the drivers' platform while pit crews prepare to launch their boats.

brothers from the San Diego Argonauts, and Ed Fisher and Bill Hornell from the Seattle Model Yacht Club.

Another person who ran a bunch of boats was Jack Oxley from Los Angeles. Two things impressed me about Jack's accomplishments. Firstly, he always seemed to have a needle valve setting that was right on the dime. Secondly, I don't think I once saw him without his pipe in his mouth. A real racing experience is to be downwind from Jack as he puffs on that pipe and races his boat. Talk about your smoke screens. Being a "real pipe smoker," Jack doesn't smoke those pleasant smelling tobacco blends. Jack can just be happy that no one from an environmental protection agency was there monitoring air quality. Should the truth be known, I'd even smoke that stuff if it made my boats go as fast as Jack's.

An event like this is as much talking as it is racing. And for me, the talking was a whole lot more satisfying. I found out that people who had been hospitalized



Al Williamson, San Diego, won the B.C. Cup for R/C Unlimiteds. Model is "Miss Burien."



"The Three Stooges Racing Team" took 2nd Team Marathon. Garcia, Monohan, Hazelwood.



Elevated judges' platform provided excellent view of action. Racing (left to right) are: Brian Dallas, Rod Garaghty, Leo Dreith, Monohan.



Judi Hazelwood managed to tangle her throttle cable on her Prather 3.5 Tunnel. "Trick setup" allowed more prop speed, control. HA!



Ed Fisher used a Prather Deep Vee 40 to win C Monoplane and a second place in B Monoplane as well.



Bill Hornell used a Ward Marine Offshore 31 to win the A Monoplane event. Bill used a K&B 3.5, Kraft radio. Bill is Offshore Chairman.

were doing better, and that was good news. I found out that a model boating friend of mine was very ill, and that wasn't such good news. I had long talks with Mr. Octura Models, Tom Perzentka about products and people back in his area. Charlie and Pat Pottle, who once again are handling Marine Specialties, were there as spectators and always as friends. Lots of time was spent discussing organizational concerns with folks like NAMBA Directors Wally Stewart and Howard Power, and President Stuart Russell.

I watched in disbelief as Jack Garcia plucked a bee out of a puddle and proceeded to let it crawl along his arm. The bee eventually dried sufficiently to fly off. I laughed as Richard Hazelwood told the story of how he once convinced



I have to tell one more Hazelwood story. Anyone who has been around racing has seen some crashes. We probably all have our favorite crash. There were the usual crashes at "B.C. '83." One that Rich Hazelwood was involved in, however, was rather unusual. During a heat of 7.5 tunnel, a boat spun out directly in front of Rich and he smacked it in such a manner that the two boats were wedged together bow-to-transom. Rich's boat kept running, and he managed to bring both boats back to the dock. Rich kept his engine running while the other boat was disengaged. When his boat was relaunched Rich was disqualified for relaunching after the start of a heat. Sometimes rules don't always provide satisfactory justice.

The proliferation of classes being offered at the NAMBA national event is a potential problem. Even with seven days devoted to racing it is becoming increasingly difficult to squeeze all the different classes into the schedule. I for one do not favor adding more days to accommodate more classes. Although I dearly love model outboards, it would appear that this is one area where there could be some consolidation with inboard classes. I believe that outboard

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Judy Prigley (driving) and Bev Power (counting laps) won the Team Marathon. Set new N.A. M.B.A. record, too! Watch out guys!



K&B's 10 cc Outboard on 7.5 lower end. The new K&B .67 inboard engine is due for release this fall. No date yet for the big outboard.



Bev Power displays "B.C. '83" pins and T-shirts. Bev won R/C Unlimited Consolation race. Trophied in five other classes! Busy Bev!



Richard Fish's Freedom Boats Deep Vee took second in Class C Monoplane.

Rod Geraghty won the A OPC Tunnel event on his 1st attempt to race

in this class. Where do you go from there? Model is Geraghty Tunnel.



ASSOCIATED BEODER BEODE

Have a last look at the Associated RC150 Club Racer (minus body). Bumper is home made unit. Note K&B .21 engine.

Here is the Dirty Racing Team's Associated RC500 which sees action in the Northwest GT racing circuit. MRP Camaro body.

R/C AUTO NEWS

any more gear problems.

ASSOCIATED RC150 IN COMPETITION As this is written, John Snyder has eight races, plus several practice sessions, on the RC150 Club Racer 1/8 car ... plenty of running time to make a few observations ... and to suggest a few changes.

First, to freshen your memory, we started with a stock Associated RC150, available for the ridiculously low price of \$75. It is also available with a K&B .19 for only \$100! And Associated says "Take that, guys!" to most everybody else selling 1/8 cars....

First thing dropped in was an 8800series K&B 21, fitted with an out-theback Thorp muffler and an older-model Delta slide-valve carb, both out-ofproduction pieces. Sticking with a lowbucks approach, we used an old (antique almost!) JoMac radio system that has many, many races on it. A 5-cell pack was used, made up of AA NiCds. For the tank there was only one choice, ours came from Associated, the same thing is also available from Delta. No other tank currently available is suggested. Supertough Delta body posts were installed at the front, an MRP Tweak Plate was slipped under the stock servo saver and MRP also came through with a 12-tooth clutch bell/union nut/needle bearing assembly. Delta heavy duty output arms were used on both servos, along with one of their linkage kits on the throttle servo, they also supplied the neat antenna mount. That pretty much covers the bolt-on stuff.

Modifications to the basic car were few, mostly detail refinements. At the front we shimmed the tweak out of the car using thin washers under the front cross-bar. Yes, the MRP Tweak Plate does the same thing, but I think you will find this handy little gizmo is best used as a fine-tuning aid instead of being relied upon to remove large amounts of tweak. (Tweak is an unequal loading of the front tires — which translates into an unequal loading of the rear tires. We just think of it in relation to the fronts as this is where the adjustments are made.)

The axles were epoxied into the steering blocks, as they were prone to

slipping when changing front wheels. Ball bearings for the front wheels were not used as the oilite bushings work fine.

A two-piece rod between the steering servo and the servo saver was used, simply to make adjustments here easier. Two rods are made up, each overlapping the other by an inch or so. At the overlap, two 1/8-inch wheel collars cinch down on the 1/16 rods.

Gear life on pan cars has always been a problem as the gear hangs down below the pan and gets whacked once in awhile. John made a gear protector, which is simply a machine screw bolted to the motor pod as close as possible to the gear, the head of the screw on the bottom of the pan. It was necessary to use washers under the head of the screw to get the desired height. This screw takes a lot of abuse, especially on rough tracks, so it has to be replaced once every few races. The good news is that once we got the clutch, brake, and idle settings right (we melted a couple gears from a too-high idle), John didn't have

Due to using the older type of Delta slide-valve, which uses two separate needle valves, we needed two feed lines from the tank, as a simple T fitting in a single line will not work. John just tapped into the molded-in fuel passage in the tank, just below the stock outlet. This works fine. However, just the other day I had reason to cut into one of these tanks and found out that there is an identical internal fuel passage on the left of the tank that could have been used, even though it doesn't have a built-in filter and does not extend all the way into the sump.

By DAN RUTHERFORD PHOTOS BY AUTHOR

John had quite a lot of trouble with the disc brake, to the point that we were very seriously considering making our own unit. However, it turned out that I wasn't remembering everything I thought I knew about brake systems. The problem was that the brake was super-critical to adjustment, and that the "just-right" setting was very narrow. This was compounded by the fact that



Okay, so it's not the prettiest picture I've ever taken, but how else would you do it? What you are looking at is Kraft's new line of show-biz wheels for off road cars. Lotsa chrome!



The brake actuation spring on this RC150 proved to be too heavy for the job, so a lighter one was substituted and the disc brakes were much better.

John had yet to learn that a light brake is best for most tracks, and the only way to go at our club track. So he wanted lots of brake, but was usually getting too much. We finally solved the problem by using a much lighter spring between the brake arm and the adjusting nut on the brake actuation rod. The one originally used was simply too stout, the light number nicely broadened the brake setting to where it was no problem anymore.

We had another problem which was, again, due to my not paying more attention. John insisted on using way more brake than he should have; every time I would tell him to lighten the brake, he told me the car wouldn't turn well enough that way. All the time I was assuming he had the right tires for our track (stock Associated rubber in the rear which is just OK, and Associated medium molded fronts, generally the best bet for this type of car). In fact, he did have these tires on the car, but I was certain I had also done up some Associated soft molded fronts for him, and that if he needed more steering he would have slipped them on the car. Wrongo! So after suffering through understeer the first few races of the

season, we finally got out heads together, put a set of soft fronts on the car, and now it turns well enough to once in awhile need some steering throw taken out. John is slowly cutting back on the brake.

Before you make the wrong assumption here, you should know that our club regularly uses quite a lot of VHT on race days (Very High Traction is literally a glue used by drag racers for more traction at the starting line), so the traction is quite good. As I write this, I have the RC150 here at the house, and now I notice that for the last race John slipped on the stock cut-foam tires that came with the car. I have never cared for those particular tires, especially on a solid-axle car, but they did the job last weekend. Seems like once 1 figure 1 know all there is to know about RC cars, somebody uses something I know won't work ... and it does work!

The humongous rear bumper looks pretty ugly, but it works and is needed to protect the muffler which can be crumpled in a nasty rear-ender. Notice that one of the older can mufflers would bolt right on the bumper, in fact, we intend to install a can sooner or later.

About the only other mod from stock is a recent one. John had finally ground most of the screws common to the undersurface of the pan down to almost nothing and replaced all with new screws. This involved countersinking the pan, however, he went a little too deep with the countersink, and used ovalheaded screws. I see that in the last race the front end took a healthy whack, and that one of the screws holding the crossbar is close to pulling through the pan. A new pan is on the way; next time I'll countersink the thing myself (I have a drill press and John doesn't), and proper aircraft-grade flat head screws will be installed.

SO HOW DID IT ALL WORK?

The basic chassis has been very reliable, much more so than I would have thought originally (after all you are supposed to get what you pay for, right?) and when all the Good Times racing is stacked up against the price of the car, the RC150 is easily the best buy available in 1/8 racing, even if not up to the performance level of today's suspension cars. It is possible to break this car, just as it is with any race car, but John hasn't had any breakage, no bent axles, no problems with the motor and its mounting blocks coming adrift, no broken wheels or any of that race-ending stuff. I am sure that use of the MRP clutch assembly and its needle bearing has avoided a few problems and it is highly recommended.

As for handling, it did take a few races for John and I to get it sorted out. This process was complicated by the brake problems, as well as my assumption that he had on hand a selection of front tires, John's lack of experience at 1/8 (this is his second year of racing), and a severe lack of communication at the track. It's not that we don't talk; we do. And we pit together. However, I am nearly always running at least two cars out of my pit area, plus helping others at the races, and John is just independent enough to want to try things his own way more often than not. The bottom line is that we should have been able to get the car well sorted out two or three races into the season, where it actually took twice that

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Two new goodies from Associated: super flexy wire for 1/12 installations, and a lifetime supply of modified motor tape.

More Associated goodies: 1/12 and 1/8 size wheel and tire combos. This rubber gives better traction, comes in three grades of density. **By DICK HANSON**



Dave Stuart and Bob Gustin (right) hold three models, all powered by O.S. ABC .61s: the CAP 21 (far left), Dalotel (No. 16871), and Tipo.

• We would like to start this month by jumping into our preliminary tests on the new O.S. 1.2 cubic inch singlecylinder four-cycle engine. It's half of a Honda motorcycle engine disguised as a model airplane engine. At least that's what it seems to be.

The reason for our anxiety has been our desire to find an alternate to the O.S. Gearbox engine. The Gearbox is a fantastic machine, and the possibilities of a four-cycle engine which would approximate the power output seemed remote.

Before we get going, I must preface the test results with some facts about the Gearbox engines that we are using.

We use tuned pipes in order to extract maximum power and eliminate the power loss that occurs at high altitudes. The pipe acts as a supercharger so that we get about the same power at 7000 feet as we get at sea level ... at least that's what our tachometers tell us. Of course, the efficiency of the props and airframes at different altitudes changes, but if we keep the models light, the changes are not a problem.

A second fact about the Gearbox engines is that the gear ratios used dictate the prop size and desired model size, weight, and speed. Basically, you use the 1.4 gear with a smaller prop, say 13 x 8 to 14 x 10 with lighter, smaller models such as our 920 sq. inch C.A.P., which weighs 9 to 11 pounds.

The 1.9 gear engines take care of larger birds having up to 1400 sq. inches and accept propellers such as 15 x 10 or 16 x 10 very nicely. The 1.2 cubic inch four-cycle, on the other hand, is normally aspirated (no supercharging), and as such, will suffer from high altitude power loss just as any other engine, two or four-cycle, will suffer if there is no provision made to increase the size of the mixture or the potency of the mixture used for fuel.

Well, that's pretty academic stuff for

most of us, but if we want to fairly compare the potential of each basic design, we must look at all the possibilities.

It looks like the cards are stacked in favor of the two-cycle, tuned exhaust, twice the number of power strokes, years of refinement, etc. On the other hand, we have the inherent higher torque possibilities of the four-stroke. This is because the engine gets a full, fresh charge of fuel each cycle and the exploded (burned) fuel is allowed to push the piston through a *longer* portion of the stroke.

Well, the O.S. 1.2 has some very nice engineering work in its design which lets the air (fuel mixture) flow in a fine fashion. Also, the materials and assembly are absolutely first rate. The only thing I can see which could have *possibly* added power would have been the addition of a timed spark ignition. We will doubtlessly see someone try this. (Otto? wcn)

lying

All of our tests are done here in high and dry (well, sorta dry) Utah, at 4300 feet elevation and low average humidity. So that we could insure no damage would occur through overheating, we took the precaution of using very oily (20 - 25%) castor/synthetic fuel having about 15% nitromethane. The bottom line here is that you should be able to get as good or better results from this engine than I have obtained.

The first test was to bolt on a stock 14 x 8 Zinger prop and try to establish a feel for the correct needle valve setting. The engine started with the first slip and after some rather obvious rich, fullthrottle running plus various midrange settings, we tweaked the needle expect-

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O.S. four-stroke and Wankel are mounted on author's scientifically engineered engine test stand. Author reviews the O.S. engine this month with surprising results, see text.



TAYLORCRAFT

By HOBIE CLAY... If you are looking for a Peanut to compete with the Laceys and Fikes, here it is. Properly balanced and trimmed, the Duane Cole Taylorcraft flies with the best of 'em!

 Duane Cole has been flying airplanes forever. In the years before World War II he was an aerobatic competitor and was US National Champion in the mid-30's. An author and teacher, he's still very much in the middle of things. He attends the big EAA fly-in at Oshkosh, Wisconsin, every year and does his aerobatic routine. He also books in to air shows around the country to take part and put on a show for the spectators. He does this in a much-modified, 1938 Taylorcraft which is the subject of this article. I have been fortunate to watch him at the annual air show and fly-in at our hometown airport, chat with him about the ship, and get some measurements and photos.

The model is drawn as it appeared on June 7, 1981, when I last saw it. Duane is constantly modifying the details and told me the next change would be to enlarge and strengthen the old fashioned trim vanes at the tail post under the stab. His short-wing modification allows the scaled-down Peanut to have a much longer fuselage than the barn door version originally designed by Gilbert Taylor.

The lightest and simplest model plane fuselage can be made by building the upper side stringer into the framework. After the sides have been fastened together at the tailpost, they are first connected with cross-members at this stringer long enough to obtain the widest width shown on the top view. The top longerons are then pulled together and connected with the shorter members shown. The bottom longerons are similarly connected last. Doing it in this sequence best preserves the wing/ stabilizer relative incidence angles. Now smear a little cement around the upright stringer joints to stiffen them. When the fuselage has been finished,



Cole's T-craft Peanut is covered in red and white tissue. Reg. numbers are rub-ons.

covered, and dope has cured, the center spreaders starting from the wing trailing edge to the tail can be removed to keep the tail end light and allow the rubber motor to thrash around a little.

Patterns for the three fuselage top formers are traced from the front view and cut from 1/20 sheet. Sheet the top of the cowl all the way to the instrument panel and the sides back to the first upright. Very soft balsa can be used in lieu of foam for the bottom cowl and nose blocks. If a source for good, dense-textured styrofoam is hanging you up, try using supermarket meat tray material sanded flat and laminated to thickness with white glue. Seal it well with several coats of diluted white glue before covering and using any dope or paint to prevent solvent attack. The side and bottom stringers can be put on. The top stringers go to the rear wing spar and are not put on until the wing and rest of the fuselage are all finished and mated together.

Scale rib spacing is shown with the top leading edge sheeting. Strip ribs help hold down weight. The nose is relatively short, so the tail feathers should be kept light. I vacu-formed the wheel covers and turned the wheels from foam. This is easier for me, and gives me better assurance they will be the same. Both can, of course, be made from balsa. Wheel covers must be kept thin to stay in scale.

The prop shown is an inch too long for take-offs but is needed for decent flights. A plastic prop can be used but the pitch can't be easily changed by steaming like this one can. Blades should be twisted to approximate helical pitch by soaking and wrapping on a two-inch diameter can or bottle at about fifteen degrees forward skew and baked dry. Block up the leading edges threefourths of an inch at two inches from the center to get initial eight-inch pitch. I find the blades can best be tacked to the hub with Ambroid while held in the pitch jig and the joints reinforced with a little epoxy. Nose thrust bearing and rear motor peg are 1/16 aluminum tubing.

Cover with lightweight white and red tissue, and dope one coat of nitrate thinned fifty percent and plasticized with a few drops of castor oil or your favorite retardent. The lettering and scallop trim are cut from red tissue, the 1/32 wide control surface and cowl panel lines from black. Set into place with acetone on a small brush. Tail numbers are black, 10-point rub-on style. I line them up on clear "sticky-back" mylar, trim closely, peel off the backing, and set them in place.

Don't forget to put on the black antiglare panel on the cowl behind the windshield and build-up the 1/32 round

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Here's a sneak preview of Walt Mooney's next Peanut project. Stay tuned!

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See page 95 for a partial list of Peanut plans available from MODEL BUILDER





AFTER: The Saulsbury Nieuport after repairs performed by Frank and Chris Scott. Here Chris prepares to send model aloft on an official flight. Frank Scott photo.

• Our lead-in line this month was seen on a passing dump truck, and may be open to various interpretations . . . but from our hobby standpoint, might be considered to be a reminder to consider the REAL reason for our efforts! **OUR HANGAR LOGO**

Gerald Myers, of Redway, California, feels that the little drawing at the top of this column should have a caption. The gentleman in the greatcoat is saying: "Emile, it appears that your dieting has failed, and we must stengthen the landing gear."

BILLS, BILLS, BILLS

Nope, we're not talking about the budget-busters we all receive each month through the mail, but rather, the names of so many model builders. At the risk of slighting many other *Williams*, here's a list compiled easily: Bill Northrop (ye olde editor), Bill Forrey (**MB** production manager and "R/C Soaring" columnist), Bill Winter (former editor of many model mags), Bill Watson (of Gossamer Albatross fame, as well as models and the flying R/C pterosaurs in "War Games"), Bill Bishop (founder of Comet Model Airplane & Supply Company), Bill Brown (of Brown Junior Motors), Bill Chana (who builds display



BEFORE: Badly damaged during shipping, this Nieuport monoplane by Brent Saulsbury was an entry in the West Baden, Indiana, indoor meet. Frank Scott photo.

models with Walt Mooney), and well, you get the general idea.

In the California Flightmasters Scale club we find Bill Warner, Bill Stroman, Bill Krecek, Bill Noonan, as well as outof-state members Bill Caldwell, Bill Pardoe and Bill Harris. And probably others, who will forcefully remind *this* Bill of my oversights... **TYPO OF THE MONTH**



Dave Rees launches his rubber powered Bristol Brownie ultralight. Photo by Tom Schmitt.



Robert Howard's fine-flying rubber powered Albatros D II placed third in a recent Mile Square scale contest.





This beautiful Peanut Bell P-39Q built by Lubomir Koutny, of

good to see this kind of international cooperation.

Czechoslovakia, was proxy flown in France by Roger Aime. It is

Mark Smith's "Panic" R/C FAI/F3B glider, constructed for the World Championship in York, England, in less than two weeks, including F/G molds! Late news – Mark finished 7th out of 65.

Typographical errors are a bugaboo to any publication, and we've had our fair share over the years. But we thought the creative spelling in a recent *Airpower Museum Bulletin* deserved some sort of prize. In it, the 1911 French monoplane in the San Diego Aero-Space Museum was described as a "DUPPENDUSION" (sic!).

FAREWELL BUCKY

The world has lost one of its most creative citizens with the passing of R. Buckminster Fuller, possibly the nearest thing to a universal man since Leonardo da Vinci.

