

MODEL BUILDER



AUGUST 1977

volume 7, number 68

\$1.50



LCDR THOMPSON

NAS LIVERMORE

23

Three powerful reasons to get your hands on a NEW MRC -Webra Schneurle

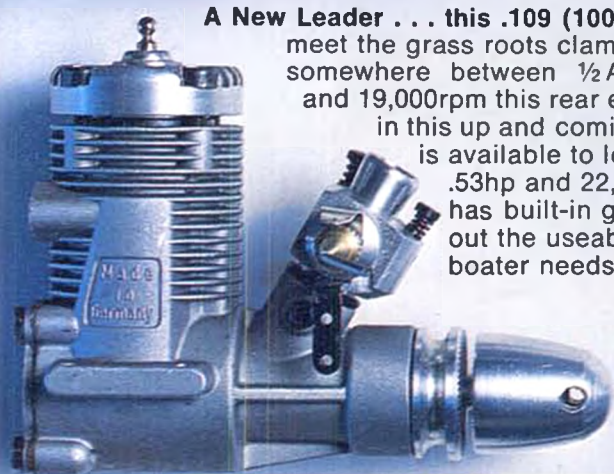


From The Maker Of Champions . . . until now MRC-Webra Schneurle power was synonymous with the world and national champion Speed .61. Now we've harnessed this winning horsepower and reliability for three new Schneurle ported, high performance engines. A mammoth .90R/C, a sporty .20 and a sprightly .109. Each with a powerful reason to be.

Control For The Big Jobs . . . this .90 (1037R/C) is a behemoth that develops tremendous torque at low engine speeds . . . just right for that giant scale bird or big biplane you won't trust to any other power source. Reaching 2.5hp and 13,000rpm it'll take heavy payloads off in a burst of power, allowing you to adjust the fuel mixture by remote control. Marine version available.



Send \$1.00 for MRC Model Aircraft Products catalog.



A New Leader . . . this .109 (1008R/C) Schneurle was developed to meet the grass roots clamor we've heard for a new racing class . . . somewhere between 1/2 A and 1/4 Midget. Developing .38hp and 19,000rpm this rear exhaust beauty will be the leader in this up and coming category. A Power Plus Silencer is available to let you milk it for even more rpm — .53hp and 22,000rpm. And the marine version has built-in gear reduction system to put out the useable torque the model boater needs.

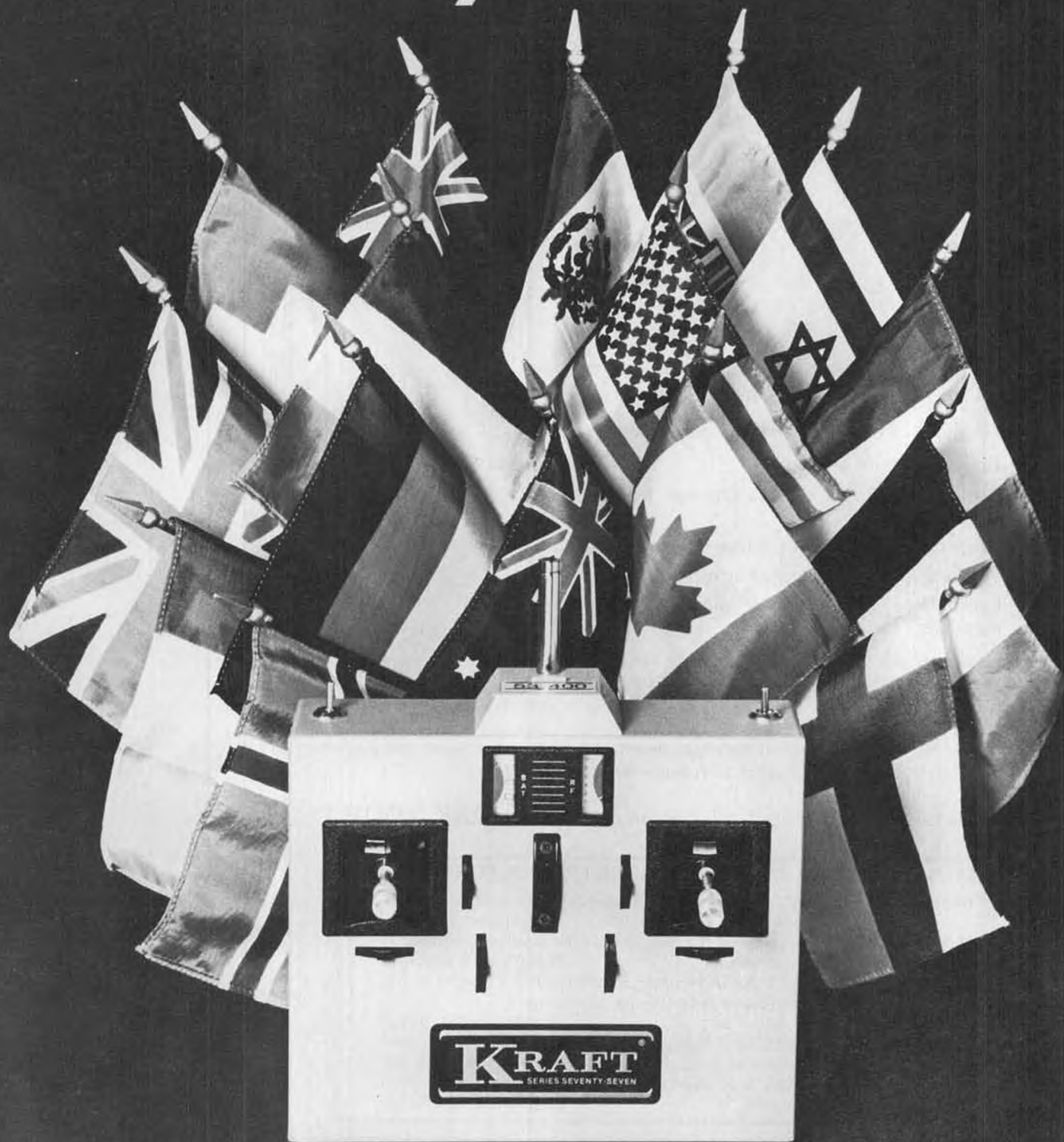
Webra's Done It Again

. . . as you might expect when MRC-Webra makes a .20 Schneurle it's going to be the last word in reliable power. And that's just what this 1019R/C is. Designed with two Schneurle ports and a cross flow port, it supplies the top end power you want for your low wing craft. In addition there's a 1019RCA for competition race cars, complete with cooling clamp head and cooling fins that start at the base and continue up the cylinder head to keep the heat off. Marine version available.

See the trio at your hobby dealer. He'll give you all the reasons to get your hands on these new MRC-Webra Schneurles.



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- Leaves less mess on your plane, easier to clean up

Steve Helms, one of the top U.S. pattern flyers, and winner of both the Masters and the Phoenix Southwestern RC Championships, says "Magnum Power gives me 700 more RPM." Hard to believe? Yes, it sure is — but it's true! Magnum's unique advantages derive from its different method of lubrication, which

reduces friction and increases protection. It also reduces viscosity, requiring both high speed and idle needle valve settings to be adjusted leaner than on standard fuel. Whatever fuel you've been using, try Magnum Power and you won't go back.

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Catalog with Basic Explanation of R/C
Equipment and Radio Control Definitions

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Return Of A Spirited Classic

The Airtronics Gere Sport Kit for R/C flyers.

Now you can recreate one of the most celebrated light biplanes of the early 1930's. Its simple, yet rugged design permitted it to be equipped with power plants such as the Model A and Model T Ford engine. In fact, George E. (Bud) Gere, Jr., the designer and builder, was working on a Chevrolet motor conversion when he met his untimely death. He never saw his plane fly. But now, thanks to Lee Renaud's stand-off scale design of the Gere Sport, you can fly Bud Gere's dream.

Designed for 3-channel R/C flying, the nostalgic Gere Sport is fully capable of practically all aerobatics. It has excellent flying characteristics, yet this Airtronics kit is inexpensive and easier to build than many single-winged models.

- Kit includes machined parts, all air-frame hardware, detailed instruction book and rolled plans.

- A certified three-view drawing is included for the scale enthusiast.

- Flies very realistically.

- 36-inch wing span, 485 square inch wing area. Total flying weight, 3¾ pounds.

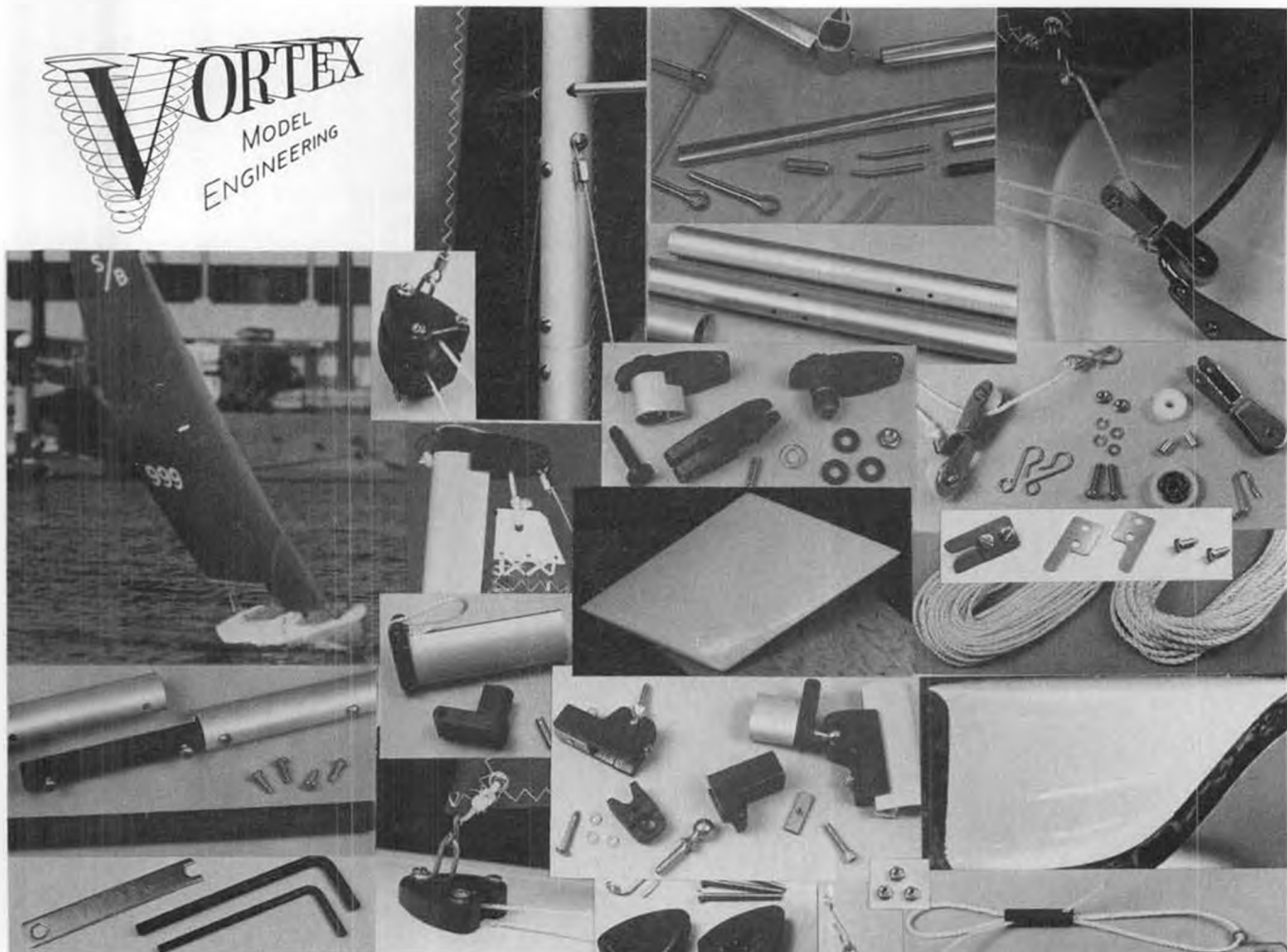
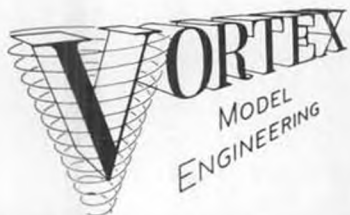
- Ideal for use with Cox/Sanwa 3-channel R/C System.

- \$36.95 (engine and R/C System not included)

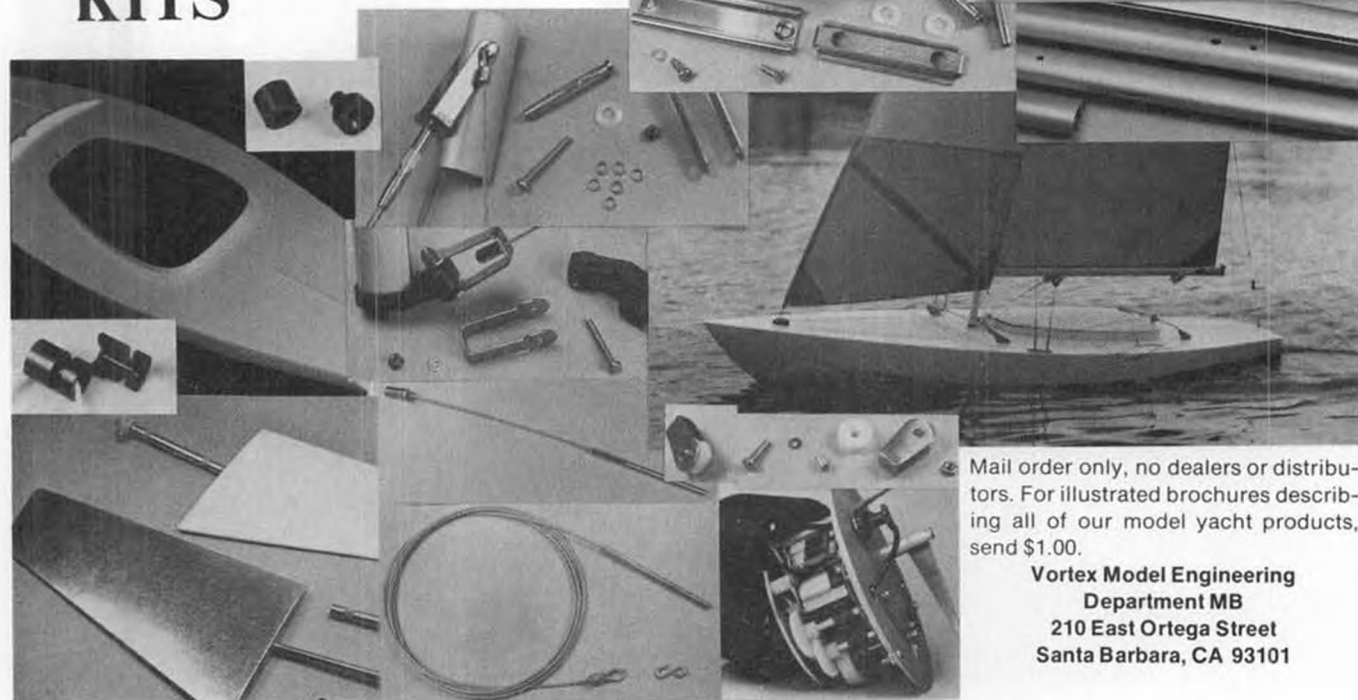
- Accommodates .09 or .15 sport engines such as the Medallion .15 R/C.



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AIRTRONICS KITS, COX ENGINES.
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AUGUST

1977

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Cover: This is the cockpit in Earl Thompson's super-detailed FG-1 Corsair, which took First Place in AMA (Precision) Scale at the 1977 World War II "Scramble", Morgan Hill, California, May 21 and 22. Complete coverage of this contest begins on page 10. Earl is from Livermore, California, and his Corsair appropriately carries the markings of NAS Livermore. Kodachrome transparency by Jim Caparelli.



The victorious U.S. R/C Aerobatic Team displays its trophies and diplomas after winning first place at the 1977 World Championships in Springfield, Ohio. (l to r) Team Manager Dick Penrod, Dave Brown 2nd, Rhett Miller 6th, and Mark Radcliff 5th. Mark and Rhett changed places in the flyoff, while Dave held on to 2nd place.

from Bill Northrop's workbench . . .

A BUSY SUMMER

If Xerox could come up with a machine for making copies of people, we sure would have liked to try it in June and July . . . the Masters Tournament and R/C Aerobatic World Championships in Springfield, Ohio; the Free Flight World Championships in Denmark; the S.A.M. Championships in Las Vegas, Nevada; and the first R/C Race Car World Championships in Pomona, California . . . all within a month!

Luckily, we have several "original copies" who covered these events for us, and we'll have full reports beginning next month. Bill Hartill will be bringing us the free flight story from Denmark, both in film and words, Chuck Hallum and Eloy Marez covered the car races, John Pond baked in the 120° sun at Las Vegas, and your MB editor took a 12-day sauna bath in Springfield, Ohio for the Masters and 10th R/C Aerobatic World Championships.

And if that ain't enough, the 1977 AMA Nationals is just a few weeks away as this is being written. Dirty Dan, Bob Stalick, Jim Gager and others will be taking notes and pictures to keep our readers well informed about the action at March Air Force Base and surrounding facilities.

If you can't make it to the Nats, here are a couple of other . . .

THINGS TO DO

The Mile High Club, of Denver, Colorado will be holding an R/C contest on August 20 and 21, the results of which, we will be watching with great interest. As part of a fun-fly weekend, the club will be holding a Rudder-Only Scale Pattern event, to be divided into two classes. Class A is for any aircraft that can ROG and maneuver from

normal attitude. Class B is for aircraft that must be hand launched and may need to spiral to gain airspeed for maneuvering. All aircraft are restricted to 72 inch span, .35 maximum engine displacement, and two channels (one for rudder . . . may be coupled to wheel for ground steering . . . and one for throttle or engine cut-off, for maneuvering and/or safety reasons).

Class A sounds like the advanced R-O competition planes we described in last month's "Remotely Speaking" column. Class B really takes us back almost to true rudder-only . . . no throttle control, that is . . . although we remember managing a few takeoffs with our 1 inch scale Great Lakes Trainer that

had one engine control . . . the McCoy .09 stopped running when the fuel supply ended!

* * *

The 19th Annual Eastern States R/C Championships will take place on Sunday, October 2, rain or shine, 8:00 a.m. to 5:00 p.m., at Forrestal Campus Airport, Princeton, New Jersey. This contest, for all pattern classes, plus AMA Precision and Sport Scale, is directed by long-time well known modeler Leon Shulman, and is conducted by the Central Jersey R/C Club, in consort with the Kiwanis Club of Piscataway and the Circle "K" Club of Middlesex County College. Contact Lee at 173 Essex Ave., Metuchen, N.J. 08840, phone (201) 548-1444.

PETE WESTBURG RETURNS

After a brief hiatus, which to those of us who really appreciate well-executed scale drawings, has not been brief enough, Pete Westburg has returned to *Model Builder*.

We don't wish to get into a name-for-name comparison with other scale drawing artists, but knowing something of Pete's dedication to accuracy and his dogged determination to track down every detail of the aircraft he has chosen to "attack with pen and ink", we feel that he is tops in his field. He also backs up his drawings with excellent, sometimes rare photos, which are invaluable to the ardent scale modeler.

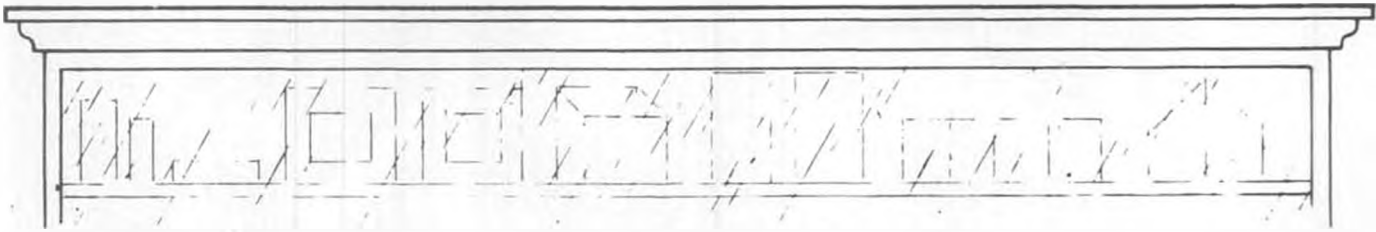
Although Pete's drawings will appear in *Model Builder*, he will retain reproduction rights on all of them, as in the past, and you must order full size copies directly from him at 834 Seventh St., No. 6, Santa Monica, California, 90403.



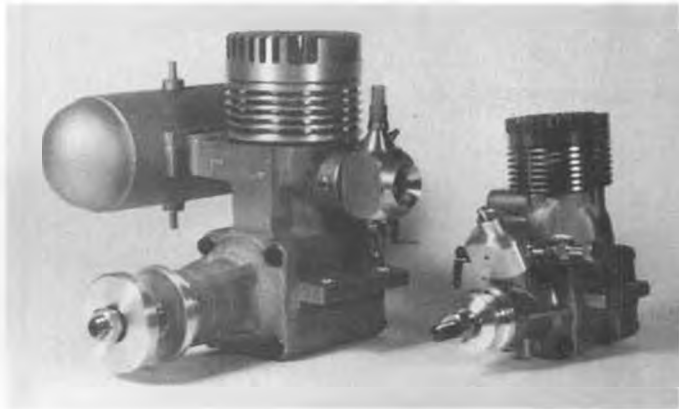
Individual R/C World Champion winners (l to r) Wolfgang Matt 3rd, Liechtenstein; Dave Brown 2nd, U.S.A.; and Hanno Prettnner, new World Champion, from Austria.

Continued on page 103

OVER THE COUNTER



Semco tuned pipe adapter on Black Head Webra.



MRC-Suevia 25cc (1.5 cu. in.), with an Enya .60 providing size comparison.

• One of our readers sent us the following, entitled "Technology Through Rose-Colored Glasses", borrowed from somebody, who borrowed it from somebody else. We know the problem of controlling your enthusiasm when you run into a product that you like and believe in, however, we still bring you the following, and ask that you remember that it is all new, exclusive, and futuristic. Thanks, Dave!

"The enthusiasm of some product promotion people knows no bounds when it comes to proclaiming the virtues of the client's product. Ordinary language doesn't seem to do justice to the wonderful things they discover in the object of their acclaim, and so they have developed a special language that cannot be completely understood by the average

design engineer unless he or she has the translation. We offer the following interpretive guide.

NEW . . . different color from previous design.

ALL NEW . . . parts not interchangeable with previous design.

EXCLUSIVE . . . imported product.

UNMATCHED . . . almost as good as the competition.

DESIGN SIMPLICITY . . . costs cut to the bone (manufacturer's).

FOOLPROOF OPERATION . . . no provision for adjustment.

ADVANCED DESIGN . . . copy writer doesn't understand it.

IT'S HERE AT LAST . . . rush job; nobody knew it was coming.

FIELD TESTED . . . manufacturer lacks test equipment.

HIGH ACCURACY . . . unit on which all parts fit.

DIRECT SALES ONLY . . . manufacturer had argument with distributor.

RUGGED . . . too heavy to lift.

LIGHTWEIGHT . . . lighter than rugged.

YEARS OF DEVELOPMENT . . . finally got one that worked.

UNPRECEDENTED PERFORMANCE . . . nothing we had before ever worked this way.

REVOLUTIONARY . . . it's different



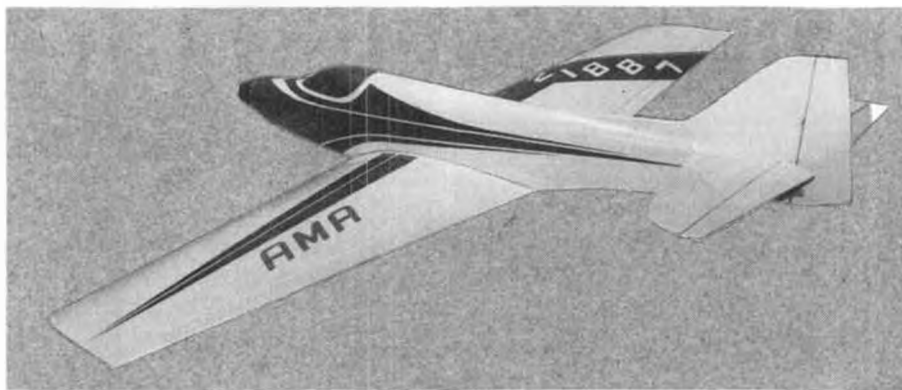
MRC-80 servo features coreless motor.



Model 771 glow plug battery, with charger, by Flight Dynamics.



"BuzzBee" audio tachometer, by Fusite Division, Emerson Electric Co.



The "Sting", by Myers Airplane Products, for .40 engines.



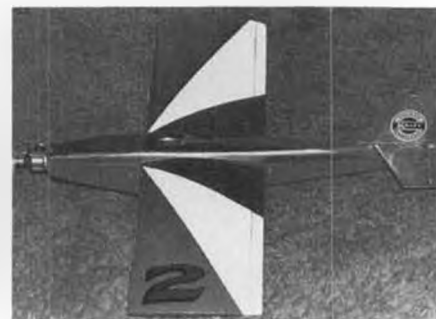
Electric motor speed control for cars, boats, and planes, by Galler Electronics Industries.



"Quickee 18" ARF air-boat, for 2-channel radio, by RAM.



Retract units for 1/2A models, weigh 1/3 oz. each, by Robart.



Myers "Cricket" for sport, or 1/2A pylon racing, 2-channel radio.

from our competitors.

BREAKTHROUGH . . . we finally figured out a way to sell it.

FUTURISTIC . . . can't figure out another reason why it looks as it does.

ENERGY SAVING . . . achieved when the power switch is "off".

DISTINCTIVE . . . a different color or shape than our competitors.

NO MAINTENANCE . . . impossible to fix.

REDESIGNED . . . previous faults are corrected, we hope.

HAND CRAFTED . . . machine that assembles it is operated without gloves.

PERFORMANCE PROVEN . . . will operate through warranty period.

MEETS QUALITY STANDARDS . . . ours, not yours.

SATISFACTION GUARANTEED . . . manufacturer's upon receipt of the check.



Ultrasonic cleaner from Tatone Products.

* * *

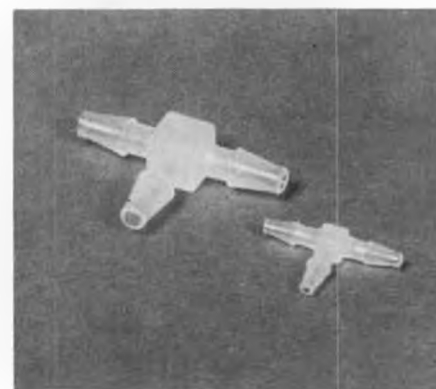
Interested in 1/4-Scale? If so, you'll definitely be interested in the 25 cc (1.5 cu. in.) MRC-Suevia Schnuerle Ported Engine. This big one, known as Model 252, features a precision machined aluminum casting, aluminum piston, custom piston rings, and a crankshaft that is supported by a roller bearing in the rear and ball bearing in the front. Dependable output of approximately 3 HP at 11,000 RPM is claimed, with plenty of low speed torque.

Low RPM and a resonator type muffler contribute to extremely quiet prototypical sound in flight. Idle as low as 1700 is possible, with a smooth transition from low to high RPM, and the symmetrical design allows the engine to run in either direction at the same power and RPM. The MRC-Suevia will easily swing an 18 inch prop, and is priced, including muffler, at \$249.95.

Look for it at your local shop, or inquire from Model Rectifier Corp.,



Piston Resetting Tool for Cox engines, by Tatone Products.



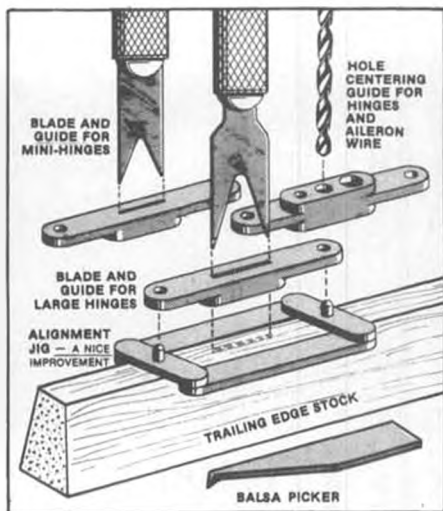
Fuel line "T" fittings by B&D Enterprises.

2500 Woodbridge Ave., Edison, NJ 08817.

With the introduction of its MR-80, Model Rectifier Corporation (MRC) now has a total of eight different servos available to the R/C'er. Each is designed and built for a specific use, and has its own unique features.

The MR-80, considered the most advanced servo available to R/C modelers, features high efficiency, long life, and extremely fast response time, derived in part from the use of a coreless motor. High efficiency comes from a zero iron loss; long life from reduced induction sparking, and fast response is a result of reducing inertia through the small mass of the motor.

This servo should do well in all applications; aircraft, cars, and boats. The expert and competition flyer especially will recognize and appreciate the tight, fast (.5 sec. transit time), and



Kwik-Hinge Slotter set, from Bu-Bro Products.



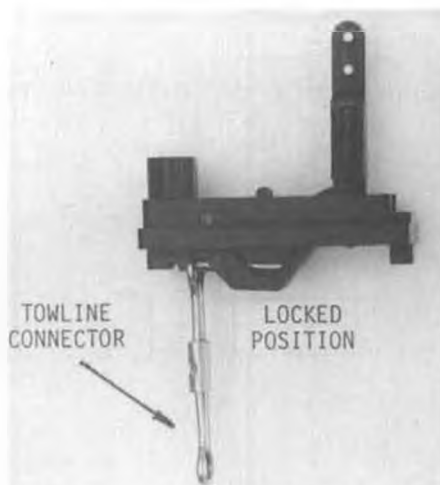
The MAGNUM One Design, by Matt Jacobson/AMPRO.



The newest free catalog is now available from the Heath Company.

smooth performance. It is a ball bearing design, so high vibration uses will not cause any undesired effects.

The dimensions are 1-3/4 x 7/8 x 1-3/8 inches, including what is probably the thickest mounting lugs of any



"Pro Tow" releasable R/C glider tow hook, by Rocket City.



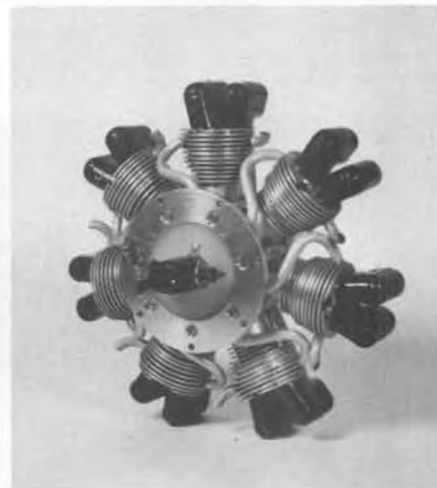
design. Five different output arms are furnished, the centering of which are adjustable through a hole in the top of the case, which grants access to the feedback pot shaft. The Signetics 544A IC amplifier gives top speed and power with a minimal deadband. The weight is 2.1 oz., torque 50.5 in/oz., and idle current a low 5.8 ma. Priced at only \$64.95, the MR-80 is available with all current MRC R/C systems, and

will work with all previous models as well as some of other manufacture. Inquire at one of the many MRC dealers, or direct with Frank Ritota, MRC, 2500 Woodbridge Ave., Edison, NJ 08817.

* * *

Probably the most dreaded part of the building process to many of us is the

Continued on page 96



The 5 and 7-cylinder radial OHV glow engines soon to be available through Model Builder Products. Outside diameter, to top of rocker-arm covers is 6-1/4 inches for both engines. Shipments are expected to start in September. In the meantime, orders for priority shipments are being accepted.



MORGAN HILL WW II SCRAMBLE

Text by PATRICIA GROVES and photos by MONTY GROVES . . . The fabulous World War II "Scramble" at scenic Morgan Hill, California, gets better every year. Over 8,000 spectators paid to watch this spectacle.

• Drawing a record 56 scale aircraft, the World War II Scramble held its third annual gathering on the weekend of May 21-22.

It just so happened that Armed Forces Day coincided with the opening of the California meet, so the sight of some all-too-familiar silhouettes, burning holes in the sky, re-energized old memories in the lives of many a veteran airman in the audience. For them, and for the contestants as well, it was a weekend of war stories and fine flying.

There were enough Mustangs, Jugs,

and Corsairs to make up whole squadrons. And for those who'd trained in Ryans, Fairchilds, and Stearmans, ah, the memories that returned. For old 'cobra and Hawk pilots . . . happily bad-mouthing blue Bearcats, the flame of Army-Navy rivalry was briefly re-kindled. But with just one B-25 entered, the twin-raters were a little light in the USAF's Bomb Gp (M) category.

Though the American forces were naturally favored, Allied and enemy alike were represented in the "meatballs," "iron crosses," and "roundels"

of World War II. And with two flight lines in constant operation, there was plenty of action for the over 8000 (*That's a fact! wcn*) spectators to see.

After two full days of competition, Earl Thompson, of Livermore, California, won in AMA Scale. His distinctively-finished FG-1 Corsair, a Royal kit, flew in the markings of the Livermore Naval Air Station.

Winner in Sport Scale was Don Lien, the Squadron Commander of Southern California's high-spirited Scale Squadron. The fine detail of his Dave Platt FW



Plane on the cover, an FG-1 Corsair by Earl Thompson, takes off with flaps deflected. Built from Royal kit, it won AMA Scale event.



Virgil Van Bibber, San Jose, flew this piloted P-51 in Sport Scale. Note use of right rudder to overcome effect of torque.



For his first ever contest, Tim Meyers, Felton, Calif., designed and built this Czechoslovakian Avia B.534 biplane. (Good boy, Tim!)



With takeoff dolly just dropping away, this Me 163B Komet, scratch-built by Pat White, was most unusual model at contest. Holman plans.



Winner in Sport Scale was this Fw 190D (Platt kit) built and flown by Don Lien, of the Southern California Scale Squadron.



AMA Scale winner, Earl Thompson collects beautiful wire trophy and ProLine radio. Eric Clapp (in white) and ProLine's Jerry Bonzo.



Contest Manager Eric Clapp and Jerry Bonzo, ProLine, award Sport Scale winner's prizes (wire trophy and ProLine radio) to Don Lien.

190D, gave the German plane the edge over John Lockwood, of Clovis, California. But while Lockwood was placing Second in Sport Scale, he was also piloting his bent-wing bird to the Highest Flight Score in Sport Scale.

First Place in Team Scale went to Bert Baker's Top Flite P-47D. Baker, from Huntington Beach, California, also earned top honors from his fellow contestants, who elected him to receive the Hill Country Flyers' Sportsmanship Award.

When a large number of pre-registrations started coming in early, Contest Manager Eric Clapp and CD Louis DeLateur knew that they had a fast-growing contest on their hands. So the Scramble's success was due in large part to the sponsorship and support of Model Builder Magazine and ProLine

Electronics.

A successful contest only looks easy because a lot of people have worked to make it that way. And with the Pioneer R/C Club of Santa Clara shoring up the limited manpower of the Hill Country Flyers, a total of 33 hard-working individuals brought the Scramble off without a hitch.

In fact, one of the participants even hangared his Bearcat to take a "busman's holiday." As a part-time radio personality, Contestant Alan King, of Sacramento, decided on Saturday afternoon that he'd be more at home with a mike in his hand. And for the rest of the weekend, his style of commentary kept the audience interested and informed about the happenings on the field.

Keeping it "happening on the field" was the job of Hill Country Flyers'

President, Duke Crow. Along with his fine crew of Flight Judges, the calm, unflappable Duke kept things moving. Though an ear operation had decked him just a few weeks before, the Duke was on hand and working as hard as anybody.

If static judges were ulcer-prone, then "Doc" Keith and his crew would have had 'em for sure. In spite of their extra-early arrival on Saturday morning, they got there just within minutes of a rush of contestants who wanted to "get there first and beat the crowd." And static judges who can concentrate under pressure, yet give equal attention to each airplane, certainly deserve the 1977 Alka Seltzer Award. Still, the beginning of the flying segment was only a half-hour off the scheduled 9 a.m. start (For next year's Scramble, there's a very



Jim Meister placed 3rd in Sport Scale with this Jemco Corsair, seen in a smooth landing.



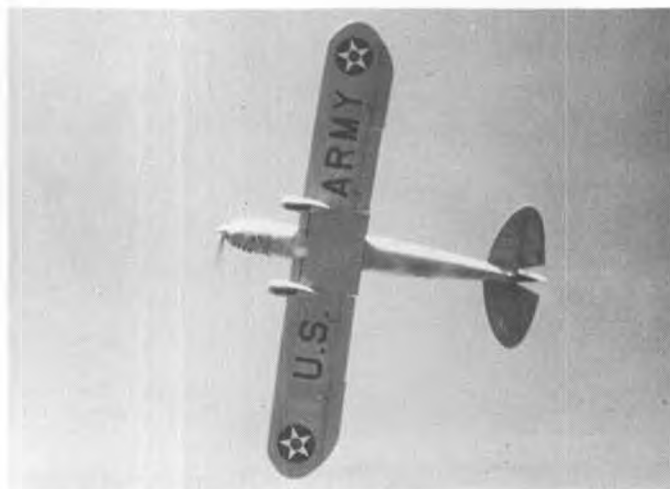
Dave Lovitt, Ukiah Prop Busters, was 2nd in AMA Scale with this Ki 43 (Oscar).



Warren Spurgeon's Top Flite P-40 Tomahawk shows its teeth during steep takeoff.



Pat White's Me 163B Komet streaks overhead, powered by a Super Tigre .60. Pat drove from Lauderdale Lakes, Florida to compete!



With a few degrees of flap, Wayne Cook's PT-20 (Marc's Model kit) takes off on early morning flight.



Earl Thompson's very realistic, scratch-built PT-26 makes an instrument approach with a student "under the hood."



Pat Ray's ancient B-25 (Royal kit) probably has as much flying time as any full-scale version of WW-II. Just completing a touch-and-go.

real possibility that static judging will open on Friday night).

Another important group who had it all together were the Scouts of San Jose's Troop 434. Having encamped on the grounds of Hill Country Friday night, the 14 Scouts were ready to handle all the traffic. For two days, they kept pit and parking areas clear for the contestants, guided spectators to orderly parking in the lots, and kept the access roads open for Hill Country vehicles. Such a smooth-running operation certainly made life pleasant for the spectators. But it was especially so for the contestants with all their gear.

What lured the crowds out early was a sunny and warm Saturday. But it was the fine flying of the contestants that kept them there on a cold and cloudy Sunday. By 10 o'clock, both days, the

grassy knolls of Hill Country were crowded with those who'd come to spend the day watching all the flying. For many of them, radio control scale modeling was a "whole, new world." And for those seeing it for the first time, they saw scale modeling and

R/C flying at its best.

During the lunch break both days, the Scale Squadron gave everyone a delicious taste of what their up-coming T-6 races are going to be like. Don Lien put his recently-completed "Gotcha" (a Joe Bridi kit) through a mini-Reno demonstration. The 9-3/4 lb. pylon-polisher looks mighty real in the air.

On Sunday, everybody was treated to an especially professional demonstration by the Revolution Helicopters' Flying Team, headed up by John Simone. Those Laguna Niguel lads do things with helicopters that are downright unreal. Loop? (Yup!)

Also on Sunday, Contestants Garry Korpi and Dave Steinel decided that the crowd ought to have the opportunity to see a dogfight demonstration. Though

Continued on page 66

OUR GRACIOUS SPONSORS

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Our thanks to them all.

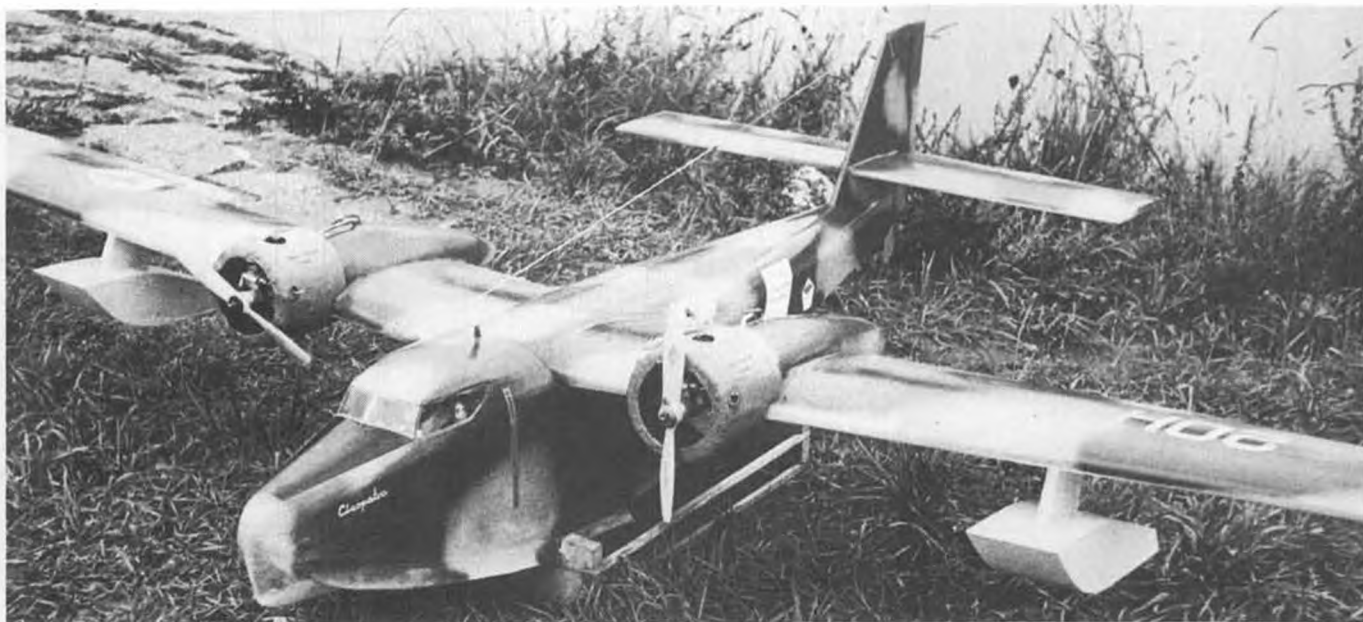


Fred Suellentrop's scratch-built Navy N2S-2, placed third in AMA Scale on first outing.

No contest can be a success without sponsors. The bottom lines say it all . . .



Gene Ageno's Team Scale Ju 87B climbs out to make vertical dive/bomb drop. Holman CAP kit.



'CLEOPATRA'

By PAVEL BOSAK . . . From one of our readers in far off Czechoslovakia comes an interesting R/C flying boat design. Very scale-like in appearance, it can also fly very scale-like distances!

Fortunately, for those of us who are not even that skilled in our own English language, Pavel Bosak, of Czechoslovakia, has been able to translate his own construction article for us. Relative to this, there is an old expression which, in effect, says that "something was lost in the translation." To prove that this is not always true, and that "something can be gained (if you recognize it) in the translation", we have chosen to be very careful in editing Pavel's article so as not to affect the continental flavor. wcn

• The sea is calm and clean as a mirror. A huge seaplane, Latecoere, at the pier, is being rocked by hardly-seen waves. As always, everything, is perfectly ready.

Jean can absolutely rely on the ground mechanic gang. He signs the flight book and gets on. The crew is already inside. Waving hands, engines roar, and the plane is moving. A big ocean liner murmurs its greeting. Jean pulls the throttle up and down as usual when these two air and sea giants pass each other. The control tower radio operator wishes his happy journey, Latecoere politely thanks back, and glides on out to sea. The deep white liner under the plane gets narrower until it completely vanishes.

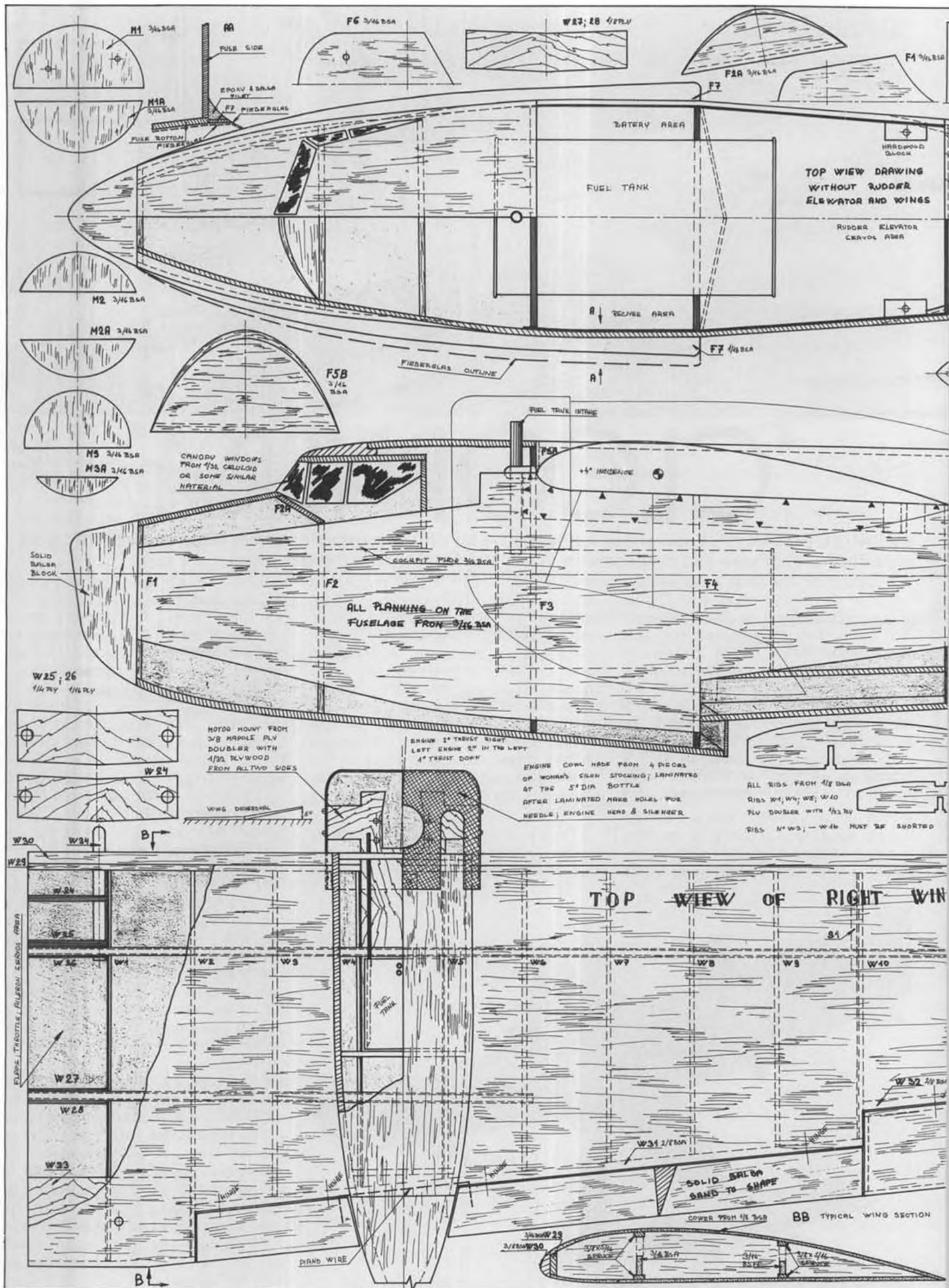
Thus is described a seaplane takeoff by the author, and it makes me believe that after reading it, every boy wants

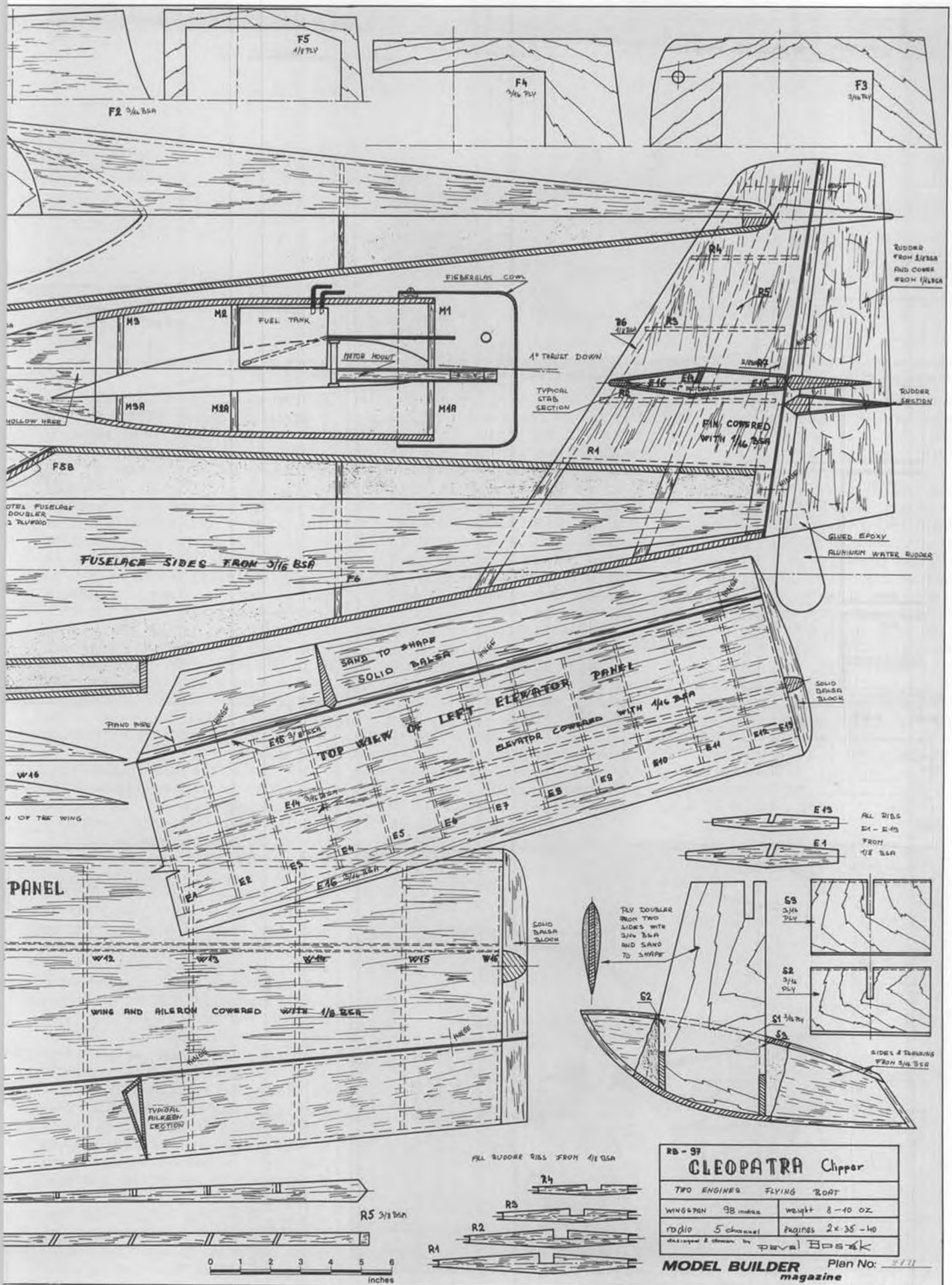
to hold the controls. And you grown-ups, be honest, would not you wish the same? Just a few people's dreams come true, but the rest of us can only dream. I have been attracted by a multi-engined seaplane ever since I took a piece of plywood and spruce into my hand for the first time. And it was the same with long cross-country flights, for both planes and models. That is how I realized my dreams and built a model which I called Cleopatra Clipper.

