

MODEL BUILDER



AUGUST 1976

volume 6, number 56

\$1.50



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dumas
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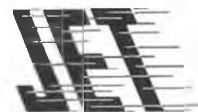
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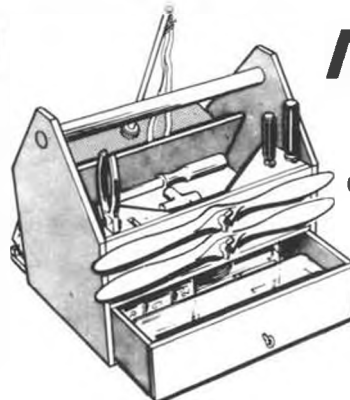
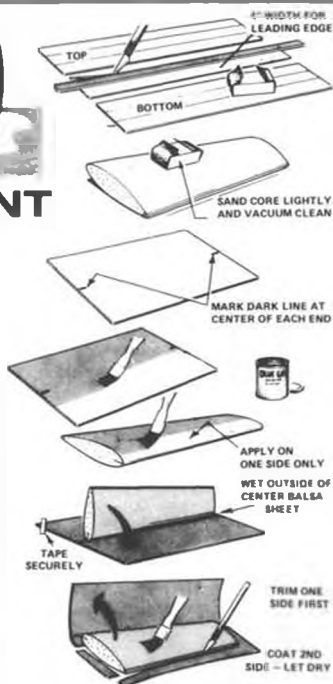
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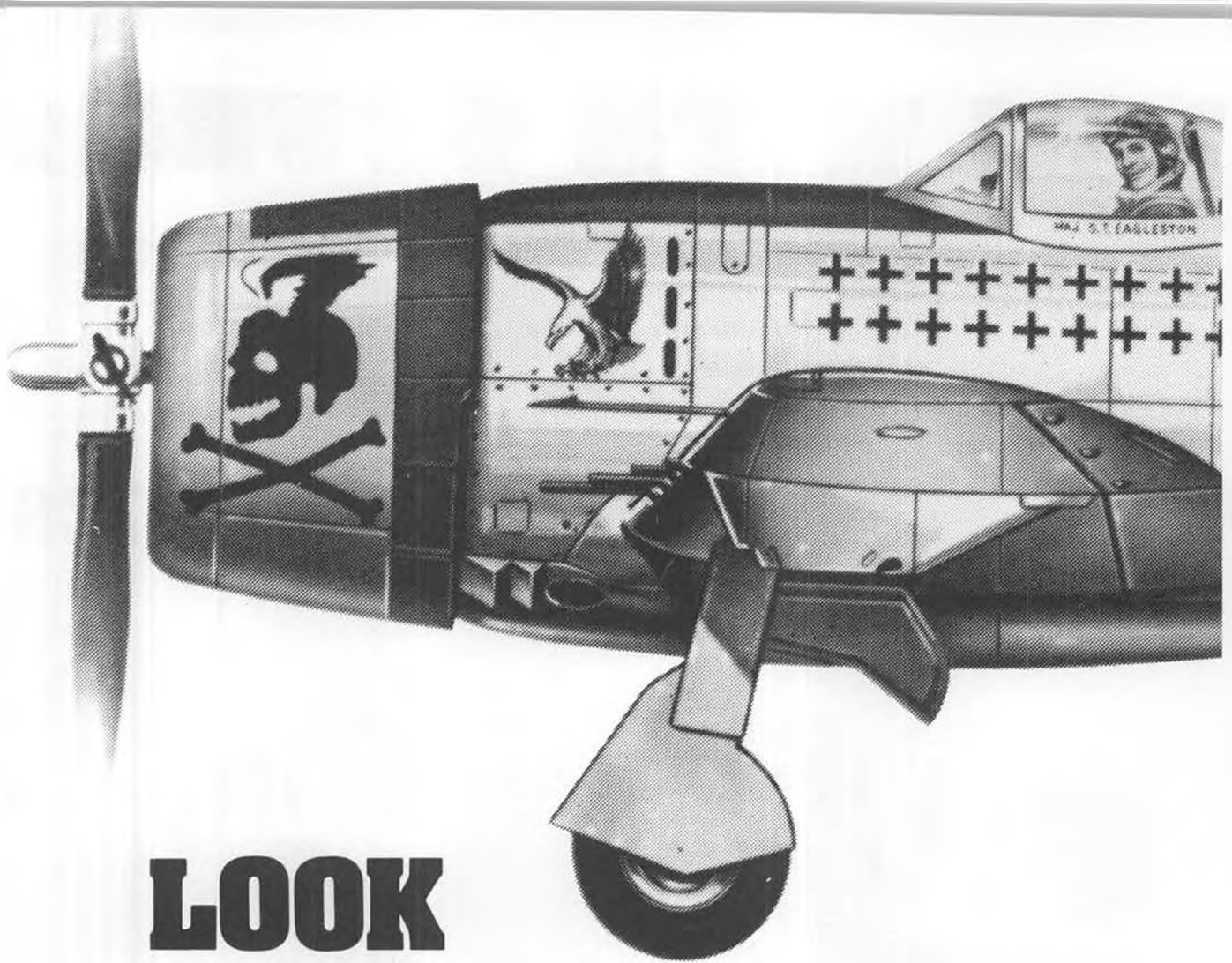


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Top Flite's NEW P47-D Thunderbolt R/C • Stand-off Scale

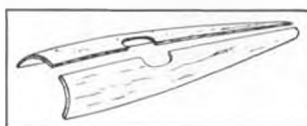
It's here at last—World War II's favorite fighter aircraft. Affectionately dubbed the "JUG" by American fighter pilots, the P47-D Thunderbolt proudly joins Top Flite's squadron of stand-off scales.

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And, just like the original "JUG", our stand-off scale version has already built a pretty impressive performance record at the 1974 Nationals with the highest flying scale score, and first place at the Chicago Scalemasters contest.

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Area: 720 Sq. In.
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For many years, Ace R/C has pioneered the concept and development of small R/C airplanes and produced top quality kits, particularly in the 1/2A category. We've created rudder only airplanes designed expressly for pulse R/O (Dick's Dream, Ace High, Littlest Stick); a small, sport biplane was produced before the biplane bandwagon (All Star); we developed a sensible, solid 1/2A sport plane (Whizard);

we conceived, established rules for, and produced the 1/2A pylon ship (Upstart); we conceived and developed the whole category of 1/2A pattern, offering two kits that remain the standard by which all are judged (Pacer, Mach None); expansion of the 1/2A pattern concept to larger engines resulted in a .23 powered pattern ship (Super Pacer). Check the record and stick with Ace R/C, the small plane experts.



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The perfect 1/2A sport plane. Span 40 3/4"; area 240 sq. in.; for .049's; single, two, or three channels. 13L105 \$18.95

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	<p>Hegi DS 22 Engstrom Engine: .61 Fuselage Lgth. 59" Fiberglass Rotor Span: 55" Flying Wt.: 8½-10 lbs. Radio: 4-7 Channel Collect. Pitch: Optional</p>	<p>RC Helicopter Builders! Flyers! Even Dealers!</p> <h2>Have we got a Copter for you</h2> <p>The largest and most extensive fleet of Radio Controlled Model Helicopter Kits in the country today. Now even larger through the acquisition of Model Helicopters of Tustin, California.</p> <p>Look what we have in stock, ready for instant delivery. Compare with what you can find anywhere else.</p> <ul style="list-style-type: none"> • SCM Bell 222* • SCM Scorpion TOO* • WiK Boeing BO 105 • Graupner Bell 212 Twin Jet • Hegi Huey Cobra • Hegi DS-22 Engstrom • Schluter Gazell • Schluter Heli-Baby • Schluter Super-Baby • Micro-Mold Lark • KALT Hughes 500 • KAVAN Jet Ranger • KAVAN Alloutte II *Coming Soon <p>Every model built, tested and approved by our own RC Heli experts, headed by renowned builder and flyer, Lloyd Wheeler.</p> <ul style="list-style-type: none"> • Largest stock of back-up parts and accessories . . . to keep you flying. • Free advisory service . . . to keep you informed. <p>Come in, write or call us. Model Helicopters Division</p> <p>S.C. MODELER HOBBY SHOP</p> <p>Helicopters, Planes, Cars, Boats, Radios, Parts for RC Hobbyists</p> <p>995 N. McLean Avenue, Elgin, Illinois 60120 Dept. 102 312-697-3737</p>
	<p>Schluter Heli Baby Engine: .40 Fuselage Lgth.: 36" Bolt together Rotor Span: 40¼" Flying Wt.: 6½ lbs. Radio: 4 Channel Collect. Pitch: Optional</p>	
	<p>Hegi Bell Huey Cobra Engine: .61 Fuselage Lgth.: 72" Fiberglass Rotor Span: 60" Flying Wt.: 8½-14¾ lbs. Radio: 4-7 Channel Collect. Pitch: Optional</p>	
	<p>Kalt Hughes 500 Engine: .40 to .60 Fuselage Lgth.: 59" Fiberglass Rotor Span: 56" Flying Wt.: 7-10 lbs. Radio: 4-7 Channel Collect. Pitch: Optional</p>	
	<p>Graupner Bell 212 Engine: .61 Fuselage Lgth.: 55" Fiberglass Rotor Span: 63" Flying Wt.: 9 lbs. Radio: 4-7 Channel Collective Pitch</p>	