Well-known for his geodesic domes, Fuller's most important role may have been as a philosopher who tried to show that properly employed technology could solve most of the world's problems, such as hunger, housing and energy shortages; a proposition unfortunately opposed by the majority of Earth's governments. As Bucky so succinctly put it: "Politics will have to go."

A prolific author (25 books), inventor (about 2,000 patents), lecturer, poet, mathematician, and map-maker. Fuller frequently applied aeronautical theory and fabrication techniques to such diverse design fields as housing, ground transportation, and climate control. Philosophically, his "Spaceship Earth" concept may have been the most farreaching in its implications. As early as the 1920s, he proposed workable solutions to most human problems. Rest in peace Buckminster Fuller, your concepts will live on. **SOPHISTICATED SOARING** We had the pleasure during July of watching Mark Smith practicing for the world R/C glider championships. The model he was flying is called PANIC, an apt name considering that it was fabricated in only two week's time, including the fiberglass molds! Current FAI F3B gliders are remarkably advanced, fast, and heavy. Mark's weighs about 5-1/4 pounds, yet is capable of still-air durations in the neighborhood of five minutes.

Part of the explanation of such high performance may be found in Mark's piloting skills, of course, as well as in the aircraft design and execution. However, some of the credit is due to the type of winch employed for launching. These electric catapults have been dubbed with various sinister-sounding labels, such as "Gorilla Winch", and have been the subject of much controversy. The speed and altitude they impart to a glider simply must be seen to be believed. The stresses they impose on the aircraft are reflected in the massive steel wing-joining rods, super-strong structures, and even in the large diameter monofilament launching line, which appears adequate for shark fishing!

To one accustomed to stick and tissue models, such a glider seems impossibly heavy. Yet, the proof is in the results achieved. Our thanks to Mark Smith for this most convincing demonstration. TALKING ELEPHANT?

Need an appropriate mascot for your next Peanut Scale meet? How about one that can also serve as an announcer? Well, according to reports from Moscow, the Soviets have a baby elephant named *Batir* that talks. The critter, with a claimed repertoire of some 20 phrases, was hand-raised by humans, and it is understood that tape recordings are being made available to help convince

LOW PRESSURE FUN

the skeptics. .

Walt Mooney conducted one of his popular outdoor contests for Bostonian class models on July 4th. In keeping with the patriotic theme, each model was required to display some kind of American flag, and some clever entrants complied with this rule by simply pasting 20-cent flag postage stamps onto their models. Airmail, anyone?

Another innovation was a mass-launch event in which any sort of free flight model was allowed to compete. The lineup included everything from detailed scale models through sport jobs and hand-launched gliders. How could such a conglomeration compete fairly? Easy. Mooney merely announced that in

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Two Dornier pusher-pullers - winners in the Jacques Pouliquen Memorial contest. Note that one is a two-seater, the other is a single-seater. Models and photo by Emmanuel Fillon.

NOVEMBER 1983

Zany Doc Martin with his Peanut scale Fabre, the world's first successful hydro-æroplane. Photo by Frank Scott.



Well, well, back in July, I ran a short feature on the puzzle I was having on the identification of the "real Goldberg G-5 airfoil." Riding to the rescue with reams of information was Phil Hainer, the proprietor of Flite Rite Models and long time student of Goldberg airfoils. Phil straightened me out quick. Sez he,

"The G-5 was used on the Comet Mercury and Zipper free flight designs. The Sailplane used the G-6, and the Cumulus and post-war Zipper used the G-610b."

He goes on, "I don't know what airfoil you printed in the July issue, but it wasn't the Sailplane (G-6) section. The G-6 was intended to be used only with false ribs ... no turbulators or sheet leading edge. It can be distinguished from the other Goldberg sections because it has a thicker front section and a flattened trailing edge. In addition, it has a rounded (almost double-ellipse) leading edge. The G-5 is thinner at the front and the trailing edge is not flat. The G-610b is thinner yet, and it is intended to be used with a sheet leading edge."

My conclusion: John Malkin's book is wrong. John lists the airfoils as the Goldberg G-5 and the Zipper airfoil, separately. In fact the G-5 and the Zipper are one and the same, and the airfoil he lists as the Goldberg Zipper is in fact the G-6, which he described earlier, is the airfoil used on the Sailplane.

by Bob Stalik

To straighten out all of this confusion, I present to you two corrected Darned Good Airfoils this month: The Goldberg G-5 and the Goldberg G-6.

NOVEMBER DARNED GOOD AIRFOILS Goldberg G-5 and G-6.

The G-5 preceded the G-6 and was used on the highly successful Goldberg Zipper...the most renowned free flight model of its time. Its forte was its ability to handle large amounts of power and fly well flight-after-flight. By today's standards, it is pretty thick. It is, however, an excellent gliding section. It must be used with false ribs and be sheeted or turbulated for best effect.

The G-6 is the airfoil used on the stately Sailplane . . . perhaps the model referred to most frequently when the word "glide" is mentioned. This airfoil is very similar to the G-5, but is a slight bit thinner overall. The flat trailing edge was allegedly a concession to easier building. Once again, the leading edge is intended to use false ribs. On the original, these ribs were spaced along the leading edge at one-inch intervals. Similarly, this section is thick by today's standards, but the payoff is a glide that has placed this model (the Sailplane) and this airfoil firmly into the legends of our hobby.

Incidentally, the Zipper and Sailplane both used the wing airfoils in the stabilizer as well. I believe that modellers who are designing free flights cannot overlook the potential in these two sections, particularly when constructing ships that are apt to fly with the same wing loadings as these two classics.

PS: Malkin's book also has an airfoil



Author's rendition of the Hutchinson Deja Vu. Site is Hart's Lake Prairie, Western FAI Challenge. Ship is powered by a Cox Conquest .15.

labelled as the G-6. It is a section that is not from any model that Phil Hainer was able to locate. Can anyone identify it?

Mystery solved, so help me Mike Hammer, private eye!!

NOVEMBER MYSTERY MODEL

It was years ago, but I built this ship as my first Jetex 150 model because the full size patterns appeared in the magazine. The name attached to it by the designer or the publisher was eminently forgettable, but I named it Jet ExLax just to have some fancy tissue trim to put on the wing. Once I conquered the frustrations of getting those blankety-blank motors to work somewhat consistently, I found that the Jet ExLax actually flew. If you know the name of the design and are the first one to send it to Model Builder's editorial offices, Bill N. will forward to you a nice prize in the form of a free subscription to his and my favorite model magazine.

THE PANHANDLE — NOVEMBER THREE-VIEW

Al Grell is one of those free flighters who every active club should have. He is skilfull and meticulous in what he does. He volunteers to do many times his



Formation crash! Interesting crop of FAI power models grows in author's backyard. Front model is the FAIman V, front left is the Olofsson Korla Plankton (*MB* plan), three Deja Vu models, right.



Tom Cashman, of Federal Way, Washington, prepares to give his Bob White inspired Wakefield an energetic send-off.



Off she goes! Author sends his Deja Vu on its maiden flight. Turns out to be a good flier. Site is Harts Lake.

share of the tasks, and in the Northwest, he and his wife, Dee, are well known for their hospitality at contestants. On top of all of this, he is a good gas model flier.

Al served as my mentor and inspiration when I first moved to Albany, Oregon 23 years ago. Much of my progress as a designer and flier came under his tutelage. It didn't hurt that he had a farm of about 140 acres that could be flown on about 8 or 9 months a year. It became a prime test site for the latest designs.

Several years ago, after talking over the characteristics of good A Gas models, each of us went our ways to try our respective hands at coming up with our own designs. Al took the route of modifying a well-known and successful design, the Texan, by Ed Miller.

The result is the Panhandle ... so named to remind one of the Texas derivation. The changes are a longer tail moment arm, a rear fin, the use of thinned (to 9%) Ram Rod airfoils, and power is a Cox .15 Special ... the last of the lightweight T.D. style Cox engines.

The result is a model that has a very rapid rate of climb (as the Cox has about twice the power of the K&B Greenhead .09 that powered Ed Miller's original). All other features of the Texan remain largely intact. As Al readily acknowledges, he has a tendency to build a little



NOVEMBER MYSTERY MODEL

overweight, so the Panhandle is probably 2-3 ounces on the heavy side.

In my observations, this ship climbs with the best of them ... with a slight right spiral in the 9-second engine run, and then a transition that actually gains altitude. The right glide pattern is bouyant thanks to the Ram Rod airfoils, long tail moment, rearward C.G., and huge stab.

The three-view as presented gives enough of the information to build the model. It's a good one.

HUTCHINSON'S DEJA VU REVISITED

In the June issue of **Model Builder** Free Flight, I casually mentioned that someone ought to build the Deja Vu, as Hutch didn't have a chance to do so before he died. Since then, I have completed my version of his ship. I can say from experience that the model flies well, and came outright on the proposed weight with the correct areas. Mine is powered by the Cox Conquest .15 mounted on a Tatone mount. The timer is a modified K-Mart as described in the August issue. Nice ship. Have you started yours yet?

AMA MUSEUM ACCEPTS NFFS MODELS OF THE YEAR

The Ultimate Dragmaster and the Maverick 1/2A Model were both NFFS Model of the Year award winners. Both of these Tom Hutchinson designs have been accepted into the new AMA Model Aeronautics Museum.

1983 NFFS MODELS OF THE YEAR

Speaking of Awards! The National Free Flight Society has announced its winners of the 1983 Models of the Year. These awards are made annually in conjunction with the presentation of the Symposium papers at the AMA Nationals. Winners are shown elsewhere.



Business end of the Deja Vu. Note K-mart timer, engine and engine mount details. Kerr brake and NFFS skid used.



Tail feathers of the Deja Vu. Photo shows installation of Crocket VIT arm and use of Olofsson style stab mount.





Three-quarter rear view of the author's Deja Vu.

Copies of the Symposium Report, including the above mentioned designs are available from Fred Terzian, 4858 Moorpark Ave., San Jose, CA 95129. The cost is \$10 and well worth the price.

NFFS 1983 MODELS OF THE YEAR AWARDS

INTERNAT	TIONAL CLAS	SES:
F1A	Matt Gewair	n Pacer 14
F1B	Alain Lande	au
F1C	Adreas Mec	xner Delfin
AMA POV	NER:	
Small	Roman Ram	irez Cargo
Large	Hal Woods	Summerwind 744
	Doug Galbre	eath
HAND LA	UNCHED GLI	DER:
Phil Hai	ner Jr.	Kwik Flip II
Phil Hai	ner Sr.	
INDOOR		
Stan Ch	ilton	Sweet 16 EZB
UNLIMITE	ED RUBBER:	
Bob Wh	nite	Ulimited Unlimited
SCALE:		
Don Sru	ll	Santos Dumont
SPECIAL:		
Ed Dolb	у	FAI Rubber

NFFS MEMBERSHIP

While I'm at it, I might as well plug membership in the NFFS ... the only organized voice for Free Flight in the U.S. of A. Some contest operators give a reduced entry fee to NFFS members . . . a good practice to imitate. Anyhow, if you are not a member, you should be. Send \$15 to Don Hughes, 8383 Zancanaro Ct., Citrus Hts., CA 95610. He is the membership chairman. Besides making you a good guy, membership brings you a membership card, a set of NFFS decals, an excellent and high-class newsletter edited by Bob Meuser, and an opportunity to influence the direction of our favorite hobby-sport.

THE END

Now, as you face the winter months, one thing should be clear ... you procrastinated your way through the best outdoor flying months of the year, and if you wait long enough, it's going to be spring again. You can participate in the indoor scene for the next six months, but you should also do more than plan



Ted Stalick is half-way through a launch in this photo. Scene is the Western FAI Challenge. Model is Hatschek SkyScraper.

for the next outdoor season. How about building something that you can trim and fly? Try the Panhandle or the Deja Vu or something. Just finish this issue of Model Builder and go out into the shop ... oh, it's 10:30 already ... well, there's always tomorrow ... or the next day. Thermals!!!

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UPPER	1.65	4.26	5.35	6.82	8.02	8.92	10.3	11.04	11.6	11.28	10.34	8.86	6.72	4.6	2.15	0.96	0
LOWER	1.65	0.29	0	0.14	0.46	0.78	1.2	1.55	2.16	2.48	2.48	2	1.48	1.01	0.58	0.26	0
	DA	BNE	D GC	OD A	IRFO	DIL -	GOL	DBE	RGG	-5 🔺	GOL	DBE	RG G	-6 🔻			

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STATION	0	1.25	2.5	5	10	20	30	40	50	60	70	80	90	100
UPPER	1.5	3.8	4.9	6.5	8.4	10.6	11.4	11.35	10.6	9.1	7.3	5.3	3.05	0
LOWER	1.5	0.3	0	0	0.06	1.5	2.12	2.28	2.3	1.9	1.45	0.76	0.3	0



• Having devoted the last column to contest results at one meet, it is time to take a look at what is going around in other parts. First, I would like to thank those who took some time to write and offer comments. Whether you have questions (make 'em easy!), comments, opinions, or what-have-you, keep those letters coming! Again I solicit your club newsletters.

Bob Furr is the newsletter editor for the Orbiting Eagles of Greater Omaha. He writes to say that control line is alive and well in Omaha, Nebraska. Here are a couple of tidbits from his newsletter:

By MIKE HAZEL

PHOTOS BY THE AUTHOR

Murphy's Law of Model Designs: Your buddies always think your designs look like someone elses.

Corollary to Murphy's Law of Model Design: All great designs are created by accident... and destroyed by the same method. (amen to that —mwh.)

And here is Bob's summary of excuses not to attend contests:

The contest season has started. Support clubs holding contests, or eventuSpeed action! Chris Sackett starts up Keith Loutecky's D Class ship. Ear protection is a must with ST .65. (M. Hazel photo.)

ally there will be no contests to attend. Here is a list of excuses for not attending contests that I have heard in the past, and my reaction to them.

The weather isn't very good in that town ... (It's the same for everyone.)

I died . . . (Very good excuse, but you can only use it once.)

I never flew in a contest before ... (Everyone has to start somewhere. Come on out and have some good clean fun.)

I was sick . . . (Glad I wasn't sick. Hope you get well soon. Hope you weren't sick of being beaten.)

I can't beat Joe Blow because he won the NATS in the event I fly...(You never will either, if you don't at least try.)

It's too far away . . . (Fine, as long as you don't expect people from that town to come to your contest.)

No one from that town came to our contest, so I won't go to theirs ... (If everyone thought that way, there would soon be no contests to attend.)

I had to work . . . (Very good, glad I didn't.) (Is this guy a professional contestant? — mwh)

I don't like John Doe who's in their club...(Go anyway. There will be lots of other people there.)

You probably have heard or used some of these yourself. If you have some good ones, send them in so I can share them with the rest of the readers. I am sure we can come up with an appropriate prize for the best one.

Next we rip off from the RAMS newsletter, edited by Raymond LeFrancois, of Christianburg, Virginia. It sounds like they have had a flying site problem:

"It seems to me that the biggest question is when are we (AMA) going to wise up and make mufflers mandatory for each and every activity? We (RAMS) have already lost the best site we ever had at Salem High School because of excessive noise (and everyone of us agreed that it was excessive). Is the museum next, or Madison?

Sure, this particular problem is R/C related, but it would be folly to assume



Jerry Thomas' new experimental assymmetrical jet speed monster. Flying surfaces face inside for less drag. Model takes off on drop-off dolly. Note that the control surface is on the wing . . . no elevator at all! (M. Hazel photo.)

MODEL BUILDER

that it is not our concern also. The fact is that all unmuffled model airplane engines make noise that is loud enough and of a pitch that annoys the heck out of a lot of people. It isn't music to everybody.

As it directly relates to us: I can't think of one single CL event that couldn't be run just as well with mufflers, even the 1/2A stuff (except for Jet speed! mwh). The West Coast control line group (WAM) has been doing it now for years. They fly the same type of events that "we" do: speed, racing, combat, carrier, etc. They didn't kill the sport. They did something about our biggest problem, and they enjoy the benefits... more places to fly and the knowledge that they are not subject to being run off because of an unwholesome image. Let's face it, seldom are we much more welcome than a bunch of Hell's Angels."

There has been a lot of writing on this subject of noise control over the years. The problem no doubt becomes very real when YOU lose a place to fly your planes. In general, our R/C brethren lead the way in engine noise suppression. Even there, I hear of problems with a number of so-called mufflers which do little more than direct the exhaust away from the engine. This is not to take away anything from the many fine units that are on the market.

A number of years ago, I tried a muffler on a .35-size sport plane. Would you believe the quieting effect was nil? I knew this to be a fact as the engine noise tone did not change noticeably when the muffler fell off during one flight.

The way to circumvent the "cheater" mufflers is to enforce decibel rating regulations. I will be the first to admit that I do not like a concept like this, however, being one who does not like to see things over-regulated. But if push comes to shove, or in other words; no noise standards, no flying site; I guess it would be a matter of going with it, or quit.

A big concern with total enforcement is how will it be made effective? In an organized activity, it may sound fine, but



Class A Combat entry seen at a recent Sacramento W.A.M. meet. Power is a Cipolla .15. Note safety cable to engine. (Bob Kampmann photo.)

how much of the flying activities are organized? The minority of the flying action is in competition, leaving the rest of it to the sport flyer. A lot of sport flying is within the regulated confines of club rules, but a lot isn't. That is where things could be ruined for all by a few, and it certainly has happened before.

My personal feelings are that I wish we didn't have to bother with muffler regulations at all, and leave their use subject to local needs. There are several remote area flying sites where the noise just doesn't matter. But I do understand that it isn't so everywhere. It is too bad that we cannot count on all modelers to exercise courtesy and common sense in regard to how our noisemakers affect the heathen public. Your thoughts and comments would be most welcome on this subject.

Edward Bono writes in to tell us: "The X-Cell team, sponsored by X-Cell Models, will hold its second Annual AMA sanctioned All Scale R/C and CL AAA Meet, Saturday and Sunday, October 1st and 2nd, at Kearney Field, Lexington, Kentucky."

According to Ed's information, there will also be competition for CL precision aerobatics in addition to the scale flying. There will also be a swap shop for the modelers, and manufacturers are invited, too. If you see this in time, contact Lew McFarland, 3404 Keithshire Way, Lexington, KY 40503, or phone at (606) 223-2368, for more information.

Across the country on the following weekend, there is another major annual meet, or actually a double meet. On October 8th, the "Old Timers Fun Fly" will take place in Portland, Oregon. This event will include Old Time Stunt, displays, and demonstrations of genuine historical models. The contact for this is CL historian and Fireball enthusiast, Frank Macy. You may reach him at 5200 SE Jennings, Milwaukee, Oregon, or call

Continued on page 77





Jim Lee and his son, Todd, used a gyrocopter for balloon bust event. Bob Furr took this shot at the 11th annual meet in Omaha, Nebraska. Bob Furr is the newsletter editor for the Omaha Eagles.



Control Line Combat is what it's all about at the Bladder Grabber. Here we see a C/L combat model gliding in for a landing with its streamer intact.

1983 BLADDER GRABBER

By RICH VON LOPEZ ... Control Line Combat is alive and apparently quite well as evidenced by this report of the 1983 Bladder Grabber. With prizes worth \$5,000.00, it's not hard to see why! (Whatta name!)

• Combat flyers are dedicated aircraft modelers. They are continually building and upgrading their equipment. Repairs never end, nor does the cleaning and assembly of engines. The rewards for all this ettort are skimpy, save for one contest, the Bladder Grabber.

The Bladder Grabber is the brain child of that electronics genius, Bob Carver. Bob is the owner of the Carver Corporation that produces high-tech stereo equipment. Not that stuff for the masses, but components for the real aficionado of exact musical reproduction. Bob started the Bladder Grabber eight years ago. It takes place in beautiful Seattle, Washington in July. The current prizes for this contest are \$5,000 worth of Carver stereo components. That "bait" (as Duke Fox called it) is enough to draw flyers from California, Michigan, Texas, Utah, Oregon, Washington, and from the neighboring country of Canada.

This year, Carver invited Duke Fox and Combat World Champion Tom Fluker, Jr., to the Bladder Grabber. Yes, he did pay for their airline tickets. Everyone else brought their best equipment on their own. Steve Kott and Ed Bryzs came from Detroit. Mike Petri, John Salvin, Sr.



"Won't start, eh? You try spittin' on it yet?" Caption contest anyone? Willie Naemura holds model as Norm McFadden scrutinizes. Jim Womack and John Salvin, Jr, background.



Mike Petri had a good Saturday with a 4-0 record.



Jarl Boles, Utah, went around testing wings and stabs for contestants. This one failed.