Naturally, to realize my boyish dream, I had to start with simple soaring gliders, Nordic A/2 planes, C/L models, and only then I began with R/C. Even here it was nothing but a step-by-step job. First Rudder-Only, then Intermediate, and finally pattern. Before I started to draw Cleopatra, I had gathered the necessary information, and after studying about 60 plans of seaplanes, I know enough. I did not want to build a scale plane, nor a purposely plain model, but a realistic looking airplane with cockpit and a crew. That is why searching for information went on. And Cleopatra was born. I put the stress on its stability, because during long flights, the control over a non-stable model would be too difficult. Next condition was its stability for long flights. I know that my usage of OS Max engines for this purpose was not the best, but in our republic I could not buy a better engine of category "40". That is why I have chosen this one so that the model could be big enough and could be well seen. There is much space in the fuselage, even for a one-gallon tank. But I did not try this one. I tried the first takeoff



Underside shot discloses the wide hull and spray rails which help prevent water spray from hitting the propellers during takeoff runs. Wide tip floats not as pretty, but very functional.





RB-97

CLEOPATRA Chipper

TWO ENGINES FLYING BOAT	
WINGSPAN 98 inches	weight 8-10 OZ
radio 5 channel	engines 2x 35-40
Designed & Drawn by PEVAL BOSAK	

MODEL BUILDER magazine Plan No. 9772



Cleopatra in full flight, with just the aft point of the forward step cutting a small track in the smooth water. A touch of up elevator and it will become completely airborne. Twin OS .40's give plenty of takeoff power for the 8 foot span flying boat.

with a five pint tank. Such a tank, together with separate tanks for each engine (9 oz.) is enough for 2 hours of flight.

I have to stress that the engines do not take all the fuel, because I used an imperfect system of repumping with the help of pressure from silencers. This season I want to use Perry pumps. The OS Max 40 engines are efficient enough and are able to take off the model with a one-gallon tank. In case of my smaller tank, I used maximum engine output only while taking off. Once the model flies with a full tank, I give it half throttle and at the end, just one-third. The longest flight it has done so far was 50 miles, according to the guiding car. In fact, the flight was longer because I had to circle and wait for the car. Average speed in a straight flight was 43 miles-per-hour. The fuselage tank is used for cross-country flights only. For everyday fun flying, I use small wing tanks.

The model is equipped with wing flaps for the reason of difficulties at the takeoff. I didn't know if the engines would get the model off. Now they are useless because of the engine's output. But I use them for landing. The landing speed is lower, and the model does not glide on water surface so long. The length of landing is much shorter. If you do not use them, you might find yourself in a situation when the model would be darting into a pond dike and you would be unable to stop it. The flying itself is pleasant and simple. The control of the model is similar to category Intermediate. Thanks to slightly bent wings, it can be controlled by rudder . . . no ailerons.

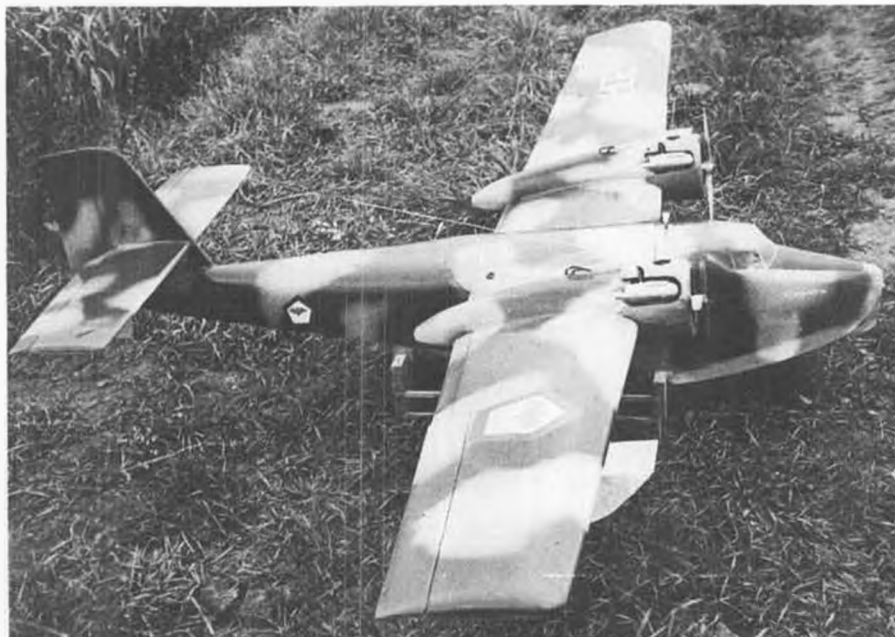
CONSTRUCTION

This was begun by fuselage, so that I could see the shape of my new model first. The base is two balsa sides which are strengthened by plywood where wings are fixed. Bulkhead F1 to F6 are glued between sides (I do not

mention material sizes which is described in my plan). Before fuselage is glued together, get rudder frame ready. It consists of the main spar R5 and profiles R1 to R4, leading edge R6, and trailing edge R7. Beware of twisting the fuselage while you glue it together. Then cover its bottom front part as far as bow. What follows then is covering stern and finally jump behind bow. An experienced model builder is able to read my plan and that is why I do not describe single operations for beginners. To mention but one, I found useful while covering rear bottom fuselage part, to cut its shape from hard paper and only then cut it from balsa and glue to its place. Next operation is fixing the pushrods for rudder and elevator inside the fuselage. Now even rear top fuselage part can be covered.

Let us start the front fuselage part. Cover it as far as the bulkhead F2A, make cockpit floor and rear cockpit wall. There we can place figures of pilots, also of navigator or wireless operator. Here anything can be done according to your imagination. Cockpit windows are from celuloid or similar material. Do not forget to use a paper template first. The shape of windows must be exact. Each window is one piece. Frames are painted. Finally, cockpit cowling is covered as far as bulkhead F3.

The most difficult thing is building the stab and elevator. The main stab spar E14 is glued on rudder spar R5. Then fix and glue stab airfoils (ribs). These are made from balsa rectangles by sanding between airfoil templates. Now glue trailing and leading edge E15 and E16. Stab balsa sheeting is done in such a way that as many sheeting parts as it is possible would be put through the fin. Sheet the stab first, and then the fin. Fin covering will end at stab. Then glue on the stab tips. Joint between fin and stab is filled with epoxy and balsa fillings. Glue on the fuselage nose block. Now sand the whole fuselage and glue on deflector bars F7.



Ship is realistic in appearance, but not really a scale model of any particular aircraft. Keen observers will recognize parts of various full-size designs.



Cleopatra has flown over 50 miles on a single flight, from pond to pond.



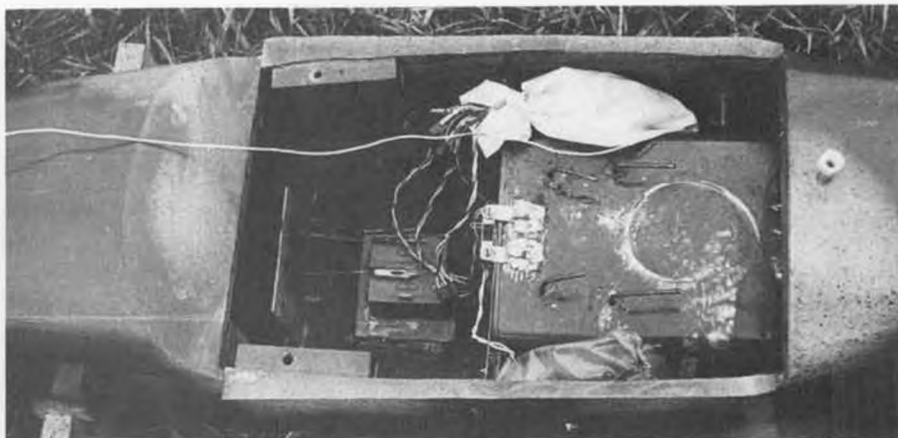
The author/designer, Pavel Bosak, holds Cleopatra aloft for a front view. Being a typical modeler, the engine cowlings are still unfinished, as explained in the text. Maybe tomorrow!



Pavel with his Tono 35 R/C powered Volksplane design, which was published in Czech model magazine "Modelar" in March 1975.

Joint between them and fuselage is again filled with epoxy and balsa filling.

Now study well detail AA. The whole front bottom fuselage part is laminated and also the top part of deflector. Thus we get a good cover against splashing water from the bow against the propellers. Now it is time to fill in joints, sand fuselage, and do



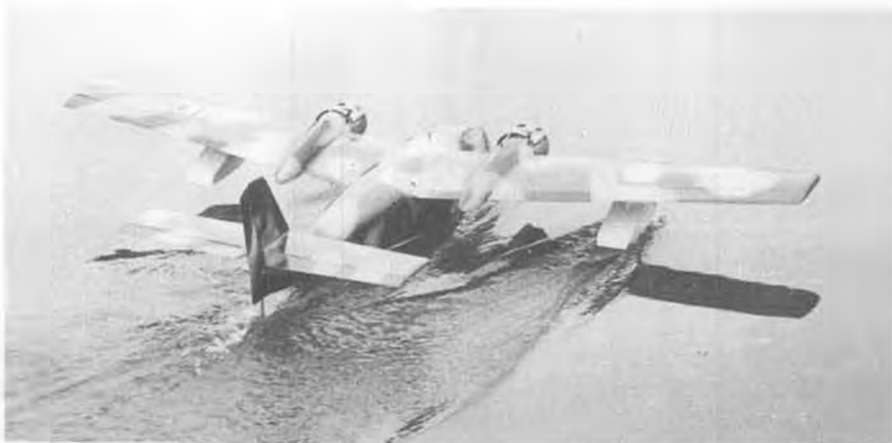
Endurance anyone? Though it will hold a gallon tank, this one is a mere 5 pint fuel cell, which supplies the individual 9 ounce nacelle tanks through engine pressure. Lots of radio room.

modelspan sheeting. The same is done with elevator and rudder. Only then are they assembled in place with nylon hinges. Both halves of the elevator are joined by piano wire. The aluminum water rudder is inserted and glued into the air rudder.

WINGS

The wing is all-balsa construction. Ribs are made by rasp interpolation (stacking and sanding). Cut balsa rectangles according to the biggest rib. Make plywood templates of the root and tip rib, according to plan, and sandwich the required number of rib

blanks between them. By sanding, which follows, we get all ribs at a time. It's useful to mark ribs with corresponding numerals. Now cut each rib to exact length over the plan. Cut notches as required. Keep the trailing ends of ribs W11-W16, as we shall need them for ailerons. W1, W4, W5, W10 ribs are strengthened with thin plywood. All wing details are put together on the main and the subsidiary spar (which reaches W6 rib at engine pod). Glue on the leading edge W29, and trailing edges W31 and W32, then both wing halves are glued together with plywood links W25, W26, W27, and W28. Then sheet bottom of wing and inside it, fix pushrods for ailerons, throttles, and flaps. Install also fuel tubes from main tank if you are going to put it in. Now glue part W24 with wing dowels W34 and plywood W33 for strengthening the center of wing under screws. Then glue part S1 for floats to rib W10. Cut a slot for this part in wing sheet. Before sheeting top part of wing, fill in between front spars with 3/16 balsa webbing, out to W6, and glue between W4 and W5 ribs the engine mount. Glue bulkheads M2, M2A, M1, M1A, M3, M3A. Install tanks and sheet-cover the pods. Tanks can be bought or make your own from



Under low power, the fuselage lays back on the rear step, putting the water rudder in a position to effectively steer for taxiing. Once on the step, the air rudder takes over.

Continued on page 67



Rhett Miller III, four-times Nats Champ, 1977 Masters winner, 5th in World Champs, age 19!



Dave Brown, second at 1976 Nats, second in 1977 Masters, 2nd at World Champs, age 31.



Mark Radcliff, fourth at 1976 Nats, third in 1977 Masters, 6th at World Champs, age 22.

'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

• When it was all over, and we ended up with the same FAI R/C Aerobatic team that we had two years ago, the joke was going around that the 1977 Masters Tournament was a big waste of time, effort, and money. It might have seemed so to some but not to Steve Helms, who,

WOW CHARLIE YOU BUILT THIS ONE IN RECORD TIME, AND IT'S A BEAUTY TOO!

in the flyoff, came within a scant 50 points out of almost 19,000 of unseating Mark Radcliff from third place and a spot on the U.S. team! (They ended up 45 points apart, but Mark scored the highest single flight of the meet in the third round with a whopping 5045 and also had the higher non-counting score, so would have won anyway if they had tied).

Not far behind Steve was Dean Koger, by just 120 points, flying the most

talked-about aircraft at the contest. Dean, about to become a major in the Air Force, is stationed nearby at Wright-Patterson AFB, and the plane he flew was designed by a local Springfield, Ohio modeler, Wayne Ulery. Called the EU-1 (Wayne's pretty wife is named Emily, so you shouldn't need any more help figuring it out!), the design is a radical departure from the current trend in precision pattern aircraft. Weighing 11 pounds, it has 980 square inches of wing area, with a sharply swept leading edge taper from a root chord of 22 inches (3-3/4 inches thick)! Its appearance is a composite of many contemporary military jet fighters, and its flight is slow, majestic, and rock solid. We'll be seeing more of this one for sure.

Second most important to getting in the top five at the 1977 Masters Tournament, was getting in the top ten, as these contestants gain an invitation to the big money competition in Las Vegas this coming November. The other five, after Miller, Brown, Radcliff, Helms,

and Koger, included Jim Kimbro, Phil Kraft, Ron Chidgey, Tony Bonetti, and Denis Donohue.

Jim Kimbro certainly came up with the hard-luck fisherman's story about the "one that got away." At the end of a tremendous 3rd round flight, Jim's time ran out just before the plane landed. Although his caller, Howard Danforth, still had 15 seconds on his watch when the plane stopped rolling, the official time had ended 10 seconds earlier. All the "if" phrases of Monday morning quarterbacking wouldn't change the picture, but the biggest "if" of all is this . . . Jim scored 4610 *without* the landing. As we recall, the landing averaged around 7 and on the inner circle. With 5 judges, that made the landing worth 525 points, which, added to 4610, would have given him the highest score of 5135, and 3rd place

MY POWR-MITE SANDER REALLY SMOOTHS OUT THE ROUGH SPOTS.

SEE PAGE 30

going into the flyoff! Even if he landed in the outer circle, he would have totalled 4960 and been in 4th place. Flying with a bass-ackward elevator



Our 1977 U.S. R/C Aerobatic Team, alias "The Flat-Stab Gang", (l to r) Dave Brown, Team Manager Dick Penrod, Rhett Miller, and Mark Radcliff, just after completion of Masters.



Rhett Miller accepts First Place Masters plaque from Contest Director Bill Elliott, WORKS.



USPJA judges (l to r) Julie Woods, Bill Johnson, Dick Austin, Ralph Brooke, and Line Chief Bob Upton rest their eyes as the next flier gets his engine started at 1977 Masters.



"If you don't like the weather, stick around, it'll change in a few minutes!" Assistant CD at the Masters, capable Bill Keller.



What you often see when Rhett Miller completes a roll maneuver. Judges write score, flashers look over their shoulder, hold up card.



USPJA judges (l to r) Line Chief Dave Lane, Sam Crawford, Bob Reuther, Whit Stockwell, and Larry Sartor.

stick (he pushes forward to go up!) can't be all that bad.

Jim actually tied with his boss, Phil Kraft, who had the highest single score of the two, but the fourth, uncounted flight was used as the tie-breaker, which gave Jim the edge.

Ron Chidgey, National Champion for the last two years before Rhett Miller moved in to take over what seems like permanent possession in 1973, showed that he is still within striking distance if anyone should weaken. He was only 55 points behind Phil and Jim.

Tony Bonetti, the "Albanian Prince", perhaps under Emily's steady influence, is flying much better than in the past. He improved his score with each

round at the Masters, a reverse to his usual competition scoring pattern in past years. Perhaps he would get even better scores if he had a less distracting caller than Emily. After all, judging does take a great deal of concentration . . .

Last but not least of the top ten was Denis Donohue, whose last flight of 4255 wasn't quite enough to bump Fred Kugel out of 10th place . . . until tabulating discovered an error that added 100 points to his score!

The weather in Springfield, Ohio kept everyone on edge prior to the start of the Tournament. Like the annoying little dog that circles around you at a safe distance, constantly yapping and making

threatening moves, the rain clouds darkened the skies all week, thundering now and then, and throwing occasional rain drops here and there.

At the Friday night pilot's briefing, the contestants met C.D. Bill Elliott, and his capable Assistant C.D., Bill Keller, both members of the W.O.R.K.S. club. These gentlemen went over the various details pertaining to the operation of the contest, and then yours truly took over to discuss and hopefully clarify the latest rules variations pertaining to scoring of specific maneuvers. Two of these items were carried through into the World Championships, and might be of interest to all competition

Continued on page 101



Bryan Ulery graphically illustrates the amount of space available inside fuselage of Dad's EU-1.



Wayne Ulery's EU-1 design, as built and flown at the Masters by 5th placing Dean Koger. More description in text. Ship created a great deal of interest. Plans will appear in M.A.N. . . darn it!



Official U.S. Navy photograph of Graham Hicks' Jet Ranger in flight at NAS Lemoore, California. Modelers who attended some of the last Navy Nats at Glenview NAS, north of Chicago, should remember the great help Graham provided on behalf of the Navy.

CHOPPER CHATTER

By JOHN TUCKER



PHOTOS BY AUTHOR UNLESS NOTED

WHAT ABOUT IT, CIAM?

I received a short note from Mike Dailey, of Seattle, Washington, which probably expresses the feelings of a lot of helicopter contestants around the world. Mike writes, "How can the CIAM vote for an 11 lb. weight limit? Most .60 size helicopters go over 11 lbs. My Jet Ranger is 13-1/2 lbs., and I am building a second as light as I can, and it will be 12 lbs. The people I have talked to in the Northwest can't believe the 11 lb. weight limit. If the CIAM wants to vote in unrealistic rules, I'm with the Germans . . . I'll build my helicopters that are 12 lbs. and fly well!"

Well, I'm with you Mike . . . I can't imagine a finer flyin' machine than a finely-tuned Jet Ranger, but I've never been able to get the weight below 12-1/2 lbs., so if 11 lbs. is the limit,

a lot of good competition will be going downstream under the CIAM rules. If any of you other chopper pilots have any thoughts on the subject, shoot it in to me, and we'll give it a little space in the magazine.

NEW GLO-FUEL AVAILABLE

Every once in awhile, a good item comes along which should be brought to the attention of the modelers. Such an item is the entirely new "Magnum Power Glow Fuel" which has recently been developed and formulated by George Aldrich (of the classic "Nobler" fame) and distributed by Carl Goldberg Models, Inc., 4736 West Chicago Ave., Chicago, Illinois 60651. This is the first truly superior fuel in 25 years, which uses a powerful and uniquely different method of lubrication that reduces friction and increases protection. Now

you don't need much imagination to realize this means higher RPM's with less wear and tear on the engine! Steve Helms, a top U.S. Pattern flyer, says the new fuel gives him an extra 700 rpm. In addition to the rpm gains, you will have a lower engine idle with good recovery, your engine will be cleaner internally, and your chopper will be less messy and easier to clean-up after a session on dirt flying fields.

I have just finished running a gallon of this new fuel through my Jet Ranger and Alouette, and can attest to the claims noted above. There were also a couple of other areas of special interest to the helicopter flyer, such as cooler engine runs and a requirement to lean-out both the high speed and idle adjustments on the carb. We all know how hard it is to keep the helicopter



Dr. Emery "Lee" Wayman's Moody helicopter in flight, without body. Note heat sink and muffler on forward-placed engine.



Our clounnists sons, Kim and John Jr. (in Stetson) prepare for some flying at the San Diego "Drones" stadium flying site.

engine cool when its buried down inside the fuselage . . . and we know also, that a hot engine has a good chance of freezing up about the time we got into the "dead-man's curve" at 50 feet of altitude!

One of the first things I noticed about the fuel was the drastic change in the coolness of the cylinder heads after flying on Magnum Power fuel. The difference was great enough to be noticed by "feel" . . . I looked around for a thermocouple to get the factual readings, but have not yet had the opportunity to make a scientific comparison between different fuels. Perhaps I'll leave that to the engine experts . . . in the meantime, I'm convinced of its merits and will continue to use it!

Magnum Power fuel is available with 5%, 10%, 15% and 25% nitro methane to satisfy your specific needs. Magnum Power 15 is especially recommended for R/C helicopters. Believe me guys, if Carl Goldberg says it's good, then you can rest assured it's really great, and if George Aldrich makes it, you can rely upon his claim, "You won't go back to your old fuel". 'Nuff said!

STABILITY VERSUS MANEUVERABILITY

Many of the letters I receive indicate that most beginners are very concerned about the sensitivity of their new toy, and wonder what to do about all those modifications we write about, and how can they change the flight characteristics to make it less touchy? On the other hand, as the modeler becomes more proficient, he starts looking for ways to make his chopper more maneuverable! And then, there are many of us who want both (have your cake and eat it too?). Well, to satisfy these requirements, we'll have to review a little basic theory . . . but in general, "there are no free lunches", and what you finally end up with is some sort of compromise!

The most important thing is to determine just what you want your chopper to be, in relation to your personal skills! For example, the beginner invariably wants a machine that is very stable, non-sensitive, and tolerant of improper commands during the learning phase. Most any R/C helicopter can be changed or modified to achieve this capability, however (and this is a big however), it will not be a maneuverable helicopter in the sense that you will be able to do steep turns, loops, and all those good things that the expert does with his chopper. The expert flyer is continually looking for a helicopter that responds instantaneously to his slightest control input and has the capability of doing most anything! Unfortunately his chopper is not very stable and would be a nightmare for the beginner to fly. A fact that is most often overlooked, is that the expert flyer knows his machine intimately, and has acquired the skills necessary to make

3 BASIC TYPES OF STABILITY

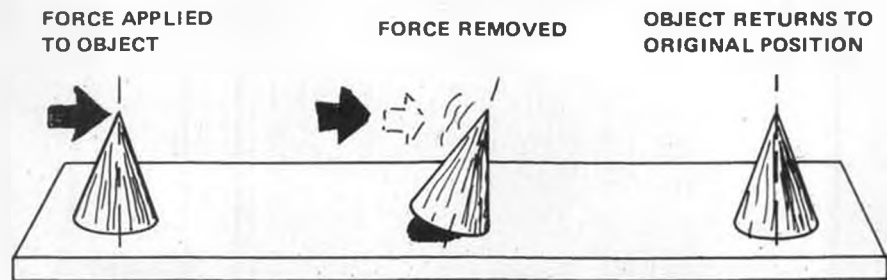


ILLUSTRATION OF POSITIVE STABILITY (CORRECTIVE MOMENT)

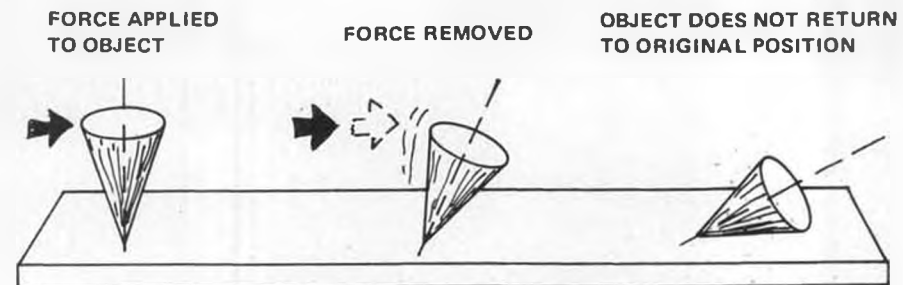


ILLUSTRATION OF NEGATIVE STABILITY (UPSETTING MOMENT)

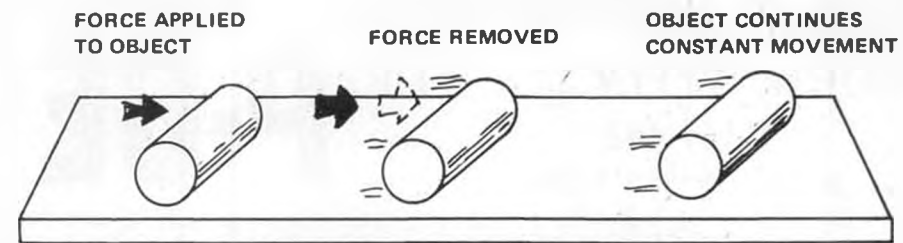


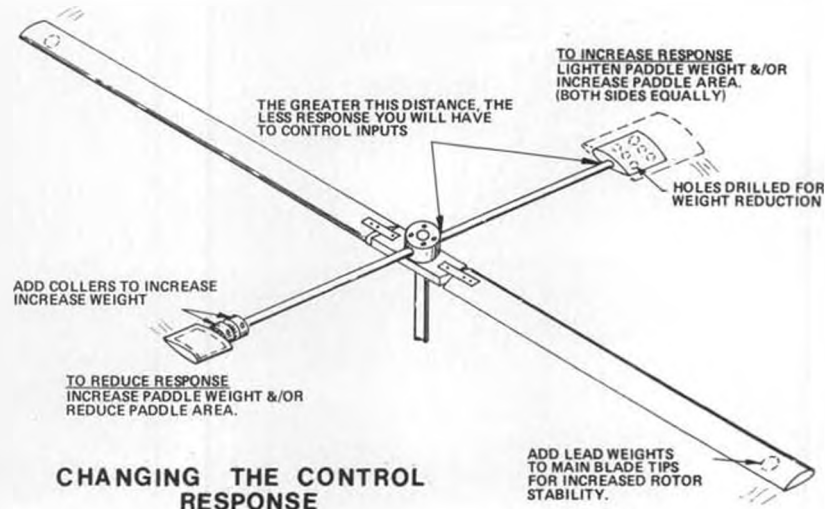
ILLUSTRATION OF NEUTRAL STABILITY (ZERO MOMENT)

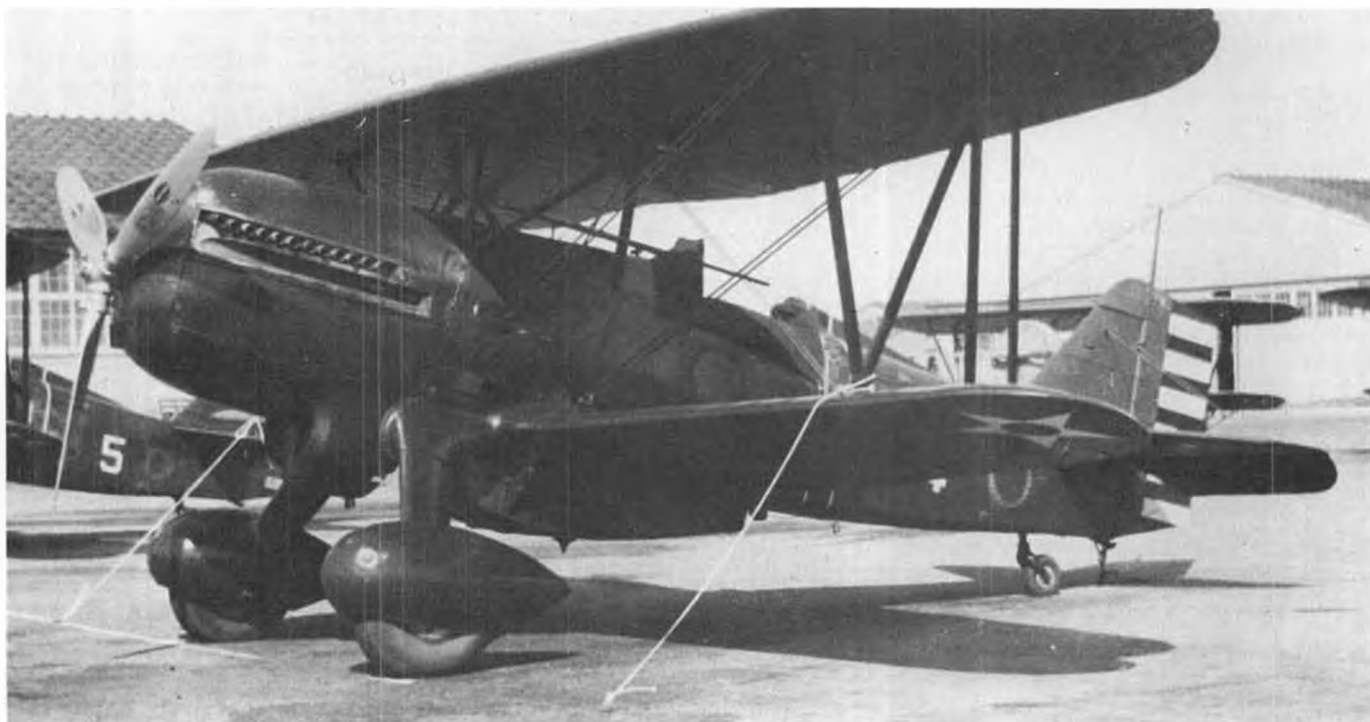
it appear to be very stable, and he gives little thought to its true lack of stability. (The above two paragraphs would fit exactly into an article about fixed-wing aircraft. The beginner needs an inherently stable model, but once he gets his "wings", this same aircraft becomes inadequate . . . to him. wcn)

In review, an R/C helicopter can be made to be quite stable and easy to

fly . . . but it will not be very maneuverable or responsive. It can also be modified to be very responsive and aerobatic, but it will not be easy to fly without skill. Somewhere in between these two extremes are the majority of the helicopter kits available on the market today . . . designed as a compromise to satisfy the greatest number

Continued on page 68





A P-6E photographed while at March Field, 1934, site of the 1977 AMA Nationals. Behind it is a Boeing P-12. Lt. Col. Hap Arnold was in command of the base at that time. Note dent in left wheel pant, and that tie-downs merely wrap around strut base! Nick Karstens photo.

BORN TO FLY..... THE PART ONE

By PETER WESTBURG

● Along with a couple of million other teenage modelers, I fell in love with the Hawk P-6E and the feeling has not changed over the years. Even without its classic paint job, it is still a beautiful thing to see, and a classic . . . an airplane that will be remembered as long as there are people to remember airplanes.

Though only 45 P-6E's were built,

the attention it got made it seem that thousands flew in the skies of the early and mid-thirties. The airplane had a mixed up birth, being ordered as the YP-22, a Hawk nearly identical to the YP-20 except for the split type landing gear and a 650 hp Wright Cyclone radial. The engine was changed to a Prestone cooled Conqueror and the landing gear to a cantilever single strut

P-6E

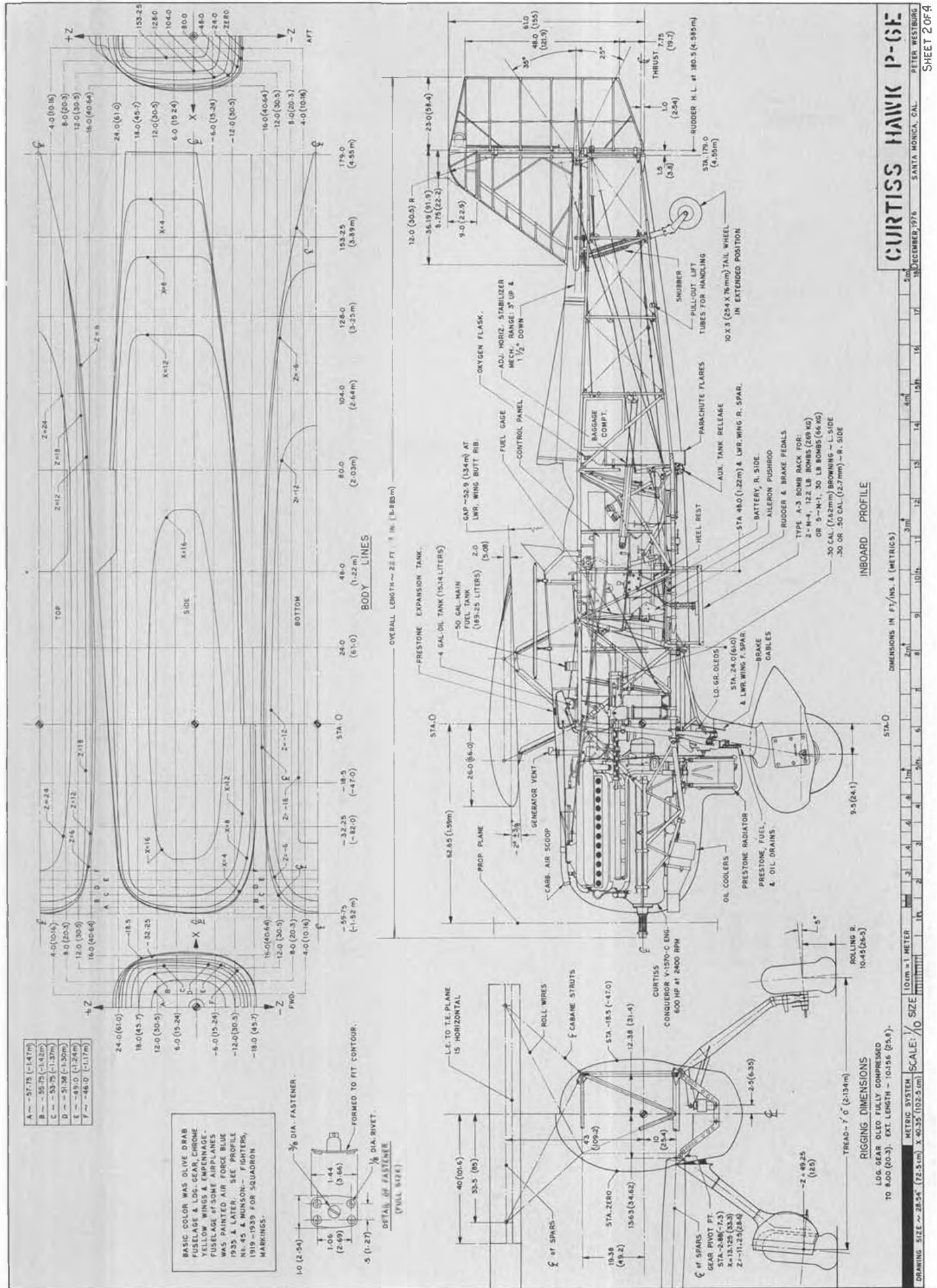
with full streamline pants over low pressure tires.

But for the practical problem of maintaining spares, the airplane would have gone down in history as the P-22. The wing, empennage, fuselage and many other parts of the XP-22 were the same as those used on its predecessors, the P-6 series, which in turn borrowed much from the P-3 and P-1. The designation was therefore changed to P-6E, the handle by which it will always be known.

Next month, we'll have a few more facts about the P-6E, more pictures and Sheets 3 and 4. ●



Insignia on this P-6E is of the 33rd Pursuit Squadron, which flew out of Langley Field, Virginia. Half-pants on low pressure tires were a service modification to enable caked mud to be hosed out. No, Mabel, they didn't have many paved runways in those days!



CURTISS HAWK P-GE
 SANTA MONICA, CAL.
 19 DECEMBER, 1976
 SHEET 2 OF 4



The author's beautiful quarter-scale Kestrel 17, built from Ralph Learmont kit. Span is 14 feet, and the weight, with retracting wheel, is 8 pounds.

R/C SOARING

by Dr. LARRY FOGEL.

PHOTOS BY AUTHOR

● I've got good news and bad news . . . the good news first: I want to report that the 1/4 scale Kestrel 17 designed by Ralph Learmont of Melbourne, Australia, looks and flies every bit as great as the full scale Kestrel. Some months ago, I acquired this semi-kit from Ralph . . . a gelcoat fuselage, clear canopy, and foam cores for the wings, stab, and rudder, together with a 100-page printed instruction book. Actually, the instruction book is all you really need. It's truly an engineering document. The drawings are exceptionally fine and show that the designer has carefully thought through every detail. The plane goes together exactly according to the instructions, which offer certain optional features. For example, you can hinge the ailerons and flaps in the usual manner, or follow the instructions to build up a curved cup attachment in replication of the scale hinge line. It's a lot more work, but sure looks great.

Ralph also details a retractible landing gear with doors that open as the wheel comes down. What self-respecting Kestrel would fly without such gear? So . . . I had to have that as well. He also details an inboard retractible tow hook . . . I'll let that slide by for the moment.

The first problem was to find a sufficient level surface for sheeting the 7-foot long wings. Bob Radcliff came to my aid. He had just the right bench and knew exactly how to cover foam with balsa. Then there was the task of fabricating the retractible gear and building the tricky linkage for relaying the six servos to the control surfaces. Here "Murph" Misewicz came to my aid. In fact, "Murph" went on to structure the support within the fuselage and all the moving parts for control of the flying surfaces.

I then turned to my wife, Eva, with a plea for her finest Monokoting. The result set the stage for some final

decorations and the building of a scale instrument panel within the canopy.

This 14-foot span beauty scaled out at 8 lbs., and is balanced according to instructions. I purchased a six-channel radio especially for this aircraft; rudder, elevator, ailerons, flaps, spoiler, and retracts, and coupled, the ailerons and rudder to ease handling in the first flights. On hearing this, Ken Banks said, "You'd better fly that radio in some old dog before you put it in this beauty." I took his advice, and sure enough, ran into radio problems. Lost control of my friend at low altitude and . . .

With the radio repaired, we were set for the first flight at Torrey Pines. The choice was to hand-launch over the grass or toss it right off the cliff some 350 feet over the ocean. The wind was out of the West at eight knots . . . good lift and smooth air. Ken ran with the plane held high overhead, then threw it out in level flight as I concentrated on finding neutral trim. Quickly the Kestrel gained speed, then altitude. It flew with grace and beauty against a cloud-covered sky.

A few minutes into the flight, I handed the transmitter to Ken. Shortly after, there was a sharp up-command . . . one that Ken didn't give it. He quickly leveled the aircraft, but then the wheel cycled down and up, again without his command. That called for some fast thinking. He circled overhead to cut the range, then quickly brought the plane in on final approach, experiencing one more glitch. But the landing was smooth and there was an outburst of applause



Photo of full size Kestrel 17 instrument panel, which the author intends to duplicate and install in the quarter-scale model.



Don Edberg, winner of the 1977 North-South (California, that is) contest, and member of the Torrey Pines Gulls.



Col. Bob Thacker with much-modified Hobie Hawk at N/S meet. "No wonder the line's so tight, I'm standing on the winch button!"

from the crowd that had gathered to watch this event. I congratulated Ken on his presence of mind and flying skill. I want to take this occasion to thank Bob Radcliff, "Murph" Misewicz, and my wife for their craftsmanship, and Ralph Learmont for a real contribution to model aviation. I hope this kit will become available through an American distributor in the near future. In the meantime, you can contact Ralph at 31 Queens Parade, Burwood, Victoria, 3125, Melbourne, Australia. I expect to have the radio problem straightened out and have many hours of joyous flight with this new bird.

That's the good news. Now for the bad news: I've learned that aerobatic aircraft can't fly under water. I was flying off Torrey Pines in the late afternoon. There was good wind and loads of lift . . . great flying conditions for an aerobatic sailplane such as the Swallow. It's fast and can perform inside and outside loops, inverted spins, axial rolls . . . all this on ailerons and elevator with only a 4-foot span. Everything was going well until I decided to land. I walked back toward the landing site, some 150 feet inland from the cliff edge. The plane was still high over the ocean with loads of altitude to spare. I thought, "Perhaps one more axial roll." Well it turns out that at that distance, and with the sun behind the aircraft and near to the horizon, it's impossible to tell the red of the underside from the yellow of

the topside. In fact, both look black.

You guessed it, I confused the two and lost reference. After a few moments of trying to bend the stick, it was all over. The plane entered the Pacific at terminal speed. You might say that plane was "totaled." There wasn't even a radio left. The parts were spread out and sank. A dog on the beach dashed into the surf and retrieved half a wing. But what can you do with the teeth marks through the foam? Moral of the story: Don't fly aerobatics under silhouette conditions. In summary, I've learned two important lessons in the past few weeks. First, thoroughly flight test every new radio before entrusting your prized possession to its control; and second, maintain close visual contact while performing aerobatics.

There's been other recent activity at Torrey Pines. For example, a pylon race which shows off what you can do with a U-control kit converted to RC. Kirt Hanson of Costa Mesa brought down a good-looking profile with only the battery in the nose. Contrast this ship with the Maxiglide B-58 as offered by AMT for hand launch free flight. This glider is all foam and begs for RC conversion if you have a slope with loads of lift. Don Edberg slapped in two servos and the result is a fast-flying, highly aerobatic trick. It does everything you tell it and sometimes things you didn't. This is the plane that Don launched by mounting it on top of an

Aquila, then hoisting both by an electric winch.

Hey, have you heard about the new Kraft miniature airborne system which should be available in the near future? Their KPS-18 servo weighs .582 ozs. Four of them total 2.328 ozs. Their KPR-7L receiver weighs 1.411 ozs. The mini-switch harness (part no. 200-154) weighs .282 ozs. This brings the total weight to 5.975 ozs. for a four-channel airborne pack. Think what you can do with really small sailplanes.

For several years there's been friendly competition between Northern and Southern fliers in California. I couldn't attend this year's challenge meet, and so I asked Al Doig to cover this event for the sake of this column. He reports as follows:

"The South shall rise again! On May 14 and 15, the best of the Northern California thermal flyers beat the best of the Southern Californians for the second year in a row. This year's fracas was hosted by the Central Valley R/C Soaring Club and pitted 50 flyers from the South against 50 from the North. The problem with any California contest, it's like flying in the Nationals. When you take guys like Edberg, Thornberg, Thacker, Qualls, Nibley and the like and put them together with 80 other guys nearly as good, it takes real courage for some of us to show up . . . but we always do. Out of five flights, the winner had a maximum target



Murphy's Law II and IV, seen at the North-South meet. Note extended rudder post which provides hinge support.



Joan Nolte, Cordova Model Masters, of Scaramento, "coming through the gates." Looks like a "Murphy's Law".

deviation of 6 seconds. His worst landing was 86 out of 100 points. And he was almost beaten by the next ten contestants.

"Contest Director, Dell Henry, and the Central Valley group, ran a nearly flawless contest. The tasks were 3 min. precision and four rounds of 5 min. precision/duration. The contest started on time at 0800 Sat. and by 1400 Sun., 435 flights were completed and all awards given. The weather was near perfect except for some dust devils, or as they are known in the Midwest, tornados. One offensive little devil, even whilst we held our planes to the ground, broke two of our stabs, unwrapped Roger Taylor's wing cover from about his wing, and threw it into a puddle a rod or two downwind, and maxed Al Doig's hat (except no one thought to start a watch, so it was not regarded as an official flight).

"An attempt to eliminate Kamikaze landings was a feature of this contest. A set of gates was placed 20 feet from the outer edge of the 25 foot radius landing circle. Spaced 25 feet apart, these gates were the type of fiberglass poles with orange flags that one sees on the rear of bikes. In order to earn the points counted from the center of the landing circle to the nose of the airplane, the flyer had to pass through the gates. It was originally decided that the sailplane must pass through the described rectangle. By contest time, the height requirement (top of poles) was eliminated. There were two reasons for this. First; it is difficult for the judge to be certain whether the sailplane is under the line between the tops of the poles. Second; it was found that, in wind, it was sometimes not possible for a light sailplane to pass through the gate and make it to the center of the circle (Just remember, I only report the facts, not authenticate them.)

"Anyway, there were just as many "dorks" with the gates as without. They do decrease the number of downwind

Continued on page 70



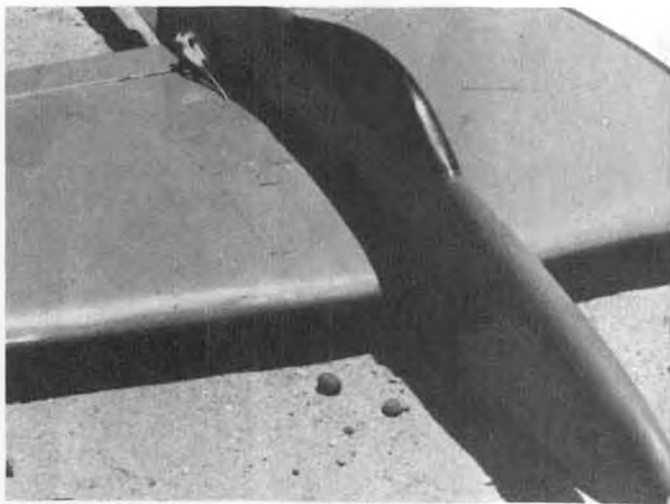
Don Edberg's all-foam AMT Maxiglide B-58, converted to two-channel radio control. It does everything in the book and then some. Seen here at the fabulous Torrey Pines slope site.



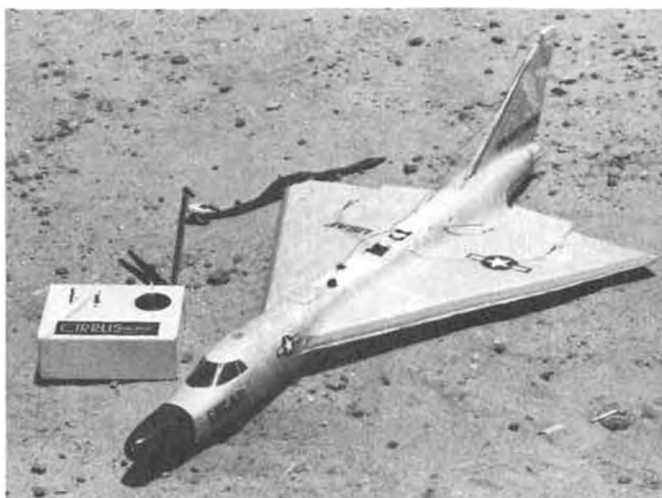
B-58 plays tag with a couple of slope soaring hang gliders (second one is hidden behind rudder). Maxiglide is sold as a free flight hand launch glider. Needs strong slope lift with R/C.



Kirt Hanson's profile C/L P-63 which he converted to R/C slope soarer for pylon racing. Battery is mounted in the nose, while all other R/C gear is in the wing.



Close-up of P-63 shows radio hatch and aileron pushrod in wing. Battery is in nose for ballast.



Close-up of the all-foam AMT Maxiglide B-58 with radio conversion by Don Edberg. Control is by flaperons (or stabilators).



MODEL ROCKETRY

By DOUGLAS PRATT . . .

● Have you seen STAR WARS yet? For goodness sake, see it, and soon!! You can bet your brass B3-4 that you won't regret waiting for a ticket.