MODEL BUILDER

AUGUST

1976

volume 6, number 56

621 West Nineteenth St., Costa Mesa, California 92627

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Cover: Certainly an appropriate cover for this Bicentennial year, George Clapp's Fokker Trimotor "America" sits on the runway of Central Square Airport, in upper New York state. Power for the 71 inch span, 1-inch scale model is a single O.S. 40. The outer props free-wheel. Ship is a smooth, stable flier. Ecktachrome transparency by Ken Little.



Model Builder's new office at 621 West Nineteenth St., Costa Mesa, California 92627. The former owner/occupant blew a fortune on interior decoration. You gotta see it to believe it!

from Bill Northrop's workbench . . .

• The following account of a real-life incident is extremely well written. It is clear, concise, and without misleading exaggeration. We hope that everyone who reads it will react sensibly and in a mature fashion to its message. We also want to thank Walt Schroder, of M.A.N., for sharing this material with all of the hobby news media, and also congratulate Charley Viosca for an excellent piece of writing.

"Before I begin, let me make it perfectly clear that this accident was my fault. I feel that I am as cautious as one can be and I know this accident can happen to anyone. All of us, no matter how careful, do have moments of carelessness and that's when we get caught. Every modeler I know treats model fuel like a can of water. Fellow modelers, we are carrying a possible bomb and all of us need to be made aware of this.

"This particular Tuesday afternoon, I was ready to go to the lake and test-run two boats. My wife was fixing an early supper and I told her that I would load the van to be ready to go. That day, I had been breaking in an engine and had my can of fuel, along with the 12-volt battery and starter, sitting by the garage door. I had made a new box to hold all of my usual junk and had just painted it. Since it was still wet, I figured I would use the old ice box I had been using, just one more time.

"I picked up the can of fuel in my left hand and the battery in my right hand with the starter still hooked up. I almost put the battery down to disconnect the starter, but figured I would do it after I put them in the ice box. I bent over to set these items down, then all of a sudden there was a funny glow and my vision disappeared, followed by a terrible explosion and fire.

"Well, there I was, blind and on fire.

I must tell you that the urge to run was tremendous and had I run, it would have been fatal. I stood up and told myself not to panic and that I was alone, on fire, and had better save my own life or die. I immediately stopped breathing when the explosion occurred and knew that if I inhaled the fire, it would kill me.

"I was standing on my concrete drive and knew that I had to get to the grass in my back yard and groped for the latch on the gate. My second thought was to hit the flimsy gate and force it open if I couldn't find the latch. Yes, all of these thoughts were as they happened. You'd be amazed to know how fast your mind does work.

"Well, after opening the gate, I dove into the grass and rubbed the fire out on my face. To eliminate any chance of inhaling flame, I held my shirt in front of my face as a filter to breathe through. My next motions were to roll in the grass to the water hydrant about fifteen feet away. I turned the water on and bathed in it and put out the fire. I was lucky here too, as I had modified my hydrant to shoot the water out rather than down, and this made it much easier to get the fire out.

"After all this, my wife saw me and came out. This was when I discovered I could see only silhouettes and told her what happened. I then went into the house and got the fire extinguisher and put the fire out in the driveway and garage. Next I had my wife call the eye doctor, as my primary concern was for my eyes rather than the burns, as I make my living as a jet pilot and my eyes are a necessity. Next I took a bath and put on some cotton pajamas and had my son, David, drive me to the fire station where I got into an ambulance for the ride to the hospital.

"Let me go back and confirm one

thing that might sound confusing. That is the part about the flash and sound of the explosion. Yes, I was burned in the eyes before I heard the sound. All of the skin was burned off my eye balls before I had a chance to close them. My eye doctor told me that I came as close to being blind as possible without actually being blind. About all there is left to tell you is that I was a very lucky fellow. Both my hands, face, right arm, leg and knee received second degree burns, along with my ears. The eyes are doing fine and still check 20-20. I am home now and consider what happened to me can happen to someone else. If it had happened at a different location, at a flying field etc., I might not have been so lucky. All of what I told you took place in about eight seconds. Any longer would have resulted in more extensive third degree burns which would have meant a long hospital stay and skin grafting.

"Not too long ago, you may have read about the modeler who had a can of fuel explode in the trunk of his car with the result that everything was a complete loss, including the car. I also know that firemen in some cities are advocating eliminating the fuel in plastic jugs. Well, all I can say here is that this particular accident would not have happened had the fuel been in plastic. The reason the fuel blew up was the fact that the starter battery clips touched the can, and when they did, the can got red hot at the two contact points and acted just like a glow plug. The fumes at the top of the can ignited and blew the bottom out of the can, splashing the remainder of fuel (about 1/2 gal.) all over me. Now that this is all over, I do not relish the use of electric fuel pumps, although they are used thousands of

Continued on page 88

OVER THE COUNTER



Ford Trimotor by Sterling. Span is 34-1/4 inches.



Sterling's Tiger Moth, with 32-1/2 inch span. OK for new Jumbo rules.

● Ken Holden and his R/C 1/2A Aero-commander Shrike are no strangers to Southern California's flying fields. This must be one of the most successful and consistent small twins in this part of the world, in addition to being an attractive machine. It is now available as a foam wing/balsa construction Ace designer-approved kit.

Powered by two Tee Dee .049/.051's (not furnished), and requiring a three-channel radio, this unique airplane weighs 32 ounces ready to fly, on a 48 inch span, 290 square inch wing.

Look for it on your dealer's shelf, Ace Kit No. 13L112, at \$29.95.

Also from Higginsville, Mo, comes Ace R/C's answer to the FCC and the CB'ers. Its very popular Pulse Commander, for pulse proportional rudder-only radio control has gone 72 and 53 Mhz.

Using many of the features found only in much higher priced digital sys-

tems; double-tuned front end, super-het receiver, and transmitter RF deck as used in the Ace Digital Commander, this system is an ideal way to start or try R/C. It is also perfect for relaxed sport flying, with compatible actuators for your choice of .01 engines, up to 36 inch span (Baby); .02 engines, up to 40 inch span (Baby Twin); .049 engines, up to 42 inch span; or hot .049 to slow .15 engines (Stomper).

For only \$75, these units are completely wired and tested, and are complete with airborne nickel-cadmiums and charger. Available on all 72 and recommended 53 mhz frequencies, through your dealer or direct from Ace R/C, Box 511, Higginsville, MO 64037.

* * *

Ed Manulkin, President of Sterling Models announces that two additions to their "E" Series flying model kits are in the works and will be available in late summer or early fall.



Ace R/C's 48 inch span Aero Commander for 3-channel radio and two .049/.051 Tee Dees. Foam wings. \$29.95.



Sig's fully adjustable control line handle is only 69 cents.



Now available on 72 and 6 meters, Ace R/C's Pulse Commander, for \$75.



Jill Peck holds the latest Peanut Scale kit from Peck-Polymers, the "Ganagobie", cute little French home-built.



Hank Wheeler, owner of that beautiful Gipsy Moth, holds model of same. It's another new Peck-Polymers Peanut Product!

One is the popular 'Tin Goose' . . . the Ford Trimotor, in a 34-1/4 inch model; the other is the famous Tiger Moth, by De Havilland, in a 32-1/2 inch model. Both may be powered with rubber, small glow or CO2 engines, or electric motors, and may be flown control-line, free

flight, or radio.

These new kits feature parts of graded balsa, numbered for easy assembly. All materials except liquids are furnished, including three plastic dummy engines for the Ford, and a plastic cowl detail and spinner for the Moth.

The Ford is priced at \$11.95, the Tiger Moth at \$12.95. Tell your favorite dealer that you read about them in MB and to get yours on order. Or write Sterling Models, 3620 "G" St., Philadelphia, PA 19134.