Greg Hill flew this monoboom design in the Bladder Grabber.

and Jr., Matt Rodriguez, Max Boyd, Greg Hill, Myles Lawrence, Rich von Lopez, and Dr. Chuck Rudner were the Californians. Jim Womack and Jarl Boles drove over from Utah. Gene Pape and John Tompson came from Oregon, Pat Wilcox and Tom Fluker, Sr. and Jr. were the Texans. Davis was the Canadian. The state of Washington was defended by Howard Rush, Norm McFadden, Bob Carver, Willie Naemura, Ed Byerly, Phil Granderson, Richard Salter, R. Birch, G. Birch, M. McConnel and a couple of others whose names I did not get. There were 30 entries. Bob Carver invited all the flyers to a restaurant breakfast on Saturday morning. This was also the time to take care of the contest paper work. The stage was set and the weather was clear. On with the show.

Carver drew the World Champ in the first match of the first round and put a



Steve Kott finished 2nd ... and it only cost him six of these models.



Jim Womack's C/L combat job. Note the rather expensive, but



Close-up shot of Jim Womack's rig. Note Rev-Up 9-6 prop, TWA engine, missing fuel line.

kill on him. No fluke! Four rounds were flown on Saturday and only three flyers were clean at four wins and no losses. Using a triple elimination format, a 4-0 record is a real good place to be. Mike Petri, Steve Kott, and John Salvin, Jr. were the ones with the hot handles.

On Sunday, the top guns were being knocked out. Granderson, McFadden, Carver, Pape, Rush, Hill, Lawrence, Fluker, Wilcox, Petri, and Salvin, Jr. all fell away. Four flyers went into the semifinals with records of 7-2. Kott, Bryzs, Rudner, and von Lopez all had a chance. Teammates Kott and Bryzs had to fly against each other, as did teammates Rudner and von Lopez. Kott and Rudner were victorious and went to the finals. Rudner beat Kott who had to borrow a



Duke Fox checks out one of those expensive Neamura models. Only \$150, American!

model as his six original models were damaged. These top four were rewarded with enough stereo equipment to make the trip worthwhile.

NOTES OF INTEREST

Tom Fluker, Jr. had a model fly away and land on the nearby beer warehouse. It took the fire department to get it down. The fastest models were those of Rush, Lawrence and Carver. Greg Hill has the talent to win, but needs more uniform equipment. None of his models were the same. Bob Carver buys his models from Willie Naemura for \$150 a copy, and let me tell you they are real gems. "Too beautiful to fly combat with!" says Bob. The top four places went to foam models. This may be the first contest that I have been to where



Bob Carver (left) presents Dr. Chuck Rudner with his winnings. Not bad for flying model airplanes!



Minor engine damage can result from head-on crashes. This one will never see action again.



1977 Junior Nationals Fast Combat Champ is still at it. Matt Rodriguez, Clovis, Calif.



Tom Fluker hurt that one! It's all part of the game, though.



Rich von Lopez' remote needle valve setup.



RELIABLE ENGINES AT REASONABLE PRICES Midwest Model is the source for: IRVINE ENGINES FROM ENGLAND H.P. ENGINES FROM AUSTRIA COMPLETE STOCK OF SPARE PARTS COMPLETE SERVICE FACILITY Dealer Inquires Invited WRITE OR CALL FOR MORE INFORMATION **MIDWEST MODEL** SUPPLY CO **MW8822**

there were more foam models than wood. Foam kills were happening all the time. That is when the string leader of the streamer cuts through the foam, goes back to the spar and snaps. It's too big an advantage to ignore. Womack was using TWA engines. Greg Hill and Bob Carver had Hoffelt engines. Both the Hoffelt and TWA sell in the \$150 to \$200 range. Almost everyone else ran Foxes

We heard some interesting stories from Duke Fox about how he started in business with a partner (Arnold), and how his family mortgaged their home to buy the business outright.

Tom Fluker, Sr. and Jr., Duke and I were treated to a demonstration of Bob's Sonic Holography stereo system. It makes you feel as though you are in a concert hall.

The Flukers and I toured Seattle a bit. had lunch at the Space Needle, took a monorail ride, and bought cherries at the Peoples Market at the wharf. We ate a lot of cherries at 59¢ a pound.

Norm McFadden gave me a quick tour of the Carver factory. It employs 85 aircraft modelers would like to have a sponsor such as Bob Carver. Thanks! •

Hannan Continued from page 55

honor of the date, the 4th model to land would be declared the winner, and in this case, that happened to be Warren Shipp's autogyro.

Winner of the main Bostonian category was Charlie Yost's all-balsa Boston Termite, which declared its own independence Day by flying out of sight. THIS IS A NEW IDEA?

Florence Bakken sent us a handy-hint clipping from the July 5, 1983 Woman's Day magazine. Illustrated were colorful model aircraft suspended slightly out of reach of grasping hands. The handy hint, from a lady in Texas, was that models could be hung from the ceiling with fishing line to provide the illusion of flight, and protect them from inquisitive fingers. We know this system of model display was in use at least as long ago as 1900, but wonder how old the idea really is?

THE LEADING EDGE

Jim Jones, who markets the good-olddays type double-edge razor blades, also sells backless single-edge blades, which have been ground and honed to a double bevel. These are sharper than the usual blades and are available as follows: 100 blades: \$6.50 plus 90¢ postage; 24 blades: \$1.60 plus 40¢ postage; 12 blades: 80¢ plus 20¢ postage. The address is: Jim Jones, 36631 Ledgestone, Mt. Clemens, MI 48043.

PLENTY OF PEANUT PLANS

David Aronstein, 50 Pasture Lane, Poughkeepsie, NY 12603, has added several new scale and semi-scale Peanuts to his range of drawings. Among them are the Boeing Monomail, Evans Volks-

plane, Molt Taylor's Mini-Imp, Etrich Taube, and two ultralights. David also offers Grapenut, Walnut, and Bostonian plans . . . all at very low cost. A stamped pre-addressed envelope will bring you the complete list.

LEAKY COVERING

After so many years of sealing our model covering materials to air-proof them, we may need to revise our thinking. Although boundary layer suction experiments are not new, it appears they are now being examined more seriously, as illustrated in a recent McDonnel Douglas advert sent in by Cyrus Stow.

In an effort to improve the efficiency of airliners, perforated wing skins with air being sucked through the hole to stop turbulence before it develops, are being tested, and fuel consumption reductions of up to 20 percent. But don't hold your breath in the meantime introduction into practical service may not be until the 1990s.

TOTAL AVIATION

In our article about the complete aviation display held at the French Orly airfield, a few issues ago, we noted how few airports these days seem to cater to attracting the general public as anything but paying passengers. Henry Haffke brought to our attention an airport in Minville, New Jersey, that hosted a comprehensive show intended to dramatize the magic of flight in all its forms. Featured were demonstrations by both model and full-size airplanes, hot air balloons, a helicopter, a glider, and ultralights. When first approached about putting on such a display, Airport Manager Lewis Finch thought it was "a good idea", but after seeing the enthusiastic public response, he pronounced it "a great idea." According to a quote in the Atlantic City Press, "A person who knows nothing about planes can get a pretty good idea of what aeronautics is all about." There must be a message here . . . Is anyone listening? FLYERS

A simpler title for an aviation movie would be difficult to imagine, yet this one word says it all. If you are in the San Diego, California, or Washington, D.C. area in the near future, by all means try to attend a showing of Flyers. The Reuben H. Fleet Space Theatre in San Diego and the Smithsonian National Air and Space Museum are each equipped with the semi-hemispherical dome and equipment required to project this unique motion picture.

The emotional impact of the presentation is nearly overpowering at times, with breathtaking color photography, marvelous sound, and total immersion in close-up, wrap-around aviation splendor. If that sounds to be excessive praise, consider these scenes: assembling a full-size Vought Corsair bentwinger in a hanger that has a Tiger Moth suspended from its roof like a model; a lovely lady mechanic; airborne sequences of high-performance sailplanes in very close formation; the rare Fleetwings stainless steel amphibian in all its polished splendor; Fokker Triplane and

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FRANCIS SMITH'S SHIP YARD

BOX 118 NORWOOD, PA. 19074





(AS FEATURED IN MODEL BUILDER MAGAZINE)

95' PATROL BOAT 48" LONG 10.5" BEAM Price \$ 250.00

85'HARBOR TUG 36" LONG 10.5" BEAM Price \$225.00

All wood kits sawn from aircraft quality birch plywood, spruce and first-grade balsa...one piece plywood Keel, plywood Bulkheads, plywood Main, Middle and Bottom Decks...All plywood Superstructure...HARBOR TUG: Balsa planked; PATROL BOAT: Plywood sheeted...Portholes, Stanchions, Guard Rails, Rudders, Tiller Arms, Skegs, Struts, Stuffing Boxes, Drive Shafts, Propellers and Fittings are furnished...All Deck hardware is pre-cut, ready to assemble from detailed drawings. FOR FURTHER INFORMATION, SEND SASE INCLUDES SHIPPING U.S.A.

Nieuport 28 reproductions in low-level aerobatics a mid-air rescue of a fallen wing walker; a deliberate crash-landing of a Corsair on an aircraft carrier; and much more! If this sort of action doesn't quicken your pulse, you'd better change hobbies...

CLUTTON CROSSES THE POND

Eric Clutton, well-known both as an aeromodeller and full-size aircraft homebuilder in England, has recently moved to the United States. Model Builder readers may be most familiar with his charming lightplane FRED, which was featured in Peanut form in December, 1982. Eric is operating a small business here, and among his first offerings are the English P.A.W. diesel engines. These range in size from a tiny .049 through a .29 displacement, and they are available in either standard (for free flight or control line) or R/C form, at reasonable prices. High performance Schnuerle port versions of two sizes are also offered.

Apart from model engines, Eric is marketing a delightful little publication dealing with the making of propellers for homebuilt aircraft. See Eric's classified advert in this issue for more information.

AND SPEAKING OF FRED

Benno Sabel, of Germany, sent in the results of a Peanut Scale contest conducted there. The winner? None other than Siegfried Gloeckner, with his FRED, as published in *Model Builder*. He captured the second place spot too, with a Santos-Dumont No. 20 constructed from a Sabel plan. Benno himself placed third with the rare pioneer Goupy No. 1. AND IN FRANCE...

There have been some new Peanut Scale rules tried, with the objective of rendering static scale points more nearly equal to duration scoring. This is a difficult task, as confirmed by J.F. Frugoli, who sent the static judging point-ofview rules adopted by their committee, and recommended to contest organizers. "But, as every Frenchman is an individualist, I'll bet that everyone will use his own rules. The most important thing is to have contests."

Frügoli furnished results of the annual Jacques Pouliquen Memorial Peanut Concours, which was successful despite severe wind conditions. In first place was Jacques Delcroix's Pottier 100, proxyflown by Gilles Chauveau. Second went to Emmanuel Fillon with a Fike (an unusual choice for him!), while J.F. Frugoli, himself, placed third, flying a Lacey M.10. Bob Peck's Volksplane, proxy-flown by Roger Aime finished fifth, following by Bill Warner's Cessna, proxied by Frugoli to sixth place.

Juniors (Cadets in France) also put on a good showing, with the following results: first place, Christophe Tardy (Pottier 100); second place, Michel Tabas (Lacey M.10); third place, Christine Vial (M.S. 660); fourth place, Rodolphe Hennique (M.S. 660); and fifth place, Oliver Truche, flying a Luton Minor. In the special event for fighter planes, Emmanuel Fillon captured both first and second awards, with a pair of Dornier 335 "pusher-pullers," as shown in one of our photographs. J.F. Frugoli's Miles 20 finished third, while Lubomir Koutny's Bell P-39, proxy-flown by Roger Aime took fourth.

We applaud the spread of proxyflying, truly a low-cost way to participate in our hobby on an international basis. **MAGAZINE COLLECTORS**

R.J. Twohy, of 24246 Crenshaw Blvd., No. 103, Torrance, CA 90505, specializes in used aviation magazines. Included are titles such as Aero Digest, Popular Aviation, Air Trails, Aeromodeller and Flying Aces. Why not send him a stamped, pre-addressed envelop for the price list? And please tell 'em Model Builder sent you!

SIGN-OFF TIME

From one of our favorite club newsletters, "CROSSWINDS," edited by Russ Brown, of Ohio, we abstracted these definitions from the "Glue Guru Glossary:

"Model Airplane Cement: An oldfashioned means of forming artificial scabs or warts on fingers. However, unable to join fingers.

"Instant Glue: A greatly improved modern cement, able to join fingers easily.

"10-cent kit: A form of Peanut available in the 1930s. In terms of flying ability, vastly overpriced.

"C.D.: One who encourages others to

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65





"E.T.: Movie about a trailing edge (T.E.) installed backwards." Ah well...

Pattern Continued from page 50

ing the engine to pop or sag badly as we passed the optimum setting. Instead, we found the engine to be remarkably docile, in that it sagged only mildly. Our tachometer said 9200 r.p.m. at max setting. Not too bad.

After a few more break-in cycles; cool, restart, etc., the engine said 9500 on the same prop. The interesting thing was that the acceleration from 1500 to 9500 was extremely rapid. This lead us to ponder as to whether or not we were using a propeller which ran the engine over its peak torque. Interestingly, the 9500 r.p.m. figure is only 500 less than we get from our 1.4 Gearbox engine (piped) on the same prop.

Next we ran a modified 14 x 8 prop... same figure. Change to a 13 x 10 Zinger, we got 9200 r.p.m. This seemed about right, so we tried a 13 x 8 Zinger and got 10,000 r.p.m. By chance, our friend Don Weitz stopped by and left us an M.K. 11-1/2x8 Number 2 Silent prop to test. This is a very different prop design, having a lot of tip pitch. The O.S. ran very smoothly and showed how much power it takes to turn this prop by hitting just 10,000 r.p.m. again. Next we tried a 15 x 8 Zinger prop and got 8300 r.p.m. Finally, a 15 x 10 Zinger tested at 7800.

Now then, if you are used to hearing 15,000 - 16,000 r.p.m. figures bandied about, these figures must seem puny. Not so, oh nitro breath, these figures under the aforementioned conditions are very good, and as I suggested earlier, you should get better figures.

The big question: "Will this engine fly a competitive pattern plane?" The big answer is a definite YES, but the model should not be smaller than 800 sq. inches or larger than 1000 sq. inches, or weigh more than 11 pounds. I could be wrong, but I expect most people will have their best luck staying within these parameters. I'm impressed enough to start designing a bird specifically intended to maximize the performance curve. My guess is 925 sq. inches and 8 to 9 pounds is a safe starting point. The fact that the engine idled easily on

The fact that the engine idled easily on the 11-1/2 inch prop surprised me. I thought it needed more flywheel effect. Apparently the compression, which controls ignition, is designed to be on the mild side.

In our photograph of the 1.2 engine, you will notice another tiny engine. It's the new Wankel O.S. We won't cover its test till next month. It might whet your curiosity to know that the horsepower rating on this engine is the same as the 1.2 cubic inch four-cycle. The figures out as equivalent to four horsepower per cubic inch. Interested?

Now on to the flying field. We included pictures of the CAP 21, Dalotel 825, and the small 700-inch Tipo. These are arranged to show relative sizes. All three models were using O.S. ABC 61 engines during this flying session. The Tipo weighed 8-1/2 lbs., the Dalotel 8-1/4 lbs., and the CAP 10-1/2 lbs. We have made and flown lighter examples of each but the weights here are all very acceptable.

The fastest model is the Tipo...about 110 to 120 m.p.h. The next fastest is the Dalotel at 105+. The CAP has not been clocked, but I expect around 75 r.p.m.

The Tipo has the ability to climb the fastest, but it relies on momentum to do the job. The Dalotel climbs easily but not as high as the Tipo. However, the aileron response is much stronger at very slow speeds in the vertical roll. The lighter wing loading really shows up here.

The CAP is the most constant in speed and has the ability to pull up steadily to about the same altitude as the Tipo. The type of flying you wish to do will dictate which basic type of pattern machine you will like the best. But don't write off the ability of the "conventional" pattern types to fly the turn-around styles. Properly set up, most current designs will do either. Style, which is an elusive thing to describe, will mean the most when it comes to selection of the airframe.

If you are a newcomer to pattern flying and are working on the basic skills, keep it simple, light, easily repairable, and above all, have a good flyer work with you to note your errors (tactfully of course) and keep you from developing bad flying habits.

We must sign off for now. There is wood to sand and foam to cut. Also, you have been reading long enough and someone else may need to use your seat!

Choppers Continued from page 43

more precisely than any other kit on the market.

In particular, some of the items that impressed me were: 1) The very thick and easily removable cooling shroud; the best cooling system on the market, and 2) The basic drive system with a double-sided main gear, also three bearings in the tailboom for the tail rotor drive.

The main rotor head is nothing new, although there has been a thrust bearing added to each blade holder. Other than the addition of other bearings throughout the head, little has changed from the basic Heli-Boy head. I hope this head stays set-up better than the basic Heli-Boy head. When I had my Heli-Boy, there was always a tendency for the bearing blocks to shift slightly between the side plates and upset coning angles.

From the detailed photos, I think you can fairly well'see the basic outlay and arrangement of all the other major components.

CHOPPER CHATTER INDEX

As most of you have gathered by now, I try to write on a topical subject as much as possible from month to month. This gives a base on which to build other



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THE CLAUSEN MACHINE, Kent Clausen's

Domination like this, at the nighest levels of competition, may have shocked the rest of the RC car racing world. But it is no surprise to us. We knew from the start our new RC12i would Or askine leam. learn Associated HUIZIS Illeu 7 of for both the stock and modified Championship main. We knew from the start our new RG12i would be a winner. We tested and engineered it to handle and respond better

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RC12i RC12i

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HAT MAKES A WINNER? Ask Kent Clausen, two-time 1:12 Scale National Champ, A winner all the way to the indoors and out. And Kent took his Team Associated RC12i all the way to the World Championshin stock class title Ralph Burch, Jr. (USA indoors and out. And Kent took his Team Associated RCT2I all the way to II World Championship stock class title. Or ask the Team. Team Associated RCT2I's filled 7 of 10 grid positions for both the stock and modified Championship main Mike Wanu Wani USA Bruce Hickman USA Art Carbonell / USA

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powered), Part 2.

Mar '82: Kobe-Kiko Hughes 300 (glow powered), Part 1.

Feb '82: Servo power and control forces in helicopters.

Jan '82: Straightening main and tail rotor shafts.

Dec '81: Why R/C helos crash.

Nov '81: Comparison of models to full size helicopters.

Oct '81: Rotor blade designs; Bell and Hiller systems.

Sept '81: '81 MACS show.

Mar '81: Philosophy of setting up collective pitch.

Sept '80: Pilot for Kavan Jet Ranger; vibration tips.

To close for this month I'd just like to re-emphasize to all of you how the helicopter kits available are improving in design and quality. The new ball bearing filled ships' control response and touch are downright impressive. And the new helicopter radios allow you to use the precision the helicopter itself is capable of providing. If you're thinking about purchasing your first R/C helicopter, give it a try ... become a hover lover.

Electric Continued from page 33



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articles. However, if you haven't been following Chopper Chatter, it becomes frustrating to you when I refer back to a certain month's issue and let it go at that.

To help everybody out, I feel it's time to provide an index of the past 2-1/2 years of my Chopper Chatter articles. Please contact the **MB** office for back issue availability. The month, year, and main topics are as follows, in reverse order, beginning with last month:

Oct '83: Aerodynamics from hover to forward flight; flapping and feathering. Sept '83: GMP Competitor review;

Part 2. Aug '83: GMP Competitor review; Part 1.

July '83: Kobe-Kiko Hughes 300, Koritz powered review.

June '83: Clutch shimming for proper alignment; drive train setup.

May '83: Tail rotor theory and mixing. Apr '83: Circus Hobbies helicopter kits available.

Mar '83: Tank setups; autorotation principles.

Feb '83: Making pushrods; basic tank setups.

Jan '83: Hiller paddles; swashplate deflection; head rigidity.

Dec '82: Detailed operation of Bell and Hiller control systems; gyroscopic precession.

Nov '82: High altitude flying; troubleshooting vibration with Super Mantis; basic rotor heads.

Oct '82: Basics of helos; attitudes necessary for flying helos; fixed vs. collective pitch.

Sept '82: Quasi-governor for constant rotor RPM with an extra channel and servo.

Aug '82: Two articles: 1) '82 MACS show; 2) Part 2 of Supermantis review.

July '82: Two articles: 1) Method of balancing rotors; 2) Part 1 of Supermantis review.

June '82: Intro and theory of balancing rotors.

May '82: Helicopter contests; Background and philosophy.