I have the crew of the Dallas Area Rocket Society to thank for my introduction to it. After Saturday's flying at their Megalaunch II regional (pix and coverage next month . . . great meet!), and in spite of the fact that my large, cumbersome body was suffering from



Some of the Dallas Area Rocket Society people responsible for Megalaunch II. This was taken at the Southwest Modelers Show. Photo by Alan Wilcox.

six forms of heat exhaustion, they dragged me to see it. I revived like a watered flower. It's always more fun to see something like that in the presence of, shall we say, unusual people. Like Tim Burton, who is building a tank out of an old VW (beat that, WCN!) . . . or Scott Hunsicker, who managed to sneak a camera in and get his own stills (none of which came out too well) . . . or Martin Catt, who is a science fiction writer and who makes a living feeding giant African roaches on an agricultural experiment station. In other words, just your typical Saturday night movie crowd.

In any case, everyone I know who builds models and has seen the show wants to build models of the spacecraft (I know, a space-borne fighter wouldn't make Immelman turns, or go roaring by you in a vacuum, but who cares, they're neat!). I have information from my far-flung network of spies that one major model rocket manufacturer was consider-

ing releasing a flying Snub Fighter, but the project, I believe, got canned. Anyway, there's nothing to stop good old American ingenuity from coming up with our own!

I am in contact with several people who are building STAR WARS related craft, and I have promises that I will be able to publish their plans, depending on how well they turn out. I also have heard that a plastic kit is due to be released, and it certainly ought to be capable of being converted to power. Meanwhile, please drop me a line if you have a similar project underway; I'd be delighted to publish the results.

To encourage such projects, I'm trying to obtain stills from STAR WARS for publication, similar to the SPACE: 1999 pix we ran with the Eagle article. Wish me luck.

Well, on to business. First of all, as I said, full coverage of Megalaunch II will be forthcoming, if Fotomat decides

Continued on page 70



Part of the display of the Birch Lane Section of the NAR, one of the Bay*Nar clubs in California. Charles Russel photo.



An Estes Maxi V-2 scale model lifts off at the Birch Lane demo, to the cheers of a throng of spectators. Charles Russel photo.



Woody Petersen says this Lanzo Record Breaker is the best he has had yet. This is Taft, California.



Whadya know! A Comet Clipper with an engine cow! This one by Jerry Vernon. Those are Jerry's clip-on sunglasses, not his eyebrows.



PLUG SPARKS

By JOHN POND

• For those free fliers who can't get their fill of flying, the 1977 U.S. Free Flight Champs, held annually at Taft, California, is the answer to any modeler's prayer. Liberally spiced with old timer events, the 7th Annual U.S. F/F Champs was an outstanding success.

With the drought on in California, the weather was ideal for flying. Surprisingly, on all three days, the temperatures never rose above 90 degrees. Night flying was considerably cooler than anticipated, but this didn't seem to affect the number of "max" flights.

The oil, generally promoted by Gene Spence, the Taft Condor man responsible for the acquisition of the field, was conspicuously missing this year. In talks with Gene, it now turns out

that the old oil, normally thrown out, is being reclaimed by a new process. Originally too expensive, with today's prices, it is now practical to reclaim the oil. Looks as though the dust problem generated by the constant use of motor scooters will only get worse.

The columnist noted, in spite of the many pleas to hold down the unnecessary riding, that the field and parking areas were constantly plagued with motor-cycles and the resultant dust.

However, free fliers are hardy souls, and (at last report) all modelers had survived, something of which could not be reported of their models, as the heat, wind, and "trash movers" lost many a model. Perhaps the most interesting model to be lost was Charlie

Werle's Schmaedig Twin Pusher. The columnist was partly responsible for this, as he recruited Phil McCary to assist Werle in cranking up the two motors. Picking an opportune time and a 70 degree launch, the twin pusher promptly flew out of sight despite the tremendous eleven minute foot-race by Phil Oestricker. Can't do much when they go out of sight straight overhead!

The overall contest was run by Contest Director Joe Norcross, but as a twist, the Old Timer Events were run by Lee Norcross (dear old dad) on Saturday. How about that?

Before talking too much about the flying, the best description was given in a letter from Davey Anderson (otherwise known as the Feather Merchant Hobby Shop), who had this to say:

"I must say I never saw so few photographers at this meet before. I hope you were prepared and shot a few rolls (yeah, yeah). We had some excellent subjects and a neater (!) appearing clientele at this meet.

"Sal Taibi was dressed so neatly you wouldn't have known he was a contestant. He and all the regulars were



Jack Jella wasn't fooling when he said he could make an Atom 09 run . . . and good, too! Small Bombshell.



Bob Dittmer flies all kinds of old timers. This one is a F/F Ranger, Arden 199 power. At 1977 U.S. Free Flight Champs, Taft.



Caldwell Johnson was way ahead of present Wakefield designs with his 1940 "Stick Stick". Still going great.



Ken Sykora, the new SCIFS newsletter editor, with his Gil Shurman design "Mike" from June, 1940 Flying Aces magazine.

very professional in their flight preparations. I know now why they win. They win because they prepare themselves and their equipment for *winning*."

This is exactly the point this columnist has been trying to make for many years. No amount of rule changes will keep the dedicated contestant from winning. Think about this the next time you scream for a rule change.

NO DOUBT ABOUT IT, CHARLIE, THATS THE BEST LOOKING MODEL YOU EVER BUILT.

Probably the best comment on the field was by Ken Sykora, SCIF Newsletter Editor regarding the Texas Twins, Bruce and Leslie Norman. It was hardly worth their time winning only about fifteen trophies, the timing table, and Lee Freeman's pivot tooth. While doing all this, they still have time to time other flyers, chat with everyone, and in general, be charming. Stamp collecting, anyone?

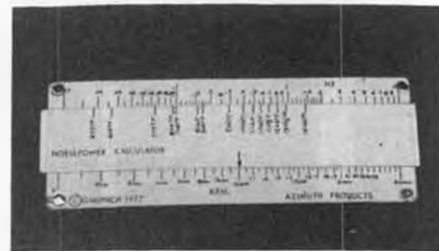
Noted on the field, Fred Emmert's new Riser Rider. This Marquardt design is a fantastic glider. Rubber event hotly

contested, although no "max-across-the-board" flights. *Four* flyoffs for first place in old timer events! Caldwell Johnson still flying his Slick Stick. Good airplane. The Wakefield boys can still learn from this 1940 design.

To add to the general enjoyment, the weather was never too windy (as noted before), hence the number of lost models was considerably lower than last year. As a matter of fact, so many models were returned that Jack Jella cancelled his normal after-contest flight to search the hills and boonies. Jack has been a real jewel in this respect.

Before wrapping up this report on the "Biggie", noted was Roy (Willie) Turner and his cowled Comet Clipper, complete with wheel spats. You've been hanging around Phil McCary too long! Willie also had a Rocket motor that ran too fast on a 12 inch prop, causing considerable ignition miss. Upon going to a 13 inch prop, the motor immediately smoothed out and gave more power. You might do well to try this gimmick yourself, as many of the old timers did not have strong enough springs for rpm much above 8,000 rpm.

Well, it was a great meet and all free flighters, especially old timers, should



The Horsepower Calculator, as developed by Gus Munich (see text).

mark their calendar for next year's contest held annually over the Memorial Day holiday. Here's how they did:

30 SECOND ANTIQUE	
1. Larry Boyer	18:27
2. Bruce Norman	17:30
3. Leon Nadolski	12:26
4. Wade Wiley	11:26
5. Fred Emmert	11:19
CLASS AB CABIN	
1. Bruce Norman	14:52

WITH A POWR-MITE SANDER, GOOD LOOKING MODELS ARE A SNAP.

SEE PAGE 48

2. Wade Wiley	11:30
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Corky Mullen, Fresno, California, turned up at USFF Champs with this Cleveland Cloudster.



Rudy Calvo checks the DT timer on his Arden powered Aerbo. His son, Rich, lends a hand.



Kenny McBride and his Comet Interceptor are giving the old old timers a run for their money.



This is Mike Guarneiri and his original MG model that was featured in a February 1937 Popular Aviation photo. Better change them gum bands, Mike!

- | | |
|------------------|-------|
| 3. Phil McCary | 10:50 |
| 4. L. Nadolski | 10:39 |
| 5. Leslie Norman | 10:26 |

.020 REPLICAS

- | | |
|-----------------|-------|
| 1. Jack Jella | 18:00 |
| 2. Lee Hunt | 15:00 |
| 3. Bruce Hannah | 11:15 |
| 4. Cliff Silva | 8:55 |
| 5. Ron Wittman | 8:31 |

CLASS AB PYLON

- | | |
|------------------|-------|
| 1. Bob Oslan | 35:00 |
| 2. Leslie Norman | 33:29 |
| 3. Jack Jella | 19:58 |
| 4. Larry Clark | 16:52 |
| 5. Cliff Silva | 13:54 |

CLASS C PYLON

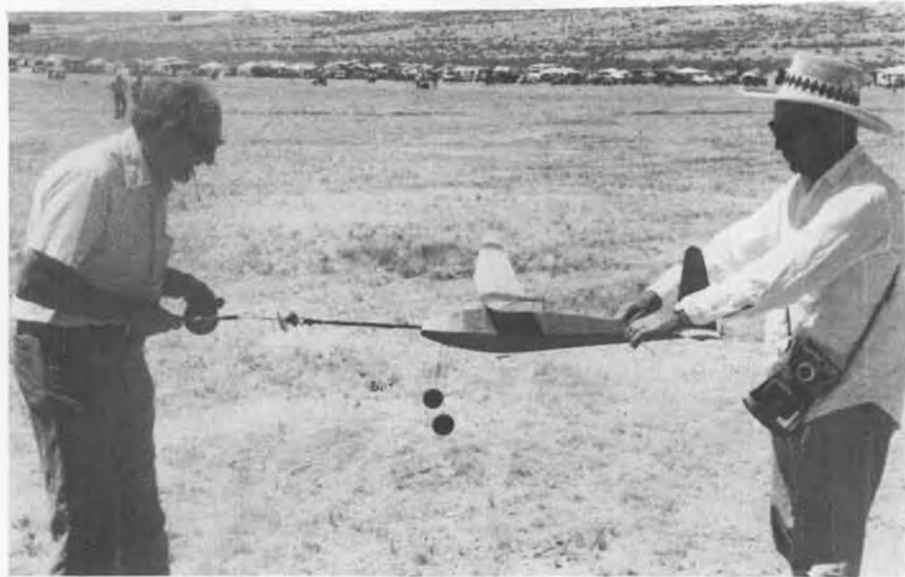
- | | |
|----------------------|-------|
| 1. Bob McBride | 12:41 |
| 2. Jerry Vernon | 12:04 |
| 3. Cliff Silva | 11:40 |
| 4. Chris Christensen | 11:34 |
| 5. Bruce Norman | 11:08 |

CLASS C CABIN

- | | |
|------------------|-------|
| 1. Sal Taibi | 23:01 |
| 2. Bruce Norman | 18:13 |
| 3. Leslie Norman | 17:22 |
| 4. Fred Emmert | 15:00 |
| 5. Larry Boyer | 9:18 |

O/T RUBBER

- | | |
|-------------------|-------|
| 1. Barnet Kernoff | 14:47 |
| 2. Bob Oslan | 14:09 |
| 3. Andy Faykun | 13:52 |
| 4. Jim Quinn | 13:17 |
| 5. Ernie Johnson | 12:31 |



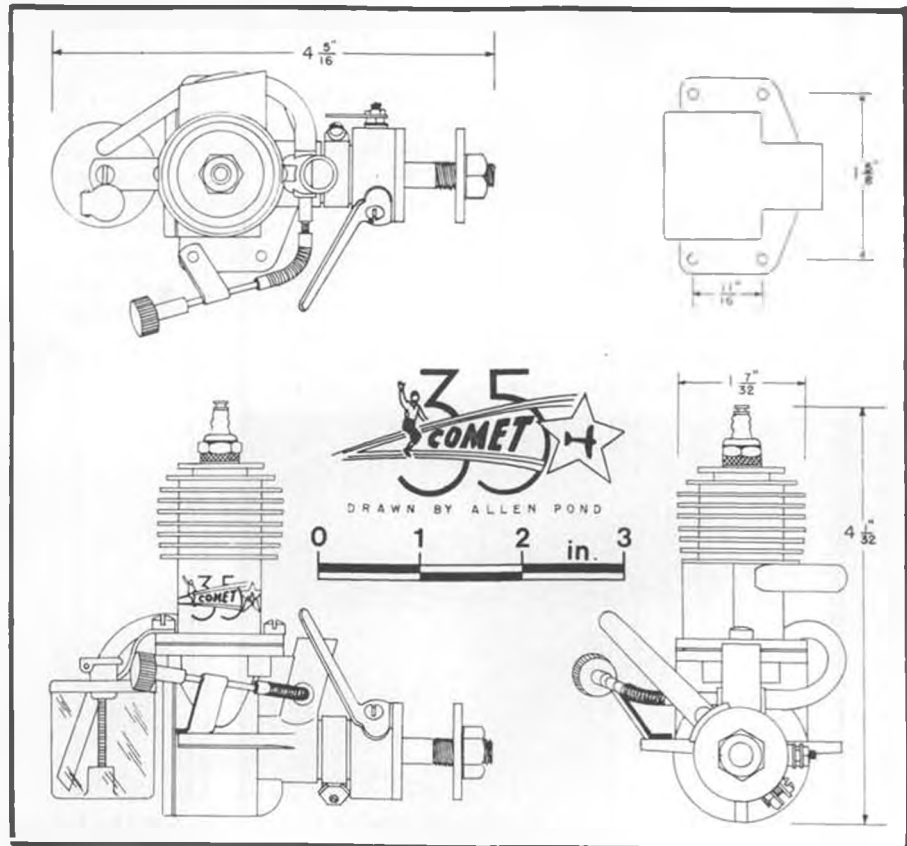
Charlie Werle and John Drobshoff (with over a 100 years between them) crank up a Roy Wriston Diamond. Yes, it's Taft again.

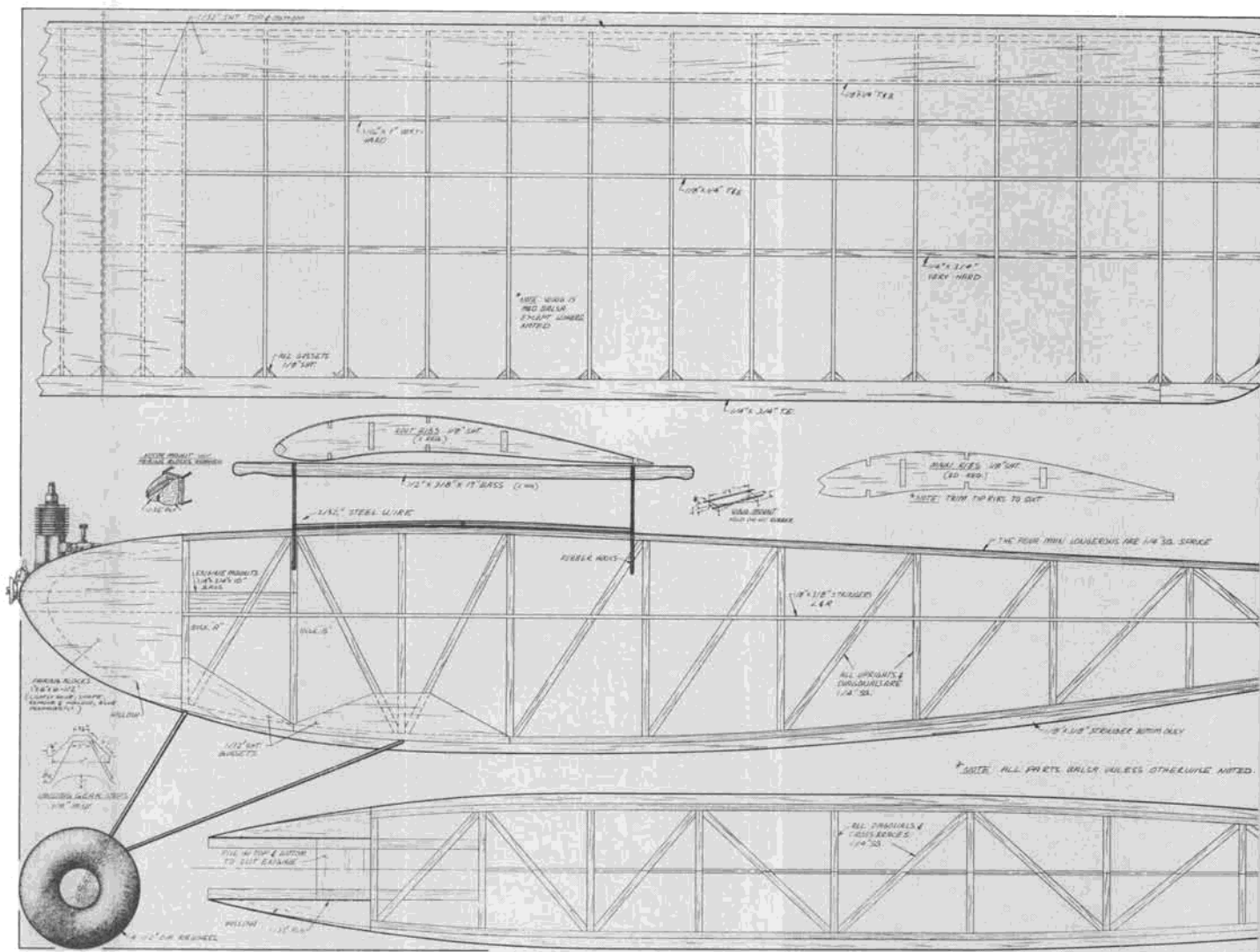
ENGINE OF THE MONTH

With the Zipper enjoying unprecedented sales, the Comet Model Airplane Co. started looking around for a suitable power plant to complement this most successful design. They found their answer on the West Coast, where the designer of the Brat engine lived.

Jack Keener, when contacted, agreed to design and develop a small Class C motor suitable for Comet products. In less time than it takes to describe the action, Keener had a motor ready for production. Comet immediately launched a full page advertisement in the May 1941 issue of Model Airplane News.

The motor, with a .35 cu. in. displacement, was rated at 1/5 horsepower at 6500-7500 rpm, using a 13 inch propeller. Strobotac tests gave a 45 oz. thrust. The engine was advertised at \$12.95, complete with Smith coil,





metal-clad condenser, deluxe run-in block, and a Motor Manual. A full guarantee was given with each motor.

Interestingly enough, the recommended 13 inch propeller turned out to be another Comet product called the Comet "Airspeed 35" propeller. You could get the prop in a variety of conditions. At 35¢, you received a hand rubbed and polished glossy prop. For 25¢, you received a finished and lacquered propeller. If you weren't too flush, you could buy the Airspeed 15 at 15¢, which was only partly finished and unlacquered. Props were

also offered in other sizes ranging from 8 to 14 inches.

Keener, who did considerable work for Mr. Hurd, of Electro-Spray Corp., contracted to have the Comet 35 produced. With initial sales soaring, the Comet people were delighted and requested more money. Keener, by this time, was feeling the pinch of his investment and requested some back up money. As Jack said in an interview, they gave me everything (compliments, etc.) but money.

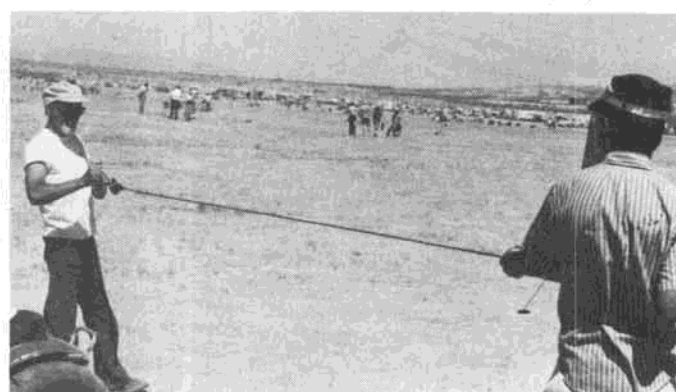
Faced with no other alternative, Keener sold out to Electro-Spray and

they produced a few more Comet 35 engines. Some old story. Comet was so badly overextended with all the new products they were bringing out that money was hard to come by. Eventually, Hurd ceased producing the Comet 35, and in conjunction with Earl Vivell, a San Francisco distributor/dealer, started producing the engine under the name of Vivell during the war years. But that is another story we'll tell you later on.

Keener's shop was located at East 17th and 29th Avenue in Oakland not far from Electro Spray. Some



Noel Barker, England, faithfully reproduced this J.S. Wreford design which won the Sir John Shelley Cup in 1938. Span is 6 feet.



Andy Faykun cranks up for an official. Has a neat 3-wheeled dune buggy for retrieving wayward models.

the PB-2

OLD TIMER Model of the Month

Designed by: **Thracý Petrides**

Drawn by: **Al Patterson**

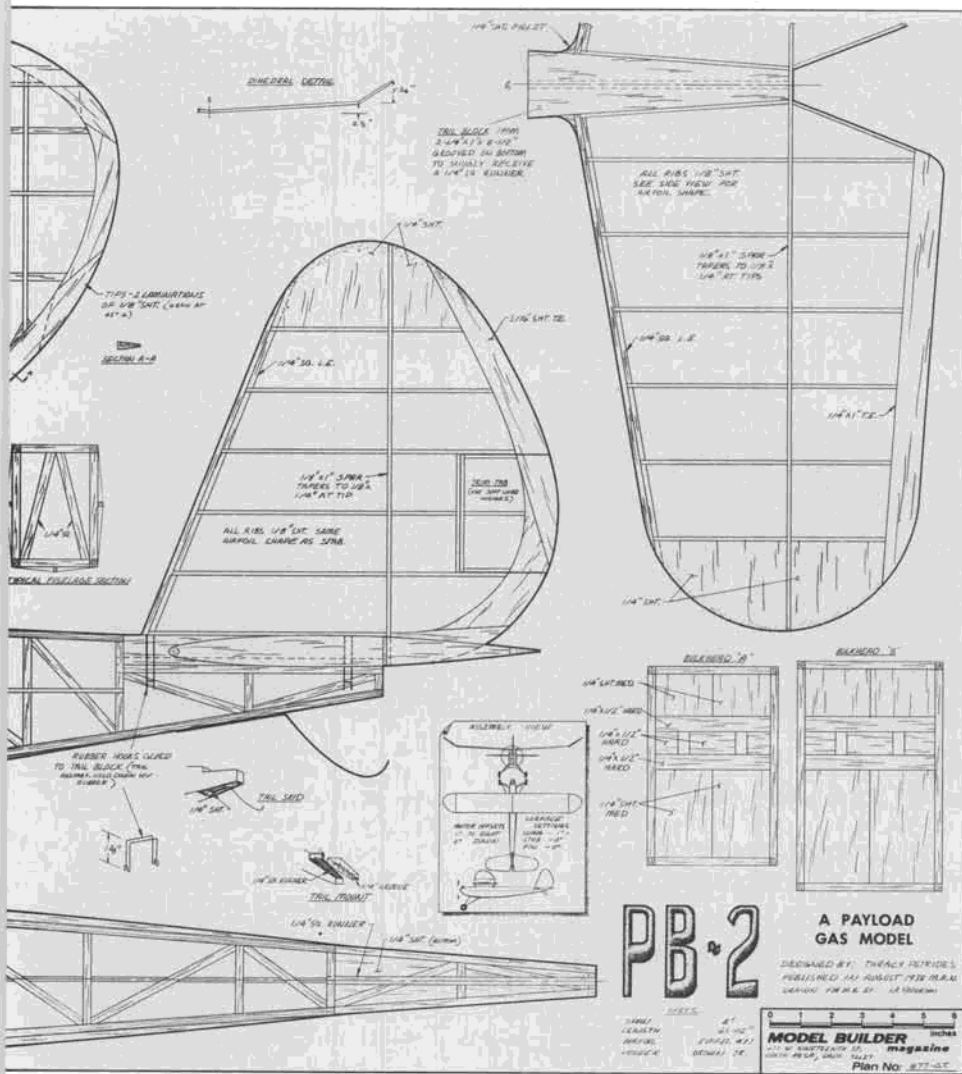
Text by: **Bill Northrop**

• Here we go again . . . another old timer plan without the balance point located! This all-important item seemed to be one of the best-kept secrets of model designs in the pre-WWII days. Oddly enough, the author/designer went into great detail about proper location of the payload weight in relation to the center of gravity (CG), but still managed to avoid giving its location. As the stab is full symmetrical, we'd suggest locating the balance point about 1/3, or 4-5/8 inches back from the leading edge of the wing.

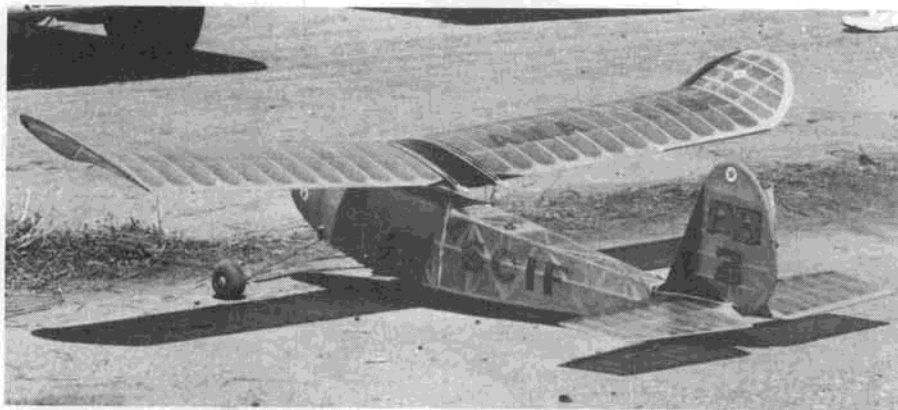
The PB-2, originally featured in the August 1938 issue of M.A.N. as a winning payload gas model, is well worth considering as a modern-day competition old timer model for free flight and R/C Texaco (or any fuel allotment event), and could very likely challenge the domination of these categories by the Lanzo Record Breakers (MB plan 773-O.T., \$4.50) and Sal Taibi's Powerhouse (MB plan 874-O.T., \$4.00). The layout is very similar to the Lanzo, complete with parasol wing, but that constant chord wing boasts a whopping 1300 plus square inches of area!

For R/C conversion, it should be a simple matter to double both the stab and fin spars to provide movable rudder and elevators. However, we'd suggest increasing the stab and fin spar thicknesses to 1/4 inch, and the rudder elevator spars to 3/16 inch.

Incidentally, flying Spiro Nickolau's O.S. 60 Gold Head powered PB-2 with Futaba radio, several years ago, was our first experience with R/C old timers. In addition to getting us turned on to this great facet of modeling, it also acted as the first inspiration for our big-and-light conception of quarter-scale classic era R/C models, Mammoth Classic Scale. •



FULL SIZE PLANS AVAILABLE – SEE PAGE 104



The late John Keller's PB-2 was the first winner of the Texaco Trophy competition as revived by the SCAMPS club of Orange County, California. An extremely stable aircraft.

engines were produced at this plant, but in very limited quantities. With the war coming on, and its attendant shortage of materials, the engine design was sold to Hurd.

Actually, the Comet 35 wasn't a bad running engine, and would have made an excellent Class C version of the Zipper. However, this was not to be, and Earl Vivell cashed in on the design.

For the technically minded, the

cylinder was machined from solid bar stock alloy steel. The piston was cast iron, honed and lapped for individual cylinder fitting. Crankshaft was hardened alloy steel. A special bronze alloy featured the wrist pin, with extra large bearings for the connecting rod and wrist pin.

A transparent gas tank was provided. Exhaust manifold was brazed to the cylinder, while the main bearings

were bronze. Two gaskets were used in the engine to eliminate compression leakage.

According to the engine brochure, the engine would not overheat due to its large cylinder fins. Recommended fuel was three or four parts of white gasoline to one part of SAE 70 wt. oil. Bore was .765 inches, with a stroke of .763, making it practically a "square"

Continued on page 73



PRODUCTS IN USE

By ELOY MAREZ and BOB UPTON . . . The COX/SANWA 4-channel radio and COX/AIRTRONICS kit for the ACRO STAR biplane.

TRANSMITTER

Those of us who have been in the R/C hobby since its infancy have seen many changes in equipment. My first system was a "Mac II" from August 1953 "Air Trails". Since then, manufacturer's have come up with many good ideas; obviously good because they have stuck for years. Others came and went rather rapidly. Strangely enough, some of the latter made it on the second go around.

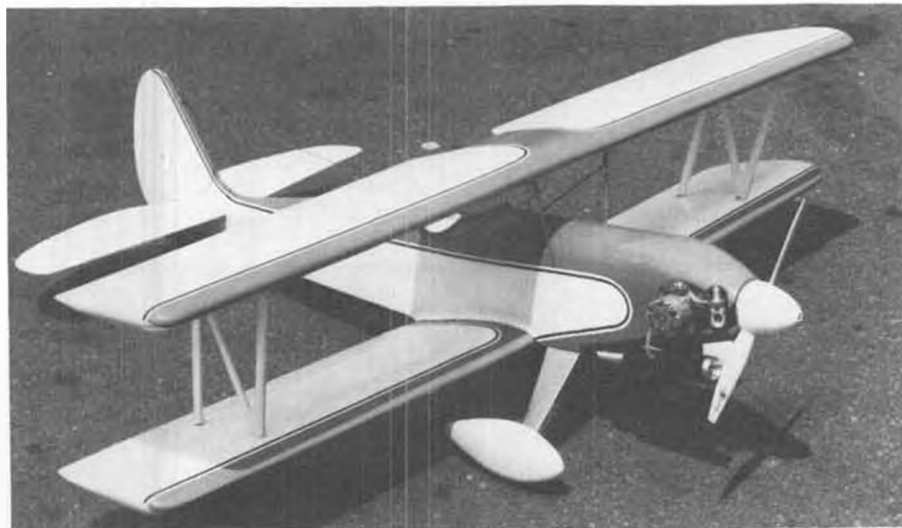
One of these second-time around successes is plastic transmitter cases. Probably the first one to be seen in any quantity was Orbit Electronics' four-channel Micro Avionics, that very soon came to be called the "Molded Micro"

by some, and the "Moldy Micro" by others. It consisted of Orbit-designed and manufactured electronics in an attractive Japanese case that also appeared under a couple of 'house' names with 100% Japanese insides. This was around 1970 . . . They all flopped! The R/C world just wasn't ready for plastic transmitters. But then, the world as a whole wasn't ready for a lot of things; small cars, for one; 1/2A R/C, for another . . . and T-shirts were still an item of underwear.

The picture has now changed. Possibly brought about by a whole new generation of flyers . . . maybe aided by the fact that the flyer-only as opposed to the

flyer/builder population seems to have increased. Plastic transmitters can now be seen at all stores and fields, and may even have pulled ahead in sheer numbers.

So it is not at all strange to find present-day manufacturers whose entire stable of transmitters come in plastic cases. And that's the way it seems at first glance in the case of the Cox/Sanwa 4 and 6-channel transmitters. Actually, they are a combination of metal and plastic, with the front upper reset portion and rear panel being made of aluminum. It is a slightly smaller transmitter than usually seen with this number of channels, measuring 6-5/8 inches wide, 5-1/2 inches high, and 2-1/4 inches thick. Probably because it is small, it seems heavy when you first pick it up. So much so, that to satisfy my curiosity, I weighed a number of transmitters that were readily available, and found that this Cox/Sanwa, a four-channel model, actually weighs from



The Acro Star, by Lee Renaud and Airtronics, now a part of Cox Hobbies, has been around for a while, but is still one of the prettier biplane designs. Bob Upton's version does it great justice.



Top level USPJA judge and former Formula 1 pylon racer, Bob Upton, with his Acro Star.



The Cox/Sanwa 4-channel radio system as reviewed by Eloy Marez. Long servo leads (10") plug directly into receiver. An extension lead is provided for aileron connection. On-off switch locks.



Cox/Sanwa receiver with sturdy case removed. Surprisingly, no IC's are used. Components are grouped in packages that appear to be IC's. PC board is of the strong, plated-through type.

7 to 12 ounces less than any of the others!

Possibly another reason for this seeming heaviness is that it is definitely bottom-heavy. A somewhat revolutionary departure on the part of the

manufacturer is the use of nine, instead of the usual eight cells in the transmitter battery, all in the bottom, and the difference is just enough to be felt. This, coupled with a short (36 inch) antenna does make for a very stable unit when

placed on the ground. The case has a U-shaped metal bracket attached to the back that folds out and can be used as a stand, holding the transmitter reclining at about 20 degrees.

Like the R/C world and plastic transmitters in the 70's, I am not ready for this sort of thing. I will mention that this 'kick-stand' on the Sanwa is very precisely formed and beautifully chromed.

The transmitter has a dull black slick finish that should be easy to keep clean. The markings are etched, white, and very visible. It is a closed-gimbal system of no radical departure in design or manufacture. The mechanical trims are ratcheted, with 29 clicks from end-to-end, for easy resetability.

An item certainly worthy of mention is the use of a 'Pull-to-actuate' main power switch which will prevent accidental operation in either the 'on' or 'off' position. I understand that it is a major service problem at Cox Hobbies, however, as too many new owners fail to read either the instructions or the little paper tab that comes attached to the switch that tells you to "Pull out to move up or down".

When you first pick up the transmitter, it appears that the sticks lean forward, and your first action might be to give it some 'up' trim. It is an illusion, however, as the gimbals are mounted at right angles to the inset front panel, which is itself set at a negative angle in relation to the front and sides. This is of little consequence once you "retrim" yourself to this slight difference from your old transmitter.

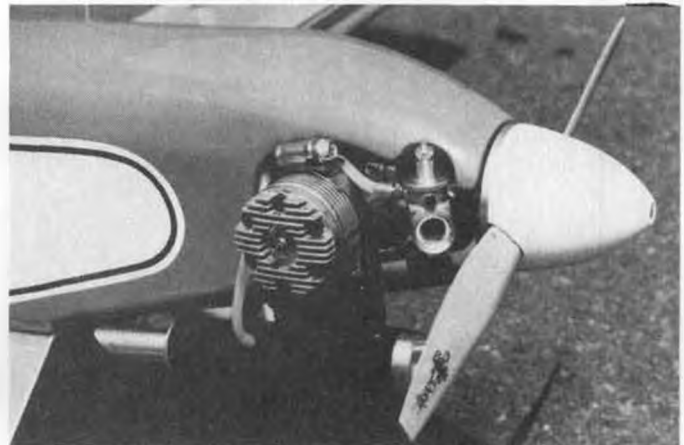
The stick ends are hard rubber, knurled on top and partly down the sides. Two sets of tips are furnished, of different internal depth, which can be interchanged to vary the stick length, but only by about an 1/8th of an inch.

The transmitter is equipped with an easily-read, three-color scale meter marked "Output". On page 9 of the manual, it is referred to as indicating battery condition. This can be misleading, as it implies that the meter is a

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Transmitter case opened up, with the stick assemblies on the right, and the single PC board with all electronics on the left.



Business end of Bob's Acro Star holds an HP61 with Zinger prop and Semco muffler with pressure tap, more than enough for 7-1/2 lb. ship.



Seen at the Dayton, Ohio races, May 22. Van belongs to Craig Wilson, "Great Planes Distributors", Plainfield, Ill. A firm believer in our title!



Workers at Pontiac Chiefs race, Chatsworth, Ill., May 30 (l to r) Bob Tock, Mark Nettleingham, John Van Antwerp, Jerry Vandervoort, starter Tom Tock.

PYLON

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

By JIM GAGER

PHOTOS BY AUTHOR UNLESS NOTED

• One Pylon Racing subject that has cropped up again, and is being discussed in very heated tones, is the basis of scale fidelity and finish on Form 1 airplanes, and the amount of "Gingerbread" that judging inspires. Some fliers say that the rivet details, panel lines, simulated corrugated metal on ailerons and tail surfaces, etc., should all be disregarded when being judged. Proponents of these items say that, since it more closely resembles the full scale version, the planes with it on should be placed higher in standings, if workmanship and finish are equal to those without the "gingerbread". Frankly, we enjoy putting these "finishing touches" on our airplanes, and even go so far as to include some of these techniques on our Q-M craft, where they count for zilch, except for adding more weight.

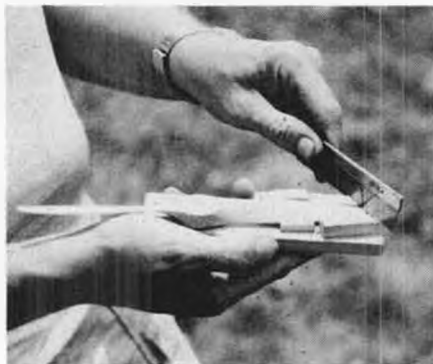
I suspect the original reasoning for handicapping the airplanes in the manner we do was that back when pylon racing first got started, it was a lot harder to build a scale, nicely finished airplane to the minimum weight limit (due mostly to then current radio weights and building techniques), and, to encourage decent airplane building and finishes (*This was the primary reason. wcn*), a method of handicapping was devised. So far, the system has worked OK, and since we're in favor of promoting good looking scale type racers, we've argued for these things, and for the most part have held our ground in discussion about same. However, we really got shot down the other day while discussing this subject, when one of the "other side" said . . . "Since the quality of the airplane figures into the outcome of the

contest (referring to the advantage of takeoff position with momentary delays of one second between airplanes), shouldn't a 'Builder of the Model' rule be in effect and eliminate all the custom-built-for-money airplanes, or at least make them take off last in each race?" At that point, I had to go get ready for the next race, so the conversation ended there. However, it's bound to crop up again. So how about sending me *your* thoughts on the subject, and we'll see if we can't put together some consensus on what we fliers want and the reasoning behind it.

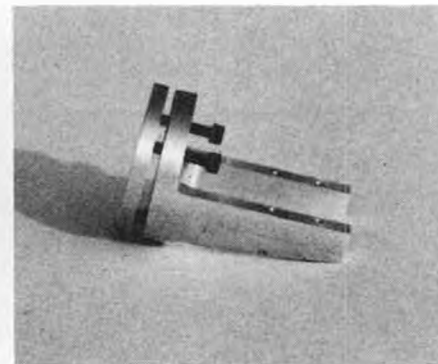
Let's get on to the pictures. I'd like to call your attention to a motor mount for Q-M racers. This mount is being produced by Big Art's Models, 20620 Emmett, Taylor, Mich. 48180, and comes complete with rear firewall mounting ring for only \$7.98, direct from the manufacturer. The mount is made from tubular bar stock aluminum, and machined to the final configuration you see in the photos. We're currently using one and it fits nicely into our "Little Toni", and is a well made racing item.

OFF TO THE CONTESTS

The first race for us this year was at Dayton Ohio, sponsored by the Miami Valley Radio Control Club, on May 21 and 22. Saturday, the 21st, was taken up with Q-500. On Sunday, 29 Q-M fliers showed up to battle it out for the



Art Arro shows his jig for reworking Form 1 props. Cut on left determines blade length and tip angle, while second cut controls blade shape and area. Once set, every prop will be the same.



Big Art's Models engine mount for Q-M racers. Made from tubular bar stock aluminum.



These lovely ladies ran registration and scoring at Chatsworth (l to r) Virginia Webb, Linda Prindiville, and Sharon Vandervoort. Thanks!



Form I winners at Miami Valley R/C races, Dayton, May 22 (l to r) Eric Meyers 2nd, Bill Hager (Ho-hum) 1st, and Bill Weesner 3rd.



Wayne Yeager's Q-M design "Proud Bird" is model of full-size copy of famous "Rivets".



Somebody's gotta win, somebody's gotta lose . . . the hard way . . . At Miami Valley race, in Dayton, it's (l to r) Russ DeWitt, Dave Keats, Toledo Exposition MC Bob Hisey, and Bob Singer.

merchandise prizes. After five rounds and the smoke cleared, it was Bill Hager in third, Bill Weesner second, and Russ DeWitt in first.

A short pause ensued, and then 18 Form I pilots lined up to fight it out. It became obvious that Eric Meyers, just recently returned from a contest in California, had brought back some of that heretofore mythical "California Air", as times in the low 20's were common, and Bill Hager turned a fantastic 1:15.6, while Eric Meyers slightly bettered that by turning a 1:15.4. Cries of . . . "short course, short course!" . . .

were heard in the pits, but remeasurement by the C.D., Foster Goshorn, proved it had been correct all along. Anyway, after five frantic rounds and several mishaps, it ended up with Bill Hager in first, Eric Meyers in second, and Bill Weesner third.

We did see one thing that has warned us away from a particular manufacturer's brand of contact cement. Bob Hisey, big wind from Toledo (he's the "Voice" of the Weak Signals Toledo Show), while rapidly motivating around the course, had his wing explode around the No. 1 pylon. Investigation showed

that the contact between the wing skins and foam cores had not bonded properly, and the balsawood simply pulled away in big pieces. I'm sure that if you want to know the brand name of the cement you could contact Bob and he would happily supply you with the name. Suffice it to say that it's not a brand we've recommended in this column.

A week later found our racing group in the little hamlet of Chatsworth, Illinois, for a race sponsored by the Pontiac Chiefs, of central Illinois. Again, the figures show that Q-M racing is still

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Special note to California pylon racers . . . the funny looking, carpet-like stuff these Quarter Midget racers are taking off from is "green grass" . . . green grass. This funny stuff is found in many parts of the country, like in Chatsworth, Illinois, but in very few areas of So. California.



The author's Dumas Deep Vee moves through Number One turn at Wheeling, Illinois. Who said that only hydros throw water?



The Vee hull comes right out of the water with Octura 1457 props mounted on the drive shafts.

PHOTOS BY AUTHOR

R/C POWER BOATS

By BOB PREUSSE



● As mentioned in the June issue of MB, I promised a follow-up article on the twin-engine Dumas Deep-Vee. In that article, we covered the construction phase, now let's review the OPS .60 engine and report our findings from the initial test runs.

The "Dynamic Duo" is powered by two OPS .60's with muffled tuned pipes from Shamrock Competition Imports, P.O. Box 26247, New Orleans, Louisiana 70126. Just as the OPS .40 we reviewed in an earlier issue, the OPS .60 is a rugged, well-machined engine with ample power and high RPM. Just a short note on the OPS powered "Northwind" we built. The combo was definitely a winner as its first contest in Racine, Wisc. We took 1st place in "D" Mono. Not bad for a new engine and boat.

The OPS .60 marine version comes

complete with a gold-colored flywheel and universal, 2 metric wrenches, Perry R/C carburetor, cool-clamp, pressure fitting, muffled tune pipe, instruction and maintenance booklet. The engine features Schnuerle-porting, as well as an ABC piston and sleeve. The front housing has a twin ball-bearing shaft. Rods are forged aluminum with brass bushings, and the piston is high silicone alloy cast.

The OPS .60 does not require any break-in according to the manual, and therefore may be installed directly into the boat. It is not necessary to run it on an air prop at a rich setting. However, a *short* period of careful running is recommended.

The engine must be run-in at the rpms and temperatures of normal operation. The ABC piston and sleeve should not seize, but may become dis-

torted from excessive heat caused by too lean a carburetor. As mentioned in the previous article, we used a 12° water-cooled exhaust manifold from International Products to keep pipe heat from returning to the crankcase.

Technical data of the OPS is as follows; stroke .87, bore .94, displacement .60, power 3.2 hp, rpm 23,000. You will not, of course, achieve 23,000 rpm in this deep-vee set-up, but this will give you an idea of the performance capabilities.

TEST RUNS

On our first test, we used Octura 1457 plastic props with a strut angle of 3°. We fired up the OPS's with the starter and launched the Vee. The hull ran too wet with this configuration, as about 3/4 of the length of the hull was in the water.



The author hoists 20 pounds of R/C power boat out of the water.



Getting ready for another test run. Bob says it takes all four of his hands to get both OPS's running. Does that make him a quadropus?

Next we straightened out the struts so that they were zero degrees. One advantage to the flex drive is that you can easily change the drive angle and depth. With this set-up, the boat now rode the water at a better attitude; however, the hull was still not up enough.

Before I continue, let me mention that the best way to set the engine is to run the boat with one engine and remove the other drive train and prop. Leave the first engine slightly rich, because it will turn more rpm's once the second engine is running. Repeat the same process on the other engine.

Our next runs included deepening the struts from 1-1/2 to 1-3/4 inches and again with no drive angle. This improved the boat even more. This time we ran the boat at a small pond and I guess this gave the boat the illusion of a lot of speed, but I will say deepening the strut was a good change. It is recommended also that the cable drive be supported in a brass stuffing box to reduce the wearing and fatiguing effects of whip motion.

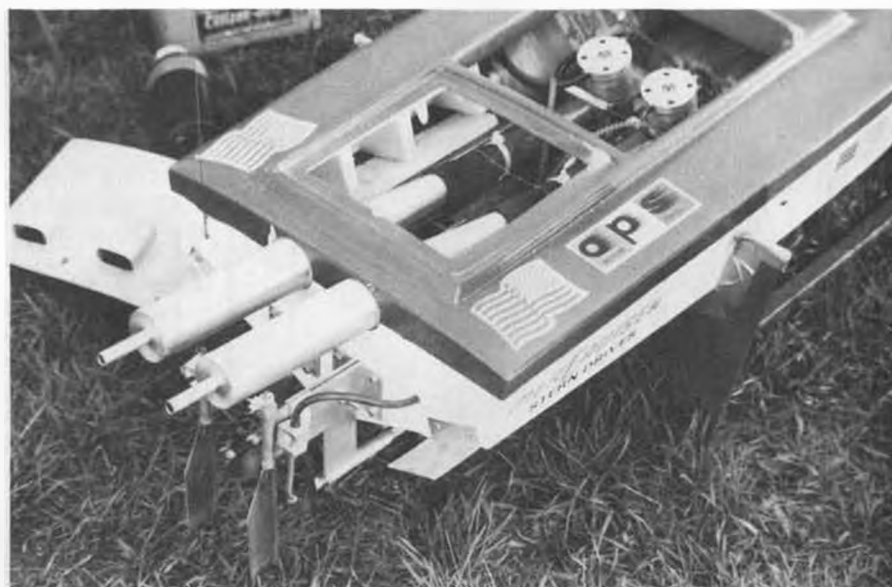
Because this is a test boat, I also decided to try Octura's new twin prop out-drive with a single wedge rudder. Two Octura standard struts are linked together by two 3/32 shafts. The assemblies are completely adjustable for rudder angle, as well as the rudder location between the props. The struts are equipped with lead-teflon bearings and are also adjustable. I set up the rudder halfway between the centerline and the right prop. It is a nicely made out-drive and very sturdy.

With the Octura set-up you'll use conventional hand-drive shafts with under-water streamline universals from Octura. We mounted the out-drive so that the prop centers are now 2 inches deep, and still with zero degrees angle.

At the Minute Breakers record trial on May 22, I was able to get a time of



Straightaway speed of the test boat is currently 40 mph. Bob feels the boat is capable of exceeding the present IMPBA "F" Mono record of 45+ mph.



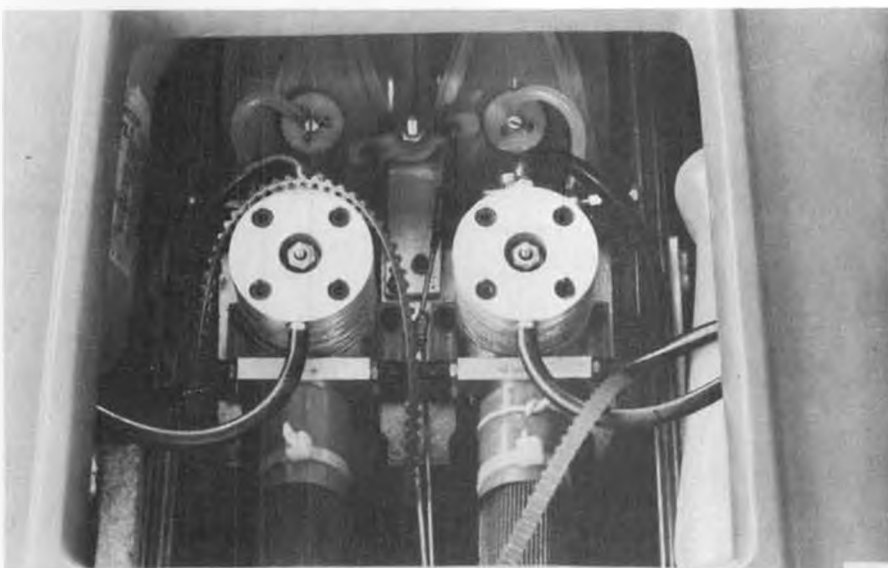
Extra styrofoam and plastic bottles are stuffed in for level flotation. Bow is filled with poured foam. Note heater hose on the pipes near engines. This prevents starter belts from melting.

40 mph on the straight 1/16. This was with the engines still a little rich, so I feel the boat is capable of the IMPBA "F" Mono record of 45+ mph. As for props up to this point, I have tried 1455's, 1457's and 1460's, all of the plastic variety until I determine what

is best, and then I'll go the beryllium copper. The 55's help the rpm, but there was too much slippage. Right now the 57's work the best, and hopefully I'll be able to swing the 60's.

In rough water, the Dumas Vee is ideal. In fact, the hull lifts across rough water just like the prototypes in the Offshore Classics. The Vee handles fine in the turns, and up to this point, torque has not been a problem. I think the weight of the boat has helped offset torque problems. My first real test of the competitiveness of the boat will be the Indy Unlimited on June 4 and 5 in Indianapolis. I am hoping the weatherman will cooperate with a 25 mph wind.