* * *

This one we had to confirm with Sig! We thought the \$1 had been left off the price information. It is really difficult to believe a 69¢ 1/2A control-line handle

Continued on page 93



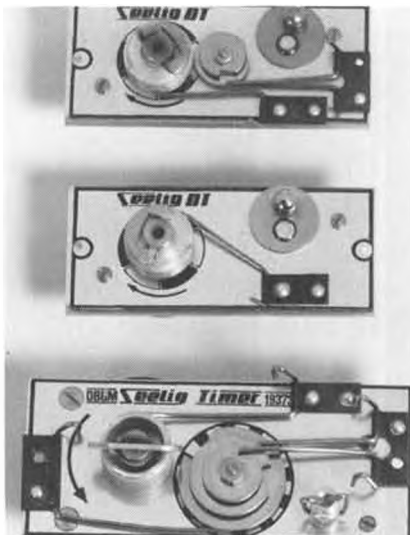
Latest production model of the Soling · M 50/800, as produced by Vortex Model Engineering. Complete kit and parts catalog now available. All products direct sale only.



Tatone muffler for use with new K&B .21 when used in 1/8th scale race car.



Millcott Corporation's new MC-1 servo, replaces older Orbit and Micro-Avionics.



Seelig timers, now being imported by Emandi.



Emandi is now importing the famous Bartels semi-finished fiberglass props.



PHOTOS BY AUTHOR AND KEN LITTLE

☼ FOKKER TRI-MOTOR ☼ "AMERICA"

An out-of-the-rut Classic Era scale design that is an easy and stable model to fly, by the creator of the Navy Flying Boat (Nov. '75 MB) and the Waco SRE (Dec. '74 MB) . . . GEORGE CLAPP

• The aircraft "America", a tri-motor Fokker, has been an interesting subject to me since I first laid eyes on it in a brand new copy of "Aviation" in 1928. I wasn't too far from being new either, at the time, being just 12 years old. I have had the issue ever since.

The following is not verbatim, but derives in large part from that 1928 magazine.

At the beginning of April 1927, at Roosevelt Field on Long Island, Lindbergh, Chamberlain and Livine, Rene Fonch of France, and others, including the then Cmdr. Richard Byrd and his crew . . . Bert Acosta, George Noville and Bernt Balchen . . . all waited for weather over the Atlantic to clear well enough for the flight to Paris. A prize of \$25,000 was to go to the first to accomplish this feat. Of course, as history has recorded, Lindbergh was the first, and winner of the then quite large sum of money. Then Chamberlain and Livine flew the Atlantic, and landed just short of Berlin with a new distance

record non-stop.

Of course this left Byrd, who at the start had been given the best chance to make the trip at all, in sort of a funk. He decided to wait until Lindbergh's return to make the flight. He did not think it proper to drop in as the Lone Eagle was then the host of all Europe.

To begin with, the America Trans-

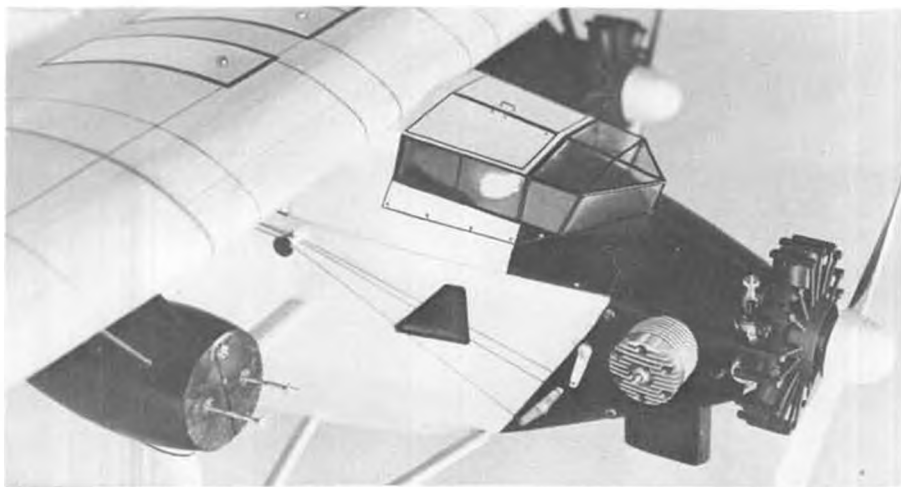
oceanic Company was formed, and obtained Byrd and his crew to fly their new longwinged Fokker tri-motor to Paris. Roosevelt Field adjoined Curtiss Field, which was about 20 feet lower. The company rebuilt some hangars and built a ramp for the "America" to get a better start. Thus, when a ship ran out of the length of Roosevelt field, it



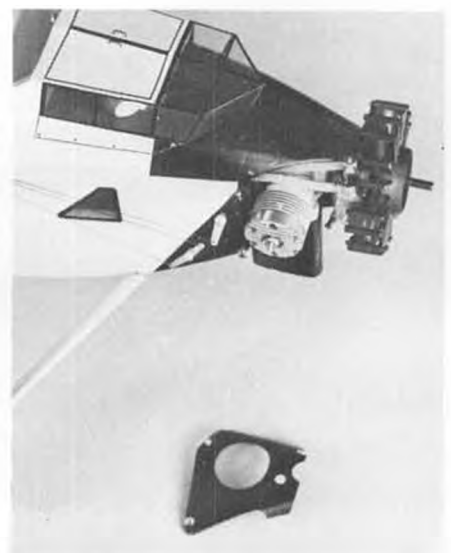
The Fokker required only minor trim adjustment for it to become a smooth, stable flier. Shock action of the landing gear struts is very realistic during ground operation.



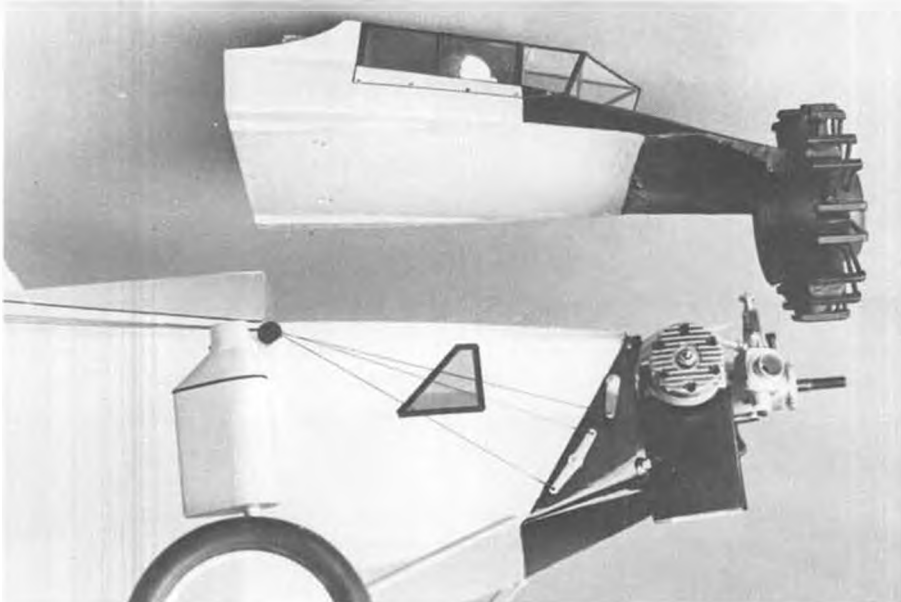
The "give-away" side of the Fokker, showing the head of the OS .40 engine in the nose. Of course, the outboard engines are dummies, with the scale-like props being allowed to free-wheel. High pitch on these reduces drag. Note external control cables (scale only).



Close-up of pilot's "greenhouse." Masochist author scratch-built the dummy, radial-engine pistons. Williams Brothers have a way of simplifying the job!



A portion of the cowl has been removed to show the snug engine installation.



Pilot's cabin and center engine cowl form a single-unit hatch for access to the fuel tank and engine compartment. Rear of cabin fits under leading edge of wing.

could rely on Curtiss Field for more distance on takeoff.

Byrd had considered Rome as a new goal and distance record, but before

takeoff decided on the original goal, Paris.