Apr '82: Kobe-Kiko Hughes 300 (glow

wrote to me with the question, "Could this be used for electrics?" At the time the article came out, the same question occurred to me, but then the usual rush of projects got in the way. Bill, though, included a sample of the connectors that he had made following the article, and it looked like it should work. So, why not try it? I went to the local Radio Shack, and as usual, they did not stock the parts called for in the article (#276-1988 and #276-1980). However, it looked like the 40 pin header, #276-1540, and the 16 pin wire wrap socket #276-1994, would do fine, so I got them. The 40 pin header was easy to convert to ten four-pin male plugs, just use a sturdy single edge razor blade to cutr the two rows apart, then cut these up into four-pin sections. The total cost per male plug was 13¢! That's cheap! By the way, I also tried using an X-acto razor saw to cut some of the sections on the header ... don't do it. The saw cuts too much material away, the razor blade is the way to go. The 16-pin wire wrap socket is the source for the female plugs, and you have to use an Xacto razor saw to cut the "floor" out that holds the two rows of sockets together. Then comes the tough part! Use the single edge razor blade to cut each eight-pin socket row into two four-pin sockets. This takes a microscope eyeball and a steady hand, but I managed to do it successfully on all of them, and came out with eight female sockets for 20¢ apiece. You may decide to sacrifice in favor of getting a three-hole and a four-hole socket (by cutting through one socket hole) when you see how tight this cut is, but you will still come out with at least four female plugs at a reasonable price. I did the cut in four stages; a cut at the top, one at the bottom, and one on each side, then worked them towards each other until the job was done. The 8-pin #276-1988 socket would be much easier if you can find it.

The rest is easy. Use two pins per wire as shown in the photos and you will have a very compact and inexpensive plug. Clay mentioned that you can get gold plated sockets and headers from mail order catalogs, which would be the very best way to go. I tested the sockets in a complete wiring layout compared to the same layout with Deans connectors, and the rpm on a six-cell 05 was identical for both harnesses. This says that the plugs are well able to handle the current, and do not have losses due to resistance. I did manage to short out a plug, and it singed the male pins. Some cleanup with sandpaper restored the pins, and it worked just fine after that. The gold plated Deans connectors do not singe, that is one of the advantages of gold plating. However, the connectors that come with the 05 systems are not gold plated, and serve their purpose. On all non-gold connectors, you should inspect them from time to time to see if they are building up an oxide coat (a grayish color) or have been singed (blackish color). That can build up resistance, which will show up as heat (the plug will get hot) and loss of rpm. The loss in rpm is often not as much as you would expect, about 200 rpm, but you will definitely notice that the plug is heating up, it can get so bad that it melts the insulation near the plug! The cure, of course, is a little sandpaper work.

The Radio Shack female wire wrap sockets are not quite as heavily made as the Deans sockets, so you may find that they need occasional replacing or rebuilding, but at the price, this is no biggie. The male plugs do fit the Deans plugs, which is handy. On the general subject of plugs, I replace the plugs in "store bought" system with Deans plugs immediately. There are a couple of reasons for this. One is that I have no patience with the bulk of the plugs that come with the systems, the 05 planes really do not have all that much room for plugs. The other is that the Deans plugs are practically maintenance free, while the commercial plugs have to be cleaned and retightened from time to time. Speaking of size, take a look at the photo that shows the Astro, Leisure, Deans, and the wire wrap sockets together. The Deans is small, but the wire wrap ones are even smaller, half the size of the Deans! That's hard to beat! Do be sure you get the wire wrap sockets and pins though, the regular IC sockets and pins are not nearly sturdy enough. By the way, if you do want Deans connectors, they are available from Ace R/C, Box 511B, Higginsville, MO 64037 (phone 816-584-7121). I think the price for a pair (male/female) of four-pin connectors is about \$1.60.

Bill included a sample of wire with the plugs he sent me, and said "You've got to try this!" This meant the Graupner super flexible wire from Wilshire Model Center (3006 Wilshire Blvd., Santa Monica, CA 90403, phone 213-828-9362).







One look, and I agreed. At \$1.85 for a package of six feet of red and six feet of black, the price is right, and the wire is absolutely beautiful. The outside diameter is slightly less than the "extension cord" wire I have been using, but it packs a lot more wire inside. My eyeball estimate is that there is at least twice the number of strands compared to zip cord, so less resistance. It is also ex-tremely flexible, like a "wet noodle". This is just the thing for my installations; it takes less room, is easier to tuck away, and causes less power loss, so a winner on all counts. I recommend the catalog that Wilshire offers too, at \$2 it is a real "wish book" of all the European (and US) electric goodies.

Speaking of Europe, a couple of columns back, I mentioned the Ampere Flyer, the European newsletter edited by Peter Blommaart (\$20 a year, credit card OK, Rue Wauters 28, B 6200 Gosselies, Belgium). The Ampere Flyer is the way to keep up on both technical and sport information in Europe, but Peter certainly does have his opinions! The "hot one" that really made me say "wait a minute" was his statement that fusing is a no-no! Peter says that anyone should be able to turn off the motor before the plane hits the ground, so a fuse isn't necessary. Further, according to Peter, the fuse uses up power, which in a contest is critical. The SEAM newsletter criticized Peter on grounds of safety, and Lagree. I will have to count myself in that great group of hackers who couldn't get the motor turned off no matter how much time I had! I've proved this to my dissatisfaction several times, and will, I'm sure prove it more times in the future. The consequences for me on these occasions before I started using fuses were burned up motors, burned up batteries, and in one accident, a burned up plane! In one goof up, I burned up a motor in the car when it got turned on accidentally. That really hurt, it was the only plane I had with me, and I had flown from Washington to California to fly it. Needless to say, I did not fly. The consequence to spectators could be even more serious, a motor that will not turn off will result in the very least a trip to the emergency room to get sewn up, and at worst such things as loss of eyesight. Since I have started fusing, I have not burned up even one motor, my batteries stay healthy, and I feel a lot more secure about the safety of the people around me. I just can't agree with Peter.

As for the fuse using up power, the only way to find that out is to try running a motor with and without a fuse to see what the rpm's are. I did this with an LT50 motor and a six-cell pack, and there was no difference at all that I could see on the tachometer. The tach is the Accu-Tach, which is an LCD digital, and shows rpm down to the tenths place. Now, in European contests, they draw up to 30 amperes on packs up to 24 cells, so it may show up there, but in our ordinary 05 systems, it doesn't, so there is no penalty for the safety of a fuse. If you have a good tach, try it, I think you will be convinced.

Speaking of fuses, there is a way that you can experience a power loss with them, and it is the same way that you can with connectors, that is, corrosion. I have been in the habit of crimping the connections to the fuse holders (no solder), and this led to a problem in my Aqua Sport. Some water got into the connection, and it started to corrode. I didn't notice a power loss, but I did notice that the insulation was starting to melt near the connection, and it felt really hot (almost like an electric stove!) when I touched it after a flight. So, I redid the connection, and did a before and after rpm. The loss due to the bad connection was only 200 rpm! That's surprising, considering the damage the heat did to the insulation. It does show that we actually lose less to resistance in the wiring than we might think.

However, the incident made me think more about how I do the connections to the fuse, and I now solder them all. Actually, the accident was sort of lucky, because it made me think up a really simple way of soldering the fuse holders. Not only is it easy, but it takes less room, which is always a plus in 05 planes. All you do is heat up the fuse holder back with a 25-watt iron (or more), then put a coat of solder on the back of the holder. Then solder the wire to the back of the holder, and clip off the shank on the holder for a neat and compact installation. The photos show the story. Try it, I think you'll like it!

Till next time . . . fly electrics, the best connection to fun!

Dear Jake Continued from page 6

was. I'm really afraid that I'm losing my husband. How can I win him back?

-Neglected in New Orleans Dear Neglected:

Wrap yourself in transparent Monokote, splash a little Cox Blue Label under each ear, then lie down and wait for him on his workbench. If that doesn't work, then he's legally dead, and you might as well collect on his insurance.

—Jake

★ Dear Jake:

What's that derivation of the word 'pilot'?

*

-Curious in Kansas City

Dear Curious: It comes from a Latin word meaning to arrange your airplane in a heap.

—Jake

Dear Jake:

I don't have a problem. I just wanted to thank you for making your advice available to us modelers. Keep up the good work!

-Grateful in Georgia Dear Grateful:

Try sealing your aileron and elevator hinge gaps with clear mylar tape. That

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should do the trick.

*

Dear Jake:

I know you like to kid around a lot, but I've got a legitimate question, and I would really appreciate it if you could give me a legitimate answer. How do you design the landing gear for a new airplane.

—Sincere in Seattle

-Jake

Dear Sincere,

With the airplane in an upright position, the landing gear should extend all the way from the bottom of the airplane to the ground.

-Jake

Dear Jake:

Very funny, but you know that's not what I meant. What I want to know is how do you locate the landing gear on a new design?

-Still Sincere in Seattle

Dear Still Sincere:

Turn the airplane upside down and look for those little wire things with the wheels on them. That's the landing gear. —Jake Soak the outsides of the fuselage between D and the tailpost with water sprayed from an old Windex bottle.

Now carefully pull the sides together and Hot Stuff "B" in place. Epoxy former "C" in place, taking care to get the angle correct. Next comes "A", again epoxied and carefully aligned. Hot Stuff the balsa block front deck on and carve it to shape.

The Perfect No. 13 tank is modified as shown and installed with wood screws. If you can find some solder lugs, these can be used instead of brass strips for mounting. Hot Stuff A-1 in place. Install the blind nuts for your engine mount, and build a box under the engine to prevent fuel from getting inside the fuselage.

Cut the nose pieces to shape noting the grain direction and Hot Stuff them in place. If you haven't already done so, install the tailpost, rear wing holddowns, and the spruce cockpit stiffeners. Plank the top and bottom with 1/16 balsa, applied cross-grain. The nose is planked with 1/32 ply as it takes a beating.

You can clamp the forward part of the cabane assembly to the top of "A", but don't solder it to the other cabane strut until we align the wings. You can now sand the fuselage smooth, slip the wheels on, and set it aside.

RUDDER

You can build up the rudder if you like, using a laminated outline, or do as I did and cut it from 1/8 light balsa. The twin tailwheels come from old Comet kits. Solder the assembly as shown and attach it to the rudder with Hot Stuff. A piece of nylon reinforcing tape Hot Stuffed over the installation will make it much stronger. **WINGS**

As both wings are built almost alike, we will cover building them together. First, make templates and cut out all the ribs, noting the rear wing rib is different. Now, build both spars flat on the board. When dry, sand the main spar up in position over the plane and install the ribs in the center section. Follow with the leading edge and trailing edge. is installed upside down.) Now we add the ribs out to the wing tip. Put the last one in first, Hot Stuff the precut leading edge and trailing edge pieces to it, then install the rest of the ribs. Believe me, it sounds a lot more difficult than it is! Add the wing tips, and a couple of blanks you will later sand to the tip rib shape. Pick the wing off the board and add the 1/8 x 1/8 rear spar. This is a soft, onepiece spar, bent into place. Epoxy the spruce hold-downs and plywood plates at the locations shown for the wing you are working on. Sand the leading edges round, and get ready to install them on the fuselage.

INSTALLING THE WINGS

Carefully square the rear wing on the fuselage. Mount it with two screws at the front spar, and one at the rear spar. Bind the 1/8 brass tube to the front cabane assembly. Run a 36 inch piece of 3/32 music wire through the tube and carefully align it to the rear wing before you solder the parts together. Mount the front wing with sheet metal screws and confirm that you did a good job.

RADIO INSTALLATION

Build up and solder the joystick assembly. Remember, you must solder the parts after you slide the tube through the fuselage! Take care to get the two outside arms even. Route the pushrods for the throttle and rudder. Connect the elevator pushrod to the joystick. Mount the control horns to the front wing and install the wing. Hook up the pushrods from the joystick to the wing and try the controls. Remember, we don't want the wing to go too far up, but a little more down movement relative to the trailing edge won't hurt. By drilling a hole in your servo control wheel as shown in the sketch more "up" than "down" is assured.

COVERING

I used a plastic film. Whatever you use, remember to keep the tail light. The real airplane was silver overall with black markings.

ASSEMBLY

Put a drop of Hot Stuff in each wing mounting hole before you install the wings for the last time. I used a living hinge for the rudder on my Flea and Hot

⁽Editor's note: Send your questions to "Dear Jake" care of **Model Builder** magazine, P.O. Box 10335, Costa Mesa, CA 92627.)

Stuffed it in place. Make up a cockpit cover from 1/32 plywood. Mount a two inch scale pilot to it and hold the cover in place with wood screws. Bolt the engine in place, hook up the rudder, and your Flea is ready to fly! **FLYING**

First, get the center of gravity correct! Most of the problems with this concept take place when people attempt to fly with an aft C.G., DON'T TRY IT!!! With the front wing incidence set as the plan indicates, and the C.G. correct, we must now work towards getting the engine to idle really well. If you don't, you will miss half the fun of flying your Flea.

All that remains is to run the thing around the ground until you get up the nerve to let it fly. Once you do, you will find it does indeed fly very well. You might have to add some down thrust if your Flea pitches up when you apply power. If your Flea balances correctly, but refuses to leave the ground, you have too much negative incidence in the front wing. If it leaps into the air and stops, you have too much positive incidence. Don't worry about stalls, just turn out of them. You will soon find out that slow flight is about the *slowest* flight you have ever seen!

You can now enjoy flying the most misunderstood flying machine in history! Take heed, you might find "Flea Flight" as addictive as I did. To tell you the truth, I'm now building a slightly larger Flying Flea. Would you believe FULL-SIZE? Ah, but that's another story!

Soaring Continued from page 30

You can get a Leisure motor at your hobby shop or directly from Leisure. The Graupner folder is available through Wilshire Model Center. Both addresses are in the appropriate ads in this issue. **Q & A FORUM**

Robert F. Hilton writes from Shelby, North Carolina:

"I am, you might say, an old timer in this model building hobby of ours (40 years, plus), but it has been an on-again, off-again type of thing for me. I have gotten really turned on with the twometer class sailplane...

"... I have only launched a sailplane from a hi-start, or actually an Up-Start (Craft-Air), but the project I would like to do is build a small winch launch system. Bill, I have never even seen a winch except in pictures, but I think a small one for two-meters only would be great.

"Here is what I would like to do. I would really appreciate your comments and answers. The winch motor would be of the type used to start 10 and 11 horsepower riding lawnmowers. I understand these are high torque starters. They are 12-volt, and would use a good, highamp motorcycle battery. Do you think it would work? What size reel should I use? What size and strength line should be used? What length line should be used? How far away from the winch should the line guide or ring be placed?



Where can winch line be purchased? "Anything else that you think might

be of help to us amateurs would be appreciated. Thank you, Bill."

Let me begin to answer you, Robert, by saying that I do not consider myself to be an "expert" on winch design. I've seen a lot of winches in my eight years of flying R/C gliders, but by no means have I seen them all, nor have I seen all combinations of motors and batteries used in this application. In this case, I've never even seen the type of motor you've described. If its purpose is to start small four-stroke lawnmower engines, I can't imagine that it will be sufficient for your needs . . . unless all you fly is lightweight "floater-type" gliders. The problem may not just be the lack of torque, but also in the lack of line speed (or horsepower). It's one thing to be able to turn over a 10 or 11 hp lawnmower engine at 60 rpm (I'm only guessing at the cranking speed here), but it is quite another thing to get the same motor to handle (let's say) half the torque at four times the speed (or more). When combined with a small 12volt battery as you describe, the voltage drop from the load you will be placing on it will probably further weaken the system. It could very well work, but not for all two-meters in all conditions is my bet

If I were you, I would get a long-shaft Ford starter motor (part number 3110 at your local auto parts store), and a six-volt car or marine battery of 50 amp-hours capacity or more. This will give you the basis for a winch that will be able to launch not only your two-meter sailplanes, but any other plane you may design or buy in the future. This motor/ battery combination, in conjunction with a drum of about four inches in hub diameter and four inches in flange separation, will give you a winch that will launch your floaters safely, yet firmly



and controllably. Remember, you can always pulse the winch pedal if you think the winch is pulling too hard, but you can't get more power out of a winch that's already giving you its all!

If your reason for wanting a "small" winch is one of physical limitations, then you are going to have to go this route or buy a winch such as the Fab-Tek winch which is small and fairly light. The only alternative you have is to build a "normal-size" winch like I described above and make a cart with wheels for it. At most, the winch motor and frame will weigh 40 pounds. The battery will weigh between 40 and 60 pounds depending on its capacity. (My 12-volt, 92-amphour, deep cycle marine battery weighs 54 pounds.)

If you are in the market for a ready-tofly winch, the Davey Systems Corporation Winch is a good one. It's called the Pow'rtow. I refer you to my review of this product in last month's **Model Builder** for further info.

As for the remaining questions ... I would say that you probably need 1500 feet of line at most. This amount should



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cover the largest field in your area, yet not be so long that if it were all deployed it would be excessively heavy for the glider to lift off the ground. I would use a braided nylon line of at least 110-pound test. RLF Products, Route 3, Box 360, Paoli, IN 47454 is a good source of this line. They carry braided nylon in 93, 118, 153, and 180-pound test. You would do well to ask for their catalog as it contains such things as winch drums, solenoids, motors, and parachutes for do-it-yourselfers.

I don't use line quides for my winch. If you are careful about lining up your winch and the turnaround, line guides aren't needed. However, they don't add any significant line drag, and they might come in handy if you can't see the turnaround to get things lined up properly. In the latter case, I would think that it should be placed about 15 feet away from the winch drum.

AIRFOIL OF THE MONTH: CLARK Y

The Clark Y is probably the most famous of all airfoils. It has been around for over 40 yers (at least) and has been used on Old Timers and modern designs with equal success. Recent laminar flow wind tunnel tests at model-size Reynolds numbers indicate that the Clark Y is very respectable compared to modern sections. Dieter Althaus has done extensive research on several sections which modelers have used over the years, and his findings have been published in a book entitled, Profilpolaren fur den Modellflug. I use his findings in this column for your enlightenment. Keep in mind, however, that wind tunnel testing is still not "real world" data . . . if may be very close, and certainly a lot better than "theoretical" data, but . . . the air you fly through may be gusty and very turbulent one day and less noticeably so the next, however, it will always be active in some way. Therefore, turbulence-free, "laminar-flow" wind tunnels can only give us data that approximates the real world. For use in comparison, this data is most useful against other similar data for other airfoils.

The Clark Y should be an excellent choice for a small to medium-sized thermal glider. It has a very good drag bucket at low Reynolds numbers which is important to "floater-type" designs. Give it a try ... it certainly has been proven over the years!

F3B WORLD CHÁMPS

As I write this on the last day of July, 1983, I am all packed and ready to fly to England to witness the fourth world champs in York. If I get back in time to write up a report, you may find it in this issue. If not, stay tuned for the December issue!

MAAC Nats... Continued from page 35

Mother Nature smiled on the three days of flying competition, with hot, sunny days and relatively good wind conditions. With only 15 fliers in Stand Off and five in FAI, one flight line was all that was necessary for everyone to get in their six rounds. It resulted in relaxed flying for the competitors, not having to be concerned about a mid-air from another flight line, and fliers and spectators alike were able to concentrate on each flight from take-off to landing.

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The first round of flying began around 5 P.M. Friday evening, and was completed well before dusk. The most unfortunate event of the first round was the crash of Sepp Uiberlacher's gorgeous Mosquito bomber. The model deservedly received the top static score of the FAI event, and was the same model flown by Sepp to 4th place in F4 at the 1982 Scale World Championships in Reno. The Mossie was lost on takeoff as it unexplainably rolled over into the runway from about five feet of altitude. This was the only real casualty of the entire competition, but there were some other interesting moments. The wings on Clyde Halford's big Bucker Jungmeister were seen to flutter like a hummingbird's when his wing struts came loose! To Clyde's credit, he landed it safely, to the applause of all present.

Three more rounds of flying were completed on Saturday, starting at 9 A.M. and again flying till dusk. Skip Mast quickly established a firm grasp on first place in FAI with his C-130, combining a fine static score with an unbeatable 634.9 flight. Skip's combination of four engines and retracts gave him a 30% complexity bonus, and his solid flying performance made it readily apparent that no one else could come close to him.

The Stand Off competition in the second round was nip and tuck all day long, and no one seemed to have an edge over anyone else at this point in the competition. The static scores were close, so it was mainly a flying contest. Pete Waters provided the spectators with some excitement when his Sig Smith Miniplane stuck at full throttle. Pete flew round and round waiting for the fuel to run dry, but his patience finally ran thin, and he made an interesting full-bore landing, shedding miscellaneous parts from the plane as it skidded across the asphalt runway!

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The final two rounds of flying were completed on Sunday, again blessed with calm winds and hot temperatures. The FAI event was already decided for all practical purposes with Skip Mast and Cliff Tacie out of reach in solid positions of first and second respectively. The Stand Off event, however, was still being hotly contested. Mast had a slight lead at the beginning of Sunday's rounds with his Sig Skyhawk, garnering an additional 3% of his flight and static score by utilizing the flaps on his bird. Skip's Skyhawk has established itself as a highly competitive model, receiving the second highest static score in the Stand Off event, and earlier this year earning top static in the Expert Sport Scale event at the 1983 Mint Julep meet.