Thanks again to Dumas Products International Products, Shamrock Competition Imports, and Octura Models for their help in this project.



The OPS .60's installed on Octura's new twin mount. Note bellcrank installation for throttles. Note cooling water lines through heads and also around tuned pipe connections.

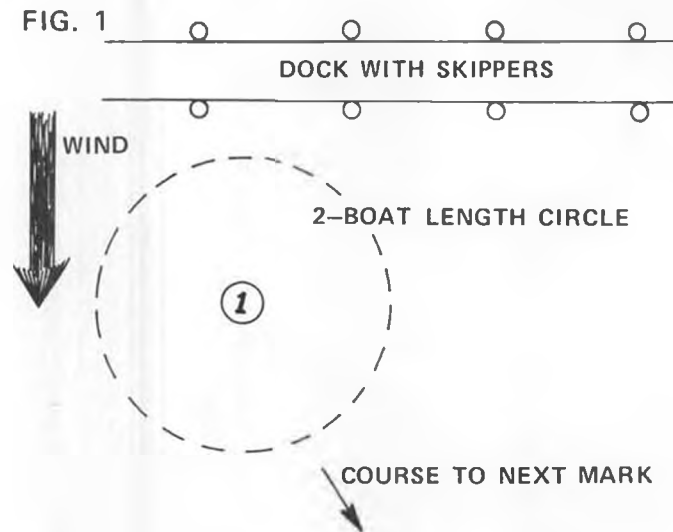


STRICTLY SAIL

By ROD CARR

• From the rapid-fire camera of Doug Barry, we are able to enjoy yet another bout of Monday morning skipping. This series of photos occurred at the 1976 Chesapeake Regatta. It was held in rather restricted waters, with a somewhat tautening effect on the nerves of the skippers involved.

To set the stage, we are looking at what turned out to be the windward mark, of sorts. The wind (3-5 kts) is blowing out of the picture into your face. The next mark is behind you and somewhat to your right as you face into the wind. The diagram will lay this out in graphic terms. (Fig. 1)



The important things to keep track of in your mind as you watch the situation develop are as follows:

- 1) Which tack are the individual boats on?
- 2) Who is overlapped on who?
- 3) Are privileged boats giving burdened boats the opportunity to keep clear?
- 4) Where and how important is the location of the two-boat-length circle?
- 5) What is the direction of the proper course to the next mark?

In this series, I think the movement of the boats is clear enough that we need not diagram the relative positions. The time intervals between photos is short, and can be gauged by using the pilings supporting the dock as bench-marks.



PHOTO 1) The four leading boats are approaching the mark. No. 420 is somewhat below the mark and is hardening up to round. All boats are on a starboard close reach. Note that No. 420 is overlapped on No. 123, who is overlapped on No. 555.



PHOTO 2) Prior to this photo, No. 555 has borne down onto 123, made contact, and apparently slowed 123 in the process. No. 123, as leeward boat, certainly was entitled to a protest, as it appears that a significant change to its speed may have occurred. No. 420 seems to have dropped back, but I think it may be a result of his rudder movement when hardening up, as well as having sheeted in a bit too much for the wind. At this point, No. 555 has entered the two-boat-length circle. He is overlapped by 123 and so owes 123 room at the mark, as well as space to jibe and assume a proper course to the next buoy. Similarly, No. 123 owes the same to 420, and can hail 555 for enough space to let 420 round properly.

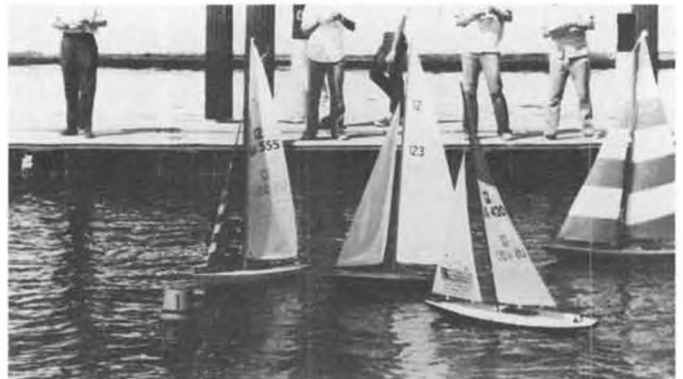


PHOTO 3) Ahhh, there's the buoy. But look what has happened to 555. His jib has swung over, which is starting to swing his bow to port, blocking the path of No's 123 and 420. No. 123's jib seems to be luffing, and 420 is coming on strong hard for the mark.



PHOTO 4) No. 555 has had the misfortune to jibe (probably unintentionally) onto port tack. It may be that boat speed would prevent him from avoiding 123, but avoid him he must. No. 420 looks like he has enough room to round, if he will only slack his sheets and fall off. The only move that 123 can make is to give hard left rudder, which will reduce the door that 420 is entitled to. No. 123 is caught between a rock and a hard place, but can blame the whole thing on 555.



PHOTO 5) The collision between 555 and 123 has apparently slowed 123 even further. No. 420 has not yet slacked her sheets and is having trouble bearing off as she rounds. East Coast 12-meter skippers seem particularly resistant to aiding their steering with sail trim in my experience. No. 555 is moving a bit better, probably using momentum transferred from 123 at their last touching. Score No. 555 with Plus 4, No. 123 with 0. At this point, we can put some blame on 420, since she is required to assume a proper course to the next mark immediately upon rounding. By remaining close hauled, she is carrying 123 up in violation of that precept. The Monday Morning Race Committee awards 2 points to No. 420. Coming up fast from the rear is No. 130. Note how well started are her sheets, in contrast to 420, who is on the same heading. SCORE: No. 555 = 4, No. 420 = 2.



PHOTO 6) All three of the lead boats have not jibed onto port tack. At this point, No. 130 is still on starboard, and if infected with the killer instinct, should have politely bellowed at all of them, and forced them all off to starboard before assuming his course to the next mark. Note that No. 420 is still close hauled, effectively blanketing No. 123's jib, which has fallen flat. Regardless of his past sins, No. 555 has become the leeward boat in the pack and can assume luffing rights over those above him who are on the same tack.



PHOTO 7) No. 130 elects to take advantage of clear air and jibes onto port tack. No. 420 is still sailing closehauled. No. 123 has been jibed, probably by stray air off the sails of the other boats. The outboard end of his main boom may be touching 420. However, he is back on starboard, and as such, becomes the privileged boat with respect to the actions of No. 555.



PHOTO 8) No. 555's boat speed carries him out in front, and No. 123 is still recovering from the push his main boom got from 420. Considering that 123 was jibed unintentionally, I have to assume that 420 was not given opportunity to keep clear, and hence should not be penalized for the contact. We see that 420 has finally slacked her sheets and comes out of the mess a good deal worse off than she went in . . . (i.e., 2 foul points, and 3rd in line, rather than first). No. 123 dropped from 2nd to 4th, but stayed out of foul trouble. No. 130 is smelling like a rose, now in 2nd, and showing what keeping clear of a mess can do for you on a light-air day. No. 555 went from 3rd to 1st, but managed to pick up 4 foul points. If he goes on to finish in front, his heat score will be 5-3/4, where it would have been only 3, if he had been willing to bide his time and round cleanly. Oh, the wages of sin!!

I would like to again thank Doug Barry for sharing this most illustrative series with us. The chance to take a "happening" like this and dissect it bit by bit is really worthwhile. We only get the opportunity because a few people in the sport take the time to contribute to its improvement. When was the last time you turned off your transmitter and sat on the race committee, or put out the buoys, or worked up the heat lists and the scoring sheet?

Next month, we'll return to the boats themselves and scamper about the deck for a discussion of deck-mounted fittings. Till then, remember to send in your AMYA dues to the Secretary, 2709 So. Federal Highway, Delray Beach, Florida 33444. And remember, that model yachting is a group sport, to which each member of the group owes some of his or her time and effort for growth and maintenance.

I'll field questions, and accept suggestions, photos, and gripes for a stamped, self-addressed envelope to Rod Carr, 7608 Gresham St., Springfield, Virginia. 22151. ●



Dr. Ron McNally, 6118 Bardu Ave., Springfield, Virginia 22152, is the current C/L Contest Board chairman. Tell *him* your troubles.



Howard Rush, with his own-design FAI Nemesis, claimed to be the ultimate FAI Combat plane. Self-portrait by Howard.

Control line

By "DIRTY DAN" RUTHERFORD
PHOTOS BY AUTHOR UNLESS NOTED

• I would imagine that by now, every serious C/L flier in the world is aware of the Aero-Challenge for Muscular Dystrophy contests, for which Bill Allen has been responsible. Coming up is the third contest in the series, and Bill says it will be bigger and better than ever. I have to believe him on that, as the Nats is on the West Coast this year, so

that many East Coast guys will be looking for a big shoot-out, and doing the show-down thing in Bill Allen's backyard is a natural.

Would you believe that I started on this plug for Aero-Challenge III without being able to find the dates for the contest? I did, and just spent a hectic half-hour searching for info . . . Nothing.

I'm really going to have to get this junk put away, so I can find stuff.

But then you can, of course, look in the AMA Contest Calendar or write to "Moose" for the dates. For now, I want to let you know that a Door Prize drawing will be held as part of the contest, to benefit the Jerry Lewis MD Telethon. Even if you can't make the contest, you can be a part of this by sending an MD donation, any amount is OK, in care of; Bill "Moose" Allen, 418 Fairmont Dr., DeKalb, Illinois 60115. Bill will send back an official MD receipt, that you can use for tax deduction purposes, and then your name and the prize you prefer will be dropped in a box and a drawing made the day of the contest. Prize(s) will then be shipped to the winner. The prizes to be offered (choose one) will be a GloBee Fire Plug and Charger, Dremel Moto-Tool, Dremel Jig Saw, clothing travel bag (\$60.00 value), or engine of your choice (maximum \$50.00 retail). Good prizes, and a chance to help in the fight against MD. Tell Moose that Dirty sent ya. 1977 N.W. REGIONALS

A super contest once again, with just the right kind of atmosphere (no hassles, just good times) lots of competition, really good weather, and efficient organization. Mike Hazel and Gene Pape do most of the work in putting on this contest, and they really know how to do it right. I'd nominate them to help with the '77 Nats, but they would surely string me up. One big contest like this a year is enough to ask of anybody.



One half of the much-feared (?) Jive Combat Team, pictured here in one of their more serious moods. (l to r) Gary Stevens, Ron Scoones, and P.T. Granderson. Howard Rush photo.



Gurt Frogg, still smiling after punching in 3 out of 4 new planes built for combat at Regionals. Credit Gurt for development of FAI Combat planes used by Outlaws, of England.

Last month I made mention of N.W. Sport Race, and at the Regionals, we had 23 entries in this class of racing alone; many of the entries trying a racing event for their very first time. As if to prove my point that most any combination is competitive, Phil Granderson won this event with a really large airplane (I can't remember what it was) and an older McCoy 35. Two other members of the Racing Affiliate of the Jive Combat Team didn't even finish their heats. Gary's Enya 29 powered Boogie Man made about an 1/8 lap and we packed it up. My plane made about 20 laps before Gary was forced into the pavement by some typical novice-style flying on the part of another team.

That's one of the neat things about NWSR . . . you have to learn how to fly in a Racing event sometime, and it's best to do it in an event where the equipment is expendable.

After winning in NWSR, Phil went on to win Stunt (Precision Aerobatics, if your name is Arlie Preszler). Arlie himself took second in Precision Aerobatics, and in a post-contest discussion, it was generally agreed that PA and Stunt are pretty much the same event, and that second-best was good enough for Arlie, especially considering the fact that he did not enter Combat.

Phil then took over in the Combat circle and took it all in Fast against some tough competition. By winning the three most highly populated events, Phil also took the Open Grand Champion trophy, which he didn't even know existed prior to receiving it!

Outstanding in the Speed circle was the team of Joe and Ken Kall, setting a new Jr. Formula 40 record of 153 mph. I happened to see this record-setting run, and it was pretty obvious that a record was being set by the mid-point of the run. The Kall team has a strong background in Combat, and I believe this is their first serious effort at a Speed event. Not too bad for starters,



Gary Byerly, of Shady Acres Combat Team, pretending to be a star. Comes from attending contests in air-conditioned motor homes. (Beats a hot van any time, right Gary? wcn)

right?

AND YOU THOUGHT YOU HAD A FAST 35

For some odd reason, this year's N.W. Regionals had an event called 35 Rat. Same rules as in Rat; you just had to plunk a lil' ol' 35 in the plane. Vic Garner and Gary Buffon simply installed destroyed HP 40's into their regular Rats, but Gary Stevens and I couldn't take this event that seriously, so we dug out an old Quickie Rat and searched about for an appropriate motor. The new K&B 5.8cc (.35) front intake/rear exhaust motor looked as if it would work OK, so Gary set the plane up to take it and put a couple of three-minute runs on the motor to be sure it was ready to go.

The day of the Racing events, we had no idea what this thrown-together combination would do, but we put 50% pop in the tank, a Kelly fiberglass 8-7 prop in the general vicinity of the prop shaft, and a Magnum Cool-short in the area of the motor that seems to run hot. It was only a half-lap after launch that everybody knew the K&B has dynamite horsepower. That incredibly draggy Quickie Rat, with its way-too-small wing, was flat gettin' it on. Even Sam Snyder couldn't hold back his curiosity, and had to ask what kind of 35 we were running. When somebody like Sam takes notice, you know something out of the ordinary is going on.

Being in a bit of a rush, we never did get a time on the plane, so I can't quote top speed figures to you, but it is obvious to me that this K&B has to be the fastest 35, either out-of-the-box or specially built, available. It ought to make an absolutely super motor for AMA Slow Rat. It *may* be usable in Combat, but the weight of the 5.8cc will be a definite problem in this event. If nothing else, this motor will allow those



Joe Kall and his record-holding (153 mph . . . proto speed) Formula 40 . . . 3/4 pan, inverted K&B 40, "V" stab. Flies clockwise (standard in the southern hemisphere, but unusual here).

who claim inflated top-end speeds for their Combat planes to at last actually turn those magic numbers without lying about it. The plane won't turn too well unless it is up around 600 squares or so, but it sure will go fast.

The availability of the K&B 5.8cc ought to make entry into AMA Slow Rat much easier for those who want to be nationally-competitive in this event. The custom-built, destroyed 40's are neat, but can be a hassle to obtain and keep maintained properly.

AND ANOTHER NECESSARY RACING ITEM RIGHT ON THE SHELF OF YOUR FAVORITE SHOP

Specialized events demand specialized bits 'n pieces which are quite often either hard to locate, or to obtain in the required quantity. But now that Al Kelly is expanding his glass prop production, he is able to supply distributors, which means that if your local

Continued on page 82



Proof that it is possible to watch Combat in calm and relaxed manner; AMA Secretary-Treasurer Earl Witt at the N. W. Regionals.



DOUGLAS SBD 'DAUNTLESS'

By ROLAND H. BALTES . . . One of the most famous of Navy carrier based aircraft during the early part of World War II, the "Dauntless" is very appropriate for this popular control line event.

• One of the most popular aircraft from World War II is the Douglas Scout Bomber, more commonly known as the SBD "Dauntless". Operated throughout the war by the Navy, it became especially famous during the battle of Midway, and provided the backbone of Naval offensive carrier bomber operations during the early phases of the war. Designed in the mid-30's, almost 6,000 were built in SBD-1 through -6 models, with very little change in outward appearance. The last one rolled off the production line in July, 1944.

With its real-life history of carrier operation, it is a natural for the carrier event, but not frequently seen at contests. Most likely explanation is the

short nose moment, which can cause balance problems unless a real effort is made to keep down the weight in the tail. Also, some nose weight most likely will be necessary.

The model was designed and built in response to a fellow modeler's request. After having drawn the plans, I could not resist it myself, and the accompanying photos show both models built for use in the Class I carrier event. The model can also be built for Scale or Sport Scale events. Power could be anything from a .19 to .40. The model is to a scale of 3/4 inch = 1 foot, which is conveniently the same scale as the Guillow's stick-and-tissue Dauntless kit. The beauty of this is that you can use

the kit canopy, decals, and other goodies. The canopy and decals were used on our models, and were obtained by mail from Guillow's. (*If you order them, tell Guillow's you read about it in MB, the magazine in which they don't advertise! wcn*).

The only departure from true scale is the lengthened landing gear, which is slanted forward to improve ground handling, primarily in the interest of avoiding nose-overs during carrier landings. The tailhook is also out-of-scale, to be compatible with the arresting lines used on the model deck. Both of our models also incorporated perforated flaps coupled to the tailhook. They are released by a momentary full down of



Designed to the same scale as the Guillow stick-and-tissue kit, the author's model makes use of the canopy and the decal set, which you can order separately from the company. A famous carrier plane from World War II, the SBD "Dauntless" is still not often seen in this modeling event.



Brenda Baltes holds the "Dauntless" for a top view.



The author and his "Dauntless" aboard the Thunderbugs carrier in Orange County, California.

the elevator. This feature is not necessary if you are building for Scale or Sport Scale.

Additional background on the Dauntless, plus pictures and marking schemes, can be found in Profile Publications No. 196. The Guillow's decals are a close match to the tone 3-view drawing in the profile, so scale documentation is readily available.

One of the unique features of the prototype aircraft, was the use of perforated flaps and dive brakes. Although incorporating functional dive brakes would serve no useful function on the model, the swiss cheese type flaps give it that extra touch of class.

Before starting construction, it would be best to have the engine that you intend to use available, since the motor mount spacing may have to be adjusted. Measure the width of your engine crankcase, then check the plans to see if the mounts need to be spaced differently. If so, the motor mount holes in Formers 1 through 4 should be adjusted.

Construction starts with the wing. Cut out the main spar, bellcrank platform, and two each of Ribs 1 and 2



Mitchel Schwartzburg (left) and the author's son, Mike, proudly display their fathers' modeling work. Roland designed plane for Mitchel's father, couldn't resist building one himself.

from a good grade of 1/8 inch plywood. Note that Rib 1 comes in 3 pieces. The spar is slipped from the rear on the

bellcrank platform, and then epoxy glued. Then add Ribs 1 and 2, making sure that they are properly installed and lined up. Epoxy well. I used Hobbypoxy Formula 2 on all of these critical joints. The throttle bellcrank should now be installed, after having attached the leadout wire. I use Perfect flexible cable; it's easier to work with during the construction stage, rather than piano wire. Bend the landing gear to shape and attach either with "J" bolts or by sewing with soft wire to the platform. Now add the leading and trailing edges from 1/2 inch sheet balsa.

Both outer wing panels are made separately, then joined to the center section. Ribs and spars are hard 1/8 balsa, while the leading edges and trailing edges are again cut from 1/2 inch balsa sheet. Use the plan as a guide to proper

Continued on page 83



Another view of the author's "Dauntless", showing neat cowling of the engine. Split flaps can be made operational, adding much to realism of model.

GRAND PEANUT of 1977!

(HIGHEST OVERALL COMBINED STATIC AND FLIGHT SCORE)



FOLKERTS SK-3, by
KURT ENKENHUS, SILVER SPRING, MD.
PRIZE: KRAFT KP-3 Radio Control System.



"Spirit of St. Louis"
SPECIAL EVENT
ROALD TWEET, ROCK ISLAND, ILLINOIS
PRIZE: COX/SANWA 2-CHANNEL R/C System.



THIRD ANNUAL INTERNATIONAL
PARCEL POST PROXY PEANUT
RUBBER SCALE CONTEST

● WINNERS ●

● SPECIAL CATEGORY

Grand Peanut: . . . Kurt Enkenhus Fokkerts SK-3
Spirit of St. Louis: Roald Tweet
Most Static Points: John Krekovich "Spirit of St. Louis"

Best Workmanship Points, Foreign: J. F. Frugoli, Tatin-Paulhan

Best Workmanship Points, US: John Krekovich, Jungmann

High Point Biplane: John Krekovich, Jungmann
High Point Female Entry: Diane Dandeneau, Nesmith Cougar

Best Score by 15 Year old or younger: Greg Hutchison

Best Peck-Polymer Kit: John Hutchison, Piper L-4B

Best from Mooney Plans: John Krekovich, Jungmann

Youngest Qualifying Contestant: Ross Jahnke, Age 13

Oldest Qualifying Contestant: Cedric Galloway, Age 67

Most Distant: . . . Jonathan Borthwick, Australia

Most Damaged in Shipment: Roger Aime, France, Pottier P70B

Best Shipping Container: Roald Tweet

● PIONEER

Place	Name	Scale	Flight	Airplane
1st	J.F. Frugoli	1	28.5	Tatin Paulhan
2nd	Walt Mooney	2	21.5	Bleriot IV
3rd	Robert Masters	3	21.5	Antoinette Latham

RESULTS...



● WORLD WAR I

Place	Name	Scale	Flight	Airplane
1st	Robert P. Stewart	2	65	Hergt Monoplane
2nd	Greg Hutchison	3	40.5	DH-6

● SPIRIT OF ST. LOUIS

Place	Name	Scale	Flight
1st	Roald Tweet	2	16.5
2nd	Royall Moore	6	30.5
3rd	John Krekovich	1	11

● WORLD WAR II

Place	Name	Scale	Flight	Airplane
1st	Steven Walton	2	18.5	Curtiss CO-3C
2nd*	John Hutchison	1	16.5	Piper L-4B
3rd	Geoff Wade	4	21.5	Miles M-18

*Tie for Second Place broken by Highest Scale Position.

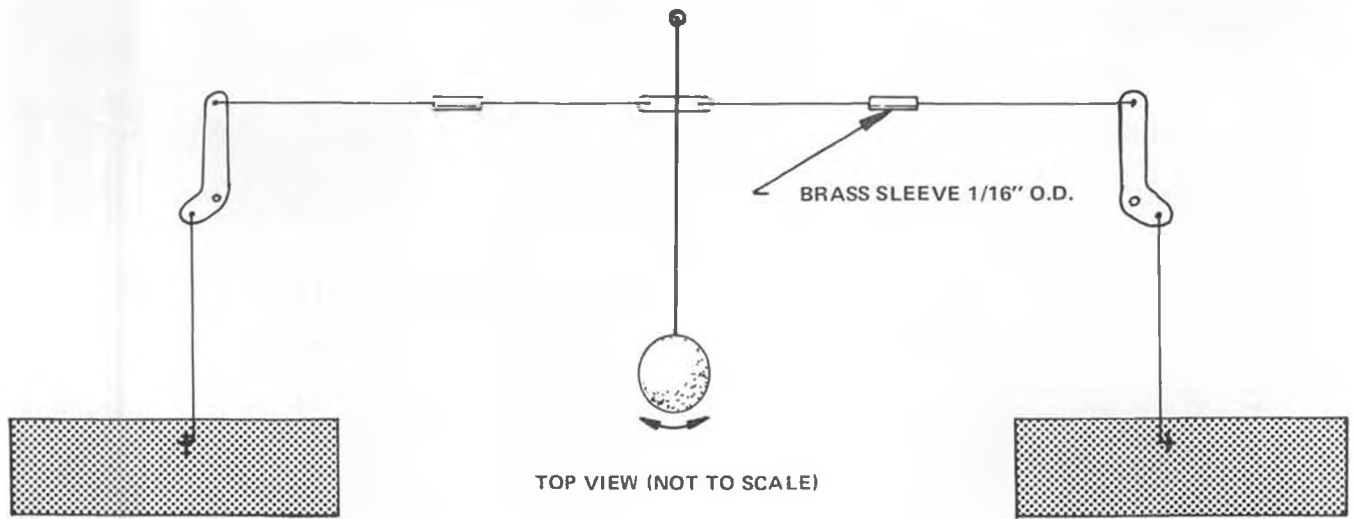
● GOLDEN AGE

Place	Name	Scale	Flight	Airplane
1st	Kurt D. Enkenhaus	3	89	Fokkerts SK-3
2nd	John Krekovich	1	19	Jungmann
3rd	Strange	2	14.5	Jungmann

● MODERN

Place	Name	Scale	Flight	Airplane
1st	Chuck Conover	1	57	Fike Model E
2nd	Rober Aime	2	34.5	Pottier P70B
3rd	Ken Johnson	6	67.5	Fike Model E

A complete report of the contest, with placings and scores of all contestants will be presented next month.



FREE FLIGHT SCALE

By FERNANDO RAMOS

• The other day, Jack McCracken and I went out to test fly my Thomas-designed Heath Parasol. Last month I had mentioned that I added pendulum aileron control to the model. The entire assembly was mounted in the center section of the wing. I was extremely anxious to try out the model to see whether the wing mounted mechanism would help stabilize the flight pattern of this flat-winged airplane.

CHARLIE, DO YOU THINK THAT EVERYONE SHOULD HAVE A POWR-MITE SANDER?

I fueled the model with about 1 cc of diesel mixture. After running about 10-15 seconds, the engine flooded and stopped. In order to remedy the problem, I had to remove the cowl. What caused this to happen? Before I continue with pendulums, I'd like to explain how I solved this and another problem that cropped up during testing, so that you may avoid them.

First off, the D.C. Dart diesel was inverted in order to enhance the appear-

ance of the model. Fortunately, I had first bench-run the engine inverted and found that it would flood very easily. I first tried using the tank that came mounted on the Dart, and discovered that it would flood much too easily with the resulting gravity feed arrangement of the tank. It wasn't until I mounted another tank quite low to the needle valve that I started getting good results. I also found that priming was not desired or recommended. Priming gave a compression lock every time. I used an Astro Flight 1/2A starter, which by spinning the prop quickly, draws the fuel into the venturi in no time at all. As soon as the engine fires, immediately lean the engine out. By having too rich a setting, too much fuel is permitted, and the engine floods and stops. The usual compression lock follows.

I was very happy to find out all this information, because I'm using the same engine inverted in my Navy scale model. Learning all I can at this stage should help out greatly later on. I made a gas tank out of a piece of brass tubing and placed the fuel line at the bottom end of the tank (see illustration). The reason it flooded on me the first time

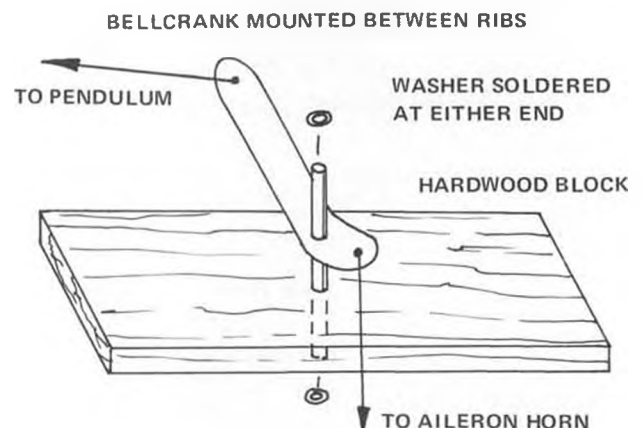
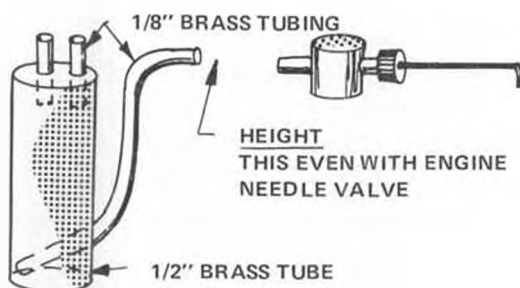
I had it in the model was that I had the needle valve out too far. This permitted too much fuel, and with a diesel, particularly inverted, it will stop running and give you a compression lock.

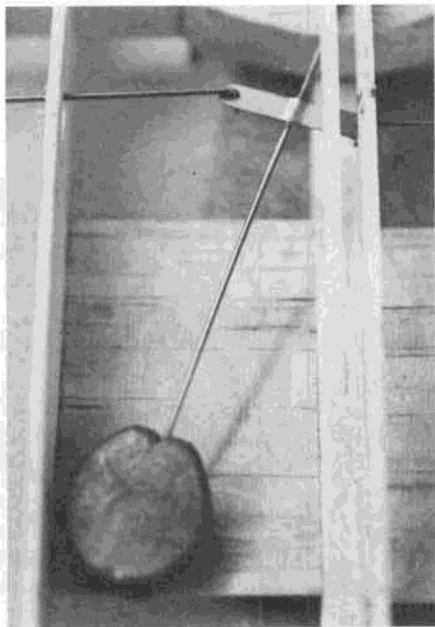
After the flooding was taken care of, I refueled the model and started the engine again. This time it ran just fine. I launched the Heath into what little wind there was and stood back to see what was going to happen. The model's first flight was a very good one. Every time the wing would dip under power, the pendulum aileron would straighten it out. This continued all during the powered portion of the flight. When the engine quit, the model was in a rather tight turn and it never recovered. When the Heath hit the ground, the front float

DEFINITELY NOT! THERE'S A LITTLE 93 YEAR OLD LADY ON MY STREET THAT DOESN'T REALLY NEED ONE.

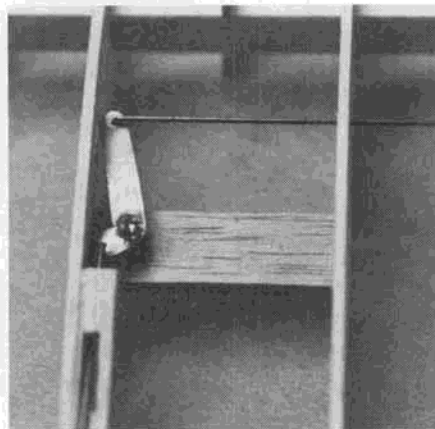
SEE PAGE 89

supports were the first to go. While I was making a few repairs, Jack was preparing his twin .020 powered Curtiss Condor (more on this at a later time).





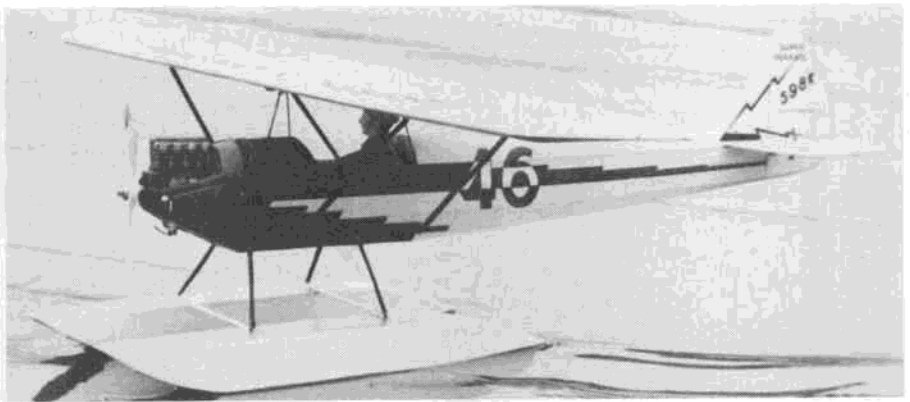
Pendulum aileron control in center section of Heath Parasol wing.



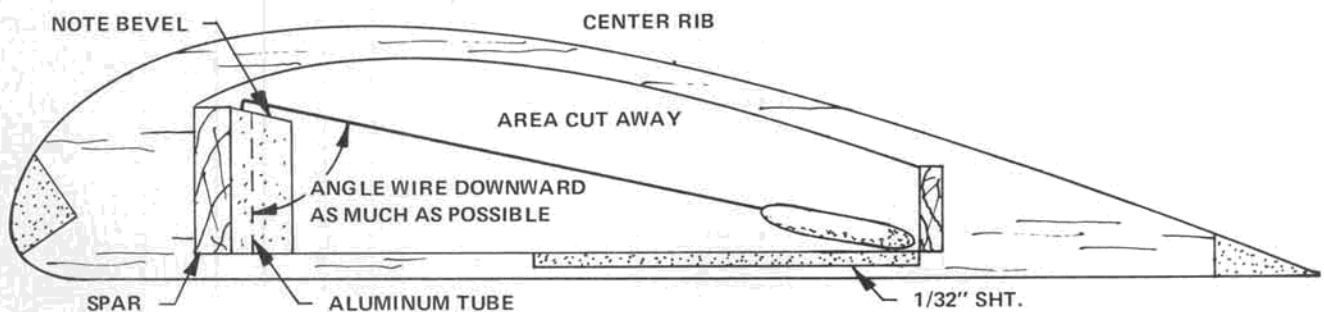
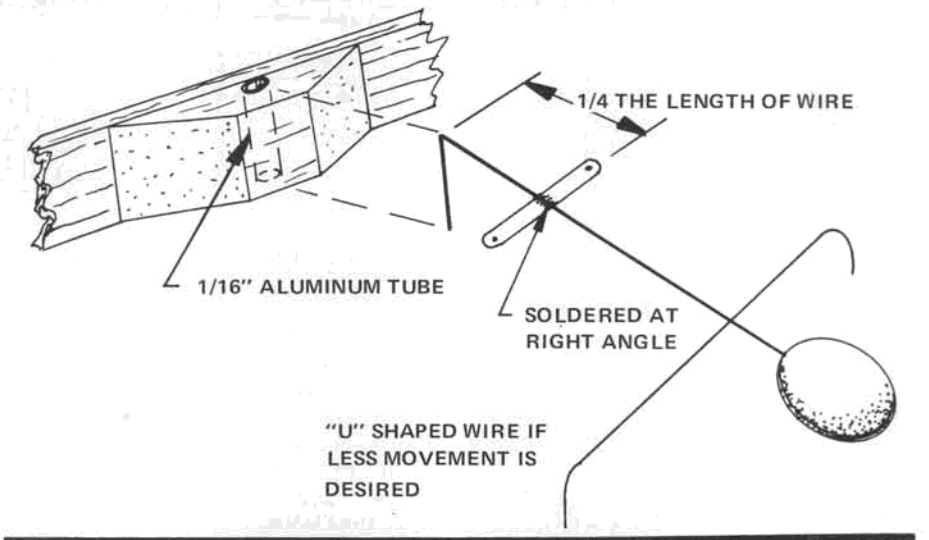
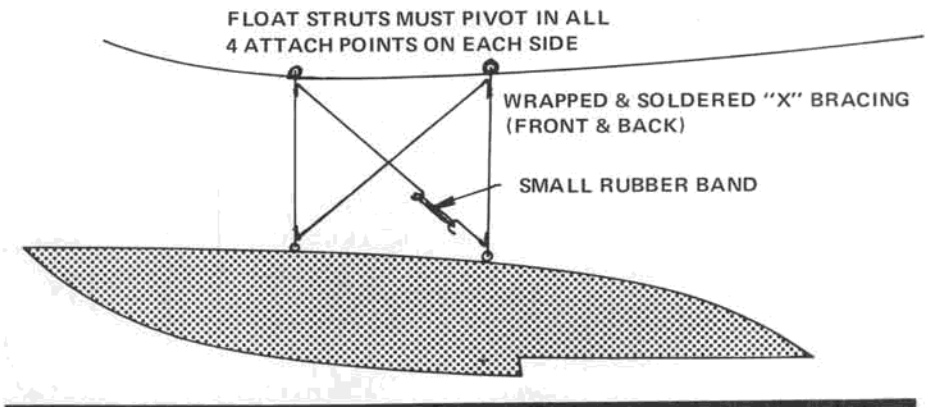
Left aileron bellcrank. Note offset for differential movement, and leverage ratio.

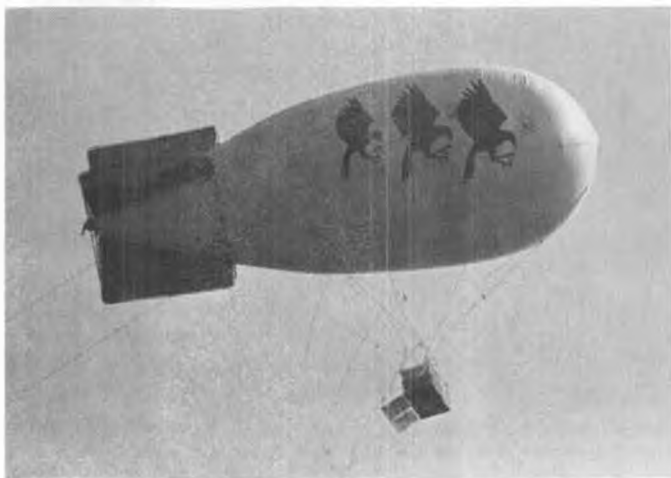
Jack used my starter to get his engines started. By the time I was ready to test fly again, the starting battery had lost enough juice so that I was unable to start my Dart. Hand starting was not possible because of the low level of the fuel line, and it's just physically impossible to turn a prop fast enough to draw fuel that far.

Well, I know that the Heath flies,
Continued on page 86



The Author's Heath Parasol on floats, built from Gene Thomas plans and details. Picture taken at famous So. California off-the-water flying site, Lake Elsinore. Note complete lack of dihedral.

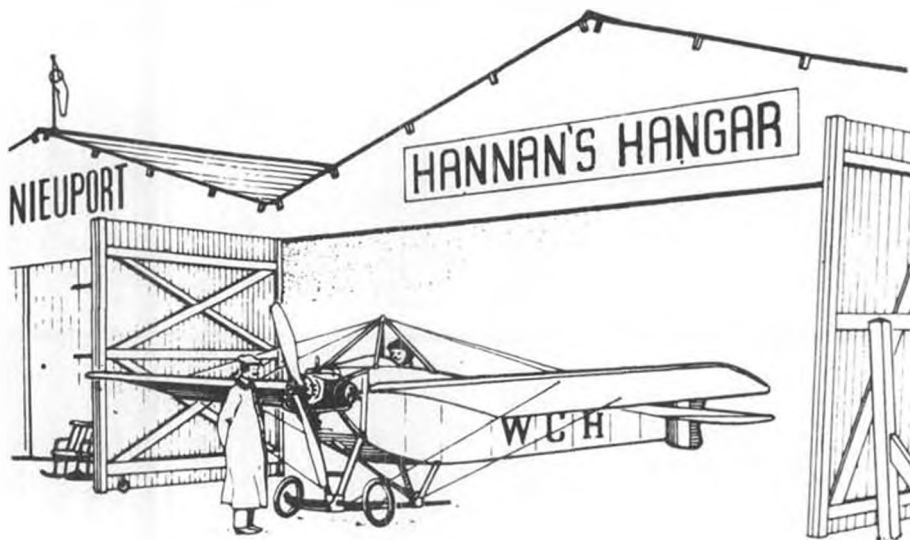




The blimp (over 3 feet long) used to launch free-flying birds at the San Diego Zoo's Wild Animal Park Show. "Bomb-bays" opened by R/C.



Pete Baker's Cessna 337 Peanut was actually converted from a Pilatus Porter Peanut. Note combined display stand/storage facility.



• We bypassed our traditional masthead logo this month in favor of the famous San Diego Wild Animal Park Bird-Show blimp. In previous issues, we have described this unusual act, involving

free-flying birds, released via R/C from the blimp's gondola trap-doors. The performance varies slightly from time to time, but typically involves a hawk demonstrating soaring skills, followed by an amazing "power dive", with a last-minute recovery. The only connection between the birds and their trainers is discipline, mutual respect, and (of course) understanding of where their next meal is located!

Currently, Kathy Smith is the star human performer, accompanied by a variety of doves, ravens, a hawk, an owl, a couple of talking birds, and an eagle. Those of you planning to attend the California Nationals with your families, might like to reserve part of a day to visit this fabulous wildlife preserve. Included are many rare and endangered species, such as tigers, lions, rhinos, giraffes, and many others. The scheme in this park is to allow the animals the freedom to live in surroundings very similar to their natural environment. Under special arrangement organized by art director, Bill Noonan, (Messerschmitt M23b, Oct. '76 MB) AMA members will be admitted during Nats week at a 15%

discount, with coupon printed in Model Builder or Model Aviation. The park is located on the outskirts of Escondido, California.

QUOTE FROM THE COLONEL

On the subject of R/C twins, Bob Thacker had this opinion: "If it was good enough for Orville and Wilbur to contra-rotate their props, it's good enough for me!"

NEW IDEA FOR "MIKE" MODELS?

Some pretty "far-out" ideas turn up in hangar-flying sessions, but this one really stopped the conversation, and started a few brain-gears turning: What if a microfilm type model biplane had a flat-black lower wing and an aluminized upper wing, and was flown on a hot day in a building with skylights. Might not it generate its own mini-thermals? Even a tiny percentage gain, perhaps unnoticeable on an outdoor model, could make quite a difference in a model which has a duration close to an hour! Others have said, no, the upper wing should be flat-black, and the lower wing

Continued on page 89



Clyde D. (Daring) Goehring at the power/control center of his MP aircraft described last mo.



Holding onto that blimp, top left, the S.D. Zoo's star bird trainer, Kathy Smith. Lovely!



The FLETCHER FL-23

By CHARLES A. SCHAAF . . . With its big, low aspect-ratio wing, and 30% stab, this could be the model to break the reign of the Fike E. No struts, T-tail, and trike gear add to the features of this interesting ship.

• The Fletcher FL-23 was built in 1949 to compete for a contract for a new liaison plane then being sponsored by the U.S. Air Force. In the competitive evaluations, it was in a leading position until the government test pilot, in a violent maneuver, managed to detach the stabilizer from the rest of the aircraft. He then left the aircraft in something of a hurry. Surprisingly, the airplane glided back to the ground in an inverted position and was not seriously damaged! The builders were given sixty days to rebuild the aircraft for further consideration, but were unable to meet the deadline. As a result, the Cessna entry won the contest and became the ubiquitous Bird Dog that we see today.

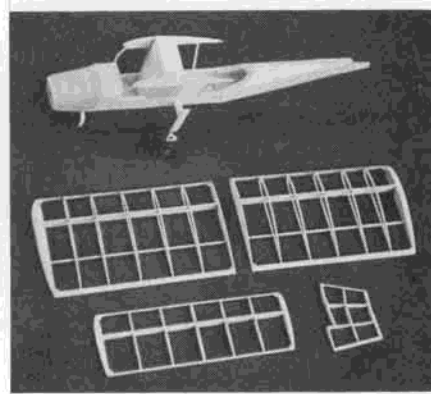
I came across 3-views of this airplane in an old Model Airplane News at the public library, while looking for good Peanut subjects, and was immediately excited. Huge constant-chord wing, 30% stabilizer, no wing struts and 7-1/2° scale downthrust all seemed to point to a perfect Peanut. However, the wing mount appeared to be a problem, and the 3-view showed a fuselage which curved gracefully from nose to tail, making many compound curves and a difficult

building problem. After thinking about the airplane for awhile, I got to wondering why any manufacturer in his right mind would design a simple airplane for liaison work with expensive compound curves in the fuselage.

I took another look at the article and the accompanying pictures, and saw that the pictures showed an airplane with a sharp change of contour at the aft end of the cabin section, and straight taper from there to the tail. I did some more comparing and saw that, while the drawing showed a fuselage that was almost wide enough for two people to sit abreast, the pictures showed a much narrower fuselage, barely wide enough for one person, with sharply angled side windows for good downward vision. Plans show the model that resulted from these observations. As far as I can tell, everything is to scale except that the original airplane did not have any dihedral.

The wings are built with sliced ribs, partly for lightness, and partly because they are easier to make. The 1/32 main

Continued on page 92



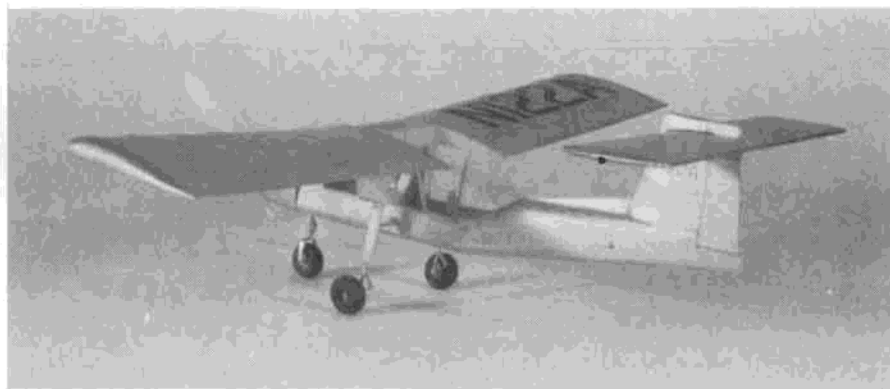
Balsa bones of the Fletcher. Note the split ribs . . . light and a little easier to make.



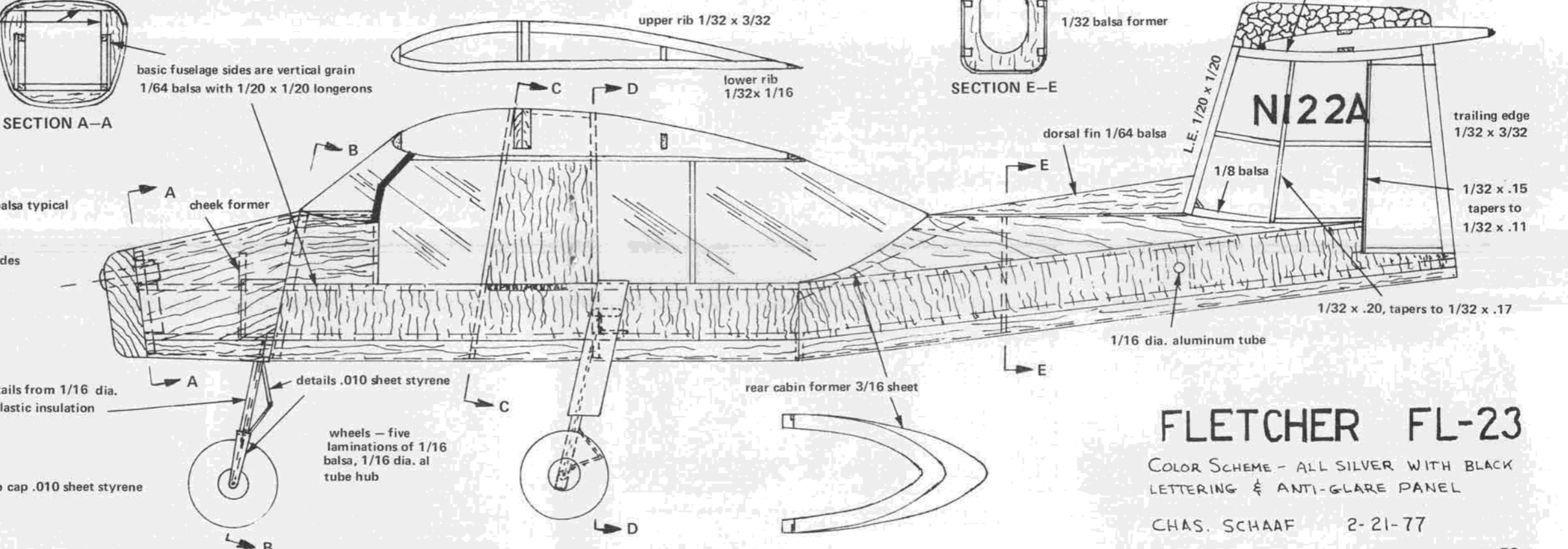
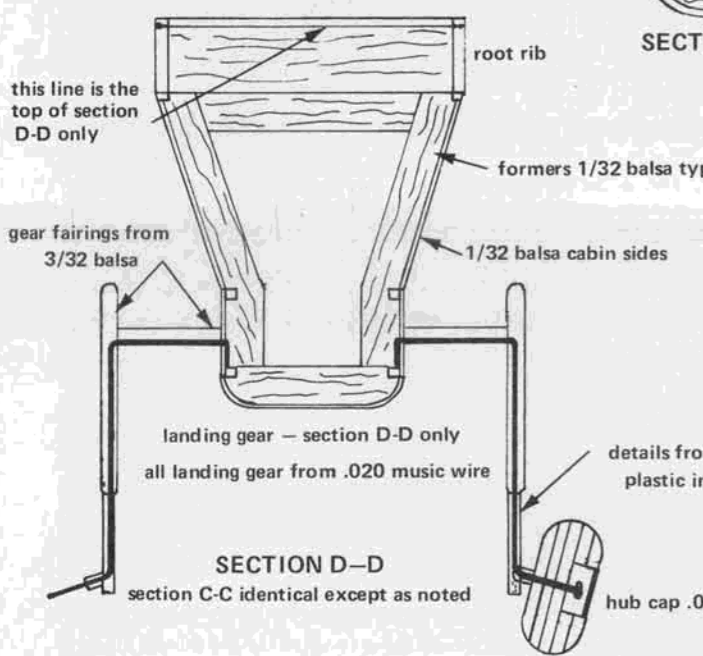
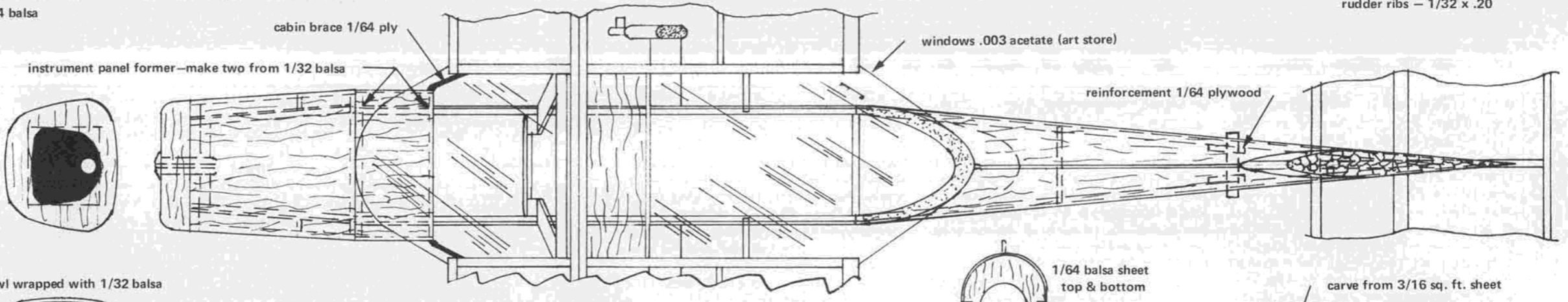
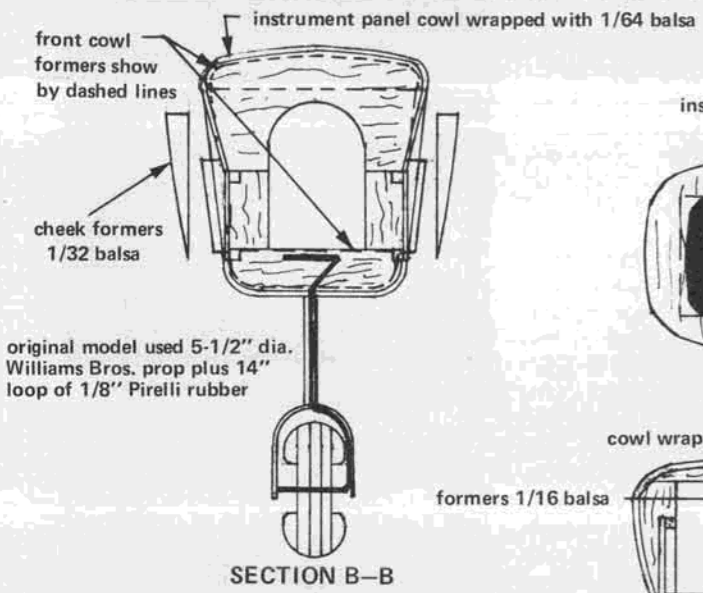
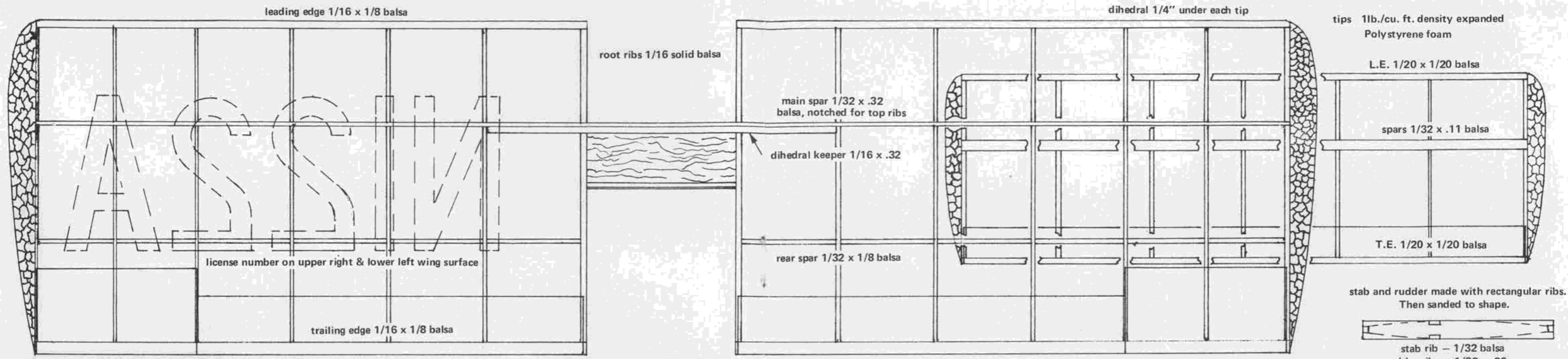
A "hand" . . . y reminder of the size of Peanut models. Large prop promotes long flights.