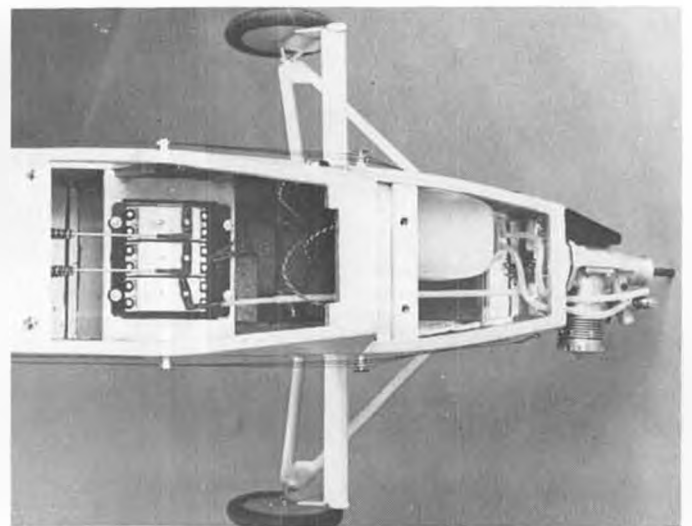
The flight had trouble right at the start, for as Acosta was warming up the

engines and checking the magnetos, the rope that was tied to the tail skid broke, and the Fokker started down the ramp. Acosta decided the engines were okay, so opened them all up and took off. Of course, the rope was to have been cut with all engines at full R.P.M.

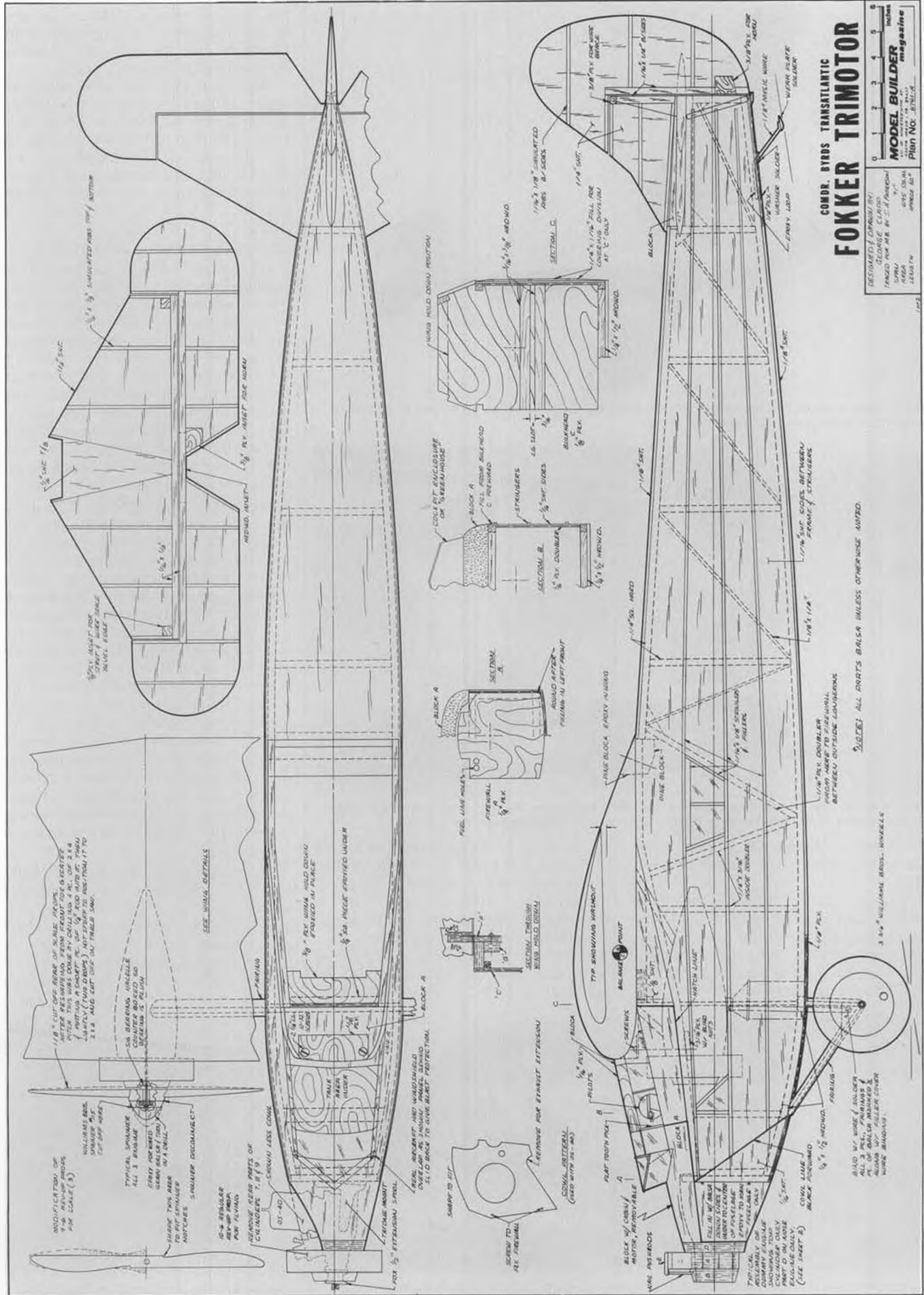
After numerous other problems, they did reach the coast of France the following early evening. With Balchen at the controls, he asked Byrd's permission to fly straight to Paris as the crow flies, as he knew the terrain. They knew by radio that fog might close in Paris shortly after dark, but Byrd took over the controls and made the decision to fly up the coast to the Seine River and follow it to Paris. By the time they got there, it was socked in with fog. Balchen then asked to take the controls and fly back to the coast for new bearings and to make a second try. They again reached Paris, but it was still fogged in. By this time, the fuel was getting low and Byrd gave the order to fly back to the coast and ditch the aircraft along the Normandy coast. The "America" was wrecked in



Strut fairing construction is shown. Also note exhaust extension and prop shaft extension.



Main cabin has plenty of room for radio installation. Too many modelers bury equipment, make it hopelessly inaccessible.



**CONDR. BYRDS TRANSLANTIC
FOKKER TRIMOTOR**

REGISTERED DRAWING BY
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NOTE: ALL PARTS BALS unless otherwise noted.

3 3/4" WILLIAMS BRGS. BOWELS



The Fokker rumbles overhead after takeoff. Long tail moment makes up for the small surface area of the horizontal and vertical stabilizers.



Two of the author's grandsons, Brad Sheldon (left) and Adam Sheldon, pose with the Fokker to give an idea of its size. Taken at Central Square Airport, upper New York state.

the landing. Acosta broke his collar bone; the rest of the crew came out okay.

I first thought of building the model when I came across a copy of Jim Duna-vent's 3-view drawing for M.A.N., published in the Dec. '64 issue. I first saw it in Dec. of '74 and became aware that it did not contain any color information

on the ship. So a year later, just before Christmas '75, I sent to the Smithsonian in Washington and got the color information. But after scaling it up to Duna-vent's drawings and starting construction, I came across Bjorn Karlstrom's 4-view drawing in color. It shows nose and nacelles blue, while the Smithsonian says they were black. I now

have four different sources of information and all are different in some respects, both as to color and details. (Welcome to the club of frustrated documentation searchers. wcn)

Most say that the wing was birch plywood finished with valspar varnish. So I came to the conclusion that, since back then varnish was preceded by several coats of orange shellac, that Bjorn Karlstrom's orange wing was probably about right. As for the nose and nacelles, I went by the Smithsonian black.

CONSTRUCTION . . . FUSELAGE

The shape of the fuselage in the cockpit area is very unusual, as the photos will bear out. The sides are built of 1/4 sq. hard balsa. The 1/16 plywood doubler in front goes between the longerons and flush with the outside of them. Vertical 3/16 x 1/4 pieces are then glued on the inside of the doubler, making one R.H. and one L.H. fuselage side. The 1/16 balsa outside is glued on at this time. The fuselage is the same width from bulkhead "C" back to the vertical behind the plywood doubler.

Starting with bulkhead "C", install the 1/4 sq. cross pieces in this area with a couple of 1/4 sq. temporary diagonals to hold the shape. Let this dry thoroughly. Then bring the tail end together, making sure it is straight. The nose, to be brought together with alike curves, will have to be well soaked with water forward of bulkhead "C" and weighted in a bit of an over-curve (because of spring back) and separately, or in other words one at a time, left to dry overnight. Then the nose cross pieces are installed along with plywood firewall. The back half of the top is then covered with 1/8 balsa. The bottom is covered with 1/8 balsa up to a point just rear of the landing gear (this shows on drawing). From here forward, it is covered with 1/8 plywood.