Closely following Skip was Cliff Tacie, with a 13 lb. Sig 1/4-scale Clip Wing Cub powered by an O.S. Max Gemini Twin 1.20 cu. in. four-stroke. The crowd of spectators and fliers fell into silence each time this model flew, appreciating the realism of sound and sight displayed by the Cub. This appears to be an ideal combination of aircraft and engine.

static with sizzling flight score of 107 in the 4th round.

A real crowd pleaser was Steve Gray, of Kitchner, Ontario, with his scratch built DHC-5 Buffalo. Powered by twin O.S. 40's, it was a thrill to see Steve perform STOL landings, pointing the nose down at a 60 degree angle from about 50 feet of altitude and leveling out just inches above the runway to a smoothly flared landing. Even the ailerons are deployed as flaps during these exciting landings!

Right on Steve's heels was Ottawa's Bud Barkley, flying his well known and realistic flying Tiger Moth. Powered by a Quadra, Bud's Moth garnered the top static score with a 113.56.

As the last two rounds progressed, fliers were checking the standings board after each flight, as this ball game wasn't over until the bottom of the ninth! Try as they might, no one was able to top Mast's total, and he made it a clean sweep, winning both the FAI and Canadian Stand Off events. Second place in FAI and Stand Off was also a clean sweep for Cliff Tacie, taking both spots with his Spezio and Cub. Steve Gray put it all together in the 6th round with another 107.9 flight and slid up to 3rd place in Stand Off, with Don Paquette 4th and Bud Barkley 5th.

Everyone present seemed to enjoy themselves over the three days, and I'm sure most will be back at the next Centralia Nats. Of particular interest during the competition were: young Don Round, of Sarnia, Ontario, flying his Jemco Corsair in his first Nats and putting in a solid performance; Ray Gareau of Montreal, trying as hard as he could to wipe the landing gear off his Norseman Mark "V"; Grahm Ireland's scratch built Fokker "Super Universal" mailplane, built and flown especially for a Canadian documentary film; the distinctive "burping" sound on idle of Doug Pinhey's SE-5A, supposedly created by using an old servo with a worn pot in the low throttle position ... unique!

At the awards ceremony performed at the Headquarters building, a special note of appreciation was expressed by all present to Contest Director Tom Savage, who put together a well organized, safe, and smoothly run low pressure event with only 10 days advance notice! Tom is typical of the hospitable and professional individuals found in our friendly neighbor to the north.

FINAL STANDINGS

	FAI			
PLACE	NAME Skip Mast, Royal Oak, Michigan	STATIC 601.75	FLT/BONUS 634.9/30%	TOTAL 1236.65
2	Cliff Tacie, Mt. Clemens, Michigan (Spezio)	618.20	514.0/ 5%	1132.20
3	Grahm Ireland, Ottawa (Fokker)	578.50	399.8/ 5%	978.30
4	Ray Gareau, Montreal (Norseman)	526.00	265.3/ 5%	791.30
5	Sepp Uiberlacher, Ottawa	641.90	24.4/20%	641.90
	CANADIAN STA	ND OFF		
PLACE	NAME	STATIC	FLT/BONUS	TOTAL
1	Skip Mast Royal Oak Michigan	112 25	07 2 00 1/2	% 210 60

LUCE		SIAILC	
1	Skip Mast, Royal Oak, Michigan	112.25	97.3, 99.4/3% 210.60
	(Skyhawk)		
2	Cliff Tacie, Mt. Clemens, Michigan	105.25	104.5,104.5/0% 209.75
	(Clip Wing Cub)		
3	Steve Gray, Kitchner	100.83	107.9,107.9/9% 208.73
	(DHC-5 Buffalo)		
4	Don Paquette, Ottawa	104.03	99.4,107 /3% 207.23
	(Liberty Sport)		
5	Bud Barkley, Ottawa	113.56	91.9, 91.2/3% 205.21
	(Tiger Moth)		

C/L.... Continued from page 61

(503) 653-7436.

The next day at the same site you can take in the "Stuntathon '83", which features precision aerobatics in four PAMPA classes. For information you will want to contact Don McClave, 7719 SE 28th Ave., Portland, Oregon 97202, or phone (503) 771-8453.

MEMORY LANE DEPARTMENT

Having a modest collection of old magazines, I sometimes find it enjoyable to just thumb through the pages, comparing things then, and things now. The time period of twenty years ago always seems interesting to me, because it was then I was just starting to exhibit symptoms of the modeling bug bite. For the record, this should also dispel the belief that I am ten years old.

If you are relatively new to the hobby, have someone show you their old mags. There are some interesting contrasts to today's publications. If you are cheap like me, the first thing you notice is the price. The going rate in '63 was about thirty-five cents.

Looking at the pricing for supplies is also amusing. You could buy a Fox combat engine for about \$9.95. Basic profile kits were about \$3.50, and a buck would get you two or three props. If you signed up for AMA membership, it set you back four dollars, but you get a lot more for your money nowadays. (Ahem whether you want it or not! wcn)

... whether you want it or not! wcn) Another observation is how the advertising seems so basic and trite as compared to today's Madison Avenue slicko style seen pushing the latest prefab shiny plastic big scale status job.

Back then, as now, there were certain topics of discussion going on that will probably always be going on. These were and are: the lack of junior participation, rehashing the rules, coming up with entry level events, and complaining about the AMA.

Another fun aspect of leafing through the old pages is to come across names and pictures of present-day modelers. This can change your feeling that some people have always been old.

Now what about that saying . . . "The more things change, the more they remain the same".

BUILDING TIPS DEPARTMENT

Solid balsa wing models have a problem with the edge surfaces dinging up rather easily. On my racing or sport models that utilize this type of wing, I incorporate spruce strips for an edging that is resistant to the inevitable dings that seem to come about. Refer to Sketch One.

The spruce strips as seen in the crosssection are fitted into slots that have been machined out. Now if this sounds tricky already, relax. All you need is a drill press. The square notch into the balsa leading edge is made with a square edged cutter, as typical in your Dremel kit. It is necessary to fashion some sort of jig to hold the wood at a 45 degree angle



to get the proper slot. I will try to get a picture of my jig in the next issue. Believe me, it is simple.

The trailing edge slot is easier to do, as it does not require any jig setup. I use one of the Dremel steel cutting wheels that has a thickness of just under onesixteenth inch. As it is undersize of the wood stock that must be fit into the slot, it is necessary to run the wood through twice. What you do is adjust the cutter height just off center from the centerline of the wood blank. After you run the blank through once, turn the blank over and run it through again. Obviously, you will need to make a couple of practice runs on scrap to get the cutter-deck clearance adjusted.

Once the slots have been machined out, you can then glue in the spruce strips, using your favorite adhesive. It has probably occurred to you that once the strips are in place, they will make an excellent guide and reference for shaping the airfoil, as they automatically define the centerline around the blank. Another feature is the advantage of having a sharp trailing edge that is not fragile.

Now there are several alternate variations of this construction. One of them is to use a hardwood dowel for the leading edge. I haven't tried this myself, but have heard of good results. If leading edge strength is not critical, you could use a thin strip as shown for the trailing edge. If you want to spend more money



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on your project, you can substitute impregnated carbon fiber stock for the spruce. In this case you would want to narrow the machined slots, as the CF is there to add strength, not to be shaped. Getting back to wood, the trailing edge can have a thin plywood insert, such as 1/64-inch stock. This is a little more difficult to machine a slot for, however.

Referring to Sketch Two will show what I call a sandwich tail. This consists of two pieces of balsa sheet with a 1/64inch plywood core in between. I now use this construction nearly exclusively on my speed and racing models instead of basswood. The advantages of this construction are: reduced weight, strong sharp trailing edge, simplified hinging work, and easy to shape.

Here is the complete procedure. On a piece of 1/64-ply stock, draw the outline of the tail surface, including the elevator outline. Next cut out this blank with scissors, or a sharp knife. Use a sanding block to smooth edges if necessary, and make sure dimensions are exactly as you want them. The hinges that are used are the nylon RC type. Locate the number necessary on the elevator hinge line, and draw a window around each one, allowing an extra 1/8 inch or so. Go ahead and cut out these windows with a sharp pointed knife. You probably have the picture by now.

Next cut two pieces of medium to medium-hard balsa slightly oversize the dimensions of the core. The thickness normally used is 3/32-inch stock.

The next step is to glue the sandwich together. For adhesive, I prefer fiberglass resin. Brush it lightly on all inside surfaces, being careful not to build it up in the hinge window areas. Set a heavy flat weight on the stack and let it cure for at least 24 hours.

Before we go any further, remember to jot down the elevator dimensions somewhere, and if necessary, mark on the wood which side the elevator is on.

After the assembly has fully cured, define the edges with a sanding block. This is easy, as the balsa sands down quickly until you hit the plywood. Next, shape the desired airfoil with a sanding block. At this point you will see how the plywood core makes a perfect centerline. After shaping and smoothing, I always apply lightweight fiberglass cloth and thinned resin. When it has dried, you can cut out the elevator.

Next, take a sharp knife and trim some material around the hinge slots to give adequate clearance for the hinges. Then, epoxy in the hinges. Presto, you are done!

COOL FUEL DEPARTMENT

Two columns back, I reported on a rules proposal boondoogle that was attempting to save an ailing racing event, namely Slow Rat. The CLCB interim vote went in favor of using restricted fuel supplied by the contest management. The final vote will basically come down to the question of what exact specifications for the fuel formula will be required besides the maximum 10% nitromethane content.

Another event that will probably go with standard fuel is speed. The speed advisory committee has recommended that a 40% nitro content fuel be adopted. The concept here is to reduce the cost of participating in the event. With the lower nitro, engines will last longer, besides saving money on the go juice.

The exception to the standard fuel will be Jet speed, as it is a totally different ballgame.

For a pure event like speed, this fuel restriction might seem like a step backward, but there are other high performance events with restricted fuel.

Technology seems to have a way of compensating for restrictions, so eventually the speeds will be back up there. The Formula 40 speed event is the perfect example here. Prior to the 40% rule adopted for this event in 1980, we were using 70%+ grog. But now speeds are back up to the pre-1980 level.

That wraps it up for this go-around. Keep your glow plugs lit, and the wind at your back. Mike Hazel, 1040 Windemere Drive NW, Salem, OR 97304.

Plug Sparks ... Continued from page 40

shown in the drawing) or vertical fins somewhat resembling a Tiger Aero head.

For those interested in the technical aspects, the Kratmo 10 featured a bore of 22 mm, stroke of 25 mm, giving a displacement of 10 cc (.60 cu. in.) and a weight of 430 grams (15 ounces). Performance figures give were .35 BHP using a 365 mm x 220 mm prop (about a 13/8) turning at 6000 rpm. One interesting fact was the clockwise rotation requiring a left handed propeller.

There are other Kratzsch engines, particularly those of Walter's nephew, who also produced a latter line of engines, that we also hope to feature in the future.

THIRTY YEARS AGO, I WAS...

Our nostalgia column is based on a letter received from Robert P. Scarsdale, 79 Fairmount Ave., Park Ridge, NJ 07656, wherein he enclosed some drawings of the early Brown Jr. dated October 15, 1933. The original set of prints have been in his possession since 1938 at which time he was employed by Junior Motors.

Bob sent a duplicate set to Bill Brown, who was so pleased he dropped in to inform Bob he did not have a set of the originals. After talking to Bill, the thought occurred to Robert that this set should be made available to all, hence, copies were sent to the SAM Archives.

However, Bob has a problem. Perhaps out there in the great modeling world someone has an answer. Here is Bob's query for information:

"On May 22, 1937, I participated in a gas model airplane contest sponsored by the IGMAA at Hadley Airport, New Jersey. I flew with a group from the Philadelphia Gas Model Airplane Association. Adjacent to our pits were two

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-			Douglas O-31A/O-31B	3	12	Berliner/Joyce P-16	4	16
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Boeing F4B-4/-3	4	16	Douglas O-43A	3	12	Curtiss F9C-2 Sparrowhawk	4	16
Boeing P-12E	3	12	Douglas O-31C/Y1O-43	3	12	Curtiss P-6E Hawk	4	16
Curtiss A-8 Shrike	3	12	Douglas O-46A	3	12	Fiat CR-32	3	12
Curtiss Gulfhawk IA	2	8	Fokker D-17	3	12	Great Lakes Trainer	4	16
Curtiss N2C-2 Fledgling	4	16	General Western Meteor	1	4	Hawker Fury Mk I	4	16
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Curtiss XP/YP-23	3	12	Stearman 4E Mailplane	2	8	Monocoupe 90A	2	8
Curtiss SBC-4 Helldiver	4	16	Travel Air 2000	2	8	Swedish Sparmann P-1	2	8

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men in their early twenties who had an early plane so good looking it knocked my socks off. "The aircraft looked similar to a

Cavalier, with elliptical wings, tails and planked fuselage. The model was only six feet wingspan powered by a Baby Cyclone. The model was painted black, with the nose and leading edge of the wing and tail flamed in red. On one side of the wing, painted in red, was an excellent rendition of the Devil, complete with horns and three pointed collar (Obviously taken from the trademark on a bottle of Pluto Water). On the opposite side of the wing, also in red, was a very neat lettering job of 'Mr. Diablo.' What a knockout! The finish could have won a trophy!

"Unfortunately, the model had not been flown under power prior to the contest, and naturally, the Baby Cyclone was as stubborn in starting as a Missouri mule. I witnessed the model successfully passing its hand-gliding tests. They looked so good the owners decided to make their first flight an official one. The thrust line must have been off, as well as the incidence, as the model made a series of high speed loops never gaining too much altitude. Drifting with the wind, the model finally made a disastrous impact with the only tall object on the field, a water tower. Needless to say, that was the end of 'Mr. Diablo'.

"To this day, I still think about the incident and wonder who those two young men were and whether the 'Mr. Diablo' was ever duplicated.'

NOW

How about that men?? Quite a few of you "youngsters" flew at Hadley. Does anyone remember this model?? The modelers?? We would love to hear from vou.

SAM RAMBLINGS

SAM 8: Received a most interesting letter from Ray Chalker, 950 S. Fawcett, Suite 301, Tacoma, WA 98402, describing the latest meet held by SAM 8, on June

Among the more avid flyers is Bob Benjamin who does those gorgeous cover paintings for Model Builder. Shown in Photo No. 6 is Bob, himself, with a DeLong 30 powered Zipper and a .020 size Playboy Sr.

One of the reasons for running this photo is to show the background area representing Hart's Lake Prairie that SAM 8 is hopeful of offering as a base for the 1985 SAM Champs. Ray will admit the Army has been none too cooperative, moving the boys off the field prematurely on this day. This was not before everyone enjoyed excellent flying weather and lots of thermals. In short, a great time was had by everyone.

Another tidbit offered is that Ray has finally been bitten by the R/C bug and used a Powerhouse to obtain a 25 minute flight! Nothing like encouragement!

Ray also points out SAM 8 now has its own field near Tenino (35 miles south of Tacoma). The field was obtained through the efforts of Don Zipoy and Bob Benjamin, the latter of whom has turned out to be a really fine O/T competitor. His Buzzard Bombshell has been unbeatable to date.

Chalker stated that SAM 8 is still hopeful of hosting the 1985 SAM Champs. This columnist has advised Ray to present his proposal (properly packaged) to the West Coast SAM Vice President, Sal Taibi, for consideration. One thing for sure, it would be nice to avoid the heavy heat and dust encountered in the south.

SAM 27: While testing rubber models at the U.S. Free Flight Champs at Taft over the Memorial Day holidays, the columnists ran across his long time friend, (Circa 1935), John Drobshoff, with a most unusual model.

As can be seen in Photo No. 7, the model features a pop-up wing. What makes it all the more astonishing is that this model is a rebuild of an old commercial (as they called them back in 1936), originally designed by Connie Thorall, the San Francisco Wing Champion of the Junior Birdmen (Hearst) chain.

As can be seen, Drobshoff did an outstanding job of restoration. Probably would have been easier to build a new model than to re-build Thorall's model. Last reports are that the model has lost none of its touch in flying. Still goes good!

John Drobshoff also called to remind one and all of the Marin County Contest sponsored by SAM 27, featuring two separate divisions of R/C gas and F/F rubber, still scheduled at the Olive Tennis and Swimming Club. Besides the excellent French cuisine being offered at the banquet, the complete facilities of the Racquet Club have been thrown open to the contestants. Activities include swimming, racquetball, tennis, and many other indoor sports to include all interests. Sounds too good to be true! What the heck, if you get tired of all that, you can always go fly some models . . . or is it the other way around??

SAM 29 ... TEXAS, THAT IS!

Received the latest newsletter, "The Planesman", from James "Bo" Buice, 800 8th Ave., Suite 106, Fort Worth, TX 76104, which contained a very hilarious writeup by Contest Director, Bruce Norman (edited slightly, of course) of the SAM 29 Annual Team Contest. Here's what Norman sez:

"This contest will probably gain national prominence, as contestants from far away places such as Dallas, Waxahachie, etc., are becoming regular faces at these meets. Prizes were overwhelming. Each member of the winning team received a gold (?) medallion, not unlike those awarded at the Olympics. In years to come, there is no doubt these awards will become cherished possessions by collectors of famous historical aeronautical memorabilia. (haw-w-w!)

'Enthusiasm was at an all time high as the spectators were heard to chant, 'Max, max, max.' Due credit should be given to the officials for keeping the crowds under control while wildly cheering. Even the fifth place team members received loud acclamation when the scores were announced. It only proves they deserved awards for the 100% effort to have fun. Because of the high cost (?) of putting on a meet of this magnitude (double haw!) there simply wasn't enough money for expensive medallions to be awarded through fifth place. (Ed. note: What happened to all that Texas oil?) (Money)

To show we actually received pictures, Photo No. 8 shows Jim Buice with his good flying Class B-C Playboys. For those readers who get confused in reading results of Texas contests, a word of explanation is in order. Dr. James Buice, father, is know familiarly as "Bo".

The son, also James Buice, who is also training to be a doctor (to thoroughly confuse the issue), is known as Jim. Both fly old timers with the same enthusiasm.

"Following this, at 6 p.m., (these Texans fly all day and night), the long awaited spot landing contest was run off. with spectators noticeably of the fairer sex. A green flag (located by rocket), about a quarter of a mile downwind, was set out as the marker to aim at. During the next thirty minutes some fantastic (!!) skills were noted. Despite a few rough landings, all walked away intact. Charlene Vanlandingham, wearing a huge smile, was declared the winner, as her plane sat exactly on the designated spot. With all this pulchritude, perhaps the Mayor of Fort Worth could award the trophy next year. (After all, what have the Dallas Cowboy Cheerleaders got that they don't?) ... dunt enser

"'Think that was all?' as Al Jolson used to say. 'You ain't seen nutting yet!' After all but one of the 120 hot dogs were consumed, at 6:45 p.m., most noticeable was the number of contestants doing calisthenics, jogging, sprinting, and throwing rocks, etc., to loosen up the bodies and especially those throwing arms for the rigorous (!) best threeout-of-nine flights in the paper glider event.

"At 7 p.m., all contestants were issued a glider kit consisting of a page from an old 'Planesman Talks' newsletter, two inches of #20 Scotch tape, and as many paper clips as needed. The next few minutes were almost completely silent (except for a few oohs and ahs from the spectators admiring the deft unerring skill of folding aerodynamic masterpieces).

"Noted were some designs that have brought fantastic precision over the many years since grade school. All contestants then began to sharpen their trim as practice flights were taken.

"Competition was intense: official flights ran 2.4 sec., 3.8 sec., 8.1 sec., 18.7 sec,. and then 27.2 seconds!! Mike Reeve's best total time set a new club record for this type of flying. Just wait until next year!!"

Bruce Norman, in closing, stated the results of this famous "Team Contest of 1983" were recorded for future generations of modelers, being sent to Tarrant County Court House, Smithsonian Institute, Library of Congress, time capsules, etc. (Help! Man the pumps, it's getting too thin to shovel!)

SAM ABROAD

NEW ZEALAND: After the report on the Australian SAM Champs, we could hardly ignore a letter from Bill Mackey, 310 Hurstmere Rd., Takapuna, Auckland, New Zealand, for a photo of his most interesting Tee-Tail design.

This model, built in 1936 or '37, is powered by a Baby Cyclone. As can be seen in Photo No. 9, the model was not covered with bamboo paper as originally, but Bill has succumbed to the new Solar Film. This has resulted in an extremely attractive model. Too bad the



color shot doesn't allow the pretty red, blue, with yellow trim to show up in a black and white print.

Bill, who retired recently, has found himself busier than ever (Same old story, won't people ever learn not to retire?) as he is now writing for the Flight Safety Foundation as a contributing editor. This, and the "honey-do" projects around the house, have meant no chance to get a razor near a stick of balsa!