Large wing and stab area (scale!) show why this should be a good "Fike E Fighter".



An interesting design from any angle, the Fletcher would make an eye-catching subject in any type of scale model category.



FLETCHER FL-23
 COLOR SCHEME - ALL SILVER WITH BLACK LETTERING & ANTI-GLARE PANEL
 CHAS. SCHAAF 2-21-77



FAI Power winner at the 1977 NFFC, Roger Simpson, Sacramento, hurls his ship into another max. Roger survived flyoff to win trophy.



Del Adam, Visalia, Calif., launches his D-Gas "Lipstick" for a max. All NFFC photos on these pages taken by Gary Medley.

FREE FLIGHT

By BOB STALICK

• The results are in . . . the U.S. FAI F.F. Team is finally complete. The Nordic Team was selected over Memorial Day Weekend at three different sites. There was Jim Walters, of Seattle, who repeats as a team member. Jim won out over other contestants who participated at the Taft site. The Central site at Bong produced winner Chuck Markos, who disdained the use of circle-tow to overcome the competition provided by 9 other contestants and emerged victorious, flying a modified "Lively Lady". Chuck hails from the Chicago area, and is the current president of the Chicago Aeronuts. Bob Sifleet, of Glen Rock, Pa., won the Eastern slot on the team by outflying 8 other competitors at the Bowie, MD. site. According to reports, the weather conditions at all three sites was very conducive to excellent flying.

These three men join the previously selected Wakefield Team Members, Bob Piserchio, Phedon Tsiknopoulos and

Walt Ghio; the Power Team of Tom McLaughlan, Al Bissonnette, and Charlie Martin, as well as Team Manager John Lenderman, at the World Championships in Denmark. Although the World Champs will be history when this issue of **Model Builder** appears in your mail box, we would like to wish all of our team members good luck in Denmark.

MYSTERY MODEL FOR AUGUST

This is a model which was designed for the short-lived weight rules which were in effect during the late 1950's and early 60's. At one time, this design, in various sizes, held over ten records! There are a number of reasons that this ship is no longer in the predominant position it once held . . . most of them due to the fact that it was specifically designed to compete under the old rules, but the ship remains a solid performer, with features that are still in use today. You can win a nice prize from Bill Northrop for being the first one with the

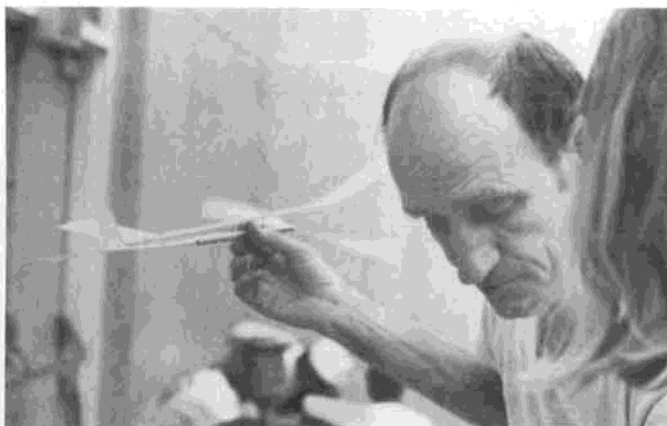
correct response (adjusted in order to compensate for the vagaries of the Post Office and geography). Please send your answers directly to Bill in care of **Model Builder**. He is the person who judges the winners. Do not send them to the Free Flight editor, as this unnecessarily complicates and slows down the communication.

AUGUST 3-VIEW - 1/2 Blimp

I have been impressed with this unlimited rubber design ever since I saw its progenitor in an old Zaic Yearbook. There have been several modifications and sizes of the ship over the years. The full size Blimp is indeed a wondrous performer, in keeping with the large, lightweight, high-powered tradition. This version, by Andy deMello, is a smaller sized version of the giant Blimp. Salient features include a novel wing mount system which utilizes a very lightweight tongue arrangement and an extremely lightweight



Second place finisher at the 1975 World Champs in A/2 glider, Peter Allnut, Canada (left), chats with Jim Wilson, Redondo Beach, Calif.



Long-time indoor ace, Clarence Mather, tunes up his Easy B for a flight at highschool gym in Taft for the NFFC.



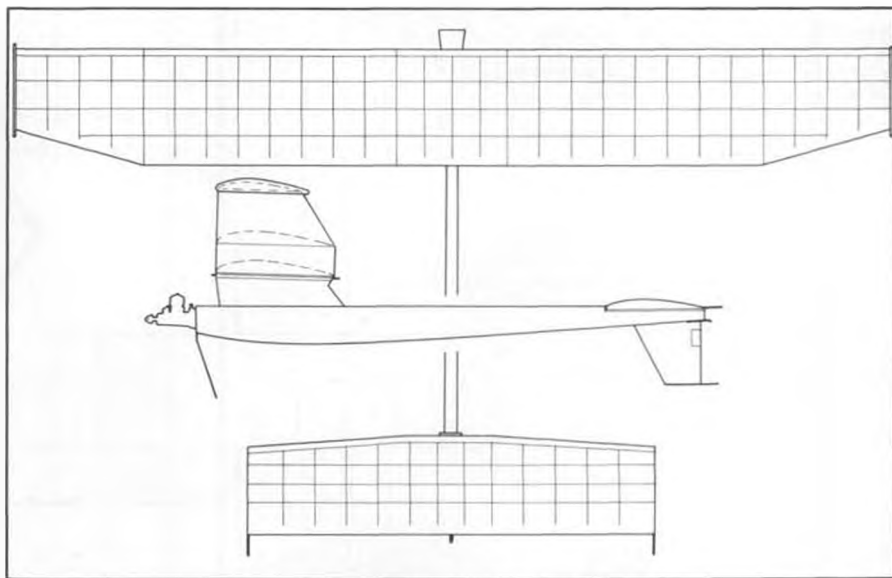
Yessir, folks, that skinny individual is none other than Dick Mathis, 2nd in OHLG flyoff.

structural system. Ostensibly, the model could be built to weigh in the general neighborhood of 2 ounces. Powered by roughly 2 ounces of Pirelli, the speed in the climb as well as the duration of the motor run must indeed be spectacular.

The only thing that has me puzzled about it is how do you construct a box fuselage using 1/16 x 3/16 inch longerons. Any suggestions?

DARNED GOOD AIRFOIL — U.S.A. No. 5

This airfoil has been almost universal for use in lightweight, low-powered models such as the Coupe d'Hiver event. It is especially used by the French, who seem to enjoy building and flying very large, thus light wing loaded, Coupes.



AUGUST MYSTERY MODEL

The features of the section which make it so usable in such conditions are its sharp leading edge entry, low maximum top camber, and moderate undercamber. Some modifications to the airfoil by practitioners have included a slight flap at the trailing edge and a thinning of the rear portion of the top camber. It was this section which was used on the NFFS Model of the Year "Garricoupe".

It shouldn't be overlooked by designers of Coupes, and it could also be given consideration as an airfoil for Jetex and A/1 gliders.

* * *

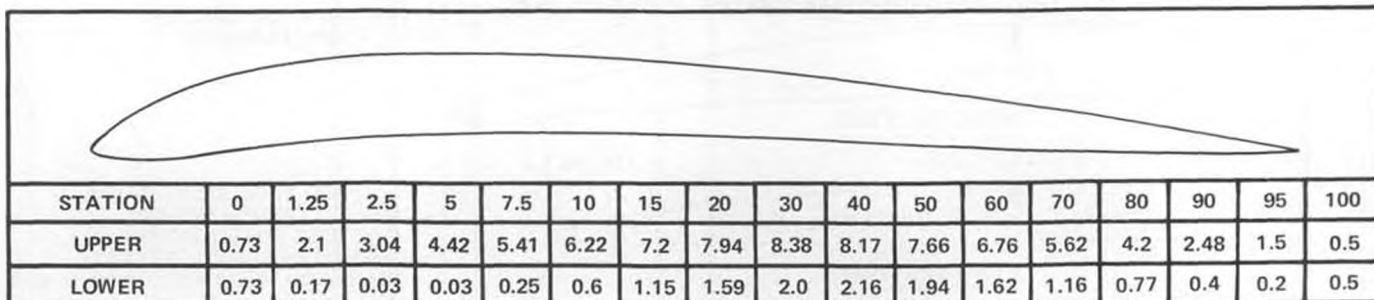
Airfoil Selection for Zoom-Launch A/2's, by Mike Segrave as reported in the Bat Sheet. "If you use an average airfoil (such as the B 6356B . . . see August, 1975 M.B. for coordinates) you can get a good glide by weakening the power at the rear, using a flat bottomed stab. If this appears to be too weak, then reduce the decalage or move the C.G. back. You will find that you can get around 3 degrees or less. With this low angle, you are able to catapult the ship to good height because the low angle allows the ship to fly fast before generating enough lift to actuate the hook. (Segrave also mentions the desirability of aileron for zoom control, and believes an auto stab is a good idea).

"It seems important to have an air-

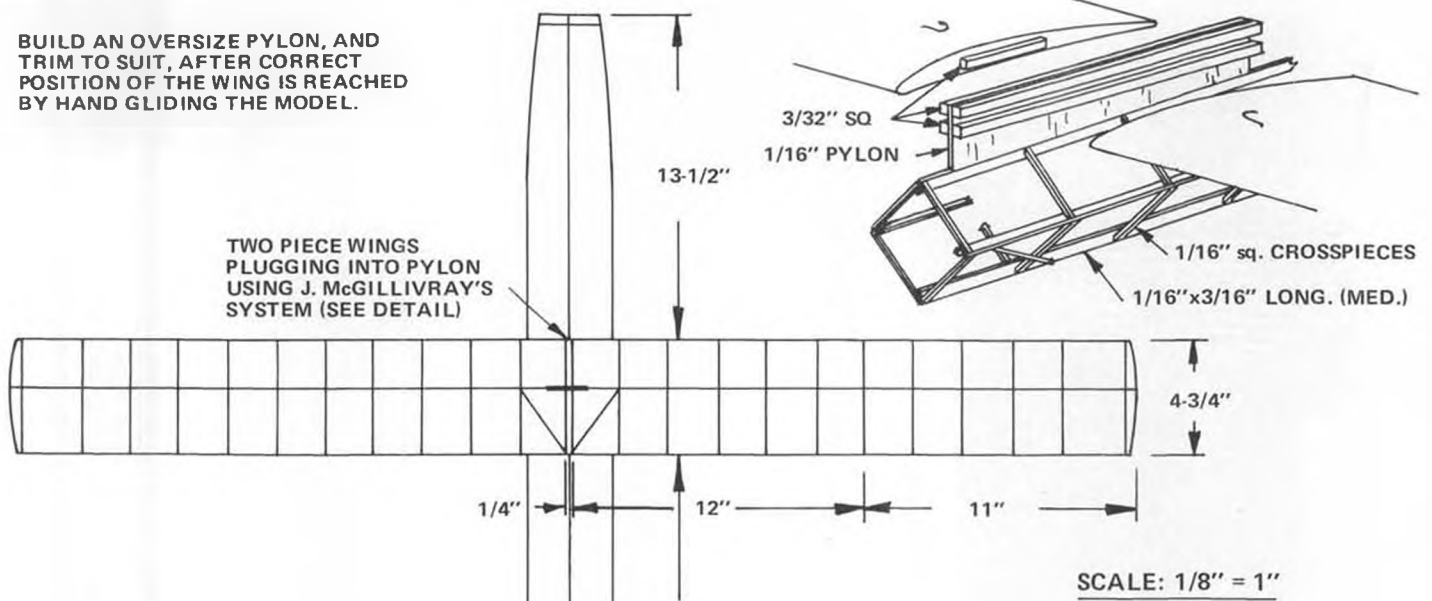


Walt Ghio, member of U.S. Wakefield Team, Stockton, Calif, blows up some cattail fluffies to search for the elusive thermal.

DARNED GOOD AIRFOIL — USA 5



BUILD AN OVERSIZE PYLON, AND TRIM TO SUIT, AFTER CORRECT POSITION OF THE WING IS REACHED BY HAND GLIDING THE MODEL.



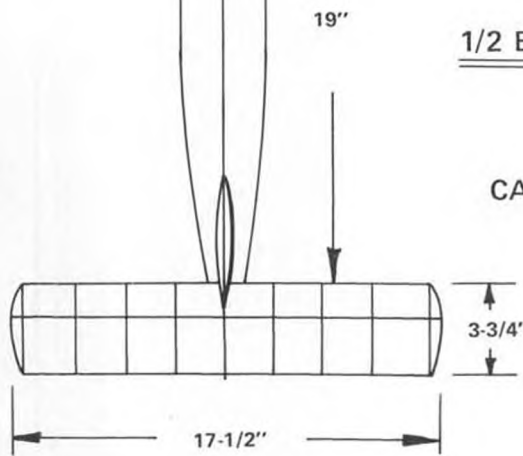
PROP:
21"D x 21" P

POWER:
12 STRANDS 1/4" PIRELLI
36" LONG, 900 TURNS USED
IN COMPETITION.

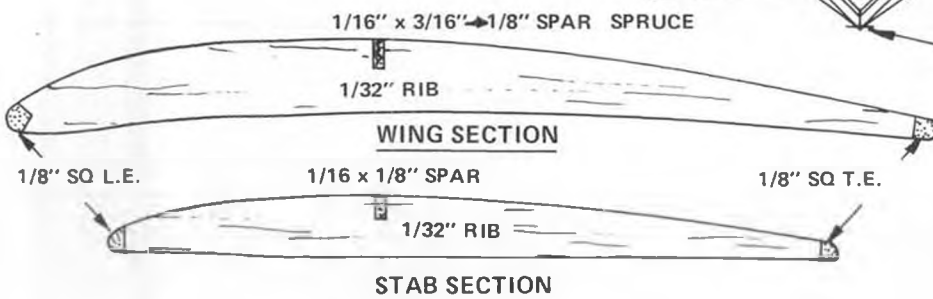
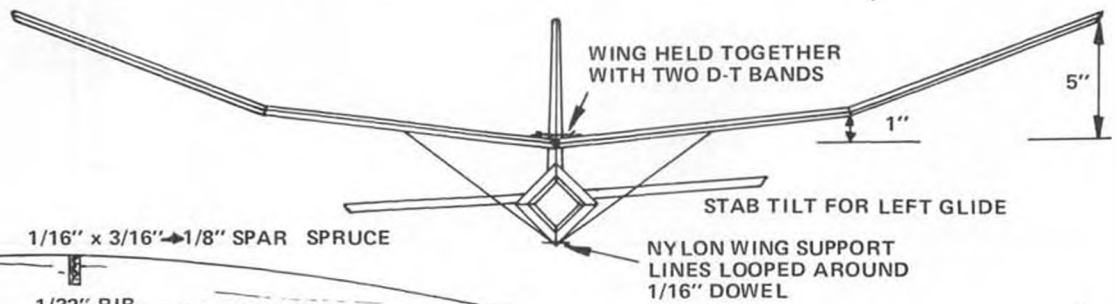
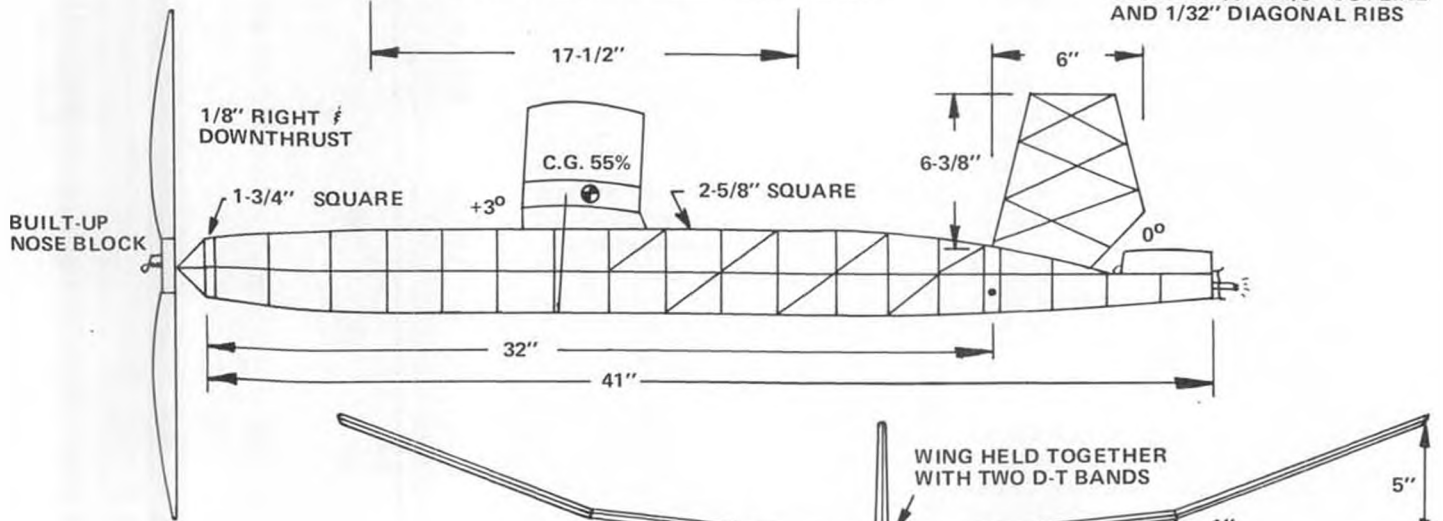
1/2 BLIMP – UNLIMITED RUBBER

ANDY De MELLO
TORONTO

CANADIAN RECORD HOLDER



FIN:
10% THICK SYMMETRICAL
SECTION 1/8" x 1/8" OUTLINE
AND 1/32" DIAGONAL RIBS



ALL WOOD TO BE LIGHT Balsa (CONTEST GRADE) UNLESS OTHERWISE NOTED. MODEL IS COVERED WITH LWT. JAPANESE TISSUE, AND TWO THIN COATS OF 50/50 DOPE



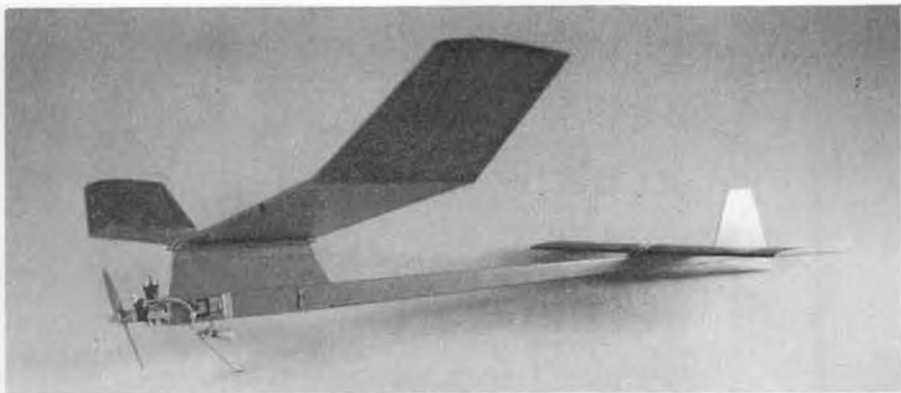
Lee Hines, Costa Mesa, CA, past national record holder and NFFC Champ, ignores ominous wildcat while eyeballing his Sweepette IHLG.

foil with the rear part straight, say from 60% back. Otherwise, the hook on the section traps air and prevents the model from gaining speed. The hook also makes the foil sensitive longitudinally, which is what you don't want on an A/2. The ship will also balloon when released instead of going in a straight line, which is the hallmark of straight rear sections."

Steve Helmick, Bat Sheet editor, continued with some observations of his own regarding Segrave's comments. "Well, the GF-6 (MB, Nov., 1974 issue) is WAY out. I traced out a whole lot of undercambers and the Lindner and B 6356B are almost identical. (Lindner section: MB Oct, 1976 issue). However, the "hook" in the undercamber of the better gliding sections is largely responsible for the better glide. The CH 407 (M.B., August, 1974 issue) doesn't seem too bad, but this particular section seems to suffer from interpretation . . . every drawing I see of it is different. Bill Gieskieng noticed this first. The Free Flight News (English) drawing of Bob Isaacson's "Wishbone" shows a noticeably flatter undercamber toward the TE and the LE is different, too. I wonder if this is actually the shape of Bob's wing, or if it is the draftsman's interpretation of the ordinates?

"Ivan Horejsi used a hybrid airfoil to place 4th at the 1975 World Champs, using the top camber of a B7457d2 (M.B., July 1975 issue) and the lower curve of the Lindner wing section. Craig Cusick is currently flying a Lindner bottomed wing with a B 6356B top.

"My opinion is that since the B 6356B calculates out at 2:20 with a 14:1 A/R, and the CH 407 calculates at 2:45 or thereabouts, how the heck can you



Jim Clem's 1/2A Country Boy, now available in kit form directly from Clemcraft. See text for more information and complete address.

expect to make up 25 seconds with a zoom launch? Wouldn't it be better to try for an extra 10 feet with a 2:45 airfoil than try to equal it with a 35 ft. zoom and a 2:20 airfoil? In case you're wondering, these figures are in minutes and seconds and calculated using the Allnutt/Kaczanowski method (NFFS Symposium) by Ron Evans several years ago. I can't see any reason to use a crummy gliding airfoil just to get the best zoom launch potential. It would be best to move the CG back to 55-60%, though, and I'm going to have to figure out how to make the VIT drop to glide/zoom position before the zoom starts. Any ideas?"

THE RUBBER SITUATION, by Stan Fink.

"Those of us who fly rubber powered models are experiencing much confusion lately as new sources and brands of rubber become available. Since Pirelli is now extremely scarce and has ceased being manufactured, you should be wondering about some of these new

kinds of rubber. But don't get too excited. None of these can really compare with good Pirelli. Some are very acceptable, however, and are capable of giving competitive flights. If you think things are bad for outdoor events, try indoor! No indoor rubber commercially available is really competitive with good Pirelli. The following constitutes a generally complete list of the kinds and sources of rubber currently available in the U.S.

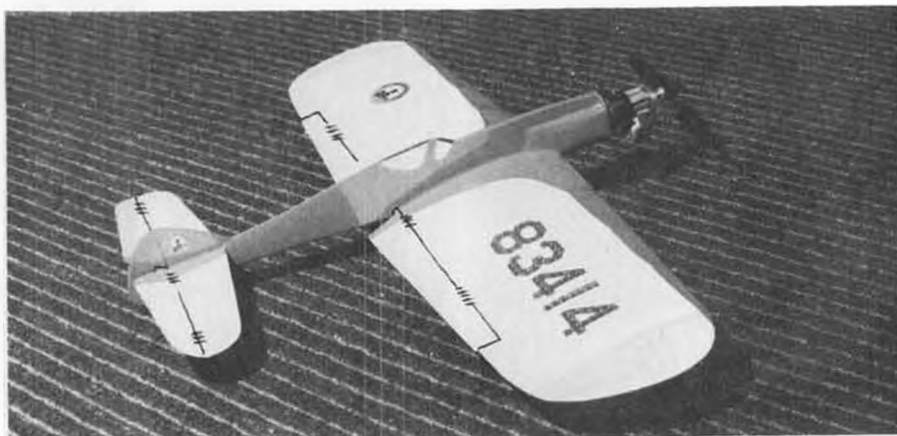
FAI Model Supply, P.O. Box 9778, Phoenix, AR. 85068. Sizes: 1/16, 3/32, 1/8, 3/16 and 1/4 inch widths. Price per 16 oz. spool (including postage): \$7.00. (FAI sells two types of rubber. All sizes except 1/4 are black, smooth early formula. Quarter inch is brown new formula. Both kinds have high power burst, poor torque curve. Neither holds lube well and both need break in. The rubber is thicker than Pirelli, and will not take as many winds.)

Sterling Models, Brown Asian Rubber.

Continued on page 91



"At least they're open about it."



Modified Top Flite "Junior Aces" Hawker Hurricane, by the author.

The 1/2-A SCENE

By LARRY RENGER

• Got lots of purty pictures to show you this month. First let's settle a question which has been asked several times. See the two 1/2A glow plugs in the photo? The one on the left is the Cox No. 1702 high compression, and on the right is the No. 302 standard unit. The 1702 has a squish band and conical contour, while the standard unit forms a hemispherical combustion chamber.

The 1702 is standard on Tee Dee .049 and .051, and QRC engines. The 302 comes standard on all the other engines. The 1702 can add RPM to a Black Widow or Medallion engine if you are using racing fuel on a well broken in engine. The change doesn't always help, so make an actual RPM check with a tachometer.

You can spot the 1702 because it has only 3 fins instead of 4, and there is a distinctive knurl around the top. Both heads cost the same.

Next photo is our fashion hint for the year. The well dressed transmitter tells it like it is with Ace R/C's "1/2A R/C" sticker on one side and a "Cox Engine Powered" sticker on the other side. On the top side, you can see Ace's

flight timer. On the back, this transmitter has Midwest's transmitter stand, and most important, the legally required owner's name and FCC license number. Also on the back are my AMA and telephone numbers. "ON" sticker and frequency flag complete the total package.

Next items are the new 1/2A control line flight pack kit from Sig and a fuel tank from the line now made by Duke Fox. He rescued this tank line from oblivion again. It was developed by the Froom company, then produced by Veco, K&B, then Clary Corp., in the past 20 or so years.

This month I actually have two free flights to show you! The first one is a modified "Dixie Gal" built by Bruce Paton. Bruce manages product development for the hobby line of products at Cox. This model is of moderate weight at 6-1/2 ounces, but a real skyrocket with only 180 "sqinches" of area. Bruce said this is the first F/F he has covered with Monokote and he thinks there is a noticeable drag reduction compared to tissue. You have to see this model up close to appreciate the high quality of

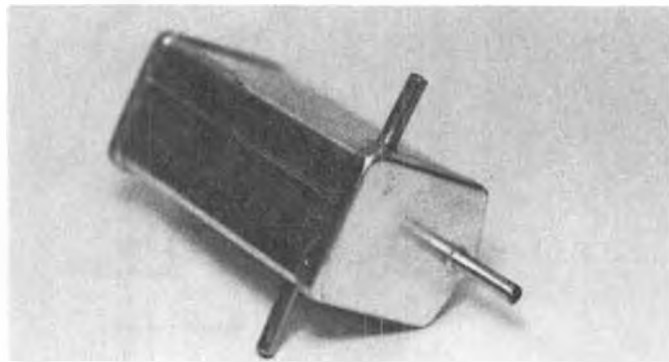


The author's Ace R/C transmitter "zooted up" with various goodies, as described in the text.

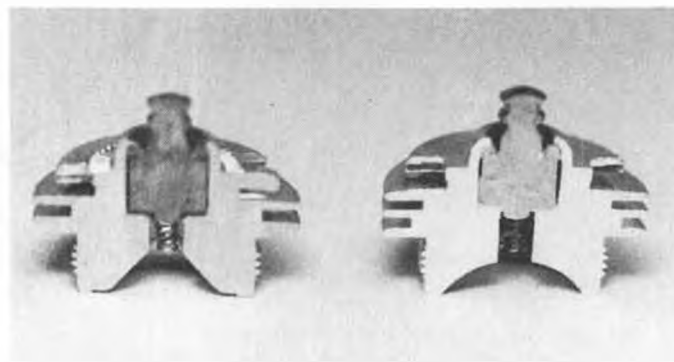
Bruce's model building.

The second free flight on view this month is the Mini Pearl, ready for launch, by Gene Simpson. Gene is the owner of Kitco, which recently picked up production of the Pearl line of kits previously produced by Dick Mathis, then by American Balsa Corp. Kitco is at 4327 McDermed Dr., Houston, Tex. 77035. The Mini Pearl has won honors at the Nats and F/F championships. Small, light and quick to build, it's very competitive.

Last photos are a couple of my own models. The R/C model was known as the "Slikker" and featured Tee Dee .049 power, two channels on aileron and elevator, and Ace foam wings. So what? The interesting part is that the photo was shot in 1971, over two years before Ace brought out its PACER kit. Performance was, as you would expect, fast and maneuverable, as the model only weighed 18 ounces! Construction was unusual as the model's wings were not removable, and butted up against the fuselage sides, leaving the insides very open. A full depth spar passed through the fuselage and extended 6 inches into each wing panel. The fuel tank was a home made plastic "baggie" tank. Compactness, light weight, and absolutely no fuel foaming, were the advantage of



All-metal tanks originated by Froom, then produced by Veco, K&B, more or less by Clary Corp., and now by Duke Fox.



Two Cox glow heads. On the left is the 1702 high compression head, and on the right, the 302 standard. Note that 1702 has three fins.



Gene Simpson, owner of Kitco, which recently picked up the Pearl line formerly produced by Mathis, then ABC, with a 1/2A Mini Pearl.



Modified "Dixie Gal" built by Bruce Paton, manager of product development for the hobby line at Cox.

that system. As an aside, see the horses in the background? Guess what our flying field was full of! This was in Colorado, when I was designing model rockets for Estes Industries.

Last model for the month is a small control-liner. I made this model from Top Flite's "Junior Aces" series "Hawker Hurricane" kit. Main changes were slimming down the fuselage and vertical tail, addition of functional flaps (1:1 ratio, flaps-to-tail) and the nose was lengthened a quarter inch. The model flies on 30 feet of .008 cable with a Golden Bee. Handle spacing was a problem. I ended up with the lines 1-3/4 inches apart at the handle to tame it. Substituting a bigger bellcrank in the model would be a much better solution.

All up weight was 7 ounces, and although it will do the entire pattern, use of tissue and dope to cut it to 6 ounces would be a vast improvement. I'll do it next time! This type of model could win 1/2A events in Junior or Senior, though it is outclassed by what the Open fliers are now building. Even for the experts, it is good as a warm up or practice airplane.

Yesterday I flew my new, full competition 1/2A Stunter with Bob Hunt's foam wings. All up weight came out at

9.4 ounces, the equivalent of a 43 ounce Nobler. Performance, on 35 ft. of steel line with a "Super Stunter" engine swinging a 5x3 three blade prop, is kind of fast. I may go to a "PT-19" engine with only a single bypass.

This model has flaps, and the elevator is now set at 1 to .75 flap-to-elevator ratio. The tail moment is 1 inch longer than a Tercel with the same wing and tail areas. In addition, I have a 3 inch bellcrank and 2-3/4 inch handle spacing. The adjustable tip weight and leadout position are really useful. I'll have a photo next month.

A few columns ago I said that flaps were unnecessary on a 1/2A stunter. Obviously, I am not practicing what I preached. The change of mind came about as a result of talks with long-time stunt expert Charlie Mackey.

Charlie's case was that you can easily make an unflapped stunter maneuver tightly, but you can't make it smooth. Flaps give the effect of changing the wing angle of attack without having to move the fuselage flight attitude. When flaps are tuned correctly, the fuselage will fly a square or triangular corner precisely, with no initial lag or final overshoot. The controls can be made very "groovy", but the model will still turn tightly.

The way this happens is the result of an "adverse" pitching moment produced by the flaps. If the elevator didn't override this effect, your controls would be reversed! Varying the flap-to-elevator ratio allows you to tune the sensitivity of your model the way you want it. Once your bellcrank-flap-handle configuration is set so that your comfortable full-handle deflection gives full flap throw roughly 30°, you then vary the amount of elevator to tune in the model. An alternative is to add nose or tail weight to accomplish this tune-in.

Balance changes are a pain, though, because you then have to change landing gear and lead-out position too, and why add weight if you can avoid it? Balance changes also affect the gust sensitivity and the power-to-glide trim change.

By the way, on my stunter, I used Du-Bro ball links which I "freed up". The controls will fall under the weight of the pushrod alone! Covering is dark Red Solarfilm, everywhere except the cowl, which was painted with matched color Pactra "Formula U". Trim is gold tape and Spectra type letters, all from R.J. Whittman. The model took 3rd place out of more than a dozen stunters on display at the MAC Show this year.

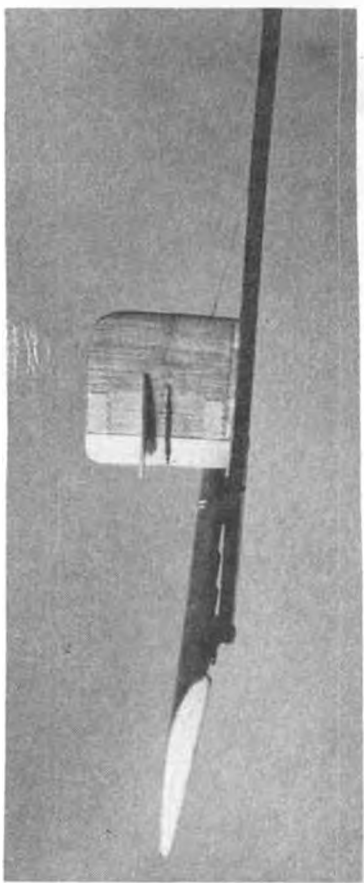
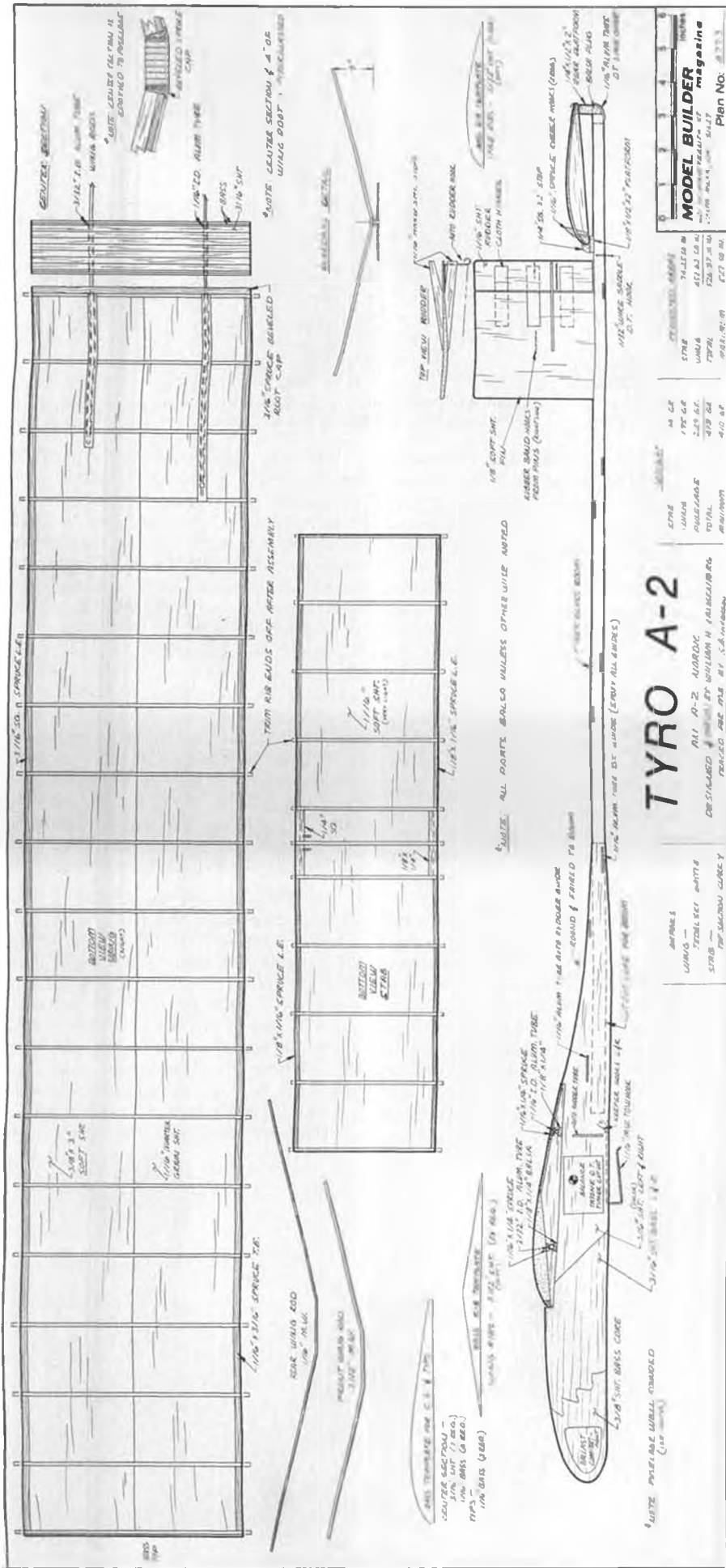
Enough! See you next month. ●



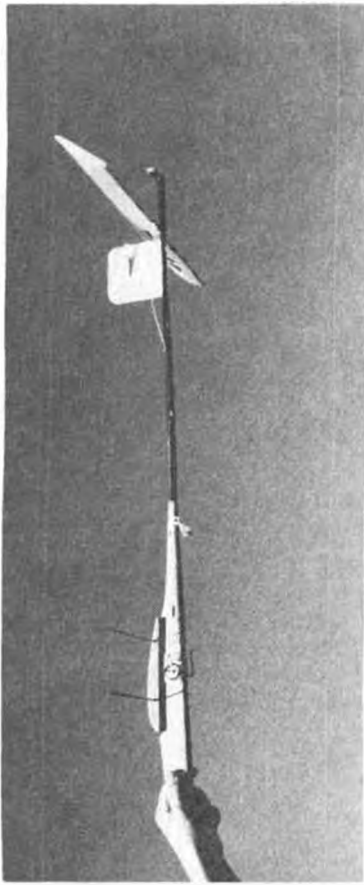
Half-A control line flight pack put together by Sig.



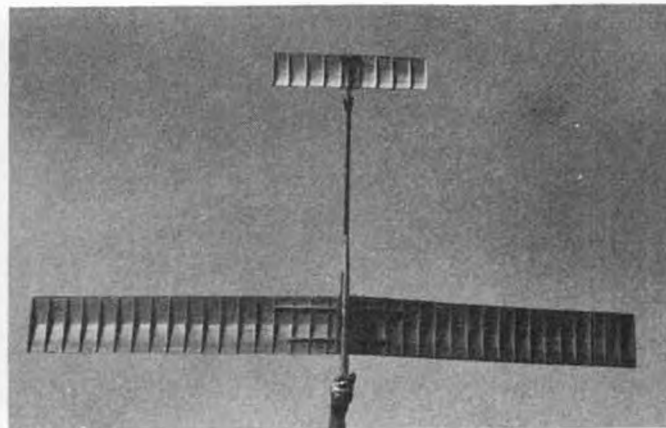
"So what's new about foam winged 1/2A R/C models," says the author, shown here with his 1971 "Slikker" design.



Tail section, showing simple rudder stop and auto-rudder rubber band. Stab is single sheet of sixteenth, formed over exposed ribs.



Fuselage without wings, showing root section and wing wires.



TYRO A/2 • NORDIC •

By WILLIAM H. LANGENBERG . . . Designed for the author's 15 year old son, this all sheet balsa A/2 Nordic is just the thing for anyone of any age who would like to enter the scientific world of free flight.

TYRO — (ti ro) a beginner in learning, a novice, an amateur.

The TYRO is aptly named. It is intended to be a Nordic glider for the flyer, of any age, who is new to the event. More specifically, it was designed for my son Robert, age 15, when he outgrew junior competition and moved up to the senior class. Tiring of the A/1 glider he had been flying, and perhaps too flushed with success, he desired to move up to the "big time" A/2 league, and requested a new model design to build and fly.

The first time the TYRO appeared at a contest, one of Robert's competitors sidled up to me and queried sarcastically, "What is that boxy looking thing? It looks like an overgrown A/1."

He was right on both charges. But he was premature with his disparagement, for at the end of the contest, he trailed far behind Robert in the



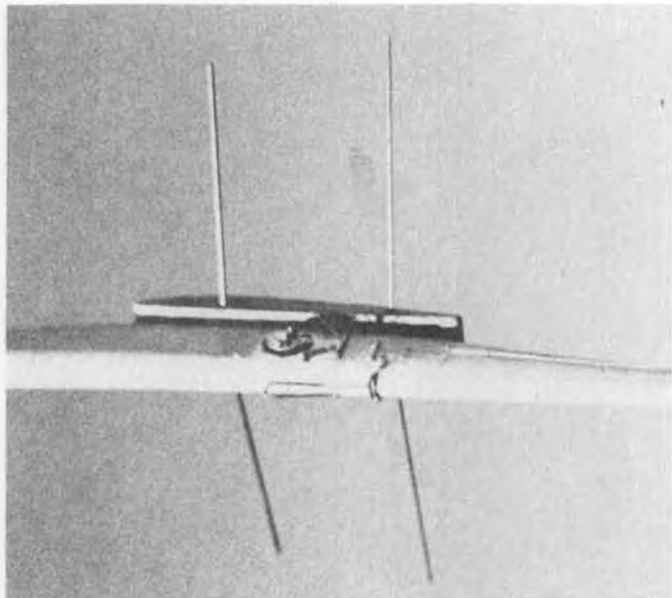
The author's son Robert, ready for launch. Squarish appearance of design belies its performance capabilities. The big thing is knowing when and where to launch.

standings. A fluke? Not really. That result has since been repeated several times.

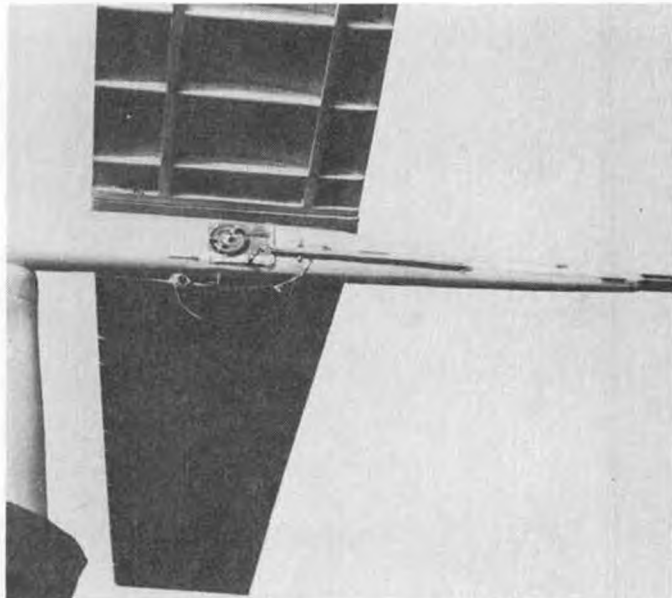
As a long time Nordic flyer and former FAI team member myself, it has

been my contention for many years that a consistent winner in this event need not have a complicated, difficult-to-build, or even streamlined model. In my

Continued on page 93



Close-up of wing mounting area. Note Tatone DT timer and auto-rudder line.



Exposed underside of wing discloses Jedelsky type construction and location of tubes for mounting wires. Note timer release.



Italian team members arrived for the WR/CCC about a week early. Went through many changes in that period.



Johan Pretorius and Bob Reid arrived from South Africa about two weeks before the First World R/C Car Championships race.

R/C AUTO NEWS

By CHUCK HALLUM

● Our first competitors from overseas have arrived for the World R/C Car Championship at Pomona, California, on July 4, 1977. It has really been quite refreshing to talk to these guys and find out what their racing is like, what problems they have had and how they are solving those problems. In general it really sounds like the foreign races are run on a more strict basis and more professionally. When I tell you what some of their procedures and rules are, I'm sure you're going to say we couldn't do it that way . . . but only because it could be that we have been doing it *wrong* all this time.

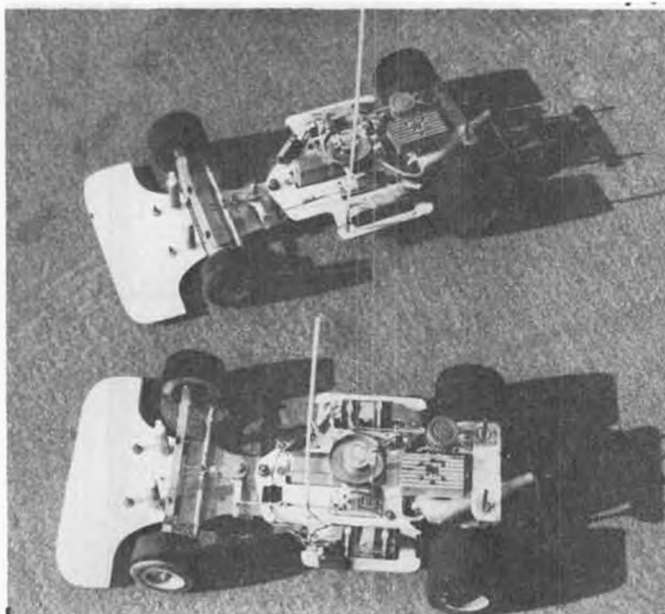
Two of the South African drivers, Bob Reid and Johan Pretorius, competed in the "Gold Rush Race" at San Diego, California, last weekend. The next day I was able to talk to Bob and Johan at

my shop and over lunch for a couple of hours, and get their impression of our racing and how it compares to their racing. Both drivers seemed to be amazed at the confusion of our starting procedure, and the driving conduct of the racers.