When covering the bottom front, leave 1/8 inch slots for landing gear wire at the 1/4 x 1/2 hardwood cross pieces. The two short pieces of longeron and 1/8 cover are then tied into bulkhead "C" at the top. Stringers of 1/16 x 1/8 balsa are now added to fuselage sides as

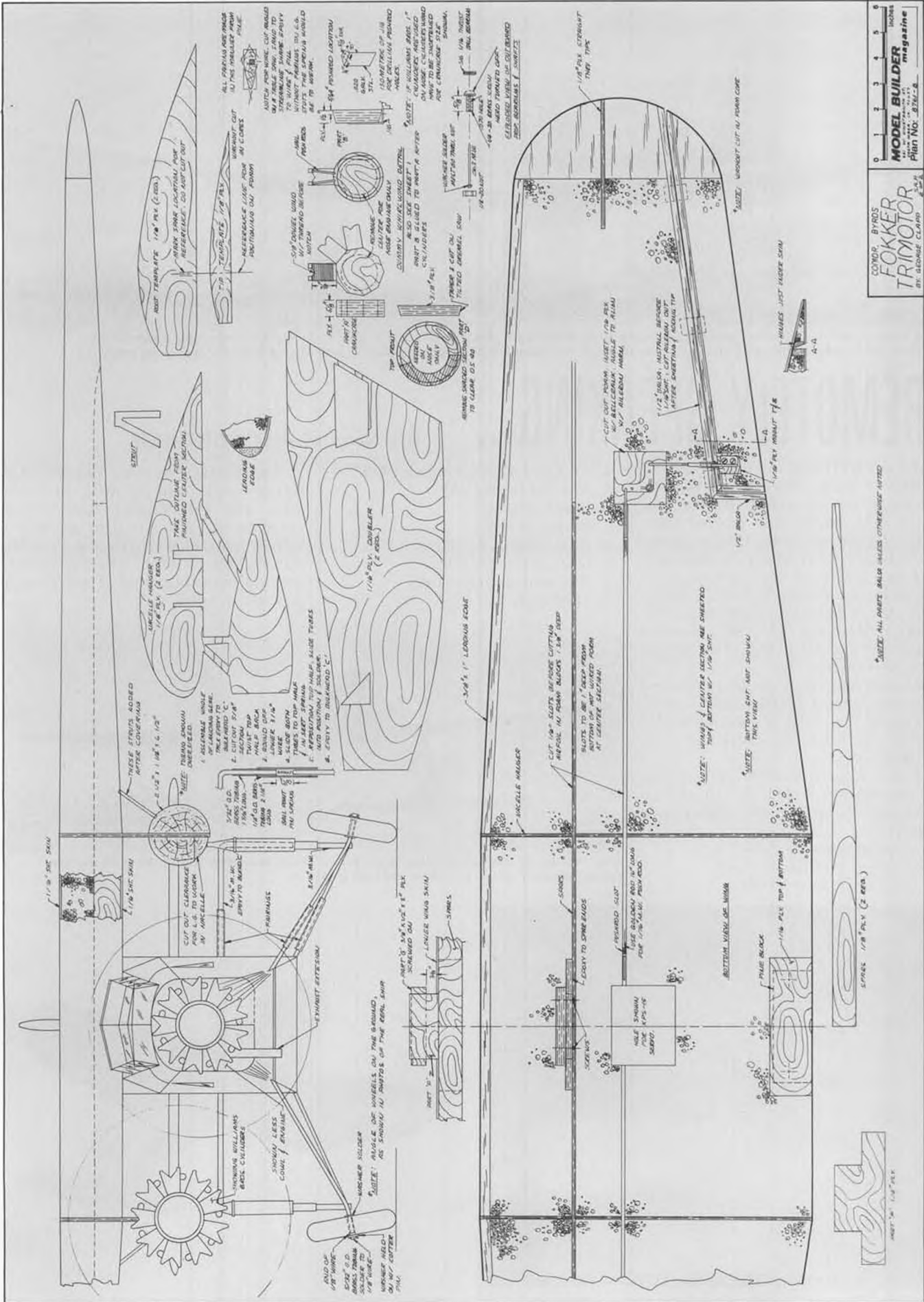
Continued on page 70



Author/designer George Clapp preps the OS engine for flight. Note pushrod showing through aft cabin window.



Underside of center section. Plywood wing retainer fits under notch in top of main cabin.



CONDR. BY: RDS
FOKKER TRIMOTOR
 MODEL BUILDER
 Magazine
 Plan No. 327-8

NOTE: ALL PARTS SALES OTHERWISE NOTED

SPRUE 1/8 PLY (2 KEYS)

SPRUE 1/8 PLY



Don Lien, Anaheim, California, was Grand Champion at the Morgan Hill World War II Scramble, flying this impeccable Supermarine Spitfire. All Scramble photos on these pages courtesy of the Pioneer R/C Club, co-sponsors, with MB, of this annual all-scale event.

'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

HALF-A PATTERN

With so many 1/2A versions of well-known .60 pattern ships being available in kit form, mostly with molded foam wings, it was inevitable that someone would organize a 1/2A pattern contest.

Though it may not have been the first, we offer as a sample 1/2A pattern event, the 2nd annual one put on by the MARCS (Madison Area RC Society, Wisconsin) on June 20th. The simple rules were as follows.

Aircraft Specifications: Maximum engine displacement of .051 cubic inches, maximum fuel load of one ounce(!), control functions not restricted . . . and that's it!

And here's the pattern. Zero points for maneuvers 1 and 2, ten points maximum for each of the remaining 9 maneuvers:

1. Launch (Upwind - UW)
2. Position for first maneuver.
3. Two inside loops (UW)

4. Two axial rolls (Downwind-DW)
5. Inverted flight (UW)
6. Cuban 8 (DW)
7. Vertical 8 (UW)
8. Four point roll (DW)
9. One vertical roll (UW)
10. Two outside loops (DW)
11. Spot landing.

The Vertical 8 is an outside loop directly under and following an inside loop, and the Vertical Roll is one complete roll, going straight up, with a quarter inside loop to start and a quarter outside loop to finish. All other maneuvers are self-explanatory. Time allowed was not specified.



Dale Sebring, of the Valley Fliers (San Fernando) was second in Sport scale with this neat Italian Macchi Fighter. It looked and flew great.



The Grand Champion Trophy, a very unusual piece of hardware. Bet this won't join the rest of the dust collectors!



Flaps and gear down, with wheels almost in the locked position, John Lockwood's 1st-in-Sport-scale F4U about to land. Realistic!



Earl Thompson was first in AMA Scale at Morgan Hill. This is the cockpit of his winning ME-109.



Cliff Weirick, former AMA President and Kraft Systems executive, now managing the Sanwa radio control division at Cox Hobbies.

The Four Point Roll could be the toughest maneuver here, because most 1/2A pattern ships use only aileron and elevator. Some couple rudder to aileron, but this removes the axial rolling capability, and a four-point would be just about impossible. The answer to all of

this will be the new super mini, Swiss motor powered servos soon to appear with Cannon and Mathis radios. These little dudes are 5/8 wide, 1-1/2 high including output arm, and 1-1/4 long. The hole spacing on the singular, clip-in servo trays is 1-3/16. Watch Cannon ads

for availability. The Mathis radio will be ready about the time this appears. Write to Mathis Electronic Systems, P.O. Box 132, Lake Havasu City, Arizona 86403, Phone (602) 855-3633.

In our opinion, the best thing going for this event is that it is completely uninhibited by "Big Brother" FAI. In fact we could, and will write a thorough editorial on this needless domination of many of our modeling events by FAI regulations.

Unique to pattern flying is the hand launch with zero points. On most 1/2A pattern ships, the gear is "retracted", or just a single wheel or skid is installed to protect the prop. In other words, ground handling is of no importance . . . flying is the name of the game. Many .60 pattern fliers are in favor of this . . . but again, we are intimidated by the FAI and cannot dare step out of line.

Anyway, Half-A Pattern could become one of our greatest R/C competition



No, it's not a Zero! It's a Japanese "Oscar" by Bob Lovitt. Seen at the Morgan Hill World War II Scramble.



Gorgeous DeHavilland Mosquito by Jim Meister, of Vista, California. This was about the best twin engine fighter/bomber in WW II.