Bill is planning to radio control the model, as good flying fields are not that plentiful. Mackey concludes by saying the plans are still in the offing, as the originals were just rough building outlines. Need to put down a few more construction lines. We'll be looking forward to this plan!

GERMANY

Gerhard Everwyn has been responsible for forwarding a few photos of Erich Punke and the old timers he has built in the last year. Photo No. 10 from Erich shows the framework of his HS 100 (a 1939 German F/F design) fitted with a Saito 30 four-cycle. Thanks again to Phil Bernhardt for the German translation. This helps tremendously!

Gerhard also reports he has been able to amass a considerable number of old German model publications with duplicates being sent to other O/T devotees. An interesting sidenote gleaned from the "Modelflug der Deutschen Luftwacht" reveals that a group of German modelers visited Japan in 1941 to arouse interest in models!

SOUTH AFRICA

Received a classic shot of a Buzzard Bombshell that could pass for Joe Konefes original sitting on the runway at the 1941 Chicago Nats. Stan Ohlsson sends in Photo No. 11 of his neat looking Buzzard Bombshell sitting on the Yisante Kraal Airfield in South Africa. Stan is a dyed-in-the-wood O/T addict, as he sent in other photos of his other O/T models. The O/T game is getting bigger all the time in South Africa! **READERS WRITE**

If it wasn't for the readers who occasionally send in a photo and possibly a contest report, this column would be as dead as last night's pancakes. Photo No. 12 was sent in by Jim Alaback, 785 S.



Photo No. 13 should come as no surprise to the readers, as Sherman Gillespie, 6248 Blauer Ln., San Jose, CA 95135, amply demonstrates what his love is in old timers...rubber! This shot of a Jimmy Allen "Bluebird" is a classic closely resembling the photo used in the kit plans.

Sherman has been instrumental in obtaining the use of school auditoriums

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and gymnasiums for the flying of indoor scale and other indoor types. This has been the bugaboo of indoor flying (just like outdoor F/F), the lack of suitable areas to fly these models. Sherm reports a renaissance of indoor O/T flying scale. So c'mon out and join the fun!

As can be seen in Photo No. 14, former SCAMP (Southern California Antique Model Plane Society) Chuck Provance, is still very busy turning out old timers. Although the model kit was very popular in its day, the California Chief A-2 (sometimes called the Cheese) is rarely produced. Originally designed around the Baby Cyclone engine, Chuck put a P.A.W. 1.46 diesel engine in his version. Last reports on this model was that it was entered in the La Junta SAM Champs.

The nickname, "Cheese", was derived from the fact that the pre-fabbed sides of 1/4 inch hard balsa were often not oil proofed by the new modeler. In no time flat, the fuselage sides soaked up the oil until the strength of the sides felt like cheese. Regardless, the model kit was a tremendously quick way to get into the air, and many a modeler was introduced to gas model flying this way.

Lesher Dowling, newsletter editor of SAM 21, is responsible for the next photo, No. 15, showing the lineup of antique models for judging in the Beauty event. This photo, taken at the Salinas Aero Modeler (S.A.M.) meet, also shows competition going on in the back-



ground. A good variety of models are shown in this shot beginning with Pond's Dallaire, Otto Bernhardt's Lanzo Record Breaker (the eventual winner), a Cloud Cruiser, and Jim Kyncy's Anderson Pylon. All models are fully competitive and not built for exhibition.

Incidentally, in talks with Otto Bernhardt, who runs 77 Products, the "King" (from King Otto, natch) expressed the viewpoint we should have more sketches and kinks on ways and means to improve the building and flying of old timer models. Otto said probably the best thing this column ever carried was the Shielded Ignition System as designed by Tom Bristol. Subsequently published circuits are only improvements on the original basic circuit.

This writer has several sketches on hand but was not certain if the readers were interested in this type of column. We would be most interested in the reaction of the readers, as we can readily accommodate this type of column. In addition, if you, the reader, have a particular pet gimmick for the building and or flying of old timers, we would be most pleased to hear from you. In short, fellows, share your experiences with the next fellow. He'll appreciate it!

THE WRAPUP

Next month we will carry a complete description on what went on at La Junta, site of the 17th Annual SAM Old Timers Championships. Photos from our official SAM photographer, Harold Johnson, of Minneapolis, Minnesota were a little late in coming through so we had to put off the report until the next issue.

However, to show you some of the fun ahead of time, at the SAM Victory Banquet, the highly prized perpetual trophy for the R/C Texaco event was won by Don Bekins in a five man fly-off (the boys are getting too darn good).

Inasmuch as the Roberts Trophy for R/C was originally won by Chet Lanzo and donated to SAM as the Texaco R/C Perpetual Award, the columnist throught it only appropriate that Chet Lanzo award the trophy. (Having won it again in 1982).

So, after some shennanigans at the microphone, Pond turned the awarding of the trophy over to Lanzo. Upon

calling up Bekins, Chet then announced there was a special cash award for anyone winning with a Lanzo type design.

Upon asking Bekins what kind of model he had won with, the entire audience roared, well knowing that Don had won with a scaled up Goldberg Diamond Zipper, sometimes called the Gas Bird.

Lanzo was properly sympathetic and said, "Well, better luck next time. Here's a buck for your trouble." With laughter still ringing in their ears, Lanzo and Bekins then left the podium.

Men, that's what this old timer game is all about. It's great to be able to win, but it is even greater to be able to rub elbows (or is it shoulders?) with your peers, buddies, and friends. You don't see that in any other form of competition ... only the Old Timers!!

BIG Birds Continued from page 25

But an inherent safety hazard has reared its ugly head. Even though your engine may be completely dead, i.e. plug and/or boot removed and kill switch on, the spring starter itself is not disabled. It's still sitting there, intact, just waiting for someone to engage it so it can show off and do its thing. And it did just that to a normally curious 3-1/2 year-old who tried to emulate his elders by rotating the prop backwards . . . and got whacked on the hand for his efforts. The engine in question was absolutely dead; it could not fire up. But the starter was very much "alive" and did what it was designed to do ... snap the prop through a number of revolutions.

Luckily the toddler wasn't hurt badly, but he could have been, and this incident really got to me because my Adam is also a very curious 3-1/2 year-old ... so, for all practical purposes the poor tyke with the great BIG tears streaming down his cheeks was mine ... and did I feel lousy. That engine should not have been where anyone could have gotten to it (insuring that it was "dead" and therefore no longer a hazard, was a terrible assumption), and for sure, the kid's parents should have had better control of him. It's up to us to keep our eyes open and make damned sure this kind of situation won't happen again... because anyone who "plays" with a prop that has a SS on the other end of the shaft is gonna get bit.

I like the starter; it's simple and effective, and it's a much needed item that most every BIG Bird owner can appreciate. Yet, it always has the potential to bust up a hand or wrist, whether or not the engine is in running shape. And that hand or wrist that gets beaten up may be yours or a buddy's . . . and as most of us BIG Bird types are close to being middle aged (or older), this kind of accident could be more devastating to us then to a small child; you see it's a fact of life that older bones are more brittle and break and crack easier than younger bones... and they also take longer to knit and heal properly. So, please, be extra careful around props . . . and assume that all engines have a SS installed in back. 17x6 PROPS

A few months ago I mentioned about running my new Magnum .915 4-stroke with 16x6 and 17x6 props ... and received letters asking where I obtained the 17x6. What I hadn't mentioned was that all the 17x6's I have were cut down from 18x6's that weren't doing anything to earn their keep. I've found that all the stories I'd heard about 4-strokers liking wide-blade props were true; the engine does well with these type props when married to something like Sig's 1/4-Scale Cub.

I've checked around, and to the best of my knowledge there are no 17x6's made in this country. The only commercially available 17x6 I know of is called "Super Thrust," which I'm pretty sure is made in England by Airflow. If anyone has any more info on 17x6 types, please let me know and I'll pass the poop on.

IKON NORTHWEST

Emil Neely has some really good and well-proven kits to offer ... and I do mean well-proven. The Monocoupe 90A raising a cloud of dust on its takeoff run in one of the photos is a five year-old prototype; sure, it's dog-eared (that's a nice way to say "ratty"), but the bird has held together well all this time and still flies better than most.

In addition to the Super Cub and Monocouple, Ikon will shortly have both radial and in-line versions of the Fairchild 24 ready for your hot little hands to get into. All Emil's planes have about a 9-foot span, and gross out at 16-17 pounds with Quadra. And let me tell you that you don't need anything more than a Quad for any of these birds; I flew his old Monocoupe and it's a "hotdogger" for sure. It'll do just about anything the pilot is capable of, and look good doing it. And for those who like to go hog-wild with scale details, all the planes lend themselves well to gussying up.

Mr. Neely also has floats that work so well, he even uses them on his own aircraft; that's like knowing the cook eats his own stuff instead of going to another



place for vittles. If you haven't tried water flying (or using skis), you really have been missing out on F-U-N. You've got to be prepared, however, and unless someone else has a boat of some kind, a one or two-man raft would be a nice investment (they're available for under thirty bucks): it would be mighty embarrassing to get caught with no means for retrieving a BIG Bird that ended upside-down, or one that was drifting the wrong way 'cause the engine quit. Also, many guys use other than wooden props when flying off of water 'cause the spray on takeoff literally eats wooden blades. But it is fun and you'll never know what you've been missing unless you give water flying a go.

PLASTIC SERVO TRAYS: A GREAT, BIG NO-NO

Some guys never get the word ... or perhaps they just don't heed good advice. Whatever the reason, quite a few birds have pranged because plastic servo trays were used. I don't like them, and don't think they should be used in any airplane, as a better and more rigid tray can be easily made from ply... and tailored for your specific installation. Bob Chanslor, who hails from Peculiar, MO, was one of many who've written or called about plastic trays being a dumb way to go. Bob didn't mince any words about how he felt...

"I don't understand why anyone building a giant model will try to use those ----- plastic servo trays. I watched a new Nosen Aeronca Champ go in after its first takeoff because the servo tray came loose. They may be okay in smaller planes, but they just aren't worth a ---- in anything that's BIG. It's so easy to make one out of 1/4-inch plywood that is considerably more substantial. I don't know whether it's ignorance, or stupidity ... or both. The admonition against them should be repeated loud, and strong,



and often. Some of us just don't realize what kind of forces are acting on the servos and the trays. Seems like these guys don't read all the material available on BIG Birds."

If you have been using plastic trays in your biggie and haven't had any problems, it's in spite of you and not because you did something right. Odds are you're treading on very dangerous ground and are always just a hair away from loosing your flying machine. So don't take any chances, and use those scrap pieces of ply to custom make servo trays; you'll be glad you did.

And while on the subject of servo mounting, let's touch on anchoring those servos to the (plywood) tray. I can't recall seeing or hearing about using anything else but the long #2 screws for installation and, as far as I'm concerned, that's a punky way to put and keep servos in any BIG Bird. So here's what I've been doing for a while: instead of #2 screws, I've been using 3-48 machine screws and self locking nuts to keep those servos in place on the tray. Perhaps it is an overkill on my part, but it



BOX C, GARBERVILLE, CA 95440

makes no sense to trust the traditional wood or sheet metal screws to keep servos where they belong, especially with the violent maneuvers we so often engage in. I fugure that if plastic servo trays are a no-no, then plain old screws for servo hold-down must also fit into the same category. This type of installation does make installing and removing servos a bit more of a chore, 'cause the whole tray has to come out to do it right ... but, I think it's worth the little extra fuss. I get the same peace of mind doing it this way that I get from using 3-48 screws and self locking nuts to keep a 4-40 clevis secured to a control horn.'Nuff said.

MAMMOTH SCALE PLANS

I did it again, gang; got myself into another situation where I owe an apology. Seems that I really stirred up a hornet's nest out there, 'cause all you guys who like Bob Morse's Mammoth Scale Plans were irritated that I've referred to so many other plans without mentioning what Bob has available. And I agree ... I completely overlooked Morse's outstanding lineup of BIG Bird plans ... somehow. Bob, I am sorry...

Ever since I built and flew two of Gold-



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berg's very underrated "Shoestring" kits back in the middle sixties. I've had a thing for the "Shoe." That kit, I'm sure, fooled a lot of people into thinking that it was strictly a hard-to-handle racing machine ... although, quite to the contrary, it was big and lightly loaded, and a dandy looking sport and fun flyer with a standard front rotor K&B forty up front. Back in February, Bob Siegelkoff's BIG Kawasaki powered version got my "Shoestring" juices flowing again when I spied it at the Northwest Model Expoin Puyallup. Unfortunately, a second move loomed on the horizon and thoughts of future projects were shoved onto the back-burner. What I didn't know until writing Siegelkoff was that he built his from Bob Morse's plans . . . and so I now have a set, also.

Mr. Morse echoes my feelings, exactly; we both wonder why the "She" hasn't been done before in this size, as it appears to be very popular and wellliked. And, in keeping with the very objective view that "BIG Birds Fly Better," Bob S, reports that his "Shoestring" does, indeed, do everything better.

Like many others, I can, and do, spend hours "reading" good plans like these because there's so much to look at and contemplate . . . all the while licking my chops in anticipation. And because Morse's plans lend themselves so easily toward daydreaming, I find myself becoming another Walter Mitty and vividly picturing my finished bird tracking straight and true down the centerline and nimbly rotating skyward.

According to the plans, this 41% of full size "Shoe" spans 94-1/2 inches, has just a tad under 1500 squares, and should have a 3.15 Kawasaki to haul its 28 pounds around. With my much lighter, "hand-massaged" Quadra (it equals a 2.4 Kioritz in power), and with careful attention paid to the building and finishing, 1 know 1 can bring my bird in at under 24 pounds.

But even if the "Shoe" won't fit (ugh) send an SASE to Mammoth Scale Plans (3351 Pruneridge Ave., Santa Clara, CA 95051, (408) 244-5814) and find out about Morse's twelve other quarter-size or larger beauties. He's got a C-O-O-D lineup... and he does G-O-O-D work. UPDATE ON THE COMPUTER IGNITION MODULE

Last month I introduced the ignition module, described how it worked and how well it made Quadras and such run by eliminating the #*@&%# points, and told you how to get one. This month I've got a change to plug in: instead of writing to Jim Hursh for and about the computer ignition module, please direct all letters and queries to my address, which you'll find at the end of every column.

For those unlucky few who may have just picked up their very first copy of MB, this ignition chip is absolutely fantastic. It mounts directly on the firewall, connects to your engine with only two wires (one to ground and the other to the wire that normally connects to the points, which are bypassed), and does wonderful things for you and your engine: it eliminates the points; enhances the idle; eliminates that midrange hesitation; gives a crisp and positive throttle response; and improves overall performance by automatically advancing the spark as you advance the throttle. This thing really works, and is one helluva good buy at \$14.95, which includes shipping. Also, please determine whether or not your engine has a two or three-leg coil, 'cause there are different modules for each type; typically, the Quadra, Roper 1.9 and the Mag-Aero have two-leg coils.

THE ROCS FIRST ANNUAL BIG BIRD BASH

Was surprised to get letters and phone calls asking how our first fly-in went... and have been happy to report that it went WELL. It could have hardly been better, what with 40 pilots, 36 BIG Birds, over 2000 spectators ... and some mighty nice flying weather. Gonna have a separate piece on the fly-in... probably next month.

TIP OF THE MONTH

"Never Play Leapfrog With A Unicorn!"

Al Alman, 605 168th Street East, Box 95, Spanaway, WA 98387. Good news about pix, guys. We can use color prints if they're clear and in focus, and don't have backgrounds that are too dark (like many flash pix). Most all shots of birds taken at the field should be good enough

MODEL BUILDER

for reproduction, so now you don't have to sweat sending me those valuable negs anymore. As most everyone shoots in color, there's no excuse for not having some photos to send me... FLY SAFELY.

Electronics . . . Continued from page 31

thing which we all know is to some degree an indication of quality, and while we don't need something quite good enough for the Bureau of Standards, we do need something that is accurate and dependable within practical limits, and upon which we can depend and trust with the longevity of our models... that is the bottom line.

My choice has always been the Simpson 260, a multimeter that has for years been a standard in electronics. As a matter of fact, I still use one on which I used to read the relay current on gas tube receivers, which will tell some of you something. The 260 is made by Simpson Electric Co., a U.S. company whose business is measurement instruments only. The 260 basic design has been updated through the years to meet the changing needs of the state of the art. One of the latest models, the one which I recommend to the R/C electronics hobbyist is the 260-6XL, an instrument which has all the previously mentioned features, a 4-1/2 inch meter face, and which has been designed especially for solid-state circuitry measurements. It provides for all of the basic measurement needs of not only the beginner, but also an advanced, experienced technician.

The Simpson 260-6XL has the following capabilities:

DC Volts: 0 to 1000, in 9 ranges.

AC Volts: 0 to 1000, in 7 ranges.

Ohms, Conventional: 0 to 10 Megohms, in 4 ranges.

Ohms, Low Power: 0 to 10K, in 2 ranges. DC Current: 0 to 50 Microamps;

0 to 500 Milliamps, in 4 ranges;

0 to 5 Amps.

Output, AC: 0 to 250, in 5 ranges; DB: -20 to +49, in 5 ranges.

Accuracy as low as 2% is claimed; 3% on the AC scales. Internal protection for the meter movement and electronic circuitry is provided. Two batteries, a common "D", and a 9-volt transistor type are required and furnished. The 260 is UL listed, too.

For more specialized uses, the 260 can be equipped with accessories to measure temperature, high voltage up to 40KV DC and 10KV AC. Various types of cases are available for field use and protection. It is available with mirror backed scales for greater reading accuracy, and in pushbutton reset protected models.

Some of you no doubt will be thinking "Why not digital"? Well, I also own a digital instrument, so I can speak from personal experience. The digital VOM has only one advantage, that of being able to accurately display fractional units. And when I require such accuracy,

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We built our first cobalt motor in 1975 for our SOLAR-powered unmanned airplane SUNRISE. The SUNRISE motor weighed 16 ounces and produced 3/4 HP. Last year we built the SOLAR PROPULSION SYSTEM FOR THE DUPONT SOLAR CHAL-LENGER that made its historic flight from Pointoise. France to Manston, England on July 7 1981 The SOLAR CHALLENGER COBALT MOTOR was only three inches in diameter but delivered almost 3 HPII By using this advanced technology we bring you our new ASTRO CHALLENGER COBALT MOTORS, super-performance motors for the serious competitor. for the modeler who demands the best and simply won't settle for second best. The heart of these motors is the new, high-energy, rare-earth COBALT magnets. They supply much higher magnetic flux and are not damaged by overloading. To efficiently utilize this magnetic potential we have incorporated (1) a high-grade silicon steel armature lamination, (2) a high-performance commutator capable of running at 35,000 RPM and 350° F and (3) a new silver graphite cartridge brush that can safely commutate 25 amperes. The net result is a really super-power motor that is ready for world class competition. THE NEW ASTRO CHALLENGER COBALT MOTORS - NOTHING ELSE COMES CLOSE!

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I use it. Far more often, as when looking for a null, or peak, in value, the analog 260 is faster and easier to read. It is faster and easier to use when testing transistors, and forward/reverse tests of diodes. There are a lot of times when you are looking merely for presence, and not value. The easily seen and read moving needle is far easier to work with than a bunch of flickering figures which you can't read without conscious effort if they have passed a peak and are now decreasing or are still going up. A good digital VOM is definitely a worthwhile addition to the electronic workbench, but I consider a good analog VOM as the basic test instrument you should consider.

Simpson instruments are available at most large electronic supply houses, backed by a large number of authorized service centers all over the country. If you can't get information locally, write directly for a catalog. The address is Simpson Electric Co., 853 Dundee Ave., Elgin, IL 60120, (312) 697-2260. The catalog will tell you even more about my favorite, the 260-6XL, which is priced at \$139, and all its relatives and accessories. **BATTERY TESTING BASICS**

A letter from R.F. (Bob) Hilton, Shelby, North Carolina arrived. He writes:

I have several questions which I know are very basic, but I have been unable to get answers for them. I have an old Tower Six Channel outfit which is about five years old (made by Kraft), it is in likenew condition and has been used very little. I have added a jack in the bottom of the case to check the batteries with a voltmeter (sketch follows). Is this hookup OK?

What can I do to impose a load in my leads so as to get the condition of my batteries? (Both transmitter and receiver batteries. As these batteries are five years old, I question their depend-



Challenger 05 . . . \$75.00

Challenger 15 \$100.00

Challenger 25 . . . \$125.00

Challenger 40 . . . \$150.00

ability.)

My frequency is 72.400. Will this be an outlawed frequency when the new rules become effective?

Tower Hobbies no longer has servos or flight packs for my transmitter. Can other receivers and servos be used with it, and if so, what modifications would be needed?

My transmitter battery is a 6-volt 550 MA; the receiver battery is a 4.8-volt 550 MA.