I thought the starts were fairly typical . . . First about a three to five minute warning; some warm up laps; some cars dying; pit man getting the cars; a call to the start line; some people not there; a wave off for one more lap while waiting for the remaining car(s); back to the line again; the countdown; finally the start . . . and then possibly a restart because all cars did not make it through the first turn upright. Well, in South Africa its like this; no pit men allowed on the track prior to the start; a three minute warning; if your car

dies it just sits there; when 45 seconds remain (or all cars are on the track), it is announced, and the starter walks to the front middle of the start grid, and cars go to the pre-grid; at 30 seconds the starter begins walking to the inside of the track and the cars should be inside their pre-assigned start grid box (1 meter long by about 1/2 meter wide); when the starter gets to the inside of the track and turns around, he can start the race at any time. If a car is out of its start box, it is penalized. You can be "blipping" the throttle all this time, creeping forward, as long as you stay in the box. Once the race is started, pit men can go and retrieve dead cars on the track.

Even though it took me longer to explain the South African start procedure, it's really less time-consuming than ours, and is much more orderly. Personally, I really like the idea of no pit men on the track for those three minutes. There is no reason that completely unassisted starts, 'on time', cannot be made by everybody but



Johan's and Bob's cars are fairly stock Associated cars . . . which were "Americanized" during the two weeks before "the" race.



Don Amedo even came out of retirement to drive Mike Reedy's car. Mike was Race Director of the First WR/CCC race.



Georgia and Ken Campbell were here a week early too. Getting used to the track and tuning.



Arturo Carbonell also arrived early; had special plate chassis for his Delta car.



Franco Sabbatini had lots of track time to get used to traction and layout, then modify.

beginners . . . and South Africa has a special class for beginners. The penalty for being outside of the pre-assigned starting grid box is like one lap if you are to the rear, and 2 laps if you are ahead of it. If you died on the track, the penalty is only the time to retrieve and restart the car. One thing Bob and Johan did like about our starts was the rule that all cars must get through the first corner upright and not tangled up.

As far as the racing goes, both Reid and Pretorius were probably the most courteous drivers on the track. They both usually avoided contact with other cars and even moved out of the way for other cars. In turn, they got "bonzaid" or "T-boned" a couple of times. In South Africa, the black flag is used for this kind of driving conduct . . . hitting other cars, that is. The offending car may receive one warning, but that's it (Please note, Rich Davis . . . the black flag is in the ROAR rules and is international as well). The general black flag rule in South Africa is really about the same as ours . . . there should be no contact between competing cars; if you bounce off a car when making a corner, the offending car gets the black flag. If you hit another moving car you get the black flag. If you hit a stalled car, or one that spins out, that's OK. Also,

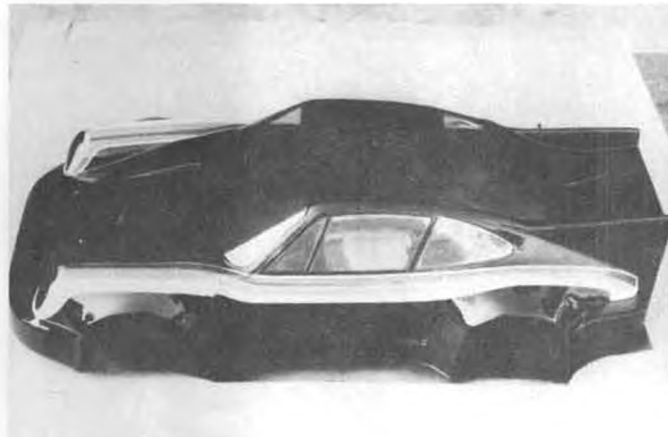
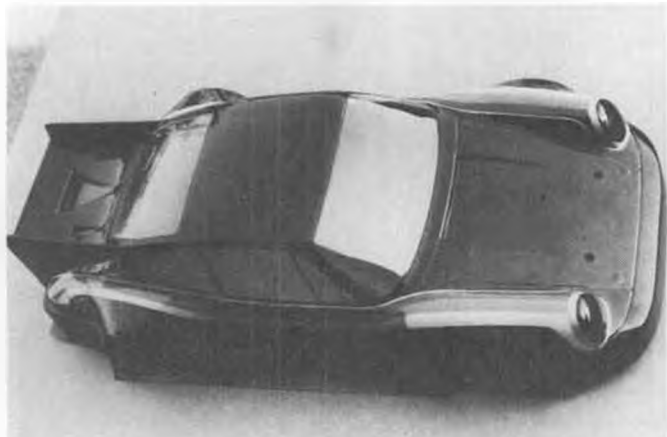
if two cars are about equally fast and jockeying for position, and come into contact, that's OK. But "Bonzai" driving, "T-boning", and bouncing off cars, brings out the black flag and you are off the track! After using the black flag at a race a few times, the driving really cleans up a lot.

Apparently in South Africa, the sport of R/C car racing was going pretty good a few years ago. Then there was a period where people started to drop out and the interest (even attracting new drivers) seemed to fall off. Bob Reid and Johan Pretorius feel that interest is on the way back up again . . . possibly because of the handicap racing procedure. However, all the big races are run with one class and with no handicap . . . and beginner drivers normally do not compete.

I can already hear the mumbling and groaning going on out there . . . "Gee, that means more work and more complications." Sure, all your fears of a new system may be justified, but also think about the fact that we would not have to worry about driver classifications, and that, sure as heck, is one big headache. In fact, the handicap system as used in South Africa is sort of a modification of the A, B, C, D, E, etc. main approach used in the Mid-West.



The First World R/C Car Champion, Butch Kroells, Burbank, California, was quite overcome (and dwarfed) by his trophy. Complete story in the next issue.



Next tech article will be on car painting techniques. This is the Interscope 935 Porsche done by Jerry Thompson, which will be described.

K&B airplane engines

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K&B .40 R/C

This K&B front rotor engine is the most in demand powerplant for R/C Scale, Pattern Flying, and "Quickie 500" Pylon Racing.

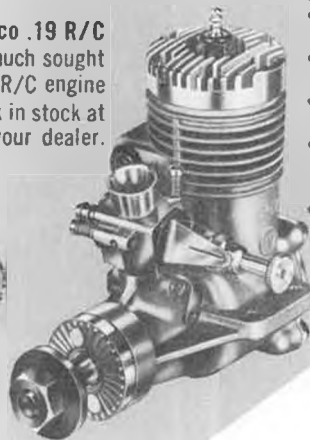


It features:

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- Exclusive K&B no-tension, single ring and aluminum piston — no long break-in period.
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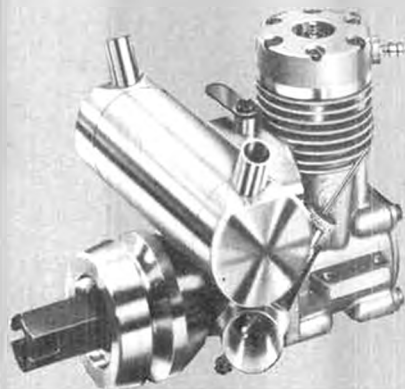


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Features include:

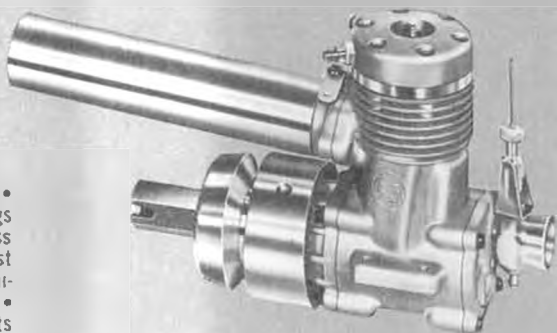
- Efficient Muffler — under 90 decibels
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- Butterfly Throttle
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ACE R/C, Inc.

BOX 511D, HIGGINSVILLE, MO. 64037

In the South African handicap system, the normal race day starts with qualifying, and the A, B, etc. mains are set up based on qualifying time. Now, if a driver with a handicap qualifies well, he makes the A main, based on time. When the A main starts, his lap counter already has a couple of laps (his handicap) on it. Now the scratch (non-handicap) racer has to perform well to beat this guy. The same thing happens in the B main, except that there may be several more handicap racers. Actually, in South Africa, they really only have the so-called "Qualifiers" (A main), and "Non-Qualifiers" (B main) races, and those twenty or so drivers are all that make up the (so-called by me) main events.

But Bob and Johan feel that since going to handicap racing, that several racers have come back out of the woodwork and new racers seem to be attracted. With the handicap system, the less experienced, less proficient drivers have a chance to win, if they qualify well, and they do occasionally.

Now what is the handicap procedure? Well usually, the first race is a scratch (no handicap) race. Everybody just qualifies, and then the top 10 racers race in the first race, the next 10 in the next race, etc. Then based on the results of the race and/or qualifying, a handicap is assigned to each racer. Anybody who would have finished on

the same lap as the fastest winner would not have a handicap. If you would finish, say, 2-3/4 lap behind, you would get a 2 lap handicap. Now if you come back at the next race and win, your handicap might go down 1 lap (maybe two). Theoretically, you never quite get the full amount of your lap differential, so you really have to scramble to beat the scratch driver. Likewise, the scratch driver cannot let up, because the handicap drivers can beat him.

Handicap for new drivers can be a maximum specified number (e.g. 10 in a 50 lap race), or calculated from his qualifying time. Since the top 20 drivers only make the final events, everybody still tries hard. Also, the handicap driver has to do a little better than his handicap to win, and he has a tendency to improve . . . but at all times has a chance to win if he makes it into a final race.

So anyway, all this sort of gives you an idea of what's going on in South Africa. The only reason I put all this in, is so you (me, too) can see how things are done somewhere else. The ideas and opinions may help us in trying to sort out our own problems. I just wish that there was some way to make everybody happy.

In our discussions, there was one other thing that Bob Reid and Johan Pretorius dwelled upon. The driver set

up we have; the factory teams, sponsored racers, etc., is probably a very discouraging aspect for anyone who is moving up, and particularly about to move into the expert class. The handicap method might help this situation, but for our racing format, Bob thought that maybe we should have a special class (semi-Pro, Factory . . .) for all factory team drivers. In looking the situation over, I'm sure this may be something that really discourages some "independent" drivers from wanting to move up to the expert class right now. We've all heard this before, but Bob and Johan have only seen one of our races. Maybe it's time to sit back and really look at this "factory team" thing. I know that way back when I was an independent and did not have a factory (if you'd call it that) to worry about, I could spend more time on my own equipment and be more competitive than I am now. So I feel that independents probably should beat many so-called factory drivers. Bob and Johan suggested that possibly a separate Semi-Pro class for the factory team, and sponsored drivers, with no handicap, and a handicap class for other drivers, might be good for the R/C sport here.

I don't know about all this stuff . . . what do you think? Write to me if you have any comments about anything . . . Chuck Hallum, P.O. Box 4658, Irvine, CA 92716. Well, now I've got to get

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back to my World Championship race tasks. The World R/C Championship has 43 Foreign entries and 109 total entrants. The Race is July 2, 3, 4, 1977, at Thorp Raceway, Pomona, CA. We'll have a report here as quickly as possible. ●

Scramble . . . Continued from page 12 potentially sacrificing their positions in the contest, the looping, turning, twisting Korpi Corsair and Steinel Me 109 showed the audience what a real "wringout out" amounts to. The crowd cheered.

All weekend, in fact, the cheers and applause of the audience gave the contestants a rewarding bonus after every flight. On the other hand, during dead stick landings and the other inevitable emergencies, the audience was so still you could hear the grass growing. They got so caught up in the contest that, by their cheers, groans, applause or silence, you could tell what was going on without even looking.

Between rounds, the airplanes were placed in a large, roped-off pit area. There was no crowding, and everyone could circle the pits and get good photos.

The arrangement eased the contestants' concerns about untrained hands grabbing at things.

The most unusual model entered was that of Pat White who drove all the way from Lauderdale Lakes, Florida, to enter his Me 163B Komet. Built from Holman plans, White had his Super Tigre .60 exhausted through the fuselage. In flight, this gave the model of Germany's WW-II "surprise" a realistic appearance in the air.

Although White's Komet was but one of only four scratch-built models entered, scale realism was evident in both Sport and AMA classes.

In AMA, placing Second to Thompson's Corsair, was Dave Lovitt's Japanese Ki 43 (Oscar), a Royal kit. In Third Place was Fred Suellentrop's scratch-built N2S-2 Stearman. Suellentrop flew his beautiful "Yellow Per!" through some very scale-like routines.

Placing Fourth in AMA Scale was Jack Watson of Hawthorne, California. Though electing to pass up the flying, his Spitfire (a Sterling kit) was on display in the pits the whole weekend.

In Sport Scale, the Third, Fourth and Fifth slots went to Jim Meister of Vista, California and his Jemco Corsair, Jerry Davis of Campbell, California, and his Top Flite P-47, and to Olaf Kitchin to Fullerton, California, and his aluminum foil-covered Top Flite P-47.

Filling out the "top ten" in Sport Scale at this year's Scramble were:

6. Mike Killeen, a 15 year old Junior from El Toro, California, with a Dave Platt FW 190.
 7. Dave Lovitt (Ukiah, Ca), with a Jemco Corsair.
 8. Dave Grip (Hamilton AFB), with a Top Flite P-47.
 9. Don Scott (Simi, Ca), Top Flite P-47.
 10. Pat White (Lauderdale Lakes, Fl), scratch-built Me 163B.
- Led by Bert Baker's Top Flite P-47, Team Scale finishings were:
2. George Killeen (El Toro, Ca), a D&B P-40.
 3. Jim Meister (Vista, Ca), flying Roger Horn's Jemco PT-19.
 4. Gene Ageno (Sunnyvale, Ca), C.A.P. Holman Stuka
 5. David Steinel (Oakland, Ca), Jemco Me 109.
 6. Dale Sebring (Sunland, Ca), D&B P-40.
 7. Garry Korpi (San Jose, Ca), Chuck Fuller F4U.
 8. Pat Ray (Los Gatos, Ca), Royal B-25.
 9. Wayne Owens (Norwalk, Ca), Dave Platt Spitfire.
 10. John Tennyson. This 17-year-old "comer" from San Mateo, California, flew a Lanier Jester heavily modified into a P-51.

For the contestants, the grounds of Irv Perch's Hill Country Air Museum at

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Morgan Hill, California, make an ideal flying site. Though the grass was mowed both days of the contest, some of the (non-scale) small-wheeled, retract-gear fighters had some difficulties on take-off. But the grass sure helped save more than one hard landing.

The next Hill Country Flyers meet will be the Western Front, World War I Jamboree on September 24-25, 1977. World War I tail-draggers can look forward to flying off a thick carpet of grass in fine style. ●

Cleopatra . . . Continued from page 17

thin brass sheet. Their size is chosen according to engines and flying time. Glue hollow balsa block to the end of engine pods. Now screw wing to fuselage. Bulkheads F3A and F5A are traced from the fuselage on plywood, glued in place, and sheet fairings added. Ailerons and flaps are fixed by nylon hinges. Flaps are made of solid balsa, and ailerons are built from the rib trailing pieces. Now glue on wing tips and sand the whole wing. Final operation is gluing floats. Put together bulkheads S2 and S3, glue to S1 according to plan, and glue on the float sides. After top and bottom balsa sheeting, glue balsa fairings to S1 and sand the whole piece into a smooth shape. See the plan. Now fill gaps and do thin modelspan sheeting.

ENGINE COWL

I laminated the cowls on a bottle with a 5 inch diameter. I used four ladies' silk stockings. Do it like this: Slide on 4 stockings on a bottle, tighten them and make a knot on both ends so they will not slacken. Then paint with laminate so the fabric is wet through and through. Do not forget to paint the bottle first with separator! Otherwise you will not take hoods off! Then cut off burrs and also make holes for needle valves, engine head, and silencer. I advise to sand cowl and fill gaps. I was in a hurry and that is why I did not do that. I put it off till tomorrow, but tomorrow has not come so far. Cowls are fixed with four wood screws on engine mount. One screw is also in a block on the top part of pod.

SURFACE FINISH

After sanding and filling gaps, the whole model is sheeted with thin modelspan and six times painted. Colour scheme is done by acetone colours, and final paint is against fuel effects. This is my own suggestion and anybody can realize his ideas.

TRIMMING AND FLYING

Because I planned my model for cross-country flying, I needed a high degree of stability. Wing incidence angle is plus 4° and stab incidence angle is minus 1°. That is why it is necessary to keep the exact center of gravity. It is possible to move it a little forward . . . not backward. Be careful

about weight in rear part of fuselage while you do construction. If necessary, place some ballast lead up forward. My model has 10 oz. of lead. After radio and engines are installed, we can start flying.

At minimum speed, model stands on water surface with rudder above. With a little more throttle, rudder goes down and model can be controlled on water surface. It floats until we open full throttle. Then it begins to glide on the bow. Now try throttling back, but still it does not take off. Try this hydroplaning several times . . . especially beginners with hydroplanes. Each operation and transition into floating, and gliding must be mastered. You must get used to the model inertia and on the way it circles on water surface. Even at minimum throttle, model glides a long distance before it stops.

Now to taking off itself. Set elevator a little bit down by trim, and at full throttle, let it glide on surface. Takeoff distance is 80-100 meters. After setting elevator up, model should take off. Because model is high-winged and there is dihedral angle, ailerons are not so sensitive. That is my advice for pilots of the pattern category. But you can seek help with the rudder, which is efficient enough.

Before flying, engines must be set up so that they are brought into action simultaneously, and not one after the

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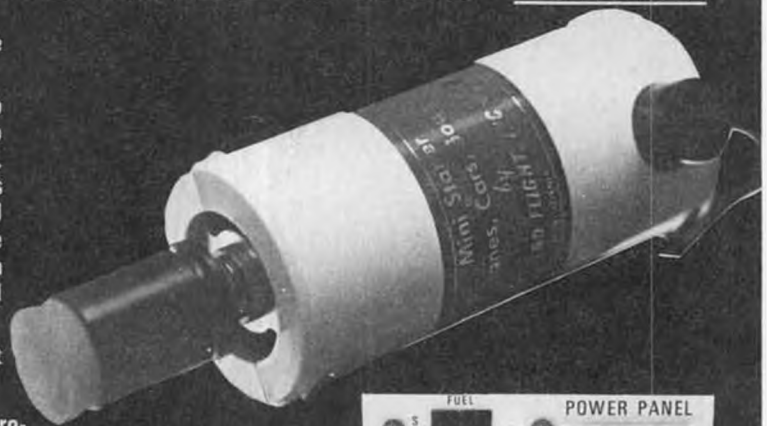
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other. It could cause a disaster at takeoff. One engine would turn model into another direction. The landing could be even worse. Both engines are at minimum speed, landing track is suddenly too short, and every pilot gives full throttle, being in such a situation. If only one engine is brought into action, model will be up side down!

In case of one engine failure, it need not be a catastrophe. My model tried one-engine flight, but with just half throttle, and with ailerons and rudder in opposite positions. At idle run, no contra-position is required. When only one engine is in action, do turns toward that engine while model is airborne. Once model is airborne after its takeoff, control is easy. After several takeoffs, with some experience, we can try wing flaps and their effects on flying. Use them for landing and even for takeoff. At landing, my flaps are at 50°. I do not use them for takeoffs. Naturally, flap angle must be the same for both of them.

That is all I can write about Cleopatra. In case it seems to be too little, any questions can be addressed to me personally. I wish every Cleopatra builder many pleasant flying hours. And to those who will use my plans for a different model, lots of luck, and I hope that my experience will be useful for them the same way. I used other model

plans.

Pavel Bosak
Fucikova 278/IV
Klatovy 33901
Czechoslovakia

Choppers Continued on page 21

of model builders. What can be done by the average modeler, so that he ends up with the machine of his desires? Read on.

The key to the problem lies in the term "stability". Stability is defined as the response or reaction of a body (helicopter) to a disturbance. The disturbance can be a poor command by the pilot, or a gust of wind or other such force which causes the helicopter to go in an unwanted direction. The reaction of your helicopter after the unwanted force has been removed is the measure of its built-in stability. If it tends to return to its original position, then it has positive stability. If it fails to return to its original position, it is considered to be unstable. (Note: more detailed study of this subject will reveal other types of stability, such as, neutral, static, dynamic, uglocity, pendular, etc., however, these are not important for the present discussion).

To achieve a degree of stability, many things can be done . . . some are already built into your kit, such as

stabilizer bar and paddles, vertical stabilizer (rudder/fin) and horizontal stabilizer. Proper location of the center of gravity also has a lot to do with it. Generally, the C.G. should be directly below the rotor hub or just slightly forward. A forward C.G. increases stability up to a point, whereas a rearward C.G. results in excessive instability, and should be avoided unless you want a "tricky" machine!

One of the greatest aids to helicopter stability is called *gyroscopic rigidity*. It is a fact that any rotating mass tends to resist any change in direction of movement with a very powerful force. The main rotor blades, tail rotor blades, and stabilizer bar/paddles are rotating masses and thus contribute greatly toward stability. Two things influence the amount of gyroscopic rigidity, (1) the higher the speed of the rotating mass, the higher the rigidity (stability), and (2) the heavier the weight of the rotating mass, the higher the rigidity. So, if you want high stability, make the rotor blades heavy, make the stabilizer paddles heavy, and increase the rotational speed of all three (caution: increased weight and speeds can exert tremendous forces on the attachments and could be very dangerous . . . this is where the kit designer earns his money in safe design techniques).

Reducing the throw of the servo controls will not increase stability, but

it will minimize overcontrolling by the inexperienced pilot, and should be considered. Another item under much discussion at present is the Kavan gyro, which is inserted in the tail rotor servo system. This device is an electrically driven gyro which senses unwanted turns (yaw) and causes the tail rotor servo to make an automatic correction to stop the yaw. Not included in any kits, it is available as an accessory addition to any helicopter, and serves a very important function in acquiring a high degree of directional stability. A few helicopter pilots "look-down" on this device as an artificial control gyro and want no part of it! About all I can say is, do they also "look-down" on their mechanically driven gyro (their stabilizer bar and paddles)? True, a helicopter can be flown successfully without the stabilizer paddles, but it suffers greatly from a loss of inherent stability and requires a measure of skill that the beginner does not yet have. Removing the stabilizer bar and/or paddles is a great way to increase the maneuverability of your chopper, but we do not recommend it for the tyro!

FINAL APPROACH

Of course you won't be able to read this short article and immediately start modifying your chopper with a great amount of success . . . we've only tried to present certain basic information.

Before you try to improve on the manufacturer's design, take a hard look at what you really want . . . read all the model magazines and examine the ideas that are presented. When a modeler says his "fix" is a must for all choppers, try to analyze what is really going to happen and determine what he really means! Is it a good fix for him (the expert), or will it help you also (the beginner)? Will it increase the sensitivity and control response, or will it tame it down?

In closing, I'd like to tell you the same thing that I tell dozens of new R/C helicopter builders every week, in letters and phone calls. These queries almost always concern the Kavan Jet Ranger and the wide range of accessories available for this kit. Should we purchase the Expert Paddles? How about that gyro or head modification? Is the wash-out control required? Should we put the lead weights in the main blades? Are the expert blades that much better, etc, etc? I respond to these questions by advising them to build the Jet Ranger *exactly* as shown in the plans, and with the standard parts that come with the kit. If you can afford the extra cost, by all means install the gyro, since it definitely makes it easier to fly. Yes, do install the lead weights in the rotor blades, since it increases the rotor mass and stability. In this fashion, you have built one of the most stable helicopters available, and one which will be a real pleasure to learn on. But . . . don't plan on high speed, steep turns, or aerobatics, because it does

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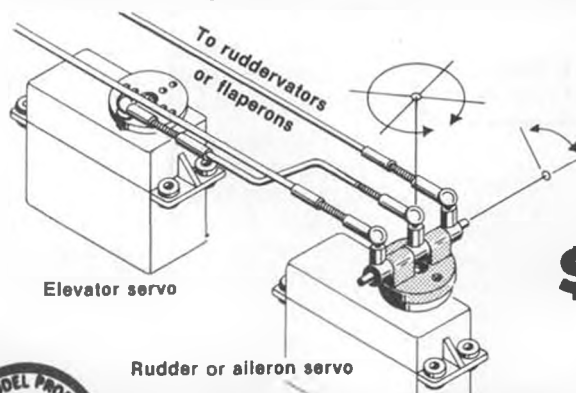
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not have enough control response to permit such flying! After you have learned to hover and to make slow, smooth turns under control, and feel good about it, you can install the head modification (this will increase the control response), try the expert paddles (they also increase response), and the washout control (this reduces drag and permits higher forward speed).

All of these things increase the sensitivity of the Jet Ranger and can make it harder to handle. But of course, your personal skills have increased along

with the additions (haven't they), and you can keep up with it! If not, then you had better start removing the expert modifications and go back to the basic configuration for a little more training! Match the sensitivity to the pilot, make it as stable as possible and still permit maneuverability, and you can't beat that combination. And that's about it for the month. Happy flying this week-end!

Soaring Continued from page 27

landings through the winch area, spoiling one of the last remaining thrills of the sport.

"The only new aircraft configuration was a design called "Murphy's Law". Mod II and IV were present. This design featured an extremely small fuselage cross-section and large flaps. A really workmanlike winch was furnished by the Central Valley Club for larger aircraft.

This winch gave the options of 6, 8, 10 and 12 volt operation. For 6 pound aircraft, (XL-100, Astro Jeff etc.) 8 volts gave a very snappy launch. We could use a more detailed write-up, especially the cast "bosses" on the tapped battery, and any charging problems.

"By far and away, the show stealer

was the Olympic II. Out of 87 entries, 15 were OLY II's. Second most popular was the Aquila. Lee Renaud has a couple of winners. The Craft-Air stable was also adequately represented with Windrifiers, SD-100's and a couple of Sailaires. Standard class clearly dominated the entries, although separate classes were not flown. It is crystal clear that, at least in California, sailplane class distinction is a dead issue. Not one major contest in the past two years has made size a criteria. "Fly what you are comfortable with" seems to be the answer. (We think most of the "old guard" in R/C sailplaning will agree with this. wcn).

"The winners were; 1. Don Edberg, Torrey Pines Gulls (South), 2. Fred Weaver, South Bay Soaring Soc. (North), 3. Phil Harris, Pacific Soaring Assn. (South). (The winning team was determined on the basis of the sum of the scores of the top five contestants). The overall total, which did NOT determine the winner, was South 23,603, North 23,288.

"THE SOUTH WILL RISE AGAIN I hope."

Please let me know if you have items which should be brought to the attention of our readership . . . especially if illustrated with a black-and-white glossy photo.

Rocketry Continued from page 28

to let me have my pictures. Meanwhile, a couple of "nose newts" from the meet would be in order. A new Class 5 altitude record is being filed, and I think it may exceed the FAI record as well. Les Cartee, of Killeen, Texas (where?) made the flight with his own-design bird, an F7-6 powerplant, single stage; it was tracked to 671 meters. Since the old record was 488 m, that's a substantial improvement. We launched an FSI Mach I System, which is claimed to be the only model rocket with supersonic capability. Well, we did hear something like a concussion; but whether it actually goes transonic or not, there's no denying that the thing takes off like a goosed archangel. When the upper stage was recovered, the nose tip and fin leading edges were charred. Hmmm.

There are some club activities going on that are well worth reporting. I have been most impressed with what I have heard about the San Francisco Bay Region of the National Association of Rocketry, known (thank goodness) as BAY*NAR. I have several issues of Cal Star, a newsletter published by the Sunnyvale Model Rocket Club and NASA (the Neighborhood Aeronautics and Scientific Association, of all things).

Their Sunroc-1 symposium included a talk by G. Harry Stine, one of the founders of the hobby. I also have issues of Overview, published by Randall Victory II, who will be remembered for his excellent work with the Dallas

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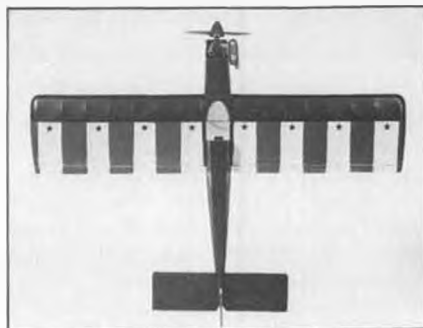
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newsletters. Thanks a lot, guys, and keep me posted on your activities. Keep up the fine work.

Impact, the NARCS newsletter (Homewood, Alabama) has a talented cartoonist in co-editor Anthony Williams. This cover is illustrated coverage of their ARC-5 regional. It sounds like a typical meet: "Where are the tracking scopes?" "How about eggs for eggloft?" "Knew I forgot something." "Langford Ignition strikes again!" "Everyone knows that a zero-volume piston is invincible . . ." Andrew Conders, editor of the Dallas/Ft. Worth Rocketeer, flew in to attend ARC-5, and was quoted as saying, "Boy, are my arms tired!" George Gassaway, current C division champ, restrained himself from throwing hand-launch gliders, but did spend a lot of time trimming his boost-gliders. One contestant used hallucinogenic lemonade to conjure up a vision of G. Harry Stine, and was coached to victory in Class D Streamer Duration. And on a typically windy flying day, several people were treated to the sight of a bird with an 8 inch chute thermalling out of sight. I can just hear voices cursing the Return Rule.

On the more serious side (ha!) they have several excellent plans, including a couple of dual egglofters and a Microjet job for Design Efficiency called the Pan Galactic Strawboss. How about drawing these up for me to print, guys?

And once again, we have that bastion

of decency and clear thinking, the Novaar Free Press. This month features scale SST plans . . . the S.S. Titanic, that is. Well, what can you expect of a newsletter that asks the immortal question, "Do you find that you can only win competitions with models constructed the night before?"

On the serious side (namely page 3), there is news that the NOVAAR gang is preparing a series of weight optimization charts for all engines presently on the market. These can be very useful indeed. The theory behind them is based on the fact that there is an optimum weight to which a rocket can be built, which is not necessarily the lightest possible weight. Such charts have been available in a technical report published by Estes but haven't been updated in years. The NOVAAR charts will be a big help to contest modelers.

They also feature a review of the new Centuri "Super C" C5 engine. Although they found that there was indeed a substantial increase in the initial impulse of the engines, they were disappointed in two things; neither the sustainer nor the delay train was close to specifications. Of course, the engines were designed for the large, heavy Super Kits, where the high initial spike will make a substantial difference (and has, in my experience); but they are lukewarm on the value of the C5 in competition. Well, many thanks to NOVAAR Free Press co-conspirators Larry Hootman and

Chris Tavares for keeping me on the mailing list.

I'll see all of you good people at NARAM. I hope I have some teeth left, after you remind me of all the "nice" things I say about you in print!

Finally in the correspondence department, I have a note from my friendly Australian correspondent, Eris Roughan. Eris very kindly passed along several copies of their newsletter, Goddar, which were extremely interesting. I especially enjoy scale plans for some of the peculiar missiles that the British have come up with over the years. Maybe I'm too used to the clean lines of American missiles, but the Bloodhound looks to me like a drunken surrealist's impression of a sober giraffe. Seriously, I'm glad to see rocketry on the upswing in Australia; it ain't easy for them to get supplies through Customs, and they have no local manufacturers, so it takes determination to be a spacemodeler over there. Incidentally, Eris, I have word from Estes that their Camroc and Cineroc kits are out of stock and out of production, but only temporarily. The Cineroc movie camera used a small electric motor that Estes can no longer obtain, so they are searching for a similar motor and modifying the Cineroc slightly to accept it. As for the Camroc still camera, the molds for the plastic parts wore out, and they decided to re-design the Camroc rather than simply re-do the old molds. The new Camroc is expected to have an

improved shutter system, and (unofficial) word is that it may be able to take color pictures. Both new-and-improved items are expected to be included in the Spring 1978 catalog.

If any of my multitudinous readers (both of them) would be interested in corresponding with an Aussie rocketeer, Eris informs me that he'd be delighted to hear from you. His address is 2 Macquarie Avenue, West Cessnock, N.S.W., Australia, 2325.

I take this opportunity to officially announce that we will be presenting a new award at the NARAM this year. The Bulzscht Foundation (dedicated to the memory of Boris Bulzscht, the obscure Russian potato farmer who invented masking tape) regularly awards the Bulzscht Award, to the modeler whose performance best exemplifies the workings of Dumb Luck. This year, the Foundation has decided to offer an award to the most unlikely design to be entered in competition. It is to be called the Evil Kowalski award, in memory of another unlikely design that Bill Northrop told us about. One of these days, Bill, we're going to name an award after you; probably something to be given to the man who is so busy running things that he doesn't have time to fly. (Call it the "Pathetic Publisher's Plaque". wcn)

Plug Sparks . . . Continued from page 33
engine.

The writer is indebted to Karl Carlson (who produced Kiener Brat engine replicas) for the information available on a taped interview with Jack Keener. It was truly a shame that Earl Vivell suffered such an unexpected heart attack before he could be fully interviewed on the Vivell engines he marketed and sold through his distributorship.

ENGINE RULES BALLOT

Well, it's official now! Just received the latest voting results on the proposed ignition converted engines. Better than 15% responded in the voting. Before someone says this is poor, remember AMA officials are generally elected by less than 10% of the membership!

No question about the decisiveness of the vote, as can be seen by the following results.

1. Adopt the rules limiting the size of converted ignition engines.

Yes	185
No	53
2. Outlaw all glow engines from the basic events.

Yes	166
No	72
3. Outlaw diesel engines from the basic events.

Yes	104
No	134

That's it men for next year. If you are planning to use a converted glow

Safe, new audio tachometer

GloBee BUZZBEE

measures engine RPM from start to finish

Listen to the engine pitch, match the tone with your new BuzzBee tachometer, and read out the RPM on the BuzzBee dial. That's how easy it is to measure engine RPM — yours or your competitor's — with the new BuzzBee, whether the model is standing still or in motion. You don't even have to be close to the whirling propellers; if you can hear the engine, you can measure its RPM with the BuzzBee.

BuzzBee covers the full range of today's most powerful engines — from 2,500 to 35,000 RPM. A single NEDA 1604 series 9-volt battery (not included) powers the solid state electronics.

The lightweight (5.5 oz.) BuzzBee fits comfortably in the hand, turns on with a push button, and generates an audible tone that is sonically matched to varying engine speeds. Easy-to-read printed face and shiny black case are fuelproof.



Don't guess. Don't be psyched. Get a BuzzBee . . . and be sure!

FUSITE

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engine for your particular model, remember the class restriction for these engines is now as follows:

Class A 0 — .15 cu. in. displ.
Class B .155 — .25 cu. in. displ.
Class C .26 — .40 cu. in. displ.

No question about it, the rules may not satisfy everyone, but it is an excellent starting point. We could talk forever about this and that idea, but until someone gets something concrete down on paper, it could go on forever. There will probably be further rules refinements, but these will take time.

For those not familiar with the system and wishing to make changes, the modeler should direct his proposal to the appropriate Rules Coordinator.

In this case, Gene Wallock, Free Flight, and Tom Acciavatti for R/C. Proposals are processed by these people and placed in the SAM Speaks publication for official vote by the membership. In no case should any rule be arbitrarily decreed by a SAM Official. We've got enough problems without that!

THE SOUTH WILL RISE AGAIN!

You may have heard this remark many times in jest, but the Texas boys are making themselves known in Old Timer circles. Spearheaded by the "Planesman" Club of Ft. Worth, Texas, their Spring '77 FUN FLY was an outstanding success.

In spite of a week of high winds and

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The Flight Proven CO₂ Motor

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Thousands of TELCO motors have now been sold world-wide and they have proved to be a safe, efficient and economic power unit wherever they have been flown. This is the ideal unit for the junior modeller who wants to fly with real power and would like to go a bit beyond the rubber band stage of modelling. Simple light-weight models of from 16" to 24" span can easily be modified to take the Telco and they will give you hours and hours of real flying fun. If you haven't tried CO₂ yet get to your local Hobby Dealer without delay and see what a fine unit the Telco is.

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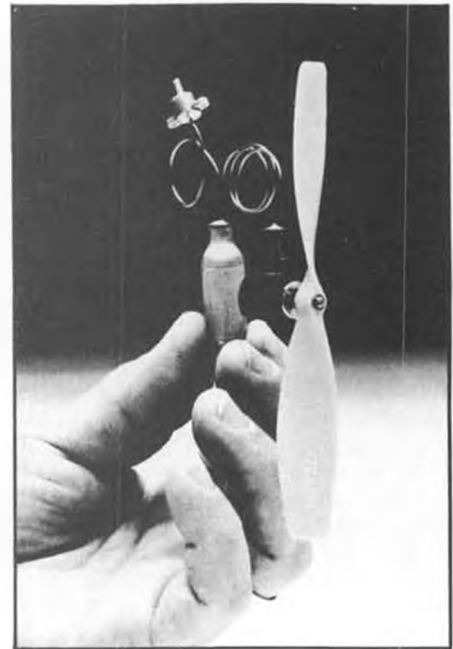
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TELCO IS AVAILABLE FROM STOCK AT ALL GOOD HOBBY STORES.

rain prior to the contest, a total of 98 entries were recorded. The best part of all was that contestants were rewarded by almost letter-perfect flying conditions, featuring gentle breezes, warm sunshine, and wild thermals.

Dave Benepe, the awards committee chairman, summarized free flighting so well in the following paragraph:

"One of the most interesting aspects of our form of the sport is the enthusiasm which the participants exhibit. In my opinion, this enthusiasm is generated by the sense of achievement a free flighter gets from overcoming the many interacting and conflicting forces that affect the flight of a free flight model. I observed a neophyte Junior who had entered his first contest, put in many flights, all of which ended a few seconds after launch while still under power. Undaunted, the youngster continued until later in the afternoon, during which he had made several adjustments, he achieved his goal. The little .020 replica climbed and then assumed a gentle turning glide for thirty or so seconds. He jumped for joy and exclaimed, "I can't believe I did that!" He had done it by himself with no help. I have no doubt that he will be a free flight buff for years to come. Every flight represents a new challenge to be met. Each successful flight is its own reward."

I couldn't have said it better. Only problem is that this columnist should

have used this as the way to close off the column. However, we have more on the meet in that the Normans (Bruce and Leslie) have taken up their act of winning here too, with Leslie winning Class ABC and placing 5th in .020 Replica. Hubby Bruce managed a fourth in R/C Texaco and fifth in combined Class R/C Limited Engine. This guy has been winning so much in free flight, he is now looking for other worlds to conquer. Other winners in the Old Timer events looked like this: Jerry Murphy (Colorado) won .020 Replica, Ed Trice won the R/C Ltd. Engine Run Event, while Mike Birdwell (Alvarado, Texas) took the R/C-Texaco Event.

Interestingly enough, in the Unlimited Rubber Event, Caldwell Johnson won a second using his 1940 Slick Stick design. "Caldwell" also reports the Ft. Worth-Dallas area has no stranglehold on old timer flying, as the Houston area has really come alive. One of the main reasons, of course, is that many of the original Brain Busters of Hampton Roads, Va., are now located and working in this area.

They (the Texans) have always been known for doing things in a big way, and it appears their participation in the old timers will not be any exception. Hot dawg!

TIRELESS OLD TIMER

We mentioned it last year and darned if he didn't go and do it again, Jim

Clark, Contest Director par excellence, announces that he will be running no less than three contests this year. These shape up something like this for you lucky New Jerseyites:

June 12 (of course this is history now), *Central Jersey R/C Club* with Classes A, B, C, Antique, and Texaco Events. All to be held at the Middlesex County Model Airport.

July 31, *Somerset Signal Seekers* 3rd Annual O/T F/F R/C Contest, featuring Classes A, B, C, Antique, and Fuel Allotment Events. All to be staged at the North Branch Park, Somerset County, N.J.

August 28, S.P.O.T. 3rd Annual O/T F/F R/C Contest at the same location as the Somerset Contest. Events to be the same, so if you didn't do so good in July, here's another chance to shine.

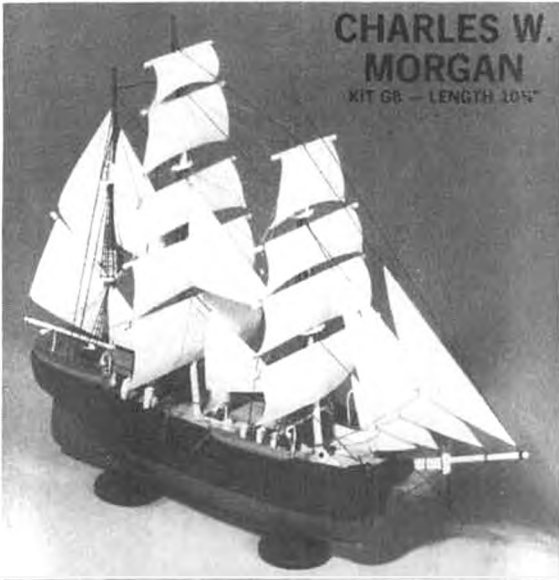
If in doubt and needing info, write to James W. Clark, 1127 Denmark Road, Plainfield, N.J. 07062. Wotta Boy! HORSEPOWER CALCULATOR

Just received the latest gimmick for figuring horsepower, from Gus Munich of 24 Skipper Drive, West Islip, N.Y. 11795.

Called the Horsepower Calculator, this slide rule was developed from over 300 discreet measurements of horsepower, rpm, and standard propeller size. Propellers employed were those most widely available, such as Top Flite

THE TALL SHIPS ARE COMING!

CHARLES W. MORGAN
KIT 68 — LENGTH 10 1/2"



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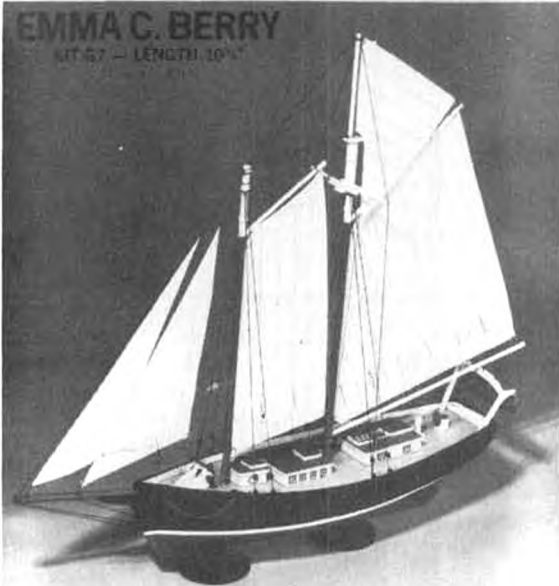
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Sailing out of her home Port of New Bedford Mass., the square rigger Charles W. Morgan sailed further and killed & processed more Whales than any other Whaling Ships of her time. Today it is for ever enshrined in all its glory at Mystic Seaport Conn., were it can be boarded and its history relived. The Emma C. Berry is one of the oldest commercial sailing ships in American Documentation. Preserved in excellent condition it can be visited and enjoyed at Mystic Seaport Conn. Emma was launched in June 1866, Slooped Rigged. Further details can be obtained from Mystic. Originally the U.S.C.G. Sailing Bark Eagle was built for the German Navy. It was acquired by the U.S. Coast Guard in 1946 and has been used as a training ship since then for Future Officers; Carrying 200 cadets. For further details write to the U.S. Coast Guard.

- **CLOTH SAILS**

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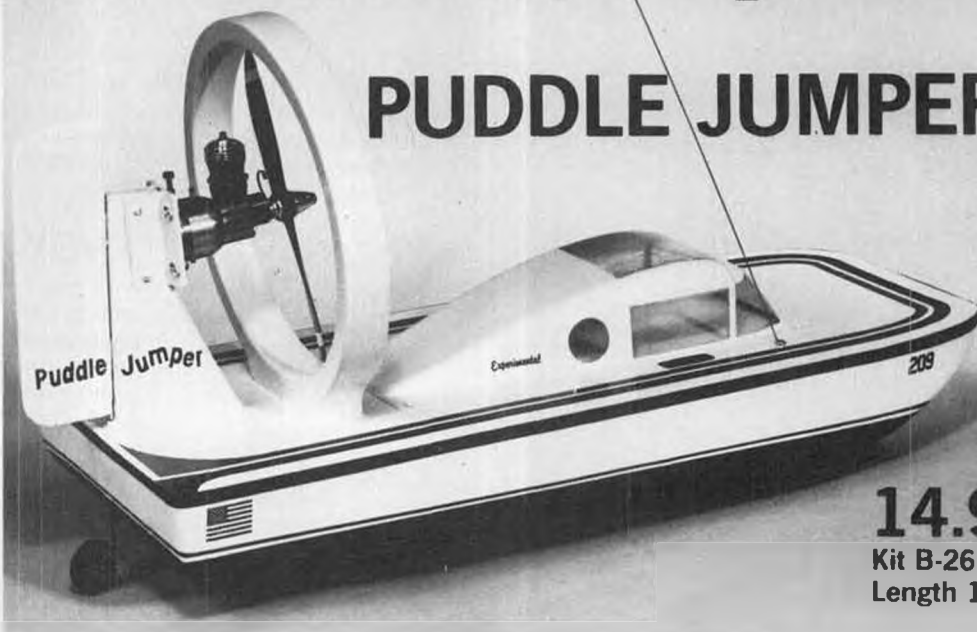
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... And it's so easy to build — both the rugged plastic hull and cabin are precisely formed. Main inner structure and deck are accurately die cut plywood as is the balsa. Included is nylon motor mount — easy to follow step by step plans, decals, hardware etc. See this beauty at your dealer.

and Power props.

It all started when Gus was curious as to the horsepower of various old engines and had no valid figures to rely upon. Gus has developed the slide rule on the basis of the standard HP formula:

$$\text{H.P.} = \frac{2 \times \text{RPM} \times \text{Torque}}{33,000}$$

He found after considerable trial and error that he could reduce the error in horsepower as low as 2%. Strangely enough, with the large propellers, the error increases to 4%. Smaller props and engine combinations should be at 3% error accuracy. However, for comparative purposes, the error washes out, so even the simplest vibratoc or "Thumb Tack" can be used.

FLORIDA FLASHES

The latest letter from Terry Rimert informs us that the Rebel Rally went off real great, with equally great weather. Although the meet was hotly contested, it did suffer from lack of the Southern Florida group.

When it was found that a rubber event was not on the "menu", enough modelers complained and the accommodating Contest Committee set up an event. In even less time, George Perryman won the event utilizing a Lanzo Stick. Beat out Jim Lewis on the fourth flight flyoff. That took care of the morning flying, so Perryman used the same model in Unlimited Rubber.

According to Terry, George was trying for the 500th flight (or something like that) on the same rubber, when it broke, wiping out the side rather neatly. About this time, Ron Sharpton started putting up some fine flights with his Korda Dethermalizer. Needing an insurance flight, Perryman cranks up, misses the good air, and comes down in 106 seconds. George then started to repair his Lanzo. Bob Willis and Terry were helping by needing George on how good Ron was doing. Unfortunately, Ron succumbed to pressure and blew his last flight.

However, no one was paying any attention to a junior, Robert Willis, who was doing very well with a Korda Wakefield. Sure enough, Perryman, and his prize winning model, "Great Speckled Bird", got beat by an old timer in his event (unlimited rubber).

Actually George was as pleased as anyone to see this happen, and demonstrated so at the trophy presentations by personally bowing to Robert and flourishing his hat. They take their rubber flying rather serious, don't they?

In the other O/T events, Frank Carney won Ignition Class with a fine flying Spitfire powered Playboy; Ron Sharpton cleaned house in the O/T Glow powered event using a Strato-streak, and Bill Kirby won the .020 Replica Event with a very good flying SoLong. How's that for action?

WHAT WERE YOU DOING 30-40 YEARS AGO?

Phil McCary came up with an idea that may make a regular feature in this column if you, the reader, have a mind to share your experiences when first starting in modeling. This should be a lot of fun, so we'll let Phil lead off with the following:

"In these days (late 1940 or 1941), in Grand Junction, Colorado, I don't think there were over ten model builders in the entire area and to boot, none of us knew anything about trimming a model airplane. My first successful gas job was a New Cyclone Lancer 48 with a Brownie for power. Having been built in 1940, the model had one of the first Brown E motors. The plane made over 100 flights before it burned up in a fire.

"Prior to that, I was building rubber models and gliders. My first attempt at an airplane was about 1936, with a 10 cent solid model. Unfortunately, I attempted to build it in the back seat of my dad's car. A disaster! So you can see, I was loaded with experience for model airplanes.

"We didn't know it at the time, but Western Colorado was far behind the times in the production of competitive model builders. The only other gas job I ever saw was a Flying Quaker equipped with a Brown D. Never saw it fly.

"Came the first contest I ever wit-

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MINI-FLEDGLING

If you've seen or flown our Fledgling it will give you an idea of the great performance you can expect from its little brother. Maintaining top quality & simple construction, all balsa & plywood parts are accurately die cut including full length fuselage sides, includes R/C hardware, decals full size step by step plans. Recommended engines .049 or .051 & 2 channel R/C although other suitable equipment may be used.

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nessed, in Salt Lake City, Utah in 1942, I was amazed! Needless to say I was overwhelmed at the difference between a competitive flyer and a country hayseed like myself. I was so proud of my American Ace 54 with a Forester 29 up front before the contest. I think I placed last in Class B with a list of 50 entries. Boy! Did they show that dude from Colorado how it was done!

"Later on, the family moved to Salt Lake City, in late 1942, and I joined the Salt Lake City Gas Hoppers. With the war drafting everybody, the office of President sorta fell to me by default. I wonder if there are any members left or if the Gas Hoppers are still in existence. Maybe someone out there may know."

GOOD NEWS!