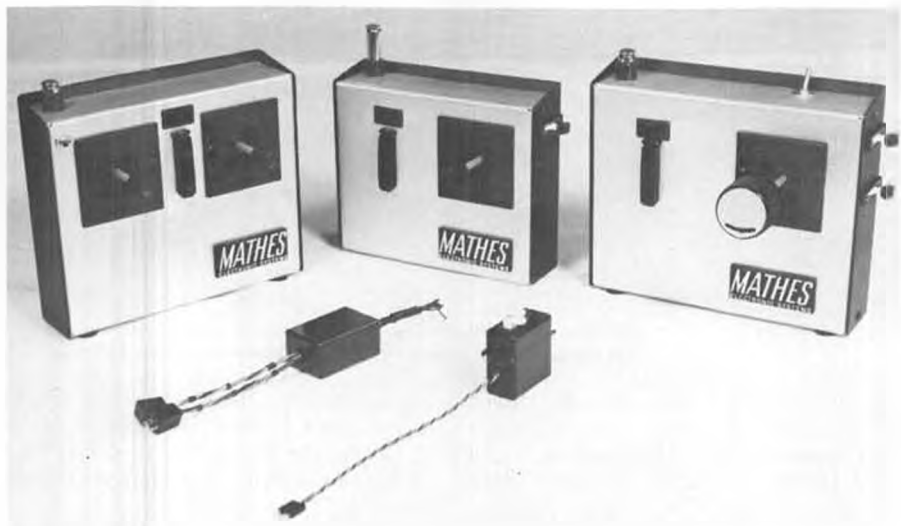
Pat Ray was first in California Scale, or Team Scale, with his realistic flying B-25 Mitchell bomber.



Howard Oseghada's Junkers JU 88 Stuka stretches for a landing. Howard, and Dan Sullivan, both flew Stukas in the contest, and placed 3rd and 2nd respectively in AMA Scale.



Dan Sullivan's Stuka reenacting its best known roll in World War II . . . dive bombing!



Don Mathes, a key figure in the development of digital radio control, is now producing his own system. It features a built-in battery warning LED system and will use new super-mini servos.

events . . . for the majority of modelers . . . it's uncomplicated, it's adaptable to small areas, the rules are simple, there's not much chance that the experts can make it over-exotic, and best of all, it's relatively inexpensive (how about 1 ounce of fuel per flight!).

CLIFFY'S BACK

Cox Hobbies' gain is KGL's loss, but Cliff Weirick has returned to California. Cliff, who left Kraft Systems as General Manager to go with Kraft Great Lakes only last year, has now joined Cox Hobbies division of Leisure Dyna-



Earl Thompson, a former hot-shot free flier, works on his AMA Scale winning ME-109. Had adjustable elevator incidence, and ground-handling similar to full size aircraft . . . terrible!

amics, Inc. as Manager of R/C systems.

While with Howard Bonner, back in 1965, Cliff won the National Pattern Championships in Willow Grove, PA, and also was a member of the U.S. FAI R/C TEAM. He was AMA President in 1968 and 1969, and is probably best known for his long superiority in Formula 1 Pylon racing.

Having Cliff in charge of the Sanwa Radio Department at Cox Hobbies will do a lot toward establishing this system on the U.S. R/C hobby market.

FAI SCALE

Results of the R/C Scale World Championships are in. The team standings put England first, Germany second, and the USA third. Our team members placed as follows: John Roth 8th, Bob Underwood 11th, and Steve Sauger 14th. Bob Wischer, who was defending champion, but not a member of the U.S. team, placed 4th. The individual winner was R. Nelitz of Canada, followed in second and third by B. Taylor and D. Vaughan, both of England.

We hope our modeling fraternity doesn't react to this lower placing of the U.S. Scale team as it did when our pattern fliers stopped dominating first place at the Bremen championships in 1969. There was immediate clamor for us to throw out our AMA patterns and switch to FAI, so we could again "rule the world."

If modelers are only somewhat turned off by the over-complicated AMA scale rules, they will throw up their hands in total despair at the hopelessly jumbled FAI scale rules. They are the product of a non-modeling rules committee, which without further comment, will give you a hint as to their impractical complexity. One committee member is known to have stated that no part of the model should be a manufactured product. "Quick, Henry, pump those bellows on my charcoal fire!"

And now, speaking of scale, here is John "Plug Sparks" Pond, to describe the World War II Scramble put on jointly by MODEL BUILDER and the Pioneer R/C Club, at Morgan Hill, Calif.

Morgan Hill World War II Scramble, by JOHN POND.

The Pioneer R/C Club, one of the



Young Novice flier, Ray Toolen collects 1st Place trophy and a .61 Profi from CD Bill Johnson and club President, Jerry Sochat (right).



Harold Parenti accepts trophy for Sport Scale win from Palos Park R/C Club President Jerry Sochat (right). CD Bill Johnson looks on.

oldest and largest Pacific Coast clubs, has just concluded its annual World War II Scramble; a contest devoted strictly to World War II flying scale radio control models.

This meet, the largest scale contest ever staged by the Pioneers, rivaled the Nationals in every respect; from number of entries, types of models, and class of workmanship in the AMA Scale Event. Based on the numerous comments, congratulations, and letters received by Eric Clapp, Contest Manager, to say the contest was a tremendous success would be a typical British understatement.

Of course, the advance publicity given by the co-sponsor, Model Builder magazine, helped immeasurably, as the entry list was double that of last year. Careful advance planning, along with a large amount of advance contest announcements, helped arouse interest to such a point that the local newspapers featured models prominently in their news items about the event. In addition, such long range advance notices were of a great help to modelers contemplating an entry for the meet. Matter of fact, Earl Thompson, a converted free flier, was able to construct a gorgeous Messerschmitt ME-109 in four months for the foregoing reasons.

The site, Hill Country Estate, in Morgan Hill, was an ideal choice, having a large flying area with carefully mowed grass. Despite the close cropped grass, some models still tripped on takeoff. By-and-large, all modelers had to agree it was a great place.

Hill Country features museums of airplanes and antique cars, along with an attractive restaurant called "The Flying Lady". Accommodations for children are still in the offing, as the amusement portion is still under development. For the spectators, the sloping ramps directly behind the pits are simply great for

Continued on page 60



Harold Parenti's Zero, which won Sport Scale at the '75 Nats, also won at Palos Park R/C Club Bicentennial Jamboree, May 15 and 16, Palos Park, Illinois.



Jim Betinis and his giant Fokker D-8, which he flew in Sport Scale at the Palos Park contest. Wonder if it flew with that big club bolted to the engine!?



Heathkit Delux Digital Stopwatch. Sun shield is clipped over read-out window for use in bright sunlight. Unit is powered by 6 rechargeable nickel-cadmium pen-cells.

PRODUCTS\$ IN USE\$

The HEATHKIT DELUX DIGITAL STOPWATCH . . . By Bill Northrop

● The Heathkit Deluxe Digital Stopwatch is a battery powered, handheld, electronic digital stopwatch. Its applications in competition modeling are almost limitless, as it is capable of seven different basic timing functions, individually selectable by a single switch. Time is displayed in digital numbers, in hundredths of a second, up to 99 hours, 59 minutes, and 59.99 seconds.

The stopwatch kit is available through the Heath catalog for \$99.95, slightly higher in Heathkit Electronic Centers. Address direct orders to Heath Company, Benton Harbor, Michigan 49022.

Managing to get a legitimate 6 meter license back in 1960 is the extent of our electronic ability, but even the more complicated radio and TV kits by Heath can be assembled with lesser qualifications. To build the stopwatch, you need just basic tools . . . but particu-

larly a fine-pointed, low-heat soldering iron for printed circuit work. Also, try to beg, borrow, buy, or steal a PanaVise printed circuit board holder that fits the regular ball-and-socket base. Truly a third and fourth hand, it holds the board while you install components, then flips 180 degrees so you can solder and clip off excess leads . . . without even removing the board.

First part of the construction is assembly of the 6-cell rechargeable battery pack, followed by assembly of the display circuit board assembly. At completion of the display circuit board, a test is specified to determine if the LED's (light emitting diodes) are operating properly. The charger is plugged into the circuit, and all LED's are supposed to display 8's . . . Ours didn't. We had 6's and topless 8's on two out of the four LED's.

At this point, the instructions go into a series of checkouts to determine what's wrong, or if any parts need replacing. Instead, though it's not suggested, we started switching LED's . . . on the assumption that if we put a good LED in the place of a bad one, and the good one read bad, then something must be bad on the circuit board . . . and if the good one reads good where the bad one was, then the bad LED *must* be bad . . . unless it reads good when it's plugged in where the good one was.

If you can understand that last sentence, you're either totally nuts, or you've been watching too many old Abbott and Costello movies!

Ya know what? After about 10 minutes of playing musical LED's, we got all 8's on the read-out. So much for "In Case of Difficulty!"