These are, I am sure, very basic questions, but to some of us it is the basic things which stump us.

Just a thought that I might pass on is that for those of us who are retired and on a fixed income, it is a real joy when we see in your articles ways and means to make inexpensive equipment that we can use. Many thinks for any help you can give on these questions.

Well, Mr. Hilton, your thanks are accepted, however, as I have enjoyed many of your hotels around the world, it seems only fair that I now do something for you! And yes, your questions could

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be considered basic, but it is all relative. we don't all have the same training and experience. What some of us take for granted can be the world's greatest mystery to someone else . . . just take a look at the next beginner with his first airplane who comes out to your field. When WCN and I first discussed my doing this column, we both knew that the engineers and technicians don't need it, or me. We are attempting a twofold purpose, one being to help those who wish to learn more about the insides of our control system and as you mentioned, to save a buck here and there, and secondly, to provide a place for an exchange of ideas, such as those received in the past from Fritz Mueller. Floyd Carter, and others. I am a great one for not feeding airplanes to the ground needlessly, and if I can help save one now and then, the whole thing is worth it.

Which finally gets us to your questions ... still on the subject of saving airplanes ... checking those all-important batteries. Yes, your test circuit is correct, and to add a load, you need merely to connect a resistor across the battery leads while you are measuring the voltage. The resistor should load the battery down to about half capacity (275 mils in the case of your 550's), but it is not all that critical. You can use two Radio Shack 271-080, 10-ohm, 2-watt resistors inseries as a load for both your receiver and transmitter battery. If you had a 9.6-volt transmitter, you should use 40 ohms

resistance. Keep the load, and mater, on for about 30 seconds and look for any large voltage drop. If you care to review the whole process, my December '82 column covered it in detail.

Remember, however, that while this is a worthwhile test, it does not actually tell you the capacity of the batteries, which, being old, may have deteriorated somewhat. You can have one lowcapacity cell that this test might not show up, yet which will do you in long before you would be expecting to run out of electrons. You should test the capacity with one of the instruments available for that purpose . . . someone in your club or group is bound to have one. The Ace Digi-Pace is especially recommended as it will accept the six-volt battery in your transmitter; not all of them do. There is a not-so-sophisticated cheaper one available from RAM, called a Simple Cycler. which works well, though it is designed. for 9.6 volt transmitters.

Regarding 72.400 (and the rest of our original seven frequencies): it will be legal until January 1988, so for now. relax and enjoy! In fact, you can even add another airborne or two, there are a number to chose from. I have flown Novak Electronics equipment extensively and can unreservedly recommend it. There is a new four-channel, four-servo airborne for \$175 that is certainly attractive. If you care to roll your own, you can't go wrong with Ace R/C Silver Seven components. The Novak equipment would be adjusted to your trans-

mitter's timing at the factory; the Ace instructions tell you how to set it up as you go. If you are flying sailplanes exclusively, you'll have two unused servos from the original airborne. Why not add one of the above receivers and a battery and equip glider Number Two? THE MARKER BEACON INTEFERENCE MYTH

We've all heard it, especially at those R/C fields located in the vicinity of an airport ... any airport! Some guy is flying along on 75.640 (White & Green

... not Green & White) when all of a sudden the fates catch up with him and as he is carrying back the pieces, he is heard to say, "They must have turned on the marker beacon over at the airport".

Well, maybe it wasn't pilot or a building error of some sort, but it definitely was not the marker beacon that did him in. Marker beacons do not cause interference to R/C airplanes, on 75.640 or any other frequency. If you've experienced it, you have a badly mistuned receiver, plus you were flying in the wrong place!

To begin with, all airports do not have marker beacons! Only those with an ILS (Instrument Landing System) do so, and you won't fine those at every grass strip in the country. Generally, they are only found at airports which handle commercial and military traffic. Further, the marker beacon, commonly known at "High Cone" and "Low Cone" to pilots and controllers, operates on 75 MHZ Period! Not plus or minus. Aeronautical radio works on much closer tolerance than we do. Thus. being on 75.640 MHz puts you 640 KHz away. And as you've been reading all that stuff about channel width, etc., that has appeared in the model press since the advent of the new frequencies, you know that we have been flying with 80 KHz spacing between our own frequencies. So you know, that if you can fly on 72.080 with another transmitter on 72.160. 80 KHz away. without interference, a transmitter 640 KHz away certainly can't bother you. **Right?**

Right . . . but there is more to it than that. The marker beacon transmitters, as there are two of them, are located in line with the ILS runway, at certain distances from the approach end. Their function is to provide an indication to the pilot of an inbound airplane making an instrument approach that he is certain distances from the end of the runway. The ILS Approach Chart for that particular field will tell him the altitude that he should be at to maintain the proper descent to the runway. Now these transmitters are extremely directive. The receiver in the aircraft, which is tuned exactly to 75 MHz and thus better able to receive it than you on 75.640, will receive a signal only when the aircraft is directly. overhead, and not anywhere else, even in the vicinity of the airport.

So you will now see why I said that you had to have a badly mistuned receiver, and be flying in the wrong place . . . right off the approach end of a runway, to be hit by a marker beacon.

Let's look at the car and boat frequencies now, as under the new law they are all going to 75 MHz frequencies. Still no problem; the nearest one is 75.430 MHz. or 430 KHz away from the marker beacon frequency. And though I know that John Brodbeck's K & B .35cc Outboards are still setting records, I don't believe that even the best one can get that tunnel hull up to 800 feet out over the approach end of Zero Eight!

I further wanted to impress you with my knowledge of the subject by telling you when marker beacons came into common use, or some other historical fact, but my library failed me. Would you settle for the fact that marker beacon in Spanish is "radiobaliza"?

BEWARE THE BLACK DEATH!

Seems that not having enough with AIDS, herpes, and Legionnaire's Disease to contend with, we R/C'ers are subject to yet another rare and uncommon disease. Like the aforementioned, we're not sure of either the cause, or the cure. And it can be fatal! While I don't have the exact statistics, I'm sure that more than one R/C airplane was a victim just last weekend, and who knows how large the total is.

I'm talking about some sort of corrosion that attacks battery wires! I don't know what it is, and while I have read other non-R/C literature dealing with Ni-Cd battery powered equipment in which this phnomena is mentioned, I have yet to find an explanation. This glitch from outer space, or whatever, makes its presence known in the form of a silvery black coating, only on the negative wire, and only from the battery to the first connection. I have never seen it on the other side of a switch, for instance, or on any other negative lead past a circuit board. It is undoubtedly some type of chemical action involving the negatively charged electrons present. This action seems to start at the battery and will eventually travel the whole length of the wire, coat every strand of it, to wherever the wire terminates. It will eventually form a hard coating all over the wire and both connections, and eventually raise the resistance of the wire. It is impossible to clean off, and a wire so affected will no longer accept solder. If this isn't enough, it makes the wire weaker, and brittle, thus more susceptible to breakage.

As a matter of interest, it would be nice to know what causes it, but it is more important to know that it exists, and could happen to you. Look for any chemical deposits on the negative terminals of all batteries when you have occasion to be inside the transmitter or the battery case. If in doubt, remove, cut, and strip the end of a wire, and if the interior is not clean and shiny, replace the whole length . . . before you have to replace an airplane.

FREQUENCY IDENTIFICATION AND CONTROL

The newly assigned R/C frequencies have sure caused some logistics problems for us ... there sure are a lot of numbers, colors and channels to keep



ufacturers are being conspicuously quiet about the whole thing, making no mention of or furnishing the proper frequency flag with their equipment. Not so in the case of Ace R/C, who was there when the gun went off with a complete set of accessories to help us cope with the new frequencies, and with each other!

The first thing required is that old frequency flag, now having to be not only the right colors, but also a distinctive shape, and having some numbers on it. To refresh the memory, the entire color/ number scheme is based on the electronic component code, in which a color represents a number, thusly:

3 — Orange 4 - Yellow 5 — Green 6 - Blue 7 - Yellow



In this case, the number 9 is not used, though white is not used to represent it. It is still however, being used to indicate the 72 MHz band, in the White/And combinations previously used. Anyway, Ace R/C has a whole series of appropriately shaped, colored, and numbered flags, which you can purchase separately.

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in the proper combination to make up the proper two-flag combination required by whichever of the new frequencies you have chosen. They are all Part No. 50L91X, with the X being the number from the above list, and they are priced at 75¢ each. You will also need a set of No. 50L920 Flag Hardware, at another 75¢.

For ease in identifying receivers, transmitters, planes, etc., there is also a set of Frequency Stickers, available for the new aircraft channels only. Two of each frequency, for 40 centavos!

And for courtesy and safety at the field, Ace R/C has a new set of Frequency Control Stickers, to be used as the basis for an additive type of field control system. You have to furnish the main control board, some small 1-1/2 x 2-inch wood or plastic pieces and those irreplaceable clothespins; what you get from Ace are those hard-to-fabricate colored and numbered stickers with which to identify the clothespins and their location on the board.



They are available in sets; 50L930 at \$4.98 for the New Aircraft Set, 11 pieces, and 50L940 for the old 72 MHz set, 7 pieces, at \$2.98. Individual stickers, in sets of two, are 98¢, and are numbered 50L93XX, with the XX being the channel number.

While you are at it, order yourself one of Ace's 110 page catalogs. You will not only be able to browse through one of the finest collections of small and large items for those amongst you who like to build and tinker, as well as most of the major lines of supplies, but you will get to see photos of Tom Runge's mob of magical Missourians who make it all possible.

LOST MODEL FINDER

I very recently received a letter from a secret admirer...secret because I can't find said letter. I know it's here somewhere, because I wouldn't throw something important like that away. (Your desk must be like mine! wcn) I remember it though, he wrote at great length about how much he enjoyed my column and my articles, what a great guy I am and what a terrific flyer...and if you are back from throwing up, we'll get on with it!

This particular fly-person flies close to a thickly wooded area, and he is always concerned that someday he'll lose one in there and be unable to find it. He has read somewhere that the oscillator in the receiver operates as a transmitter, and was wondering if it would be possible in someway to receive and home in on that signal?

Well, Secret Admirer ... please let me hear from you again ... my first bit of advice is: Don't paint your airplanes green! Secondly, you are partly right about the receiver oscillator, but there is not enough signal there to work with. In fact, the suppression of that very signal is part of why that little sticker is on the receiver, stating that it meets the provisions of Federal Communications Commission Regulation 15C.

There is an electronic add-on that might help in some situations, and which is marketed by a number of companies under various names. However, it is a simple and inexpensive item to make, and a schematic is shown here for those who care to try it. I have bread-boarded one, and it does make enough noise to be heard for at least a couple of hundred feet.

Circuitwise, the lost model locater is a transistor which is normally kept in the off position by the servo signal present in an unused channel of the receiver. It in turn controls a small buzzer, which is normally silent, except when you turn off the transmitter. From here on, its use is obvious . . . when you are down in the boonies, you turn off and listen carefully. Obviously, the whole thing depends on your crash not being caused by a completely dead battery, or having spread your airborne system all over the woods. It'll help sometimes, and as a bonus, you can use it to range check; when you have walked to the end of your radio range, the buzzer will sound off and let you know.

There are numerous small 6-volt DC buzzers to be had. Radio Shack has them, use No. 273-004. Its Piezo Buzzers will work, but the sound they make will not carry as far. You can get a small 6-volt buzzer similar to Radio Shack No. 273-055, which unfortunately is a 12volt'er, from Digi-Key Corp., P.O. Box 677, Thief River Falls, MN 56701. It is No. 139C, and costs \$2.16. There is a \$2 charge on small orders . . . but what can you do. One may be ordered on a credit card from (800) 346-5144. Ask for a catalog too!

The rest of the stuff is standard, Radio Shack parts will do, and a small piece of perf board will suffice to build it on. May you never really need it after you have built and installed it!

R/C Autos Continued from page 49

long. On the other hand, John learned a lot, quite possibly more than if I had just taken over the wrenching myself. Rollyour-own race car prep and tuning can teach you a lot, in fact, that has always been my approach, so in the long run, John's experiences with the RC150 have been very positive.

The car was never out to lunch as far as handles. Right from the first race, this low-bucks race car was beating more expensive cars; in fact, there are a lot of racers in our club who are not aware of the fact that this car doesn't even have a differential. The use of diffs is almost universal at our races, and John raced the only solid axle car. Things have now progressed to the point where he is qualifying for the A main regularly. In our club, the top three or four guys in the A main are almost always there and can usually hammer the racers making the A by the skin of their teeth, but just making the fast main is a significant accomplishment in our area, indicating that the RC150, even though low-tech by today's standards, will do the job at most any club race in the country.

One-eighth racing really needs to be taken in steps if you expect to do it for any length of time. For the first few races, possibly for the first whole season, it is really hard to go out and blow anybody away. You have to learn the lines, tire selection, clutch setup, how wings work, motor tuning, gearing, brake settings, and how to prep the car for reliability. The RC150 has done this for John, he can now get the car around in very good shape and do it consistently.

Now John is looking very closely at the Dirty Racing Team's Associated RC500 and Delta Eagle suspension cars; I just know he is going to be upgrading his racing equipment next year. While I haven't told him so, I have been watching him push that solid-axle RC150 to some very respectable finishes this year. When he gets a new car, that high-zoot number (whatever it is), then what he has learned this year will make him very competitive next year. He simply will not believe how easy the new cars are to drive fast!!

The power source in any 1/8 car can make or break you at the track. The K&B 21 has been just super. It is stock, all we did was pull off the back door for a quick peek inside and installed it in the car, where it has been ever since. Power and mileage have never been a problem, most importantly, the motor is still fresh after all the thrashing it has endured. This next winter we will check the rod for wear, and with no more maintenance than possibly a new rod, the motor will be ready to go into a new car.

Incidentally, my boy Josh is presently racing our RC500 (getting around quite quickly with it!), and it is powered by the latest K&B 21, the "square head" version. This new K&B is even better, Josh is using a .161 insert in the Delta carb (yes, we know that is a teeny bore size), but he isn't giving up anything on the straights to anyone but the top four or five cars ... on only 12% fuel. With a .200 insert that motor will put the hammer on everybody! More on the "square head" K&B when we do a follow-up, seasonof-racing-later article on both the Associated RC500 and Delta Eagle.

The radio system in the RC150 has given us a couple of little problems, but it is old and thoroughly beat-up. I used this same radio system in my first 1/8 car, an MRP pan car and that was (gasp) six years ago. That car and radio was actively raced every year, John ran it in '82, lifting the radio out to install it in the RC150. Frankly, the JoMac system for 1/8 cars was never widely used. But the DRT sure as hell got a ton of racing out of this one!

The one consistent problem we did have with this race car was needle settings, and this is to be expected. Dialing the needles is not difficult at all, but novice 1/8 racers all tend to run the motor too lean on top and bottom. About once a race day John will have flame-out problems; it has gotten to the point where I don't even listen to the motor when he says he is having trouble with it. I just tell him to richen up the mixture, he asks which one, and I tell him both of them! With my preferred approach of I'll - give - a - little - advice but - figure - it - out - for - yourself - so



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you'll - remember - next - time, coupled with his sense of independence, he generally gets it set right.

The trick is that with everything in the fuel feed system and in the motor right, needle settings are simply a matter of setting the motor rich on top and bottom, slowly sneaking up on the "race" setting a click or two at a time. The motor will at least run, even if it is very rich. It might cough, hesitate and burble like crazy, but it will run and run reliably, if not quickly. When too lean, it won't do anything right and it is almost impossible to set a motor properly from the "too lean" side. Always start from too rich. A trick I use to ensure good needle settings is to always open the high speed and low speed a little after each race day. At the next race the weather is usually different, requiring a different setting. By opening the needles beforehand, my chances of hitting the track lean are very remote, and I can use the first practice session to dial in the chassis, fiddling with needles at my convenience as opposed to spending half the practice session just trying to get in a full lap.

Helping a lot in getting the car to the track is a starting board that John whittled out of one-half-inch ply. It is rather large and klunky looking, but effective and easy to use. A Pylon (Sullivan) starter mounts underneath the top plate of the board, it is fitted with a Delta molded starting wheel, and it is



angled to get the wheel up high enough to contact the flywheel on the car. Switches also came from Delta; they stock a number which is very reliable, and the spring under the button in the switch is strong enough to support the rear of the car without activating the switch. With the car in place on the board it can be worked on, yet all you have to do is push on the back of the car to get the starter motor turning. That isn't an adequate description of the starting board, I know, I'm just throwing it in hoping that any new racers (and a few experienced ones) will take the time to build a proper starting board, they make things so much easier on race





day.

IMPROVING THE RC150

While there are quite a number of things that could be done to trick-out the RC150, I personally feel the car should be raced pretty much as-is until you are sure the car is limiting your effectiveness at the track, and you have learned all that you can from it. In other words, to improve the car Snyder is racing, we plan to lift up the motor and tank and to push a whole new car underneath same. I suspect that one of Associated's diffs could be adapted to the car, with the ball diff being my preference, but by the time you buy the diff and the wheels to go with it you will have more money in the diff than the basic car cost new. Your choice, I wouldn't do it.

With this particular car we are planning on trying the new Associated "T" series rear tires in both medium and firm grades, assuming that the soft grade will make the car bounce in the corners, in fact medium might lead to some hoppin'. However, the new tires do offer more bite. Josh's RC500 really stuck to the track last weekend using the medium tires, and for the first time ever, I raced a Delta car on something other than Delta rubber, again using the medium compound. The Associated rubber was noticeably better, even though it does cost more and wears faster.

So, other than a race or two with different rubber, we will finish out this season with the RC150 in pretty much stock condition. The car has served its purpose as a vehicle for introduction to car racing and has done well for John. For the price, it simply cannot be beat.

Peanut Continued from page 51

exposed fuselage framework before mounting the thin acetate windshield and windows. Skylight and windshield trim can be made from narrow strips of Scotch tape painted red before mounting. Door outlines are put on after the windows.

Start flights with 3/32 wide rubber strip if your plane has finished out at less than seven or eight grams. As longer loops are tried or pitch is reduced, you may want to go for wider strip. This model flies well when properly balanced and adjusted. Mine is more dependable than the flat-winged Fikes and Laceys and a lot more unusual and colorful. Try changing the prop pitch for increased performance. Pitches at 1.5 to 1.75 times prop diameter seem to be best for my light scale models.

Counter Continued from page 9

PAS-M-CO at the above address. Other plans are available, write for information.

Fourmost Products, 4040 24th Ave., Forest Grove, OR 97116, announces its newest product, the REDI-HINGE. The Redi-Hinge is a continuous, tough, durable polypropylene hinge material, which is already sandwiched into lightweight balsa. The 24-inch long Redi-Hinge is gapless, which completely seals against air leakage. Available in two sizes, 1/4-inch and 3/8-inch, the hinge comes ready for instant installation onto both built-up and solid control surfaces. The price for one package of two, 24inch lengths is \$5.00.



AMA Nats... Continued from page 23

Also happened to be present for an incident that put me back about 44 years. While timing a Wakefield flight for Ray Factor, of East Hartford, Connecticut, I watched the ship circle in a gradual descent to the ground underpower. As it took only about 11 seconds, it was marked as an attempt, and we went over to examine the model. Not able to mind my own business, I asked about the glide trim.

"I just finished it last night, but the test glides looked fine," Ray answered.

"Why not take out a little downthrust," I volunteered.

"OK," says Ray, and he crammed a piece of dried grass between the noseblock and fuselage, on the bottom edge.

"This won't count, I just want to check it out," Ray mumbled, as he heaved the model into the air. You guessed it. . . His wife, Dorie, yelled to Ray to trip the D.T., but it was too late, and the Wake was in a boomer even before the blades folded. It disappeared from site many minutes later and a "mile high." (He did get it back!)

About 44 years ago, this writer was checking out his Wakefield Korda at a contest in Lancaster, Pennsylvania. Not satisfied with the kinda awkward right power turn, I bent the aluminum rudder tab to the left, cranked in 100 turns, and hand launched. The single-blade folder was still turning when the model hooked a thermal. It was 35 minutes later that the model finally disppeared in a cloud, directly overhead. Based on the threeflight average time, I would have had the best. Being my first contest, I was shocked to discover that I had to have an official timer before the launch! (I got it back. It was found 20 miles away in a corn field.)

On Thursday, it was back to the Smith & Wesson field to catch the second day of R/C soaring. The three categories: Standard/Modified Standard, Unlimited, and Two-Meter must have broken all entry records, with 77, 89, and 86 entries respectively. Of course, many contestants were multiple entered, but with 252 to fly, the officials would have their hands full!

Naturally, we were curious to see the operation, as we had been told that 780 flights were completed on the first day! Eight winches were set up, and one ready line was established. Fliers funneled into the ready line, and were sent to the winches as they opened up, much like the single waiting line at the bank or the airport ticket counters. Five golf carts, personned by young volunteers, retrieved the chute/ring end of the lines at the turnarounds, each cart bringing back two lines apiece. Each winch was under the control of a winch man. who ran the chute down to the turnaround as soon as the flier released his model. A small ribbon marked the line to indicate when the chute was near the turnaround. Don Goughnour was the winchmaster.