Last issue we stated that it was a shame that the East State Championships would feature only free flight. However, in a letter from Sears McCarrison, SAM 16 (a division of South Shore R/C) will run five events at the August 14, SAM 16 Contest at Bridgewater, Mass. Tom Acciavatti will C.D. the following events: Class A, B, C, Antique, and Texaco.

Stan Colson and McCarrison will run all the regular free flight events, such as Rubber, and glider. Enough for everyone!

SAM 27

The latest contest staged by the

Marysville contingent under the banner of SAM 27 nee 21, may well be the last according to Hal Cullens. The boys up north are very seriously considering an organization of their own after a very successful meet on May 15.

The field, a meadow nestled in the Sierra Mountains, was about 15 miles northeast of Marysville. As Ted Kafer put it, the weather was a little chilly (there's snow in them thar mountains!) but the reception wasn't.

Since the Loren Schmidts set the pace with their after-contest picnic, the Nicholaus (Neva & Nick) had to go them one better with barbecued chicken and all the trimmings.

The contest, which was not heavily attended by SAM 21 members because of the distance (and the MAC Show at Anaheim on the same day!) was dominated by the Bekins family, Don and son, Lawrence. Between the two, they won first and second in .020 Replica, and Don won first in Texaco and second in the Limited Engine Run Event. Whew!

With the third SAM O/T R/C club now shaping up, it appears the long awaited round robin of competition will be a reality by 1978. This old timer movement can do nothing but grow!

THE WRAPUP

Trust that ingenious fellow, Ken Sykora, SCIF Newsletter Editor to come up with a real gem to close off this column (we'll steal anything).

Words to Live By:

(Overheard at the 1939 Wakefield Finals at the Detroit Nationals):

Fred Bowers: "You go first, Dick. I'll wait for some air."

If that don't get you, you ain't no old timer, Keep the faith, men! ●

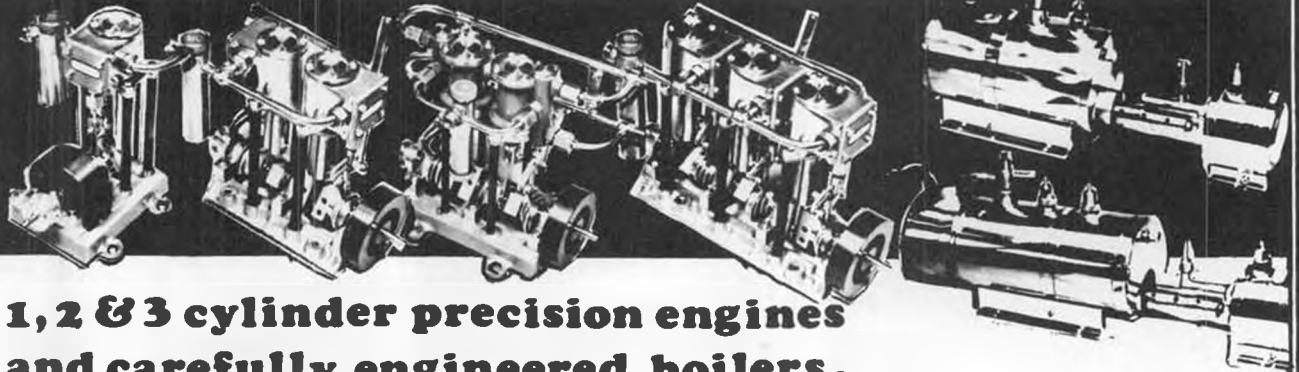
ProductsContinued from page 35

voltmeter, as used in other systems. Also, it is not hooked up as an RF voltmeter, as are those on a majority of transmitters. This one is actually reading collector current of the final RF transistor, the product of which, if the stage is working properly, is RF output.

The obvious question is, "Which is better?" They all have their advantages, and unfortunately, their disadvantages, which is why we are seeing some dual-faced meters, as on the Kraft Seven-Channel and Signature Series. There is some relationship from one value to the other; the correct battery voltage has to be present before the normal RF indication will occur. So it follows that normal RF output is indicative of correct battery voltage. In the case of the Cox/Sanwa, normal reading of the collector current is also an indication of correct voltage, and the manual lists the proper meter readings for safe, low batteries, or charge required.

Confused yet? Well, we hate to make

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SAITO STEAM ENGINES, THE UNQUESTIONED FINEST, AVAILABLE IN 4 SIZES. IDEAL FOR R/C

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BOILER/BURNER ASSEMBLIES, B2E, 5"H x 10.2"L x 3"W, \$74.95. B2F, 4.6"H x 7.2"L x 3.2"W, \$94.95. B3, 4.6"H x 8.6"L x 3.2"W, \$109.95. Safety valve equipped, running time 15-20 minutes. B2E for T1D & T2R engines, B2F or B3 for T2DR or T3DR engines. B3 provides greatest running time.

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it worse. So far, all we have checked for is batteries and output. As far as the encoder is concerned, we are just as blind as the completely meter-less system, on this and on all other systems. For practical purposes, remember that while two meters are better than one, the single one has served well for years, and regardless of where it is located in the circuit, it is presenting valuable information. It is up to you to learn what it tells you, and use that information intelligently. Assuming you are getting normal readings, a range check before every flying session and a complete control check before EVERY flight, tells you about all you can normally know about the condition of your set.

Anyway, back to the collector current. In this particular transmitter, the measured current is 150 mils. Total transmitter current consumption is 205 mils; thereby giving you a theoretical 'transmitter on' time of two hours and twenty-five minutes, assuming a 100% capacity battery. Play it safe guys, after you've flown for two hours, LET SOMEONE ELSE USE THE FREQUENCY!

Inside, the Cox/Sanwa transmitter follows average present construction methods. All the electronics are on one board. The final amplifier transistor is a single 2SC1589, in a TO-220 case. I have not been able to obtain any specifications for it in RF service, however it is

claimed to be handling 750 milliwatts of power in this system and must have been picked with that in mind.

The only deviation from the normal, electronic-wise, is the use of an active voltage regulator that feeds the oscillator and all the encoder stages. The measured voltage at these points is 6.45, only dropping to 6.25 with only seven instead of nine cells connected. Under these conditions, the encoder is not affected, and the system appears to operate normally, but is doing so at reduced output. Unfortunately, the lower indication on the meter is too slight to be noticed by many of us. The reduced output will show up as reduced range, both in the air and on the ground with antenna down. The all-important range check before every flying session becomes much more important with this system, as it appears that you could easily be flying around with two dead cells, and enough range for your average flying. Your first clue that things are not normal will probably come at the worst possible time, such as on a long low approach when your airplane will not be in the best receiving position.

By comparison, most transmitters do not have this type of voltage regulation, and will most often die, or get definitely erratic even with just one cell gone. There are possible advantages to both methods; which can be kicked around for the next three issues.

Suffice to say that this one is a bit different and should be treated as such.

The charger is internal, and plugs into a polarized connector on the back cover. There is an internal diode in the negative line which prevents the battery voltage from appearing at the socket terminals. This does not allow easily-made voltage checks, adding somewhat to the possible problem just mentioned.

And if you didn't already think of it, you will not be able to use your "Super Cycle" or similar battery capacity checker with this nine-cell system. All of these checkers are set up for eight cell transmitters. Nor can you install a pre-set type of low voltage detector, for the same reason.

As a matter of possible interest, the cells used are not of the high rate charge variety, and obviously, a high rate charger is not available.

Normally furnished as a Mode Two system, the handbook covers in great detail the steps necessary for conversion to Mode One. In this respect, there was something of a funny in a recent issue of Flying Models. Speaking of the Cox Two-Channel transmitter, which comes only as a Mode One, the author wrote:

"An expert, however, would have difficulty flying a fast plane, such as a 1/2A pylon racer, with this stick configuration." True, 1/2A's are going fast these days, but are still slower than Quarter

Midgets and Formula Ones. In QMRC, the 1976 First Place Point Winner was Bob Root, also well known in Formula One and FAI racing circles, and who holds the closed course fastest time for QM flying his own design Li'l Cobra. And the fastest Formula One time ever recorded, to date, 1:13, was flown by Ron Gilman. Both of these guys are Mode One flyers! Or is the whole point that these guys are not experts, and therefore don't have the problem referred to?

If you haven't already guessed, I am a Mode One'r.

The servos are described as operating over a 90 degree arc, however, in this system, I found some variation from servo-to-servo, and from channel-to-channel. No combination was enough to render the system completely non-flyable, and while it is realized that this is not a so-called "Super-Radio" at a "Super-Price", the initial adjustments to get them closer, at least on the channels, would have taken very little extra time. We can hope for some improvements in that respect.

The trim travel range averages about 20 degrees of servo travel from one extreme of lever travel to the other.

A clip is located on the front panel, to which a neck strap (also provided) can be attached for flying European style.

RECEIVER

The receiver is encased in a 2-9/16 x 1-5/8 x 13/16 inch dull black plastic box, held together with four tiny screws, two on one end on the top, and two on the other end, on the bottom. It looks extremely rugged and should do well in protecting the insides at times when your luck runs out.

I was impressed by the extremely neat board layout, and smooth soldering, obviously not hand-done. The metal lands are wide, with ample separation, and in this case, beauty is not only skin deep . . . the board is of the plated-through type. This means that the component leads are, in effect, soldered into a small tube, not just to the foil side. Hard to work on, but should do much to cut out vibration-related problems.

Surprisingly enough, no IC's are used, even for the decoder, which has become, more or less, a common problem. What at first glance might appear to be IC's in a package different from the U.S. variety, is in reality transistor and resistor arrays consisting of a number of components in a single package. The results are some space savings, and since less leads are involved, must add to the reliability. As in the transmitter, more than usual voltage regulation is used, with the entire receiver getting the treatment with the exception of the output voltages to the servos. The active voltage is 3.0, dropping to 2.75 under one-cell-out conditions. The airborne

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system should function normally with three cells, with only some reduction in servo speed and power, but no noticeable reduction in range. The three cell operation is more than enough to get you home safely, and as a feature much touted by other manufacturers, we wonder why it is not mentioned in the Cox literature.

The only other departure from normal, circuitwise, is the use of four instead of three IF stages. No selectivity figures are available, but they should be excellent for a properly tuned receiver.

All power and servo connections are made to male plugs mounted directly to the PC board, without wire harnessing. All the plugs are on one end, clearly marked, and the holes in the top case provide polarization by permitting the

mating plugs to be inserted only in one manner.

For some unknown reason, the end on the PC board on which the plugs are mounted, in contrast with the rest of the board, does not have the lands plated, or otherwise protected. Since raw copper does not do well under corrosive conditions such as even mildly salty seashore air, we treated ours to a coat of clear 'Krylon'. If you do yours, DON'T GET IT ON THE PINS!

SERVOS

The Cox/Sanwa servos, as furnished with the four and six-channel systems are classified as 'standard' servos, somewhat larger and heavier than the 'micro' servos which are presently delivered with the two-channel systems only. These servos are identified as number 80311, normal

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rotation (counterclockwise for right stick movement) and 80312 reversed (clockwise for right stick). They are constructed of the same dull black, almost gray plastic used for the receiver case. Long leads (10 inches) make up for the flexibility of installation which is lost by plugging directly into the receiver.

The servos are 2-1/2 inches long, 1-3/4 inches high, and 3/4 inch wide, counting the mounting ears and output wheel. The latter is a 1 inch six-arm star with holes in each arm at two positions. Also available and furnished are four arm devices, 1-1/4 inches long. Instead of the normal square output shaft we are used to seeing, these fit onto a multi-spline shaft and are held on by a large sheet-metal screw threaded into the plastic. The mounting ears do not contain rubber grommets as we are used to, but have a grooved inverted 'L'-shaped piece of rubber, with brass bushings for the mounting screws, to provide vibration isolation. It looks bulky and somewhat ugly, but since it is there for other reasons, looks can be overlooked. As for the bulk, this is not an airborne system for very small airplanes any way you look at it, and less rubber around the servos would not change that.

Going inside, we see standard practices

followed in the gears and shafts, but a deviation from normal US methods with the use of a completely sealed and assembled pot. We have found similarly constructed servos to be less liable to develop pot problems, as are sometimes found in using carelessly assembled pots built into the servo cases from individual shafts, wipers, and elements.

The amplifier itself, as crowded a circuit board as I have yet seen in any R/C system, is designed and built around the EXAR 2261 series IC, with external driver transistors which contain surge protection diodes and resistors in the same package. The IC itself is marked, not with EXAR 2261, but with some designation not previously seen. This is a standard for a specific user and branded with 'house numbers'.

The servo performs extremely well, showing a current consumption of 8 mils at rest, and an average of 180 mils during travel, with no load applied to the output. Travel is smooth, with an extremely narrow deadband, but little evidence of 'nervousness' or ticking at center. In fact, in the thumb-to-control surface chain, if you do an acceptable hinging and pushrod installation job, the weak link is not going to be these servos. It will be the pivot in the closed gimbal, which, while good in the gimbals used, still lacks the precision possible

with open gimbals.

The amplifier was mentioned as being crowded. This is the technician in me speaking . . . how are you going to work on something like *that*? You don't. But then, you really don't fix many IC servo amplifiers. The external components are few, and if the chip goes, any attempt to replace it soon bypasses in labor charges the cost of a completely new amp.

BATTERIES AND CHARGER

The batteries are "Sanyo" brand, which in my experience, are excellent in all respects for R/C use. They are kept alive by a dual transformer charger, with LED indicators to let you know charging is taking place. The charge current for the receiver battery is 43 mils; 38 mils for the transmitter battery. This is somewhat lower than the 1/10th rate recommended by most battery manufacturers, but even at that rate, 14 hours should fully charge a healthy battery. A "Super-Cycle" test of the receiver battery, charged with the system charger according to instructions, and then charged at a 50 mil rate, showed no appreciable difference in charged capacity.

ACCESSORIES

The switch harness, an average type with three pigtailed, including a charging lead, uses a small dual switch wired in parallel. This should decrease the probability of vibration-induced troubles. The switch is completely enclosed to protect it from dirt and oil, and comes with a red and black 'On - Off' plate for external mounting. The plugs, as on the rest of the system, though larger than on most systems, grip firmly, and provide enough body for easy grasping during installation and removal. The internal pins are gold-plated.

Servo trays are provided, a 2+1 type which holds two length-wise and one across, with switch mount, and a single for side mounting of an aileron servo. The triple mount requires 2-1/2 x 4-3/4 inch mounting space, plus 1 inch above and below the tray for clearance. Included also is an 11 inch extension cable which can be used with either the

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A small but comprehensive owner's manual is included, telling all you need to know about the installation and use of the system. FCC licensing information is included, as is a page of FAA Advisory information regarding flying safety.

A complete line of accessories is available for the Cox/Sanwa R/C systems, including 500 mah receiver batteries in square or flat configurations, and a 225 mah pack with charging adapter. Replacement servo output arms and wheels, and trays; and various special duty servos for retracts and for high torque or marine applications can be purchased.

WEIGHTS

The all-up weight of the airborne components, including trays, switch harness, and a 500 mah pack is 15.7525 ounces, on our "Friden" postal scale. No claims are made that this is the smallest or lightest set around, and while it won't really make much difference if you are into .60 powered 'bombs'; the extra weight and size should be carefully considered if you are thinking of the smaller airplanes.

FLYING

Proof of the pudding is in the flying, which I think has to be done in large amounts before a valid opinion is formed. In this case, I've been left out completely, as that fun part of the project was done by Bob Upton, who tells all about his experiences with the Cox/Sanwa up in the Wild Blue.

COST

Cox/Sanwa systems are priced at \$219.95 for the three, \$299.95 for the four, and \$369.95 for the six channel systems, on any of the 72 MHz frequencies. Six meter systems are available only on special order. Only two-stick systems are being manufactured.

Service is currently available only at Cox Hobbies, 1525 E. Warner Ave., Santa Ana, California 92702 (Phone (714) 540-8200) both for the six months warranty period, and for non-warranty repairs, when needed.

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Review of the COX/AIRTRONICS "ACRO STAR" kit, built and tested by BOB UPTON . . .

Lee Renaud, the brains behind Airtronics Kits, a division of Cox Hobbies, Inc., designed an attractive semi-scale biplane called the "Acro Star", based on an EAA aircraft.

This kit retails in the high 80's and is complete with all the necessary hardware. When I say complete, the hardware package even includes wire to wrap the cabane struts prior to soldering!

The Acro Star is a large model as compared to other .60 powered biplanes.

The plans are well drawn, easy to follow, and complete in every detail. While the kit is probably not for the novice builder, it should present no problems for the average R/C modeler.

The model is probably one of the sturdiest I've built in years. The fuselage sides are 3/32 plywood from firewall to tail post, the 1/4 inch 5-ply firewall being *nailed* to the plywood sides! The forward section of the fuselage is doubled with additional plywood and includes spruce side pieces and stringers. The cabane wires interfit with slotted hardwood rails mounted across the fuselage. It is a simple matter to remove the cabanes by sliding the ends out of the

slotted rails . . . very handy during construction and painting. All parts are pre-cut and machine sanded to exacting standards; they fit as advertised! The landing gear is pre-stamped .090 dural aluminum, screwed to a 1/4 inch plywood landing gear block, and is also easily removable during construction.

The wings are straightforward in construction, utilizing the sheeted leading/trailing edge concept with cap strips. The use of spruce spars with webbing between main spars enables the builder to use the wings in an emergency for walking planks to cross small streams, paddles for canoes, and the like! I can guarantee one and all that none of Lee Renaud's models will come apart in the air if built per the plans!

I deviated from the plans in one respect. I used the torque tube concept for the full-span ailerons on the bottom wings. There's nothing wrong with bellcranks . . . I just prefer torque tubes (I guess I've built too many Formula 1 racers). In addition, I built "N" struts by laminating soft .025 aluminum with 3/32 mahogany plywood both sides, and used small wood screws to join the "N" struts with the wings. The top wing screws to the center cabane struts, and the bottom wing is doweled in the front

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and secured with nylon screws at the trailing edge.

I glassed the fuselage and tail group with light-weight glass cloth and K&B resin, and covered the wings with silkspan. After applying several coats of butyrate dope to the silkspan, I covered the silkspan with silk (expensive). The well-doped wings and fuselage were then primed with K&B primer after the butyrate dope had cured (gassed off) for several days. The model was then sprayed after final sanding with aircraft butyrate dope (white and orange, with black D-J trim striping).

Jerry Nelson, of Midwest Model

Supply, sent me a new Schnuerle ported, HP61 which fills the front end of the Acro Star very nicely. This engine fired off on the first flip right out of the box, and idled back like it knew what it was doing; very impressive. This is a very fine engine, and I have about a dozen flights to date on the mill, with the carburetor on the "fat" side, and its performance has been flawless ... a real powerhouse.

Cliff Weirick, the Cox/Sanwa man, provided me with a 4-channel radio on 75.640 for the Acro Star. This radio, to date, has also performed flawlessly. It has a solid feel, the servo resolution

is very good, and they are powerful little buggers. I particularly like the large trim range on the servo. This feature makes first trim flights a pleasure because there is enough control surface movement to compensate for out-of-trim conditions.

My Acro Star weighs 7-3/4 pounds, less fuel. It can probably be built lighter, but then I've never been known to build light models, so why spoil my "hacker" image.

I must say, the Acro Star is a very smooth and groovy machine. I've "floundered" through most pattern maneuvers with some degree of recognition and the snap maneuvers are an absolute delight to perform. Those of us who are old timers in R/C tend to get a little blasé about our hobby at times. This model is a pleasant surprise for a change, and I thoroughly enjoy flying it.

The Acro Star, HP61, and Cox/Sanwa Radio combination is a definite winner, and is heartily recommended by yours truly.

Pylon Continued from page 37

growing, with 28 racers showing up to contest who is best in the Midwest. First place was taken by Dennis Bielick, 2nd by Floyd Fitzgerald, 3rd by Bill Roland, 4th by Art Arro, and 5th by Todd Leslie. Fast time was shared by the top 3-placed winners, each of whom was able to turn a 1:42.

Formula I had a somewhat smaller turnout, but still allowed for a fast and furious five rounds of competition. Bill Preis walked off with 1st place, Jim Gager took 2nd, Bill Weesner 3rd, Bob Onori 4th, and Allen Booth 5th. Winner Preis also turned in the fast time of 1:21.01.

So much for now . . . see you next month. And remember, I can't report on your races if I don't know about them!

C/L Continued from page 43

shop owner is on the ball, he is able to offer Kelly props in several sizes, which include 7x3-1/2, 7x5-1/2, 8x7, and 10x6. One of our local shops has all of these sizes, and he is getting them from Jerry Nelson, Midwest Model Supply Co.

Surprisingly, the props come almost ready-to-use. The flashing has been removed and the props are just generally very clean. In fact, a few around here have actually run the props without the benefit of any clean-up at all. Sure, it is the quick and dirty way to do it, and they have to be giving up a little performance, but the props can be run as-is, if you absolutely must.

THE NAVY COMBAT TEAM LIVES

You probably have never heard of the Navy Combat Team, have you? Neither had I, until Gary James informed me

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that he is now the Captain of said team. The fact that Gary is also the only member of the team, gives a clue as to how seriously we ought to take the whole matter.

THE ULTIMATE IN CONTEST-GOIN' VEHICLES

The Shady Acres Combat Team is world renowned (well, almost) for showing up at big contests in several outrageously large motor homes. Naturally, they do their best to make everybody feel inferior, claiming that they have the last word in high-zoot contest transportation.

An example:

Lowell Paddock: "Hey, have you guys got a tub over there where your tents are?"

DD: "Of course not, stupid."

Lowell: "Well, I sure wish you did. I've got a sore knee that I'd like to soak, and I can't do it in the shower I've got."

Now, when you are heating water over a Coleman stove, just to get hot water to wash dishes in, that kind of stuff is grating, to say the least!

Although my van doesn't have a shower, or even a water bed, it will be a really super contest-goin' truck when I get the interior in it, and all the little details planned out to make it something we can live in for a few days. So I regard the van as the way to go, and figured on having one of the best set-ups at the N.W. Regionals.

But all of us were completely upstaged by a very rare breed . . . an honest-to-gosh Speed flier . . . none other than Sam Snyder, who in the past, has arrived at the Regionals in a huge motor home, pulled in driving a brand new (get this) Rolls-Royce! That was just a bit much, but then we all felt a little better when it was noticed that the Rolls had a dent in it already . . .

NEW TESTORS .049

It seems rather difficult to make the transition from a Rolls to a new .049 engine, but let's try.

First off, let's not let past experiences with Testors .049 engines get in the way. You and I both know that Testors has, in the past, had some problems with this size engine. The important point is that Testors has been well aware of the problem also, and has been working on a new reed-valve 1/2A engine for awhile now. This is the Series 8000 engine, due to be released. I have a couple, but haven't had the chance to run either one yet. One will be tached on some test props, and then flown on a 1/2A profile Stunt plane. The other will be subjected to a Dirty Dan Destruction Test, which means we'll see just how much abuse this engine will take before breaking something inside. A 3x2 prop and 50% fuel ought to take care of that.

Right now, all I have to go on for performance figures are some graphs

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sent to me by Bill Netzeband (funny, I seem to have heard that name somewhere before), chief design engineer for Testors. I think we can trust Netzeband to tell it straight (if we can't, we've got real problems) and the graphs indicate the Series 8000 engine will outrun a Cox Black Widow. That makes it the highest performance reed-valve engine presently available.

The Series 8000 engine will sell for \$11.00, a quite reasonable price, especially in view of the fact that the engine is complete with prop, muffler ring and needle valve extension. Lately, the price of 1/2A engines has not been as much of a problem for 1/2A fliers as has been the price of glow plugs. If you are outraged at paying \$1.95 for a high compression glow head, you'll no doubt be interested that glow heads for the new Testors sell for a much more reasonable 75¢.

HELLO TO THE ONE MS. WHO I KNOW READS THIS COLUMN

The other night, Bob Davis, developer of the Davis Diesel head for Cox .049's, and I, had another in our seemingly endless series of very long (in distance and in time) conversations via Ma Bell's humming wires. Bob mentioned something about his wife being a faithful reader of this column, and I thought that was pretty cool . . . until Bob added that she is into something related to behavior studies, or something like that. I was left with the impression that I am being analyzed through this column and that Bob's wife is having difficulty in figuring me out.

I just can't understand that. Next time Bob calls, I think I had better have a talk with his wife about this. Besides, I want to know if she has ever figured out Bob Davis, as he seems to be plenty strange in his own right.

SBD Continued from page 46

alignment. Sand the leading and trailing edges at a slight angle, then epoxy the wing panels to the center section. Dihedral should be about 1-1/2 inches when measured at Rib 5. Leadout guides



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between Ribs 3 and 4 on the left wing panel are made from scrap 1/8 sheet balsa and aluminum or brass tubing. Use thread or fine wire to wrap together, cover with epoxy, and install between ribs. Now cover the bottom of the wing with 3/32 sheet balsa. Ambroid or Titebond glue can be used here. Add about 2 ounces of weight to the right wing, then cover the top with 3/32 sheet balsa. Leave the center section open between No. 1 ribs.

The trailing edges of the wing, including the ailerons and tips, are made from 1/2 inch sheet balsa. If you plan to add flaps, make sure you recess the undersides to allow for the flaps. Shape

the trailing edges and the leading edges, using heavy sandpaper, to follow the airfoil shape of the wings, after they have been glued on. Flaps, if used, can be made from 1/16 to 3/32 sheet plywood, styrene, or aluminum. Mine were made from styrene, which allowed neat and clean holes to be made to duplicate the perforations. This is a lot of work but sure looks neat. Flap hinges were standard commercial plastic, and so was the flap horn. The connection between the center flap and outer panels is by the use of piano wire and small aluminum tubes epoxied to the surfaces.

The wing should be pretty well done

by now. Cut out all the fuselage formers; 1 through 4 are made from 1/8 plywood, while 5 through 7 are 1/8 balsa. The following sequence must be followed closely to insure that everything goes together properly. Epoxy Formers 3 and 4 to the wing center section, making sure that they are perpendicular to, and touching the bellcrank platform. When dry, slide in the tank, through Former 3. You did cut a hole for it, didn't you? Next install Former 2, also add the motor mounts at this time, and epoxy them to Formers 2, 3 and 4. This is your last chance to make sure everything is aligned properly; check to see that the motor mounts are parallel.

Install the 1/16 music wire elevator pushrod on the bellcrank and add the throttle pushrod. Leave both a bit longer than necessary, for final adjustment later. Cut out the fuselage sides from 1/4 inch balsa, and glue to Formers 2, 3 and 4. When dry, install the remaining Formers 5 through 7, while clamping the rear of the fuselage together using a 3/8 inch wide temporary spacer. Now you can install Former 1 and the 1/2 inch balsa cowl ring. While you are up front, position the engine in place to mark location of engine bolt holes, drill same, and install blind nuts. Also, this would be a good time to make final bends and adjustments for the throttle pushrod. Use of an adjustable threaded link makes this much easier.

All tail surfaces can now be cut out and shaped. Keep them light. I used a Veco horn and plastic hinges on the horizontal tail surface, which is made as a unit and then epoxied to the fuselage sides. Attach pushrod to horn prior to installation. Next step is to make the tailhook platform, with tailwheel wire installed, hook added, and attached with "J" bolts, and the hook release spring installed. Spring tension should not be so tight that model noses over, but sufficient to keep hook and flaps (if used) down during low speed flight. Now epoxy this assembly in place. Finally, connect the flaps to the tailhook with 1/16 music wire. Adjust so both come down about 45 to 50 degrees. The lower fuselage rear bottom balsa block is then glued in place. Prior to installation, it will be necessary to hollow it out somewhat, plus cutting a slot to clear the tailhook and tailwheel wire. Now add a piece of 1/8 inch sheet balsa under fuselage behind the trailing edge of wing. Carve and shape the rear fuselage block to an oval cross section.

To complete the cowl, either use blocks of balsa, or stack several pieces of 1/2 inch sheet together between Formers 1 and 2. Rough carve cowl outline and then finish with progressively finer sandpaper. Cut out an access hatch for the engine, and then hollow out the inside of the cowl and hatch. Depending on the engine used, holes will have to be cut in the hatch and cowl to clear the

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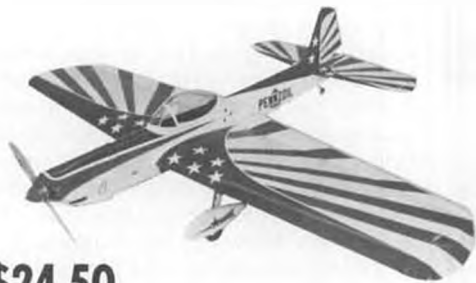
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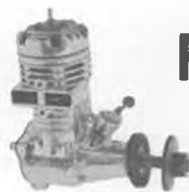
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cylinder head, throttle, and needle valve. Also install fuel line from the tank to the engine, and install the tank fill and vent lines. Make sure the tank is securely epoxied in place; wedge with scrap balsa as necessary. Plank top of the fuselage with 3/32 by 1/4 inch balsa strips. Bevel edges slightly to get a good fit. Sand and fill in cracks with plastic balsa. Fill in the area under the canopy with 1/8 inch sheet balsa.

The fuselage tailblock, made from scrap balsa, is rough-shaped and temporarily glued in place. Final shape to follow fuselage outline, then remove and drill hole for the hook release guide tubing. Also hollow somewhat to provide clearance for the elevator horn. Attach a piece of 1/16 music wire to the elevator horn, then re-attach tailblock to fuselage. Slide release wire through tailblock hole, then slide in tubing guide and secure with glue.

Wire-wrap and solder a hook release wire to the tailhook. Adjust so that almost full down control is required to release the hook. The vertical tail surfaces can now be installed. I caution again to use light balsa. On my model, the rudder is a separate piece attached to the fin with thin aluminum hinges. This allows changing the rudder offset as needed. This also makes it easier to replace the rudder if the model ever flips over. A little planning ahead may

ease the repair task.

All the woodwork . . . er . . . balsa-work, should be completed by now, except for adding a scrap piece under the wing behind the cowling. Additional details, such as airscoop and wing fillets, can be added. Fill in cracks, dents, etc. with plastic balsa, where needed.

I prefer not to install the canopy at this time, to preclude damaging it during the initial finishing process. This also allows painting the cockpit floor to avoid the bare balsa look. Since I'm constantly experimenting with different finishing processes, I used polyester resin over the bare balsa on this model. Only two coats were required, but brother, did I have to sand! There has to be a better way. I do suggest using the resin to fuel-proof the inside of the cowling, plus using lightweight cloth for strength around the outside of the cowling.

An alternate method for finishing the model would be the good old dope and sanding sealer method. Some modelers also like to use either silkspan or silk to cover the entire model. This not only adds strength but provides a good base for the final color. I used Hobby epoxy paints because of their excellent fuel-proof qualities. Before adding the color, the canopy should be attached, after cockpit floor is painted

either black or light gray. Also, don't forget a pilot. A Williams Bros. pilot bust was used, suitably painted up.

The model was painted the typical early WW-II Navy scheme of light grey/blue top surfaces, and light grey bottom. This was obtained by mixing small quantities of Hobby epoxy white into blue. Exact color is anybody's guess. The various color drawings and photographs I have seen, all seem to conflict with each other. Only several drops of black are needed in the white to get the light grey for underneath. As previously mentioned, the Guillow's decals were used to decorate the model, including the rudder stripes. Finally, a coat of flat clear was applied to protect the decals from fuel, and to give the whole model a dull appearance.

Trim the canopy frames with the light blue/gray paint, add the wheels, and finish off the leadouts. Install the engine and your ready to go. Make a final check of the balance point of the model, most likely nose weight will be needed.

Pick a calm day for the first flights, avoid full power takeoffs until you have a feel for the model.

Happy flying!

F/F Scale . . . Continued from page 49

but why it spiraled to the ground is still uncertain. I figure that it was simply too low to make a satisfactory recovery. Further testing should decide for sure. Jack gave me a solution for making the floats flex in case of a hard landing. I never mount floats rigidly on a model, and why I did it on this one, I'll never know. However, Jack's approach is quite simple and effective. I plan to make the necessary modification to make mine flexible (See illustration).

The idea is to make the float struts flex back on impact. This is accomplished by soldering the appropriate braces, but leaving two attached by rubber bands. As the float moves aft, the rubber band stretches.

Let's look in detail at how the pendulum in the Heath was made (See illustration). The prime requisite for a wing-mounted pendulum is that the thickness of the wing is sufficient enough to house the swinging weight. A thick wing also provides a greater slant to the pendulum, which is really necessary. **DO NOT** install the pendulum without it! A reasonably wide chord is desired since the weight is suspended between spars, and to have the most effective length, the chord should be at least 6 inches, preferably more. A good weight to use is a 1/2 oz. fishing weight, which is oblong in shape and has about a 3/32 hole running through its length. More weight would be required if the span of the model was much over 36 inches in span. I inserted a length of 1/32 piano wire into the hole of the weight. I then

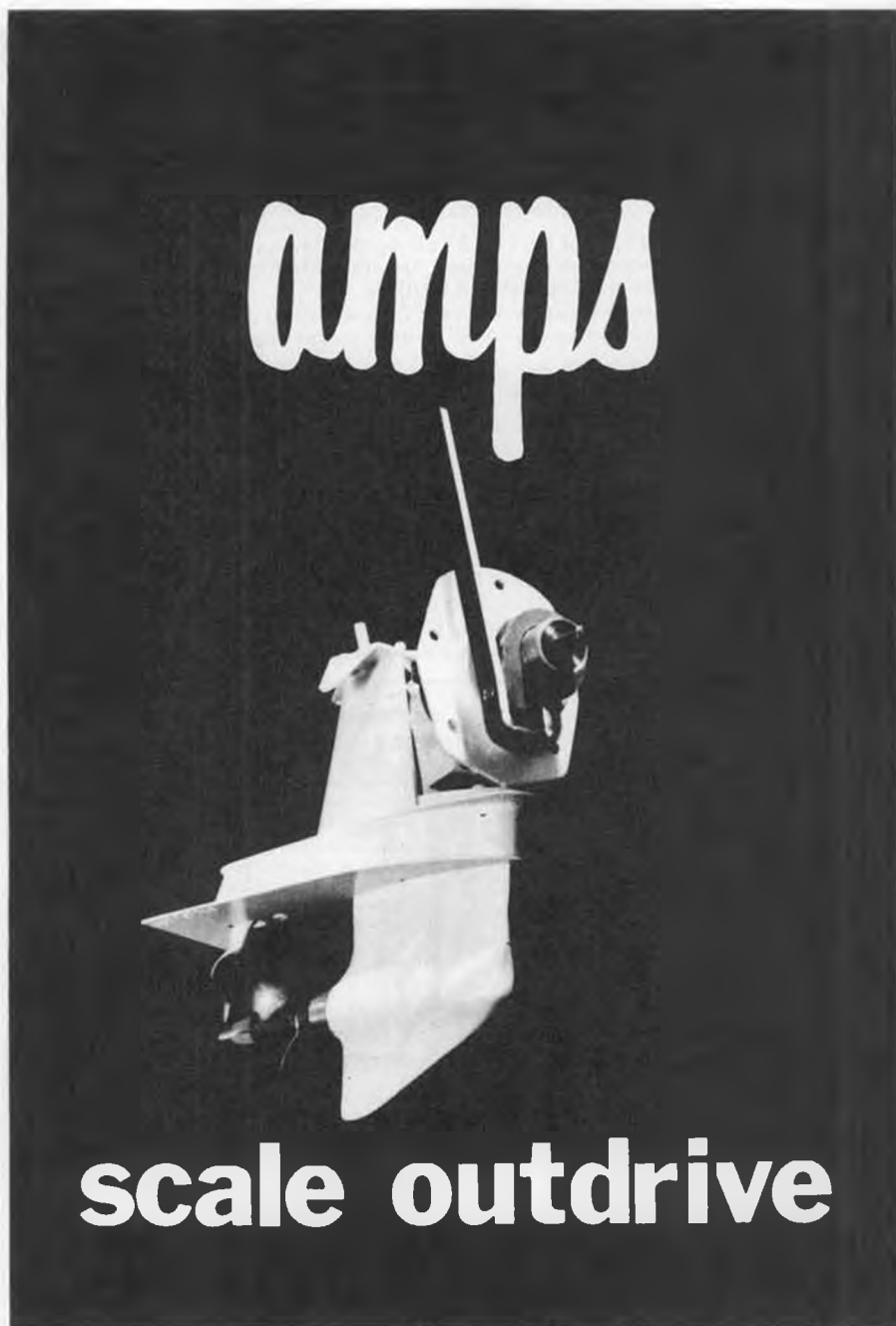
placed the weight in a vice and slowly began squeezing. It is important to keep the wire centered during this step. Once the wire will stay put, really give the weight a healthy squeeze until it is about 3/16 of an inch thick.

The next step is to prepare a short piece of 1/16 O.D. aluminum tubing the height of the main spar and Hot Stuff it *vertically* in the *exact* center of the wing. Make a hard balsa wedge with a groove in it to accommodate the tube, and glue it to the main spar. Please note the taper on the top of the wedge, as shown in the illustration. Next, measure the distance between the two spars. The length of the wire with the weight has to be just a bit shorter than the distance between the spars. It has to travel in an arc without hitting anything. Please note the downward angle of the weight! The bottom of the center section should be sheeted with 1/32 balsa, for both strength, and to provide a smooth surface so that the weight cannot come in contact with anything which would prevent it from moving freely. Obviously, any center ribs have to be "hollowed" out to provide for the swinging weight.

Before permanently mounting the pendulum in the tube, measure the exact length of the wire between the weight and the bend which goes into the tube. Divide this length by four, and at one fourth the distance from the bend end of the wire, silver solder at right angles a piece of .016 brass strip about 1/8 inch wide by 1/2 inch long, which has a 1/32 hole drilled at each end. This 4-to-1 leverage is necessary to overcome the air forces over the ailerons.

Let me digress for a moment. One tool which I have found to be so invaluable, and which was initially purchased for the construction of my full size biplane, is a Whitney metal punch. It comes as a complete set in a metal box, with 3/32, 1/8, 5/32, 3/16, 7/32, 1/4 and 9/32 punches and dies for \$20.75. These are available through most good tool houses. If not available near you, write to Aircraft Spruce and Specialty, 201 W. Truslon Ave., Fullerton, Ca. 92632. Just provide a few extra coins for postage. This punch is really ideal for making washers from 3/32 through 9/32. This way you can have an exact size hole for whatever wire size you are using. It's also good for punching out thrust bearings for rubber models, or of course, punching out rivet holes for "biggies" as well. Small washers are needed for keepers in any pendulum set-up, and this punch is just the ticket.

To me, the biggest pain about this type of project is making separate ailerons and hinging them. I use the small Goldberg Klett hinges. The ailerons must also have brass horns, preferably with several holes in them for travel adjustment. The best way I have found to firmly mount the horns is to drill several small holes in the area of attach-



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location. Check the movement of the bellcranks. If they rub against a rib, relieve that area so that contact will not be made. Bend the length of wire from the bellcrank to the aileron horn for both sides. Next punch a series of holes in the ribs which will accommodate the push-pull wires from the pendulum to the bellcranks. These holes should be just large enough so that the wire will not touch any of the ribs while moving back and forth.

The last step in assembly is to lock the ailerons and pendulum in the neutral position. Measure the length required for the 1/32 push-pull wires. Make a right-angle bend at each end, leaving about 5/32 at each end of the bend. The wires are then shortened about a 1/2 inch. Make the cut so that the gap is between two ribs, rather than straddling a rib. The push-pull wire halves are then joined together by soldering them into a brass sleeve. The reason for doing this is to provide fine adjustment and insure uniformity in length on both sides. Once this is done, place a keeper at the end of each bend. I punched several discs out of plastic, then punched them with the 1/32 wire and slipped them in place. A drop of Ambroid or equivalent was used to insure that they would not come off. Do not use Hot Stuff here. I know that it is tempting, but the way that stuff travels, you'll lock up the whole system!

Try it out. Bank the wing from side to side. It's really neat how everything works . . . at least it better! If it doesn't, check to see where you might have a bind, etc. It will be a pain to discover something isn't right after the wing has been covered.

If you feel you still have too much movement, try some of the other holes in the aileron horns until you are satisfied. One other way to restrict movement is to install a "U" shaped wire which straddles over the pendulum, near the weight. One last comment . . . If you do not use the "U" shaped wire over the pendulum, glue a wire from rib to rib just above the pendulum shaft near the weight. What this does is to keep the pendulum from punching through the covering on a hard landing (I don't want to use the word crash since this is what we are trying to avoid by using the pendulum in the first place!). This happened to me, so the wire was installed immediately!

The amount of aileron deflection will, of course, depend on the speed and natural stability of the model you have chosen. Also, the size of the ailerons. The obvious is to start with minimums and work up as testing dictates. Tall grass is surely an asset, if at all available. I recommend some type of access panels, so that if either maintenance or repair is necessary, it can be done without tearing into the covering. Lastly, if further restriction is necessary,



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ment, then use 5-minute epoxy to hold them in place. The epoxy will ooze through the holes and provide a firm attachment. Drilling holes in the brass, using a 1/32 drill is O.K., but it seems that the hole size is usually a bit sloppy once the wire is inserted. For a more exacting way of making holes with no slop, take a short piece of 1/32 wire, about 1-1/2 inches long, and grind to a point on one end. With a hard piece of wood for backing material, use a small hammer to hit the punch. A very neat hole will result. One thing is a MUST, no slop or binds in any of the linkages can be tolerated!!

The next step is to make the brass bellcranks. If you notice in the picture, I made differential bellcranks. That is, it is preferred to get more up travel than down. You can also see that the length on one side is quite long. This is done so that the total movement of the ailerons is held to a safe minimum. I experimented, making different size and shape

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horns until I was satisfied with the movement of the ailerons. The bellcranks were cut from .016 brass sheet. A 1/16 hole was drilled at the pivot point of the bellcranks. A 3/16 length of brass tubing was inserted into the hole and soldered. If you use a flux, make certain that the typical residue is completely removed so that it will not bind the system.

A platform to mount the bellcranks should be made out of hardwood, or if balsa is used, brass bearings should be inserted. The reason is that the constant motion of the entire mechanism causes the holes in the wood to elongate, resulting in sloppy linkage. Once you have decided where the bellcranks should be mounted, drill a 1/16 hole in the platform and insert a 1/16 aluminum tube into it, keeping it flush with both sides of the platform. A short piece of 1/32 wire, with a washer soldered at either end, acts as a hinge pin. Mount the platforms between ribs, in the proper

shorten the length of the "U" shape wire. Don't push on the ailerons. This puts a lot of stress on all of the pivot points. Move them only by tilting the wings.

My Heath is back together and I will be flying it again this coming weekend. Therefore, I will let you know about the results of my further testing. One thing certain, I will be taking a freshly charged starting battery!

Hannan Continued from page 50

aluminized or otherwise rendered reflective. Interestingly, nobody completely poo-pooed the idea, and someone mentioned those tiny black and silver bladed devices mounted inside evacuated bulbs, which spin when exposed to sunlight. Who'll give it a try? (Being a bipe-nut, we had to get into this. Negative or positive stagger must be considered. We go with bottom wing black and negative (Beechcraft style) stagger. wcn)

GRAPENUT SCALE?

Dave Gibson, proprietor of Gram Cracker plan service, hopes to generate enthusiasm for a sub-Peanut class of 8 inch span models. To start the ball rolling, he is offering a range of reduced Peanut plans, including an S.E.5a, Junkers D-1, Fokker D-VIII, Gere Sport, and (naturally) the Fike E. (Guess which one stays up the longest, professor!). A stamped, addressed envelope will fetch you info on these as well as regular Peanut-size and sport-flying model construction plans. Gram Cracker Plans, 9660 Ravena, Louisville, Oh. 44641.

CRAFTSMANSHIP

According to a newspaper clipping sent to the Hangar by Doug Gillies, of Scotland, arts and crafts are gaining fresh respect in Britain. Hand-made items of all types are "in" again, a refreshing attitude in this age of machine-produced mediocracy. We particularly savored these excerpts: "Watching another human being make something gives particular pleasure; making something oneself gives even greater enjoyment, as anyone who remembers sand-castles or has attended an art or craft class knows. For reasons we haven't yet fathomed, in the 1970's, we are more, not less, attracted to what the hands make in spite of our ability to make machines produce for us.

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STAND-OFF PEANUTS?

One of the original intents of the Peanut Perpetrators (Flying Aces Club of Connecticut) was to encourage originality, simplicity and VARIETY in small flying scale models. Flying the same old low-aspect ratio high-wingers (spelled "Fike". wcn) just because it is so easy to achieve duration, certainly doesn't stress any creative

thinking. Why not break the ho-hum boring design routine with an *interesting* model? In the R/C stand-off scale arena, many models have been created by the clever approach of converting existing plan or kit aircraft. Thus, for example, an SNJ (O.K., AT-6 to you ex-Army types) kit might be reworked to resemble one of those phoney "Zeros" used in the movies, just as the prototypes were. Or, a radial-engined model might be converted to an in-line type, etc. For some strange reason, this seems not to have been tried very frequently with Peanuts.

A pity, as the task could be so much easier than it is with larger models. One of our photos this month, shows just such a conversion. Pete Baker, of Oconomowoc, Wisconsin, started out with Pilatus Turbo-Porter plans, but with a few deft changes, ended up with a Cessna 337 "Pusher-Puller". Exact scale was not the objective, but rather back-yard fun flying, and why not? Note too, that Pete stores his Peanut on a

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simple pedestal, when not in use. Thus, it can serve as a sort of "shelf model" as well as flyer. This is particularly true of models constructed with their landing gear in the "up" position, which look rather strange sitting on their bellies. The Flying Aces rules specifically suggest the "gear up" approach to building, which also eliminates the need to excessively "stretch" the gear legs of certain aircraft for prop clearance.

GOLDEN AGE RACING BOOK

In a previous column, we referred to a 1932 Cleveland Air Races, book published by racecraft authority Charles Mandrake (author of the long out-of-

print Gee Bee Story). At the time, we were unable to supply ordering information for this privately printed new publication, which features hundreds of photos taken during the '32 races. Of interest to modelers, the price is \$6.95 plus 50¢ postage from: Mandrake, Box 955, Ashtabula, Ohio 44004. VIVA LA FRANCE!

Word has it that a 50-man team of French flyers will be attending the U.S. Nationals, via chartered airliner. Suppose it might be a Concorde? Let's hope they bring some of their girls too!

ANOTHER COUNTRY HEARD FROM

Walt Mooney called to add more fuel to the "canard" fire. It seems that the traditional translation of "duck" referring to tail-first aircraft, had been questioned in another magazine. Walt points out that the Russian word for that sort of craft is Utka, which means, you guessed it, DUCK! Additionally, the Italian word is Anitra (*No relation to MB's General Manager! wcn*) They too state firmly: DUCK. Looks as if a pretty strong case has been advanced for the defense of our fine feathered friends. RULES, RULES, RULES!

Most model builders get along just fine with each other, until the subject of competition rules arises. Then it is a whole new ball game, no matter what the class specialty. The seemingly endless series of rule-changes emphasize the futility of it all. Perhaps Mooney summed it up best when he said: "Regardless of the rules, those who win like them, and those who lose, won't!"

One of the problems seems to be that those who *originate* an event usually have quite a firm idea of what the "spirit" should be. But, by the time the class has been around long enough to gain widespread popularity, most of the newcomers have no idea of what the originators had in mind at the beginning. Further, it might be difficult to determine the basic intent, if only the dry, written rules are available for interpretation. The current proposals being advanced for Stand-off scale R/C are a conspicuous case in point. Many relatively recent "Stand-offers" not only

don't understand the original intent, but don't care to know! It's no use fellas, no matter HOW far you make the judges move back, a pattern airplane will never look realistic!

Meanwhile, some of the original instigators have moved on to other interests, motivated perhaps, either by boredom or sheer frustration.

An interesting indoor class is reaching the exact same potential turning point, and could follow the path of EZ-B, Pennyplane, etc. We refer to "Manhattan Formula", originated by Ed Whitten. The difference however, that may save this event from the wolves, is Ed himself. He has retained his *total enthusiasm*, and has kept his finger on the pulse of every development and controversy to date. Further, he has documented the proceedings, analyzed them, and made the views of others, as well as his own, available for discussion, consideration, and/or dissection, in the "Star Skippers" newsletter.

As with Peanut Scale, the Manhattan Formula started very small, then began spreading, and has now reached at least as far as England. With publicity in the latest Aeromodeller Annual, the formula may reach truly international proportions.

Meanwhile, Ed has accepted the tremendous challenge of managing the AMA Junior program, and we think he is just the man for the job. And, the Manhattan Formula may be the bridge between beginner's models and more advanced indoor classes. If the rules *spirit* can be maintained and cast in concrete. Good luck, Ed!

JUST WHAT WE NEED!

Latest use for expensive/scarcely wood is in attachment inserts for toilet-paper holders! Believe it or not, glue-coated balsa (choice looking "C" grain in the example we examined) is actually pointed out in the manufacturer's descriptive text, as some sort of "break-through" in toilet paper holder design. Just the thing to keep the weight down in your brick outhouse.

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The Flightmaster rise-off-water flying scale model meet conducted at Lake Elsinore, California, was again successful, with beautiful weather and a great variety of models. Visitors attended from as far away as Washington, Las Vegas, and Canada! Famous aviation artist John Amendola was among those impressed with the proceedings, and was seen taking a large number of photographs.