With our confidence restored, we dove into the main circuit board assembly, after putting the batteries on charge so they'd be ready when we completed the job.

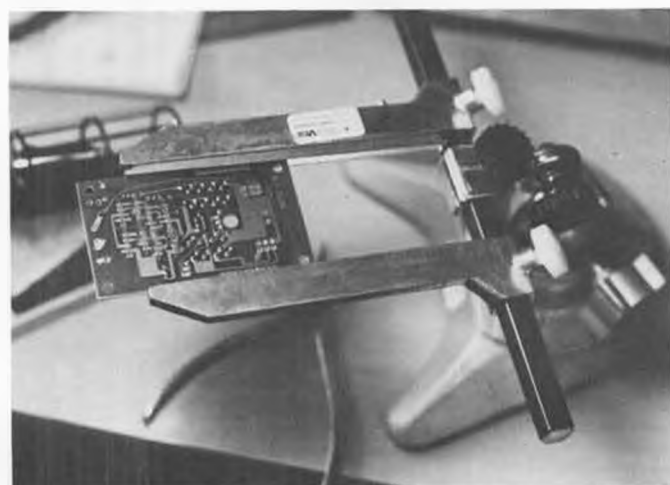
The kit builder is cautioned at several points during construction about the two large program event integrated circuits. These units are susceptible to static electricity damage until safely installed on the circuit board, so pay attention . . . their replacement price is \$18 . . . each!

Completion of the unit went without a hitch until we got to the checkout of each function. On three of the functions we got funnies. After superficial checking, we turned the unit over to our resident electronics genius, Eloy Marez. In about a half-hour, using a magnifying glass, Eloy found a microscopic solder bridge between adjoining foils . . . It cleared everything up.

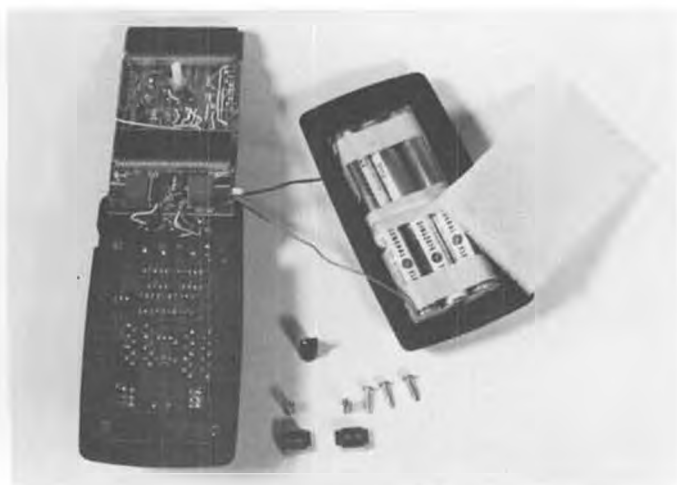
What do it do? Like any electronic computer, the Heath Stopwatch is only as smart as the person operating it. To explain each function would take too much space, but we can give you an idea of it's capabilities.

The watch has two pushbutton switches, a Start-Stop (S/S) and a Final-Stop (F/S). The first five functions use two

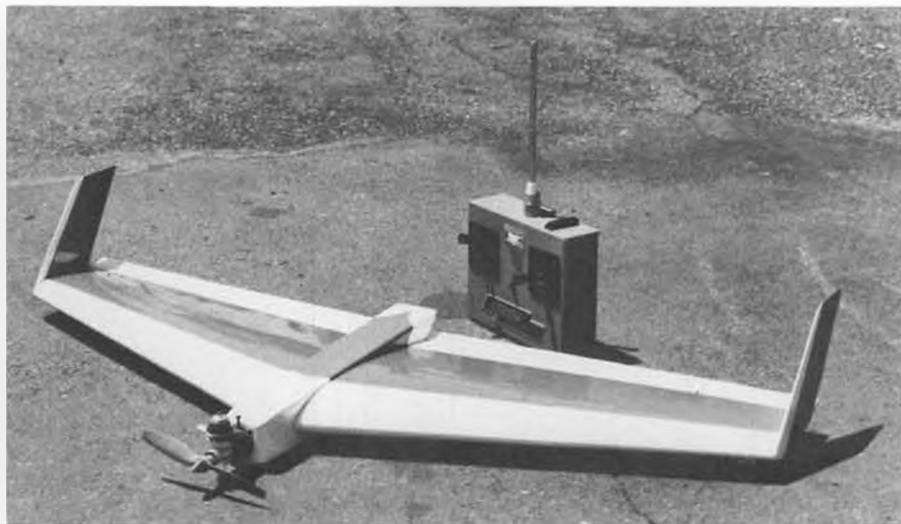
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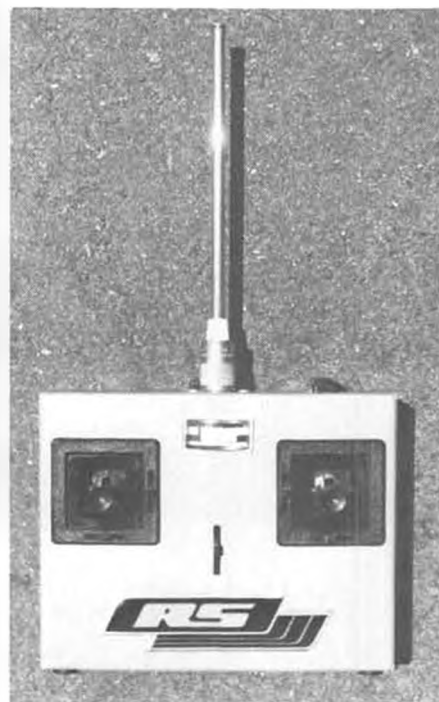
PanaVise printed circuit board holder was extremely handy during construction of stopwatch. Note orderly layout of board.



Completed unit just before final assembly. Four integrated circuits are the heart of the electronics. Completed in three short evenings.



Power version of "Free Spirit", with Cox .049 'QZ' engine. Span is 36 inches, area 272 sq. in. Flying weight ranges from 16 to 20 ounces.



Five-channel RS transmitter, with D&R open-gimbal sticks. Output rated at one watt.

PRODUCTS IN USE

TECH SERV'S RS RADIO and PEYTON PRODUCTS 'FREE SPIRIT' by Bill Northrop and Eloy Marez, with Tom Burbeck.

• This review combines one new product, Peyton Products' "Free Spirit" R/C slope glider or 1/2A power ship, and one "reconstituted" product, the RS radio control system, now manufactured by Tech Serv Company.

The "Free Spirit", manufactured by Peyton Products, P.O. Box 6423, Orange California, 92667, sells for an introductory price of \$19.95, and is a smart-looking flying wing configuration for the advanced R/C flier to use as a slope glider or a 1/2A power ship. It is a compact, one-piece, throw-on-the-back-seat type model, with a span of 36 inches and a flying weight of 16 to 20 ounces. Wing area is 272 squares.

Construction time on the Spirit runs 2 to 4 hours. All parts are precision machine cut, and consist of foam wing cores, lightweight poplar plywood fuselage sides, bottom, and rudders, balsa top hatch, all hardware . . . including Goldberg horns and wing (tail) skids, Peyton glider skid and servo mount tape,

and Airtronics "Vector Director II." Glider version is built with balsa nose-block, while power version stops at the ply firewall.

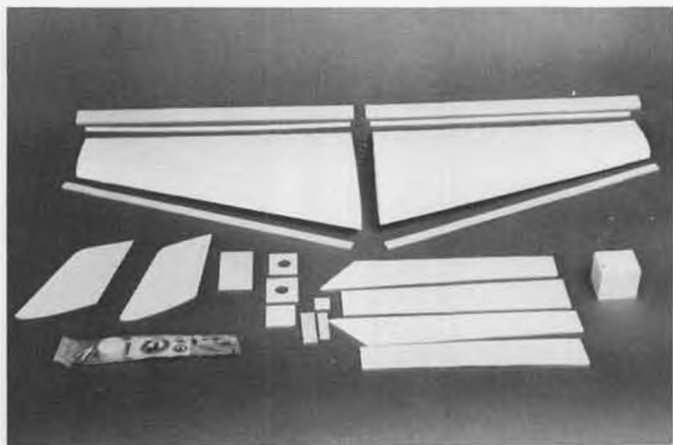
The two test models were built by Tom Burbeck. For experimental purposes, the power version was balsa-covered over the foam, then Monokoted, making it more rugged, but a snitch heavy at 21 ounces. The slope version was covered with Solarfilm, directly over the foam cores, and weighs 15-3/4 ounces.