All winch batteries were parallelwired to a gas-driven field charger, which kept their power pretty well consistent throughout the contest. Of course, the usual line-crossings and breakages occasionally occurred, but they were quickly cured.

Again, we timed quite a few flights, all the same task; seven-minute precision and spot. On the average, the bigger soarers seemed to do best, and spoilers or flaps were a help in hitting the time and spot.

Back to Westover in the afternoon, we stopped by to watch some Coupe and FAI Power flights in free flight, and then headed for R/C Pattern, where they were actually finishing up, a day ahead, much to the relief of Bob Underwood, the R/C Scale CD, who had too many entries and too little time as originally scheduled.

Trophies were awarded on the field, at Site 2, and Ivan Kristensen now believes that you don't have to be a U.S. citizen to win at the U.S. Nationals! It was nice to see a fair number of young fliers coming up to claim trophies.

After a meeting between \dot{R}/C Pylon, R/C Scale, and Nationals officials, it was decided that because Pattern was finished, and did not need its 1 p.m. to 8 p.m. time on Friday, that Formula 1 would fly all day Friday and finish up, instead of flying half a day on Friday and Saturday, originally scheduled. This gave Scale all day Friday to judge the 96 (!) entries (out of the 121 pre-registered), and then all day Saturday and all day Sunday to fly.

On Friday, with John Smith covering Pylon, we first visited the Scale judging area, which was in a grassy court right outside our motel room! What a beautiful array of models! There were nine in Precision (FAI), 53 in Sport (Sportsman and Expert), and 34 in Giant. After reviewing all of the models, it came to our mind that there was one element out of many past scale Nationals that was almost completely missing . . . the daring, outlandish, totally unusual, howcould-it-possibly-fly, that-one-I-gottasee, seemingly impossible scale project. They hardly ever win, if at all, and maybe that's why no one is willing to tackle them any more, but they are memorable. Joe Martin's RB-47 in 1962, the two B-36s in different scales at the same Nationals in about 1972, the B-24s, the B-17s... Skip Mast's C-130 is an example of one that is a winner. With enough bonus points before it even gets off the ground, it would only have to become airborne to win. However, Skip's flies well to boot.

The one model we noted in this category at Chicopee was John Nicolaci's PBM-3. AT 1/10 scale, it weighs 38 pounds, and is powered by two Super Tigre 75s with onboard starters. It is carved from foam and the wings and stab are sheet balsa covered, while the rest is finished in fiberglass cloth and resin. The takeoff is sensational, as Jato assist (Estes rocket motors) is fired just as the plane leaves the ground (it's a



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seaplane, but John added wheels to operate off the paved runway) whereupon the climb angle becomes nearly 45 degrees! Most interesting fact is that the model has been around over 10 years, and has had hundreds of flights, mostly off of water.

After devouring an eyeful of the scale models, we headed for Westover and the free flight area to catch some A Gas, P-30, and A/2 towline, plus the always popular unofficial (still?) Old Timer free flight competition. Today, unfortunately, the wind was doing its thing, and many were reluctant to risk losing models in the trees or bashing them during the launch. Old Timers were also small in number because of the SAM Champs which had taken place only the week before in Colorado. Of course, that didn't slow down Sal Taibi, who left his model trailer in Colorado, loaded his old reliable '56 Chevy (over 650,000 miles on it now!) with the models he needed for the Nats, and continued to show everyone how it's done!

Later we planned to catch the last part of R/C soaring, only to learn that they had finished up early! So it was back to the free flight area to help with timing some A Gas and P-30 flights, in a very strong wind.

It was hard to believe that we had gone through five days in a row without anything worse from the weather than a brief thunderstorm and the Friday wind,

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and by now, we figured that R/C Scale was the event that would have to pay for it all. But here came Saturday, and a clear day with mild wind that was kinda angled to the runway, but not really that bad. Of course, most of the scale stuff was tail-dragger type, so quite a few fliers followed their models to the center of the runway to assure themselves of a straight takeoff.

With two sites operating two lines each, the air was kinda busy, and there were a few breathtaking near misses, but no disasters. It was spooky to watch ducted-fan jet models streaking past big, lumbering, Giant scale Sopwith Pups, and World War II birds dog-fighting with Piper Cubs and Waco biplanes, but that's R/C scale, and as always, it's a tremendous crowd-pleaser.

Again we missed R/C soaring, as this was the day for Sport Scale Sailplane, and as only seven out of the preregistered 12 showed up, it was over too soon for us to catch it. Instead, we headed for East Longmeadow, Massachusetts, near Springfield, and the Pioneer Valley R/C Club's field to catch some R/C Old Timer activity. We arrived in time to see a few unofficial flights and the trophy presentations! Our pylon man, John Smith, and his wife, Jean, ran the events. Some contrast to the mad dash and noise of pylon.

Sunday was another mild day with light wind and light overcast which prevented the heat from becoming unbearable. R/C Scale did not pay the piper for the good weather. Ed Izzo's connections must go way beyond the Pentagon!

R/C and C/L Scale, plus the Air Force demonstrations made up the program for Sunday, and it was a very pleasant closing to the best Nationals we've seen since the Navy-supported Nationals in Willow Grove, Pennsylvania in 1969.

Going back to those earlier Navysponsored Nationals, and right on to the present, R/C and C/L Scale are always the last events to be flown. Logically, they are the most spectator-pleasing events (pylon is great too, but for safety, is kept too far away from the spectators), although we think C/L combat rates high in excitement, except for the long pauses between actual combats.

Anyway, as logical as it is to include the scale events with the air-show activities on Saturday and Sunday, when the majority of the general public is in attendance, it is kinda frustrating to the contestants. By the time the competition is over, and the scores have been tallied and checked, most of the contestants and all of the spectators are gone. From a huge crowd of spectators, contestants, hot dog and beer stands, campers, motor homes, tents, etc., it comes down to a bedraggled few contestants who are packing their gear while ducking workers who are taking down lines, removing tables, folding chairs, collecting trash, and driving off over the horizon. For their months of research, material collecting, building, finishing, testing, traveling, and tensely flying before thousands of spectators and their peers, the winners receive their trophies in front of ... the winners. Everyone's gone, the place is deserted and empty. It's almost a hollow victory.

But we're not complaining that there has been an injustice. It seems to be a fact of life. How can this group of modelers have an awards banquet like the soaring and helicopter groups? It's Sunday, the Nationals is over, and everyone is on their way home to the jobs they must resume on Monday. Do you have an answer?

The Air Force and the towns of Chicopee and Springfield were tremendous hosts for this Nationals, and apparently, they were quite pleased with the modelers in return, so it's almost a certainty that it will happen again, and hopefully soon. If you attended, and want to come again, or even if you missed this one, but want to have another opportunity to compete in Chicopee, write to Col. Roy E. Ayers, Commanding Officer, Westover Air Force Base, MA 01022, and tell him about it!

It's impossible for one person, or even a group, to completely cover all aspects of such a huge undertaking as a National championships. If you feel, as you read this closing paragraph, that there must have been more to it than was reported herein, you're absolutely right. As we returned to the relatively empty headquarters motel on Sunday evening, and thought back on the whole week, there was a feeling of frustration over the many things missed; the events not seen, the incidences that we heard about when we were somewhere else. the model aircraft of which we didn't get a full description, some of the exciting photos we just missed... But on the other hand, we're glad that we're not burdened with the responsibility of providing the only report to the modeling public. There will be other stories and photos in other publications, and hopefully written with other points of view, and photographed from other angles, so that when they're all put together, those who did not attend will have at least some idea of what this great multi-ring circus of modeling was all about.

See you next year in Reno, Nevada?

Fuel Lines... Continued from page 36

sheet includes a list of suggested temperatures for various coverings.

Wirh respect to engines, it can be a very useful gauge for tweeking the carburetor needle valve. An engine that's too lean will get very hot. Coverite suggests you don't exceed 400° Fahrenheit. As a practical matter, you may not want to use it each and every time you fire up an engine. Nevertheless, it certainly would be prudent to use it in establishing a basic needle setting for the atmospheric conditions of the day. At a suggested, quite reasonable retail price of \$5.95, it could be well worth giving it a try. If you're extra suspicious (or cheap), talk your flying buddy into getting one, and try his first.

THE MORGUE AGAIN

There are two other photographs included with this column. They show damaged parts that hopefully should serve as reminders of how it's possible to restyle the efforts of engine manufacturers.

The first one is a rather bent wrist pin. How did it happen? Well, on disassembly of the engine, there was no question that something blocked the upward travel of the piston and something else also kept trying to push it up. The odds heavily favor a hydraulic lock as the blocker. It's also quite likely that a powerful electric starter was doing the pushing. Something had to give. In this case the wrist pin bent.

As you can see, the other basket case is a piston with a caved-in crown. This time it wasn't a hydraulic lock. The diagnosis is pistonium necrosis induced by OD'ing on nitro. You may have heard the adage, "If some nitro is good, more is better, and too much is just right." Wrong! Guys, too much of anything can ruin your whole day.

In this case, the failure occurred right in the middle of a tight combat match. About a second later the opponent zeroed-in for the coup de grace. During the post mortem, the losing flyer had a few loud expletives about the engine manufacturer.

Guys, these are not isolated happenings, and too often we're prone to question why they don't build tougher engines. Well, the manufacturer's can! But, and this is extremely important to remember, only at the sacrifice of performance. Consider the example of the piston. If the crown had been thicker, it would have been stronger. The piston also would have been heavier. More mass means less acceleration for a given force. The most basic equation of nature, F=MA, is relentlessly valid. High performance always requires compromise. Need further convincing? Just watch Stock Car or Formula 1 racing on TV. I can't ever remember watching a race that didn't include several blown engines. Theirs are also a heck of lot more expensive.

I guess that might almost sound as though I'm advocating a "be-kindto-engine-manufacturers week." Not exactly, but it would be nice if we recognized that we cause a lot of engine problems.

ANNIVERSARY TIME AGAIN

Happy fifth anniversary Bill. The second word of that latest sentence just reminded me of something.

Guys, take care.

R/C Boats Continued from page 47

tunnel is a unique class and the amount of entries it generates proves it is very popular. However, I question whether we need separate classes for outboard hydroplane and outboard monoplane.

Another question that needs consideration is running the same hull and engine in two different heat racing events. There were numerous occasions where Sport 40 boats raced in 40 hydro, and outboard powered boats raced both inboard and outboard classes. If you build a 40 outrigger you can only race it in 40 hydro class. However, a Sport 40 can qualify in two classes. I can understand allowing a boat to enter both deep vee enduro and monoplane heat racing because the two events are different. Disallowing doubling of classes would probably cut down participation in some events. This would help cut down a day's racing schedule so that there



wouldn't be days when racing takes up 10 full hours as it did for a couple of days at "B.C. '83."

Although I personally didn't win anything in the racing, I did win a 3.5 engine in a drawing, my son Paul won his first trophy at a national contest. Driving very consistently with his 3.5 powered Ward Marine Offshore, Paul managed a sixth place in the A Monoplane Class. For him, this was a very rewarding accomplishment. It also made Paul's daddy really proud. I can still remember most vividly the first trophies I won back in 1967 at the International Model Power Boat Association's national race in San Francisco. I won mine by being the only boat in the class. Paul won his by competing against 40 other boats.

Winning at a national boat race takes a combination of skill, preparation, and some amount of luck. It is unfortunate when luck becomes more of a determining factor than the other two. This happened on a couple of occasions. I saw a reader board the other day with this message: "Luck is a byproduct of hard work." There's some amount of truth to that statement. Anyone who wins a national championship works for it.

The weather certainly played an important part in determining the outcome of a couple of classes. When it came time to race the small A Tunnels and A Hydros, the wind managed to make water conditions very unsuitable for these classes. There were occasions when no boats were able to complete the required five laps. I suppose this might be considered "sniveling" by some of the participants because everyone had to run under similar conditions. It is my contention that national championships should be decided by racing and not just surviving. I'll know that this amounts to "sniveling" if I receive some



stars for my "Snivelers Racing Team" badge.

"B.C. '83" was my first experience with having a computer handle the scoring and tabulations. I must admit I was impressed. I don't know how much work goes into writing a program which allows a computer to furnish the information, but those efforts certainly paid dividends during the scoring of events. After the completion of a class, the results were posted showing points and times. Each class raced four times and the results were updated very quickly. We are definitely into the computer age in model boating.

It is unfortunate that "B.C. 83" was basically a West Coast event. It is now almost cost prohibitive to travel from one coast to another to participate in model boat racing. Next year the NAMBA national event moves to New Jersey. It will almost certainly be an East Coast event. I sincerely hope that NAMBA members of the East Coast support the event. An opportunity to attend a national event of this caliber



only comes around a few times.

WAWARD WINNERS AT "B.C. '83"

A DEEP VEE/OFFSHORE

- 1. Ed Fisher
- 2. Howard Power
- 3. Wally Stewart
- 4. Mike Wight

B DEEP VEE/OFFSHORE

- 1. Bob Schliemer
- 2. Cecil Reynolds
- 3. Judy Prigley
- 4. Mike Clerc

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C DEEP VEE/OFFSHORE

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- 2. Robert Holland

3. Graham Swain

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Brian Dallas' "Sea Sweep"

B OUTBOARD MONOPLANE

- 1. Cathie Galbraith
- 2. Rich Fish
- 3. Jack Garcia

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- First Consolation
- 1. Bev Power
- 2. Greg Weast 3. Rich Bizzier
- Final Heat The B.C. Cup
- 1. Al Williamson
- 2. Doug Tomilson
- 3. Ed Fisher

BEST OF SCALE

Bob Bracket's "Atlas Van Lines"

SPORT 40

Division I

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- Ron Neidigh
 Chuck McGaughy
-

A HYDRO

1. Wally Stewart

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- 3. Jim Andrego

A MONOPLANE

- I. Bill Hornell
- 2. Bev Power
- 3. Leo Dreith
- 4. Don Donikowski
 - 5. Ron Erickson
 - 6. Paul Dunlap
 - 7. Steve Brammel

A OPC TUNNEL

- 1. Rod Geraghty
- 2. Dennis Caines
- 3. Frank Ward
- 4. Jack Oxley
- 5. Mike Wight
- 6. Don Donikowski

SPORT 40

- Division II
- 1. Ed Fisher
- 2. Rich Fish
- 3. John Hruby
- 4. Vic Drew

TEAM MARATHON

- 1. Judy Prigley & Bev Power
- 2. Joe Monohan & Jack Garcia
- 3. Steve Bremmel & Rich Fish

B HYDROPLANE

- 1. Ed Fisher
- 2. Joe Bruzzese
- 3. Jack Oxley
- 4. Steve Rowe
- 5. Al Williamson
- 6. Ron Neidigh
- 7. Chuck McGaughy

B OPC TUNNEL

- 1. Jack Oxley
- 2. Joe Monohan
- 3. Tony Bellizzi
- 4. Bill Hornell
- 5. Jack Garcia

X MONOPLANE

- 1. Robert Holland
- 2. Bev Power 3. Jim Andrego

B MONOPLANE

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- 3. Howard Power

A OUTBOARD MONOPLANE

- 1. Judy Hazelwood
- 2. Rich Hazelwood
- 3. Al Williamson

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- 1. Bev Power
- 2. Howard Power
- 3. Cecil Reynolds
- 4. Bill Prigley
- 5. Judy Prigley
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Workbench.... Continued from page 6

who need and want Sig products. And we get complaints from modelers living in the vicinity of a Sig dealer who say they cannot buy certain items from the local hobby shop, such as Sig Dope for example, because it is not stocked. So we feel our retail department is a necessary service. It produces only a small percentage of our total sales and does not justify the cost of our catalog, which we look upon as primarily a dealer aid. But the most important point to be made on this subject is the fact that all mail order and walk-in trade sales are made at full retail list price. Considering this, we do not feel that factory retail sales cause any damage to the business of Sig dealers. No modeler will write to the factory and wait for 10 days or more, if the item is available at once or can be ordered for the asking from a Sig dealer. Actually, just about all kit manufacturers sell to retail mail order customers, so our program is not unique, just more visible. Our final word on the matter is in every Sig ad — 'See Your Dealer First!'

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toward that goal."

NOTHING IS NEW

Everyone has seen the Toyota auto commercials that finish with the happy driver jumping in the air for joy. Would you believe that 43 years ago, Comet Model Aeroplane Company was doing the same thing to sell Clippers? You wouldn't? Check the photo from the August 1940 issue of M.A.N. If not a commercial, then it's a photo of the world's heaviest wing-loaded hang glider!

WE DID IT AGAIN

Al Patterson managed to slip another one by us with the Northrop N9M-A Flying Wing in the August '83 issue. In answer to the many modelers who wrote in, the balance point is between seven and eight inches behind the nose of the plane. Closer to seven inches, the better.

METRICS NO!

Phil Mahony, of Lime Rock, Connecticut, is a firm believer in staying with the inch.

"Do you know how the French buy their butter? By the pound! And their recipes are all written that way. Have you ever been at a construction site when cement has been ordered in decilitres and is sent in decilitres? What will happen to all the good old sayings of the past? Like, 'I wouldn't touch that with a 3.048 meter pole,' or 'Give a man 2.54 cm and he'll take 1.6 km', or 'A miss is as good as 1600 m.

"You start using metrics in your plans and you've lost this reader for one. I know the metric system as I have to use it. And I don't really care for it. Just misplace a decimal point sometime, you'll find out. Oh . . . one more point ... 3mm is just under an eighth, not over."

I guess we'll have to budge 2.54 cm and be content to include a metric scale on the plans as we have been doing.

MORE HOBBYPOXY COLORS

Three more Royal Air Force colors, covering the change in camouflage schemes effective from 1942 until the conclusion of WW-II, have now been formulated by the Pettit Paint Company.

Medium Sea Gray was used on the under surfaces of home-based day fighters. It is made from three parts H70 Gray and one part H10 White.

Ocean Gray was used with Dark Green on the top surfaces of day fighters based abroad. It consists of seven parts H70 Gray, two parts H81 Black, and one part H33 Stinson Green.

Middle Stone appeared, with Dark Earth, on the upper surfaces of day fighters used in the North African campaigns. It is recreated using three parts H49 Cub Yellow, four parts H70 Gray, one part H65 Bright Red, and one part H10 White.

As with all the previous WW-II color formulas furnished by Pettit, you will get the proper color only by using Hobbypoxy paints, as specified, and each

Continued on page 104

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Continued from page 100

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formula should be mixed with an equal portion of Flat Hardener for a proper matte finish.

If you have missed seeing the previous Hobbypoxy formulas for WW-II scale colors as published in Model Builder, write to Pettite "Hobbypoxy", 36 Pine St., Box 378, Borough of Rockaway, NJ 07866, or call (201) 625-3100, and be sure to tell them that MB sent ya! QUIET!

In Mike Hazel's Control Line column this month, he laments the fact that noisy engines continue to cause the loss of rapidly diminishing flying fields. He points out that although many modelers are too slack in muffling their engines, it would certainly help matters if AMA would take a firmer stand on enforcing their use throughout all categories. And as Mike points out, what about the silent (well, not when it comes to engines!)

majority, the thousands of modelers and/or non-modelers who are out there, running engines wherever and whenever they damn well feel like it?

V.

Contest Director: Joe Wagner, 12 Cook St., Rowayton, CT 06853

Well, perhaps it's the engine manufacturers who had better take another look. Let's suppose they produced engines with built-on mufflers ... not bolt-on ones that can be easily removed, but built on as part of the crankcase. Or design the engine so it will not run properly without the muffler. We don't claim to have any bright ideas along these lines, but is it not better to produce and sell sound-acceptable engines than no engines at all?

The four-cycle engines being used at this year's Nationals, in Pattern and R/C Scale (were there others?) made a significant impression on many modelers present. Maybe this is the first giant step toward quiet engines that will allow the hobby to come back to civilization, where it can be seen (not heard) and squadron in the Vietnam years. Art was an FAA Air Traffic Controller until his recent retirement. As a member of the Long Island Soaring Association, Art flew full-scale gliders actively, and powered aircraft as well.

"It's hard not to love boats on Long Island, and Art built Dynamic Models into a nautical enterprise. He was one of the leaders in R/C Scale model boating and his tugs chugging across a mill pond in the twilight with lights and electronic sound effects were a sight to see.

"Art knew he was going downhill with cancer, wired his bedside to work to the last day. Art had things to do.

"Art leaves his wife Phyllis, sons Steven, Richard and Robert, and a host of saddened friends. He was 53, but somehow packed a lot into those short years, and he still seems to be with us. Art recorded all he knew on tapes in his last few days, a measure of a man that we will miss.

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