Probably one of the characteristics that makes this contest so popular is the relaxed, low-pressure rules, which free everyone from "competition stress", and allow plenty of time for friendliness. Entrants freely help each other and F/F and R/C factions peacefully coexist . . . there is a message here!

Of the many outstanding models present, we were particularly impressed with Loren William's Rumpel, Bill Noonan's Japanese floatplane, Fernando Ramos' Heath Parasol, and Chuck West's Albatross W4, which flew very stably with NO dihedral and NO wing washout. A most fascinating R/C Dornier Do 24 trimotor unfortunately made a scale-like tailspin into the lake. R/C class winner, Joe Tschirgi, flew his newest Brandenburg, which is an in-line engined version, whereas his earlier model had been of the rotary-engined type.

Bob Haight entered his venerable Hanriot biplane, which he has flown in more Elsinore meets than anyone can remember. His comment: "It's really a new model . . . I just painted it to look old!!"

F/F Continued from page 57

Available in hobby shops. Price: \$8.00 per spool. (Sterling Brown [they also make black rubber, but it isn't nearly competitive] has a good power curve. It is pre-lubed. It is not uniform in thickness and has frequent pock-marks on the surface. It winds into rather large knots and tires easily. Density is about the same as Pirelli.)

Filati Rubber:

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Price: \$10.95/spool in 3/16 and 1/4 inch. (Filati rubber is manufactured by the same plant that used to make Pirelli, however, the process must have been forgotten, as Filati has not lived up to its predecessor's reputation. I urge strong caution in using Filati).

Vintage Aero, 1 The Glen, Tenafly, N.J. 07670. European Black, sizes: 1/8, 3/16, 1/4 inch. Price: \$9.50 plus \$1.50 post. per spool. (This rubber has a black, smooth texture, thinner than Pirelli. Does not lube well; two or three splices are in the average spool; difficult to set up into correct number of strands; winds easily into small knots; excellent torque curve; high power output; varies quite a bit from spool to spool in width and thickness.)

Not Tested: Sig Powerstrip.

Summary of report: Chris Matsuno, who writes in the NFFS Digest, says that Vintage Aero is probably the best of the new brands of rubber. It has the best torque curve and the highest total power output, actually, higher than some Pirelli. I like it best also, but Sterling Brown or FAI black are also recommended.

NEW PRODUCTS

The latest from Jim Clem's shop, Clemcraft, is his Country Boy 1/2A power model, which is available directly from Clemcraft, P.O. Box 524, Sand Springs, OK. 74063. Weighing in at between 6.5 and 7.5 ounces, spanning 47 inches, and containing a total wing area of 275 sq. inches puts it right in the middle of being an all around Cat. I and Cat. II model. The usual Clemcraft quality can be expected in this new-release, which includes high quality balsa wood as well as excellent plans and materials. The cost per kit is \$9.50 and as mentioned earlier, is available from Clemcraft or from FAI Model Supply.

As mentioned a few months ago in this column, Matt Gewain has taken over the production of some of the kits

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once manufactured by American Balsa Corp. The Gewain manufacturing concern goes by the name of Aeromodeling Enterprises. I recently received a kit of Bill Blanchard's record setting Hand Launch Glider, the Polly. The kit is excellent, from the quality of the wood, to all of the components you will need to finish the ship, including the DT components. The wing blank is saw cut to the approximate camber, so a minimal amount of sanding will be needed to get this ship into the air. I urge you to consider the Aeromodeling Enterprises Polly if you are going to be building a fleet of hand launch gliders for the fall flying season . . . or if you want to whip



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out a couple on your way to the 1977 Nats. The cost is \$3.98, and well worth it. Order from Aeromodeling Enterprises, 6238 S.E. 15th, Midwest City, OK. Matt did send along the information that he and the company will be moving soon to the Los Angeles area, so by the time you read this, a new address might be available.

Not really a new product, but certainly a useful one for modelers is the dial calipers. A good set of dial calipers can enable any modeler to measure the thickness of an object down to the nearest thousandth of an inch (or hundredth of a millimeter). The commercial kinds of calipers on the market

are manufactured for people who are in need of equipment which is used in machine shops and which can stand up to hard use and even abuse. What has been needed all along was a piece of equipment which the average klutzy modeler could use in his workshop to measure balsawood thickness, rubber thickness and similar uses. Rather than spending the going price of \$50 plus for these fine precision machines, what has been needed was one that cost \$10 or so. Well, there is one and it's made from plastic . . . that's right, plastic. Don't stop reading now, because this dial micrometer is accurate to 2 thousandths of an inch. I have one and have checked it against precision calipers of substantially more cost, and it is right on target. For the general purpose modeler as well as the expert, it is just the trick for the workshop. Now, where do you get one? Try Sears Roebuck. Most stores don't carry them in stock, but they are available from the catalog order office. These are quality micrometers and are made in Switzerland. For \$9.45 you can't go wrong.

SEE YOU AT THE NATIONALS

If this issue of *Model Builder* is on schedule, it should arrive in the mailbox about the time you are cranking up the family bus to head off to the 1977 Nats. I'll be around the fields and in the halls with my trusty camera, so if you see someone who looks like a *Model Builder* Free Flight Editor, let him take your picture. After all, it could lead you to fame and . . . well, fame! You can tell the difference between the Free Flight Editor and the Controline Editor by the looks of their faces. Dirty's face is a ball of fur . . . my face just looks blank.

Oh well, look for both of us there . . . See you at the Nats.

To bring our monthly Mystery Model contest up to date, here are the April, May, and June winners (no M.M. in July):

Paul Marchal, of Dickinson, Texas was first to correctly identify the April Mystery Model as Don Gurnett's "Hercules", 1958 Champion. For the

first time, we had almost as many wrong answers as right. Many thought Don's ship was Larry Conover's "Pelican". In fact, one contestant went into great detail on the pelican series, explaining developments leading up to the version he thought was illustrated! Gurnett's model was featured in the 1959 Air Trails Annual.

Louis Garami's "Strato-Streak" was first correctly identified as the May Mystery Model by Chet Orrill, of Meriden, Connecticut.

Another Connecticut resident, Gerald Knoblauch, of Simsbury, was first to correctly identify the June Mystery Model as Carl Wheeley's "Little Senator", from the September 1950 issue of Air Trails.

Peanut Continued from page 51

spar rests on the bottom ribs and is notched for the top ribs, so that the spar reaches to the top surface of the wing and provides some turbulation. The original model was built with two separate wings glued to the sides of the cabin structure, but this proved to be impractical, so the plans show a one-piece wing with a dihedral brace.

The only other unusual point in the wings is that the tips are made from one-pound-per-cubic foot density polystyrene foam. I find this invaluable for such things as wing tips and fillets, as it can be easily sanded to shape in seconds, and adds very little weight. In covering the wing, lap narrow strips of Japanese tissue over the foam with white glue diluted 10:1 with water. Also, be careful when putting a coat of dope on the wings not to get any near the foam, or it will dissolve instantly.

The fuselage is begun by building the basic sides, which run from the nose block to the tail, and are simply two pieces of 1/20 square balsa connected by vertical-grain 1/64 sheet balsa. The formers are then glued in place (note that you will have to do some fiddling to get the rear cabin former to the right shape), and the 1/32 sheet sides are

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glued on the cabin structure. The rest of the sheeting, from section B-B to the rear, is 1/64 balsa soaked in a mixture of water and ammonia, and glued in place with Wilhold glue.

After the landing gear wires have been glued in place with epoxy, the cheek formers should be glued in place with epoxy, the cheek formers should be glued to the outside of the nose structure. The cowl is then wrapped with 1/32 balsa, so that the cowl sides stand proud of the fuselage at section B-B. The rest of the fuselage is old stuff, although you will have to fiddle a bit to cut accurate patterns for the cabin windows. Don't neglect the landing gear details, which add so much to a model of this type.

The stabilizer and rudder are made with rectangular ribs, notched for the leading and trailing edges, and then sanded to shape after the glue is dry. I find that is much easier than trying to cut a batch of tiny ribs to shape. The tips are made in the same fashion as the wing tips.

The original was given one sprayed coat of Floquil Silver, after the tissue-covered areas had received one coat of thinned clear nitrate dope. The control surfaces and cowl flaps were outlined with India ink, and the lettering on the fuselage and rudder was also applied in ink. The license numbers on the wing were cut from black tissue and glued in place with very thin white glue.

The original model flies with a 5-1/2 inch diameter Williams Brothers plastic propeller, and a fourteen inch loop of 1/8 rubber (This means it cannot R.O.G., but the large propeller is a necessity). From the start, it showed a slow glide that bounces in every thermal, and, with the proper thrust adjustments, flies like a Coupe d'Hiver. At its last contest, it was headed out of sight when the nose block fell out. I am not sure whether I want to cure this problem . . .

Tyro A/2 Continued on page 61

judgment, the criteria for repeated success are (1) a consistent, durable,

all-weather model, stable on the tow and in the glide, and (2) a dedicated flyer with the experience and ability to sense rising air and the tenacity to tow and release his model into it consistently.

The TYRO was designed with this belief in mind. Accordingly, among the design objectives were simplicity of design and construction, durability, and consistency. The first two ruled out curved wing and stab planforms and built up construction, and they dictated the use of a fiberglass rod tail-boom. Ample V-dihedral instead of polyhedral was used to eliminate two wing joints. The wire wing joiners were employed to minimize folded wings on tow, a relatively common problem among inexperienced flyers in towline events. A clockwork DT timer was utilized instead of a fuse, because of local fire hazard regulations, but a simple fuse dethermalizer would be equally satisfactory. No gadgets of any kind were used. Durability was fostered by the fiberglass rod tail-boom, plus spruce leading and trailing edge reinforcements. Consistency was enhanced by the forward center of gravity (CG) location, with positive wing incidence and ample dihedral, and stable towing characteristics.

With this background, let's get on with construction.

STAB

Begin construction with the stabilizer, since it is similar to the wing, but easier to build. Select a piece of 1/16 x 3 x 36 inch very light, warp-free balsa. Cut off a piece 18 inches long, then glue another 1/16 x 7/8 x 18 inch section to it. Finally, glue the 1/16 x 1/8 spruce leading and trailing edges to the balsa. Sand this resulting 1/16 x 4-1/8 x 18 inch sheet smooth on both sides, and apply one coat of dope to the underside. Set this aside to dry. Next, cut out the 1/16 bass rib template and sand to shape as shown on the plan. Using this template, cut out 11 stab ribs from 3/32 soft sheet balsa, pin them together and sand them to shape.

Note that the ribs are longer than the stab chord. This is done for a reason.

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Pin the ribs to the plan through the overhang at each end. Next, carefully glue the 1/16 x 4-1/8 x 18 stab surface, doped side down, to the ribs. Be sure to pin it carefully to the ribs so that the true airfoil shape is obtained. When dry, remove the stab from the building board, add the DT rubber band hooks, DT string wire, and center reinforcing members under the leading and trailing edges. Cut off the excess leading and trailing edges of the ribs and sand the entire stab to shape. Apply three coats of dope, sanding the upper surface smooth after each, and set aside to dry and season.



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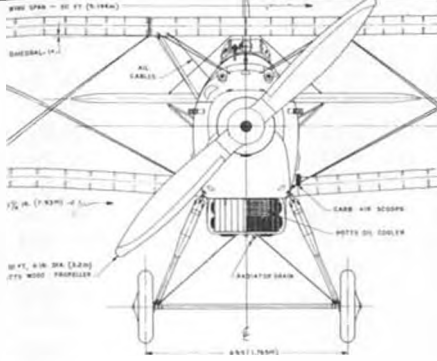
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RUDDER

The rudder is cut from a piece of soft 1/8 x 3 inch sheet balsa. It is 3-1/2 inches high. Sand it to the airfoil shape on the plan and apply one coat of dope. Next, cut out the movable rudder from 1/16 sheet, apply one coat of dope, and join it to the fin with cloth hinges as shown on the plan. Add the 1/16 hard balsa rudder stops on both sides. Cement the rubber band and auto rudder hooks in place, and give the entire assembly two more coats of dope.

WING

Start the wing by selecting two sheets each of soft 3/8 x 3 x 36 and 1/16 x 3 x 36 inch sheet balsa. Dope one side of each. Next, pin the two 3/8 inch sheets to the workbench, doped side down, and glue the 3/16 square spruce leading edges in place. Also glue the 1/16 x 3/16 spruce trailing edges to the 1/16 sheet at this time.

While these are drying, cut out the 1/16 bass rib template and sand it carefully to the shape shown on the plan.

As was the stab template, the wing template is longer than the chord, so that the ribs can easily be pinned in place during construction. Using the wing rib template, cut out 38 wing ribs from soft 3/32 sheet, pin them together and sand carefully to uniform shape.

Now remove the 3/8 sheets from the building board and bevel the top rear edge as shown on the plan to 1/16 thickness. Rough carve the leading edges to shape at this time also. Scribe the rib locations on the underside of the 3/8 sheets. Pin them upside down on the building board and glue the ribs in place. When the two structures have thoroughly dried, remove them from the board and pin them down again, this time right side up, using the excess rib lengths for this purpose. Glue on the 1/16 sheet after-surface of the wing, doped side down, making sure that proper airfoil shape is maintained. After drying, remove the wing halves from the board, cut off the excess rib leading and trailing edges, and sand the

wing to final airfoil shape. Apply three coats of dope, and sand the upper surface smooth after each.

The 1-1/2 inch center section of the wing is assembled in the same manner as the wing, except that it is a solid mass composed of seven 3/16 balsa ribs, with two 1/16 bass sheet ribs at each end. The center section is drilled out to house the 1/16 and 3/32 I.D. aluminum tubings which hold the wing wire joiners.

To install the wing joiners, notch the root ribs as shown on the plan and glue the 1/16 x 1/4 spruce fillers to the undersides of the wing roots. Next glue the 1/16 and 3/32 I.D. aluminum tubings in place, and fill in the remainder of the notches with 1/8 x 1/4 balsa flush to the bottom surface of the ribs. See the plans and photographs for details. Add the 3/16 spruce sheet bevel joints to the end of each wing root, and bevel them to allow 9 inches dihedral under each wing tip. Sand smooth the entire wing. As the last step, cut the 1/16 and 3/32 music wire wing joiners to length, bend them to shape as shown on the plan, and carefully epoxy them in the appropriate tubing of the wing center section, ensuring that they are in proper alignment.

To facilitate handling in the field, and to enhance strength, the wing center section and the first 4 inches of each wing root are covered with fiberglass cloth and resin. In addition, the 1/16 sheet bass wing tip ribs are added to protect the wing, particularly after the model lands in windy weather.

FUSELAGE

The key to a simple, durable fuselage is the fiberglass rod tail-boom. These are available from several commercial sources advertised in the model magazines, the NFFS Digest, or from most fishing equipment stores. Select a warp-free boom, as light as possible, and sand it smooth. Saw it to 29-1/2 inch length. Next, cut the fuselage core from 3/8 inch bass on a jigsaw, notching the rear to accept the boom. Also cut the timer and ballast holes in the core. Now epoxy the boom into the fuselage core,

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ensuring that alignment is correct. Glue the 3/16 sheet balsa fuselage side pieces in place, and finally, epoxy the 3/16 bass cheek to the right side of the nose.

Now cut the stab trailing edge stop from 1/4 inch sheet balsa, and glue together the leading edge platform. Epoxy the shaped stab leading and trailing edge platforms to the fuselage, together with the DT hook. Glue the rudder in place, and add the external aluminum tubing DT and auto-rudder line guides as shown on the plan, together with the auto-rudder tube.

When this assembly has dried, lay the fuselage on its right side and melt lead

into the ballast compartment until the balance point is about 1/8 inch aft of the CG location shown on the plan. Now epoxy the 3/16 bass left cheek in place. Carve and sand the fuselage to final shape. Bend the towline hook to shape shown on the plan and epoxy it in place. Epoxy the wing center section in place, ensuring it is properly aligned. Finally, give the fuselage two coats of clear dope, and add the DT and auto-rudder lines as shown on the plan. Glue the DT timer in place. Set the stab on its platform and check to ensure that the CG is located precisely as shown on the plan. If it is not, drill out or add to the

ballast until the location is correct. Also ensure that the towhook is in proper position. The CG and towhook must be accurately positioned as shown to obtain consistent, stable tows.

FLYING

In my opinion, towline glider events are particularly desirable for junior and senior flyers. Since I have withdrawn from the contest scene . . . other than coming out of the woodwork every two years for the FAI program . . . it has become apparent to me that some younger flyers are primarily substitute participants for their fathers. This is a condition which I deplore. One escape

SOCIETY OF ANTIQUE MODELERS MEMBERSHIP APPLICATION

I hereby make application for individual membership in the Society of Antique Modelers.

DATE REC'D.

NO. _____
DO NOT WRITE IN THIS SPACE

NAME _____ BIRTH DATE _____ YEARS MODELING _____

ADDRESS _____ CITY _____ STATE _____ ZIP _____

Please check if you belong to any of the following:

A. M. A. _____ NO. _____

M. E. C. A. _____ NO. _____

S. A. M. CHAPTER _____ NO. _____

Note: Membership includes 15% discount on one year MODEL BUILDER Magazine subscription. Give S. A. M. No. when subscribing.

Enclose Membership Dues of \$5.00 and send to:
Society of Antique Modelers
1947 Superior Avenue
Whiting, Indiana 46394

In making this application for membership to the Society of Antique Modelers, I agree to abide by the rules set by the Society and realize that the goals of S. A. M. and the Old Timers movement are to encourage participation above competition and is dedicated to the preservation and reproduction of vintage model aircraft.

Signed _____

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- 1st 1975 Winter Nats, Expert Road
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All metal chassis parts, aerospace quality, kits less body, engine, fuel tank and radio.

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from it lies in the hand-launch and towline glider events. In these, the adolescent flyer is on his own. Daddy cannot throw or tow his son's gliders, hence the younger competitors have a much better opportunity to compete fairly with their peers. In my judgment, this is the way it should be.

To begin flight tests of the TYRO, assemble the model and check that the wing and stab are properly aligned. The rudder stop should be set to allow about 1/8 inch left offset after the auto-rudder line is released. Now hand-glide the model to check the glide, which should be flat with a slight left turn. Adjust the glide by raising or lowering the stab trailing edge as necessary.

After hand glides are satisfactory, prepare for the first tow. Tie a 9 inch length of heavy monofilament line to the towhook for use as the autorudder release. Let out about 50 to 70 feet of towline and tow into the wind. If the model is accurately built as shown, the tow should be straight and stable until the model climbs directly overhead. Should the glider climb too slowly and weave on the tow, move the towhook back. Conversely, if it zooms up or veers off to one side, move the towhook forward. The model can usually be made to tow straight by adjusting the setting of the right rudder stop.

Once a stable, overhead tow is

achieved, practice thermal detection and releasing the model into rising air. A/2 gliders, primarily because of their size and weight, are much simpler to tow than the smaller A/1 models, which sometimes tend to weave or oscillate on the line.

The TYRO provides a simple means to enter the Nordic glider event. The model is truly easy to build, simple to adjust, and very forgiving on the tow. Its performance is consistent and often exciting. I hope you will get a great deal of pleasure from the model if you choose to build it. ●

Counter Continued from page 9

cutting of hinge slots and installing the hinges, because it is so difficult to do perfectly, and because it is important that it be done right. Du-Bro Products has come to our rescue, with the introduction of its Kwik-Hinge Slotter. Except for conning somebody into doing the job for you, this has got to be one of the least painful and successful ways of getting the hinges in place.

The Kwik-Hinge Slotter set, Catalog No. 216, contains precision guides for large and small slots, and for holes, such as needed by round hinges or aileron torque tube wires. Included also are two forked slotting blades,

and a hooked 'balsa picker'. Properly used, the various combinations will result in neat, perfectly lined up slots or holes of the proper size.

The guide will fit stock from 1/8 to 1/2 inch, the blades are made to fit medium-size modeler knife handles. Price of the entire set is \$1.95, blades only at 35¢ each, and the alignment jig with attachments is \$1.25.

Also from Du-Bro is a new "No-Play" mixer for V-tails and flying wings. It is a small, light weight, compact unit, Catalog No. 215, at \$4.95.

Those of you using the Du-Bro Universal Muff-L-Aire No. 143, will welcome the news that the baffle plate sets are now available as a separate item, Catalog No. 217, only \$2.95.

All of the Du-Bro tubing, until recently sold by the spool only, is now packaged in two foot lengths. This includes clear vinyl, silicone, and neoprene, in small, medium, and large sizes, priced from 30¢ to \$1.30 per package.

See them all at your dealer; all from Du-Bro Products Inc., 480 Bonner Rd., Wauconda, IL 60084.

* * *

New from Semco! For you tuned pipe and tuned muffler addicts, a new connector has just become available from the company whose name has become synonymous with 'muffler'. As with all Semco mufflers, the connector features an adapter mounting that mates with a machined piece designed for your specific engine. Either of two mountings can be used, a bolt-on for some engines so designed, or a strap which goes around the cylinder and holds the assembly securely in place.

The pipe adapter itself has been left extra long, so it can be cut in length after the tuning process has taken place. Connection between the pipe and adapter can be made with silicon tubing, as is general practice.

See the complete Semco line at your dealers, or write Semco Model Engineering, 14 Water St., Waltham, MA 02154. Tell them what engine you have, and your specific needs, they will be glad to recommend the exact Semco muffler or pipe fittings required. Tell them MB suggested you write.

* * *

If you have not tried Permagloss Coverite because you felt you didn't know just how to get the best results, wait no longer. A new four-page instruction guide is now available from Coverite, and is to be included with each roll of Permagloss. This two-color guide tells you such important things as how to prepare the wood and how to set the temperature of your iron, as well as how to cover open and solid framework models. How to cut it, trim it, patch it, paint it . . . in fact, all you could

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possibly ever want to know but didn't know who to ask, is included.

Permagloss is available in a variety of colors, and may be just the thing for that next project. Ask for it at your dealers; Permagloss, by Coverite, 2779 Philmont Ave., Huntingdon Valley, PA 19007.

* * *

Galler Electronics Industries, P.O. Box 87, So. Walpole, MA 02071, has introduced it's 'Mocontrol VC', a versatile R/C motor speed control for electric powered cars, boats, and planes. It is available in two models, either of which will handle from four through ten cells,

and up to 15 amps for competition machines. They both feature track-tested design, rugged construction, and are assembled from pre-tested components.

The Mocontrol VC includes a voltage bypass relay, which eliminates any power loss at high speed, as it connects the battery directly to the motor at full throttle. At less than full throttle, normal proportional speed control takes place, as well as reverse and dynamic braking. The Mocontrol VC is priced at \$55.95.

For those not needing the power bypass relay feature, the Mocontrol VC-2 is available at \$47.95. It is other-

wise identical to the 'VC', including dynamic braking and optional reverse.

Both are completely solid state, and plug directly into the system receiver. Available from your local hobby dealer, or direct from Galler Electronic Industries, in which case you are asked to include \$1.75 for postage.

* * *

Next to "I wonder just how fast it's really going", probably the next most heard question at the field is "I wonder just how fast that engine is turning?" Well, to ease some of the "wonder", Fusite Division will soon have available their audio tachometer, called 'BuzzBee',



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\$5.00 Annual Fee

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Wm. "Moose" Allen

418 Fairmont Dr.,

DeKalb, Illinois 60115



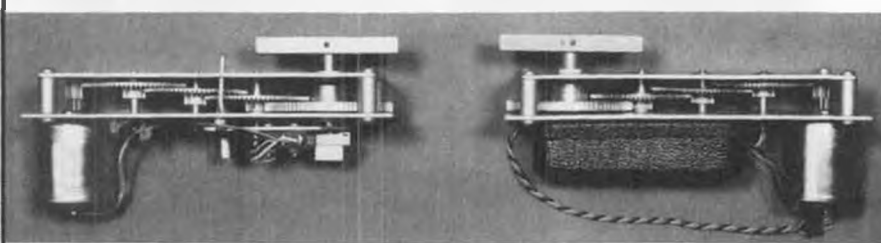
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SAIL CONTROL WINCHES



W-1 . . . \$50.00

W-2 . . . \$95.00

• Custom R/C design for all boat sizes • Power - 40 in. lbs. • Travel time - 5 seconds • Voltage - 4.8-6 (W-1) • Size - 2 x 2 x 5 inches.

The Probar W-1 is mechanically operated by a separate, neutralizing servo. The Probar Propo W-2 is designed to plug directly into the receiver, and requires no extra batteries. Specify Kraft, Futaba, or no connector. Both winches are fully assembled and tested, ready to install. All mounting hardware, switch pushrod (W-1 only), and winch arm blank are supplied.

STAINLESS STEEL HARDWARE:

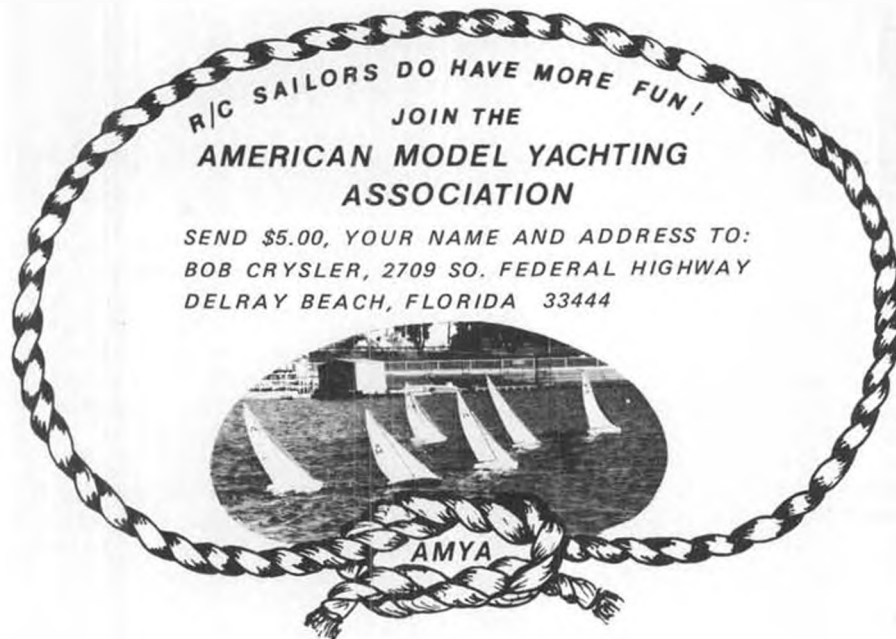
Turnbuckles, Chainplates, Goosenecks, Boom vang pivots, Pad eyes, Tangs, Deck cleats, Boom cleats, Rigging wire.

MISCELLANEOUS ITEMS:

Sheet exit guides, Bowsie, Rudder posts, Mast head fitting, Dacron sheet line.

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West Coast 12-Meter -	\$30.00	Star 1.5 - - -	\$30.00
Vanguard "J"-boat - -	\$80.00	T&A Petrel - - -	\$10.00

Scale vessels, special purpose boats, one-of-a-kinds: Write for a quote, and for our 1977 Brochure and Used Sails list.

the latest in the GloBee line of model products.

The BuzzBee is an electronic device that uses the tuning fork principle to simulate engine sounds. In use, the knob is turned to produce a BuzzBee tone that exactly matches the engine's sound, and the RPM is read off the calibrated panel.

According to Fusite, tests show that effective RPM measurements can be made on moving engine driven models, as well as those that are not moving. And obviously, it is now easy to get a reading on your competitor's engine somewhere down the flight line, or in the air.

Power for the BuzzBee comes from a single NEDA 1604 9-volt battery, the common transistor radio battery available in most any store. The RPM range is from 2,600 to 35,000, which covers everything from idle to "wow". A point for safety: you don't have to get anywhere near that whirling prop to use this tachometer.

Available in your town's hobby store at about the time you read this, or inquire from Fusite Division, Emerson Electric Co., 6000 Fernview Ave., Cincinnati, OH 45212.

* * *

Over my workbench there is a post-card-size sign that I picked up somewhere in my travels, reminding me to "Do not start vast projects with half-vast ideas". The same line of thought is apparent in the name of Gas Model Products new 10-minute epoxy, 'Half Fast'. But it is aptly named! Think of it, a few minutes more working time to get things aligned properly, but not really enough to slow down the building process.

At the field, for quick small repairs, the faster types, such as GMP's 6-Minute Kwik Set Epoxy is probably the most useful, but there are times when those extra minutes are going to make the difference between a proper safe joint and one made with half-hard glue.

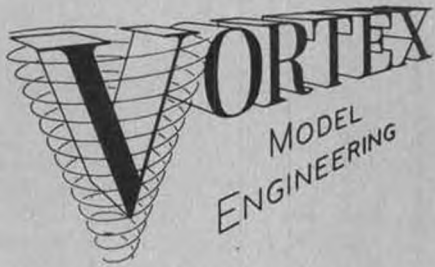
As with all products of this type, there are some cautions to be observed, clearly printed on each bottle. The ten ounce combined size is only \$5.50.

Check your dealers shelf first, and if you don't find it there, write Gas Model Products, 9736 Wilcox Dr., Cincinnati, OH 45239.

* * *

Well, they did it again! What did they do? Why, they printed a new Summer 1977 catalog! Who did? Why, Heath Company! And even added to the already numerous electronic kits available.

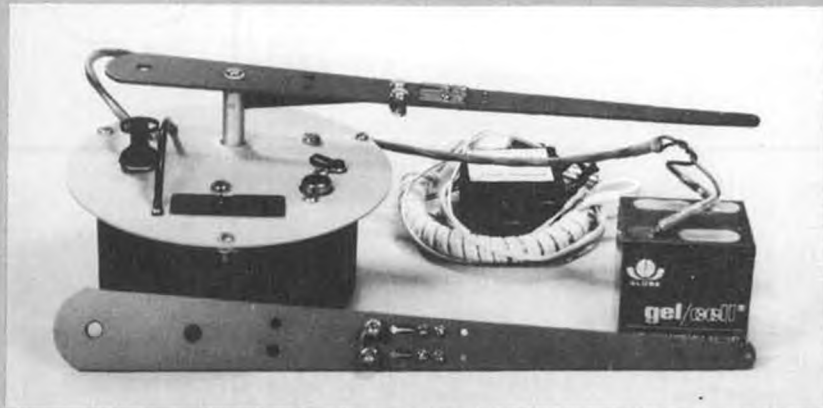
This one lists a lot of the already known kits, as well as some new products for the technician, for home entertainment, and some new learn-at-home courses for the electronic hobbyist and the Radio Amateur. The latter courses are an excellent stepping stone for those of you in R/C who aspire to a Tech-



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Department MB
210 East Ortega Street
Santa Barbara, CA 93101

nicians' Class license, so you can fly on the relatively uncrowded six meter band.

R/C flyers will be interested in the information included in this catalog about Heath's 3, 5 and 8 channel R/C systems in kit form, as well as related items such as tachometers, servo and battery testing devices, and even a glider and a .19 to .40 power plane.

The list of kits goes from color TV's to garage door openers, from smoke detectors to fish finders. Whatever your electronics interests are, you should not be without this free catalog. Ask for your copy from Heath Company, Benton Harbor, MI, 49022, and just remember to tell them where you read about it.

* * *

Matt Jacobsen, designer and manufacturer of R/C yacht kits and equipment recently announced availability of the MAGNUM OD, both as a complete kit and as a short kit. The general dimensions of this AMYA Class sailboat are LOA 52", LWL 46", Beam 12.6", Draft 11.5", S.A. 910 sq. in., and displacement of 18.50 lbs.

The complete kit includes a fiberglass hull and formed deck with cockpit and cover, cast keel with hardware, cast rudder with shaft, 2.25 oz. Dacron sails and all necessary wood, plastic, and brass items, cordage and wire. With instructions, freight collect, \$199.50,

plus 6% for you fortunate Californians.

The short kit, at \$119.50, and the same freight and tax arrangements, contains the fiberglass hull, cast keel and rudder, with mounting and steering hardware. Instructions, Class rules, and a list of sources of suppliers are also included.

Descriptive literature on the Magnum One-Design kits, parts price lists, and AMPRO sail control units, is available for 25¢ in coins, from Matt Jacobson/AMPRO, Box 3134, Burbank, CA 91540.

* * *

If a glider to you is that contraption out on the porch that you take a nap in, skip this. But if you are a potential Mark Smith or Skip Miller, you'll want to know about Rocket City Specialties' new "Pro Tow". This releasable glider tow hook, molded from nylon in the clean, precise manner that is a tradition with this company, is claimed to handle up to 75 pounds of tow line pull. Even at those high line tensions, it can be released by the smallest servo on the market, either a separate one, or one of the control servos. The "Pro Tow" mounts completely inside the fuselage, provides for a 1/2 inch plus or minus adjustment, and measures only 3/4 x 1-5/8 x 1-5/8 inches. Our postal scale weighs the complete assembly, including towline connector and screws, at 5/32nds

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of an ounce. Only two moving parts are used, with the tow hook itself being a 3/32 diameter steel insert molded into nylon.

The "Pro Tow", with instructions, is priced at \$4.98. Check your local supplier first, ask for No. 72, from Rocket City Specialties, 103 Wholesale Ave., NE, Huntsville, AL 35811.

* * *

Myers Airplane Products has just introduced two new R/C planes, one of which I immediately don't like. It is called "The Sting", and I don't like it 'cause it reminds me of a funny thing . . . to everyone else, that happened to me at

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- Complete precision engineered assembly
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\$16.95, the trike set is \$25.95.

From Robart, P.O. Box 122,
Wheaton, IL 60187.

* * *

RAM (Radio Controlled Models) has recently announced its Quickee 18, and A.R.F. (almost ready-to-float) molded plastic air driven boat for two-channel radios and .049 to .10 engines. This 18 inch long boat is claimed as perfect for the beginning modeler, is assembled from only five structural parts, and includes foolproof, step-by-step instructions. It is white, and can be left that way, or it can be painted and decorated with either epoxy or polyurethane paints. Virtually unsinkable, this boat does not require any additional marine hardware, and is ideal for Quickee 18 Sport Racing in various classes including electrics.

Try first at your dealer; if not available, write RAM, 3631 N. Kedvale Ave., Chicago, IL 60641.

* * *

Its Model 771 glow plug battery has recently been released by Flight Dynamics Inc., 4708 SE Johnson Creek Blvd., Portland, OR 97206. This neatly packaged item combines a Gates 2.5 amp sealed lead acid cell and glow plug checker. In its "Test/Off" position, the switch limits the voltage to .7, and the condition of the glow plug is indicated by the lamp. A 200 charge/discharge cycle life is claimed.

FDI states that the Model 771 is designed specifically for Cox 1/2A engines, but will work satisfactorily with the larger types. The 2.2 volts claimed are a bit high for many of the glow plugs on the market, and some are marked "not be used with over 1.5 volts." A little care is therefore suggested; Royal Products Corp. has a 45¢ voltage reducer that will treat those expensive plugs more kindly.

The \$19.95 price includes the charger, and they are available from A&L Distributors, Ace R/C, and Midwest Model Supply, amongst others... and of course, direct from FDI. Wherever you go to get yours, tell them you read about it in MB.

* * *

Tatone Products, 1209 Geneva Ave., San Francisco, CA 94112, has recently introduced a couple of interesting articles. One is a Piston Resetting Tool, for the Cox .049 and .051 engines. This hardened steel tool is designed to reset and tighten the ball joint connection between the piston and the connecting rod in these popular little engines. Any play there results in a loss of rpm, power, and increased vibration. A must for the competition flyer, or 1/12th scale R/C car driver, at only \$3.25.

The other late release from Tatone is Ultra Sonic Cleaners, in 2 and 4.6-gallon sizes. This cleaner incorporates a patented "power pump" circuit that is

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the field last summer. I got bee-stung... under an armpit, yet! Well, that wasn't enough, but that very next weekend I got bee-stung again. Under the other armpit!

My first thoughts were that maybe my deodorant was too much the type of some of those favored by Anita Bryant's adversaries, and I should change to something more subdued. Which I did... I've been using K&B 500 and have had no further problems with bees.

Anyway, whether I like it or not, the Myers "Sting", a 53 inch for .40's, sounds and looks interesting. Described as perfect for your first low winger, it features an 11 ounce epoxy

fiberglass fuselage and foam wings with 1/64th ply skins. All other parts are machine-cut and sanded, and a complete hardware package containing gear, screws, blind nuts, torque tubes, horns and hinges, is included.

The wing area is 560 squares, weight 5-1/2 lbs., complete with plans and instructions, only \$89.95 at your local dealer.

The other Myers airplane, better named, is the 'Cricket', for 1/2A and two channels. This little 32 inch, 18 to 20 ounce bird meets all 1/2A pylon rules. It features a foam wing, pre-covered with 1/32 balsa, already sanded. The rest is balsa and plywood construction, from machine-cut and sanded parts. Hardware, plans, and instructions are also included for the \$24.95 price.

Also at your dealers, or check with Myers Airplane Products, 3911 E. Downey Ct., Simi Valley, CA 93063.

* * *

One-third ounce retracts... almost unbelievable isn't it? Well, that Wheaton, IL company, Robart, has them. Actually, they are 1/3 ounce per unit, but even so, that isn't too much for your 1/2A to handle, which is what they were designed for. They should fit most of the popular kits of that size available, and feature variable geometry for scale installation in such birds as the House of Balsa FW 190, and Bell P-39.

The two-wheel set is priced at

claimed to nearly double the power over similar cleaners. Three-dimensional fluid action and even distribution of power is said to result in efficient and uniform cleaning.

Recommended as a club or possible dealer purchase, the cleaners are priced at \$165 for the small and \$180 for the large capacity sizes. Cleaning detergent is also available, at \$1.95 for 8 ounces, \$3.42 for a quart, and \$10.65 for a gallon.

Check your favorite dealer for more information and availability, or write direct to the address above.

* * *

Fiberglass anyone? Epoxy? Polyester or microballoons maybe? Whatever your needs are in this line, Fibre Glass-Evercoat Company, Inc., should be your one-source supply.

This Cincinnati company claims the most complete line of resins, glues and fillers available for hobby uses. It has polyester resins, by the pint or quart. It has glass cloth, in 6/10th, 2, and 7-ounce weights to go with the resin. It has a pre-mixed, lightweight polyester filler, and microballoons for your own mixes with either polyester or epoxy. And it has a Cleaner-Thinner which can be used to thin epoxy paints, but just as important, will completely clean all polyester and epoxy materials off your tools, work area, and YOU.

Available also are a number of epoxy resins and glues, each designed for a specific purpose. There is a slow-drying epoxy glue that can be used on styrofoam, just the thing for that cloth/glue reinforcement on wing center sections, and for joining the wing halves themselves. And a paste glue, jelly-thick, also slow-drying, should be the ideal for vertical glue joints and fillets where the more liquid glues will not work properly.

For complete information, including more thorough descriptions, recommended uses, package, sizes, and prices, write Fibre Glass-Evercoat Co. Inc., 6600 Cornell Rd., Cincinnati, OH 45242. Tell them MB told you all about it.










* * *

Plumbing giving you trouble? If it is the house plumbing, we can only offer sympathy, and hope you survive the financial shock. If it is your model's plumbing, be it plane, car, boat, or helicopter, maybe the problem can be solved with a "Tee" fitting.

The latest to cross our desk are from B&D Enterprises, and come in two sizes, for 1/16 and 1/8 I.D. tubing. They are molded from a translucent plastic, and have a lip to prevent the tubing being used to slip off. The center is just big enough to provide enough material to prevent a built-in weak point, and to allow for easy handling during assembly.

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PT-19 (shown), Gere Sport
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Remotely . . . Continued from page 19

pattern fliers and officials.

The current FAI description of the Top Hat contradicts itself. The maneuver description states that the airplane flies across the top while inverted "for a brief moment", whereas Item 6 of the reasons for downgrading says that the distance across the top *must* equal the two vertical legs. In other words, one statement does not exactly specify the distance across the top, and the other one does! According to the downgrade, the maneuver would be a "Square Hat", whereas the basic description, and the way most pilots fly it, is more like an Abe Lincoln "Stove Pipe Top Hat". It was decided that Downgrade No. 6 would simply be removed, thus leaving the shape of the hat up to the flier.

Of course, the judges were cautioned to accept either shape, provided the 45 and 60 degree limits were not exceeded. Incidentally, this same reasoning was carried through into the World Championships, and will appear in the next printing of the FAI Rule Book.

The other important variation concerned the spin maneuver. With silencers working as well as they do now, it is practically impossible for the judges . . . and for that matter, even the flier . . . to know if the engine has quit during the maneuver, or just at the moment when power is shoved on at the end of the maneuver. Giving the benefit of doubt to the flier, it has been ruled that the maneuver will be scored as long as the engine is running as the maneuver is entered.

Anyway, getting back to the threatening weather . . . Saturday morning, the first day of the Masters, the weather stopped threatening . . . it merely poured! By 7 a.m., the appointed time

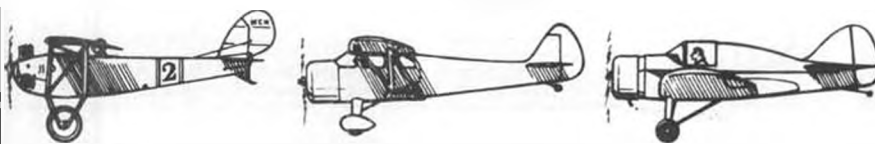
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for the first flight to get off, a solid, steady downpour had everyone huddled under the big tent at the central control site, halfway between the two flying sites. After about a half-hour of this, everyone was ready to "pack it in" and try again at noon, especially Phil Kraft, who was first up and apparently no longer has a connection with the Chief Meteorologist . . . However, the one exception was Bill Keller, Assistant C.D., who planted his 225 pound frame (our estimate) in the imaginary path of those who were going to leave, and said,

in effect, "You better stay where you are 'cause I'm going to call up the first fliers by 9 o'clock and you'll miss the first round if you aren't here!"

Actually, Bill was off on his timing by 32 minutes, as the first flight got off by 8:28 a.m.! It actually could have started sooner, but the decision was made to fly both lines back-to-back off of a new set of circles that had to be hurriedly painted on the runway in front of the main tent, which was the only shelter available at the field just in case the rain came back, which it

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didn't do until the following week . . . And How . . . (but that's another story, for next month's issue)!

Judges for the Masters Tournament were selected by the fliers qualified to compete. A list of Level 1, 2, and 3 judges was furnished by the U.S. Pattern Judges Association, and from this list, the following were selected (listed as they were grouped for the competition): Bob Upton (Line Chief), Dick Austin, Ralph Brooke, Bill Johnson, Julie Woods, and Dave Lane (Line Chief), Sam Crawford, Bob Reuther, Larry Sartor, Whit Stockwell.

On the average, one set of judges ran about 200 points higher than the other, based on a moderate score of 4,000 to 4,500, however, each group judged each flier on two flights, for completely equal exposure. The high and low score, per maneuver, was dropped. This method is quite reasonable, as it does not necessarily mean that a judge's complete score is dropped . . . only the individual scores that happened to be unusually high or low. More on this at another time.

Oh, by the way, in case you didn't know who was on the 1975 U.S. Team and reinforced their standings as the nation's best fliers, both at the 1976 Nationals and at this Masters Tournament, they are Rhett Miller III, Dave Brown, and Mark Radcliff, in their order of finish at the 1977 Masters. And in the 1977 World Championships, held one week later at the same site, and upon which we will report next month, Dave Brown finished 2nd, Rhett Miller 5th, and Mark Radcliff 6th. As a team, they were 1st, followed by Japan (which lead in team standings all the way up to the last round), and West Germany.

The World Championships, as always, was an exciting and tense competition, yet always held together by extreme comradship among the team members from the 24 countries represented. We'll do our best to convey all of these feelings to you in our W/C report next month.

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Workbench . . . Continued from page 6

Most all prints are 30 by 42 inches in size. An ad listing all of his plans that are currently available appears elsewhere in this issue.

Mrs. Brian W. (Genie) Dickerson sent us the following dissertation, entitled "LIB LIP", which we feel is very worthwhile publishing. If the shoe fits . . .

Women's liberation to the contrary, the fairer sex is handicapped when it comes to model airplanes. Picketing, letters to Congressmen, bussing . . . none of the usual methods helps us achieve equal opportunity for our husband's time. Too often model airplanes beat us out.

Last week, when I suggested he mow the lawn so that I could see the street from the house, my husband reminded me, "But the neighbor's horse enjoys our yard so much every time he gets out. And then that saves us from having to fertilize. Besides that, I'm tired from mowing the flying field yesterday."

Worse yet was the time our kitchen was on fire. Blocked off from the kitchen

phone, I ran for the one in the shop. "That's funny," my husband said, as he wiped more dope on his newest creation, "I can't smell any smoke. See if you can get my glues out of the refrigerator." He did, however, stop working on the plane long enough to talk with one of the firemen who was more curious about it than the rest.

I decided to try dressing in my flimsiest nightie and skipping through the shop while my husband sanded his fuselage. With my long, curly hair let down, my front stuck out, my behind pulled in, the perfume dabbed, and the eyelashes aflutter, I succeeded in getting his attention.

"I really like your outfit," he said, fingering the hem. "Do you mind taking it off? You really don't need it."

I thought I had found my method.

"I haven't seen this quality nylon in a long time," he continued, glancing at the fuselage. "I wonder if there's enough here . . .", he considered, as his eyes shifted back and forth between the naked plane and its intended covering.

"I doubt it," I lied, as I clutched my see-through and backed out the shop

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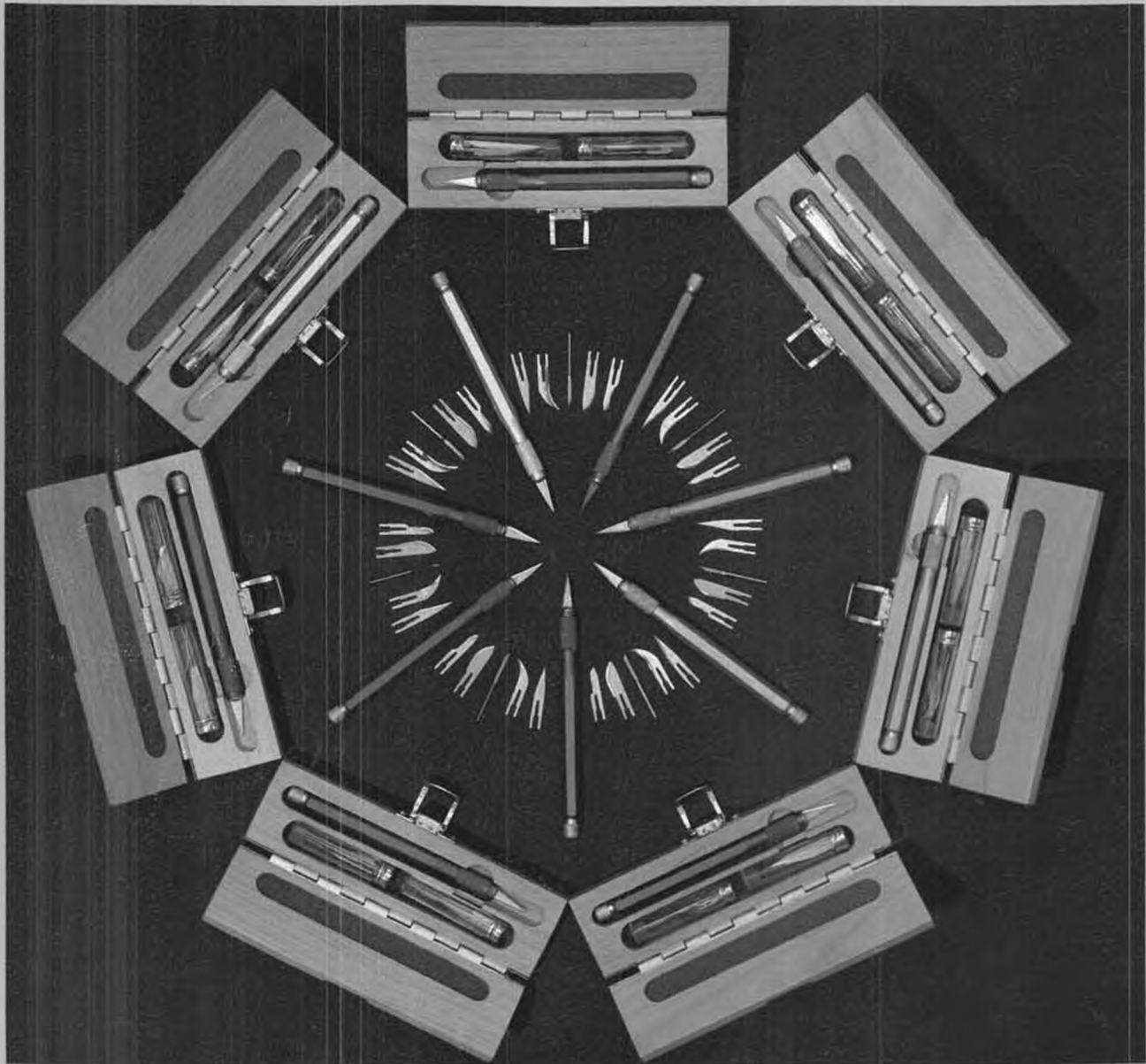


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