Flight shots all show the slope version, with Tom Burbeck flying. We suspect, however, that most modelers will prefer the power model, as the little ship seems to require at least a steady 15 to 20 knot wind, and does best with around 25. Such conditions aren't too often available, except along coastal regions. The power version, on the other hand, is a barrel of fun, with either an .049 or .051 Cox engine. One-design Half-A pylon

Continued on page 92



Snug radio installation in glider version uses two-servo brick and 225 mah battery.



All parts of 'Spirit' kit are pre-cut and ready for assembly. All hardware is included, even Vector-Director for elevons. Plywood is poplar.



Builder and test flier, Tom Burbeck, at the La Paz slope site not far from MB office. Ship is highly maneuverable, for advanced fliers.



The Hawker Fury Mark I was possibly the most beautiful biplane fighter ever created. K2048 was No. 1 Squadron Commander's aircraft. 'A' flight leader had a red fin, 'B' flight leader had a yellow fin. Long landing gear nice for scale rubber props.

The HAWKER



PART ONE

By PETER WESTBURG



FURY

- Whenever men gather to talk about old airplanes, the name Fury comes up. It was an airplane, that once seen, be it in photographs or actuality, was forever remembered. It had the long, lean, hungry look of a greyhound, but it earned its reputation on more than just good looks. Under the highly polished aluminum and skin tight fabric was a tough structure of steel and aluminum, and a reliable, powerful engine.

Sydney Camm, whose name is legend, created the Fury. A stubborn proponent of the liquid cooled, in-line engine, he held out for the Rolls-Royce 12 cylinder Kestrel against the wishes of the British

Air Ministry. The Hawker Hart, a two-seat day bomber powered by the Kestrel and designed by Camm, was the fastest airplane in the skies over England, faster by 10 mph than the Bristol Bulldog, standard RAF fighter.

The Air Ministry had trapped itself, but out of the embarrassment came two airplanes that could catch the Hart. One was a Hart stripped of all bombing equipment, the Hawker Demon, first two-seat British fighter since the famous Bristol Fighter of WWI.

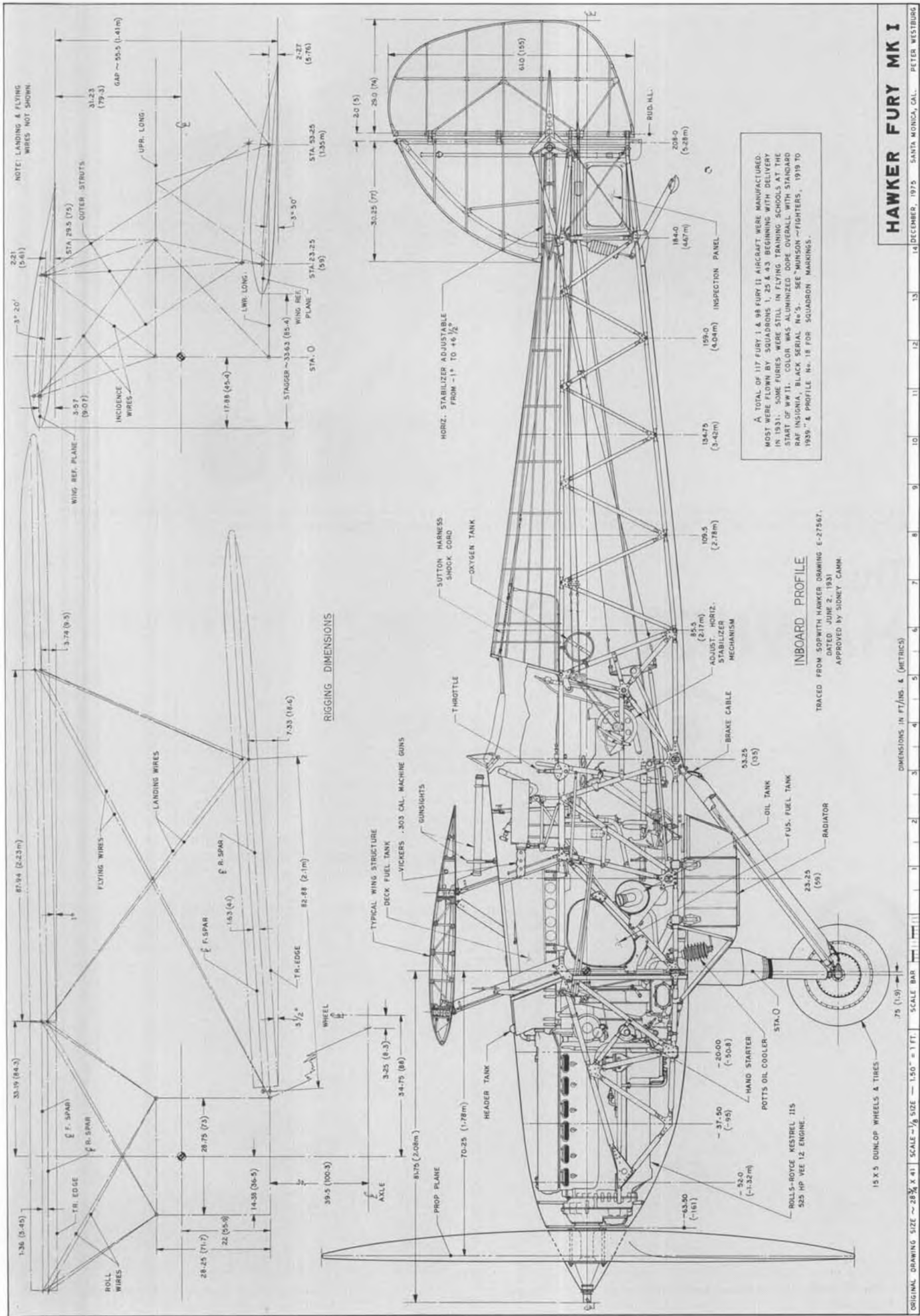
The other airplane was the Hornet. In actuality, a single seat version of the Hart, it was smaller, faster, and more



Fury Mk I's of No. 25 Squadron over the cloudy skies of England. 'A' flight leader in center of formation with dark red fin.



K1927, the 2nd Fury produced. Note similarity of fuselage profile to the Hawker Hurricane, which came along soon after the Fury.



A TOTAL OF 117 FURY I & 98 FURY II AIRCRAFT WERE MANUFACTURED. MOST WERE FLOWN BY SQUADRONS 1, 25 & 43 BEGINNING WITH DELIVERY IN 1933. THE FURY II AIRCRAFT WERE MANUFACTURED BY THE ROYAL AIR FORCE AT WINGFIELD, SOUTHAMPTON. THE FURY I AIRCRAFT WERE MANUFACTURED BY THE ROYAL AIR FORCE AT WINGFIELD, SOUTHAMPTON. THE FURY I AIRCRAFT WERE MANUFACTURED BY THE ROYAL AIR FORCE AT WINGFIELD, SOUTHAMPTON. THE FURY I AIRCRAFT WERE MANUFACTURED BY THE ROYAL AIR FORCE AT WINGFIELD, SOUTHAMPTON.

INBOARD PROFILE
 TRACED FROM SOPWITH HAWKER DRAWING E-27567.
 DATED: JUNE 2, 1931
 APPROVED BY: SIDNEY CANN



K1926 was the first of 117 production Mk I's. It was tested extensively at Martlesham Heath, the Wright Field of the RAF. Incidence wires were replaced by 'N' cabanes on later production models.



Furies of No. 25 Squadron in step formation. Some aircraft have camera guns mounted on right lower wing.

The Hawker Hart, faster than any British fighter at the time, was the airplane the Fury was designed to intercept. Many parts were common to the two aircraft.

maneuverable. Flying for the first time from Brooklands in March of 1929, it was an immediate sensation. It was the first Fury, and but for a regulation that all landbased fighters carry names beginning with 'F', it would have remained a Hornet.

Testing at Martlesham Heath, the RAF version of Wright Field, proved that the Fury had everything. It was the first fighter in the RAF to top 200 mph, doing 207 at 14,000 feet. It could climb to 10,000 feet in four and one-half minutes, and it was extremely maneuverable, with a fast roll rate and light

controls. It was truly a pilot's airplane.

The first twenty-one Furies were completed in the short space of three weeks, the first, K1926, flying on the 25th of March, 1931. In all, 117 Fury Mark I's were produced, but good as it was, the Fury Mark II had an even better performance.

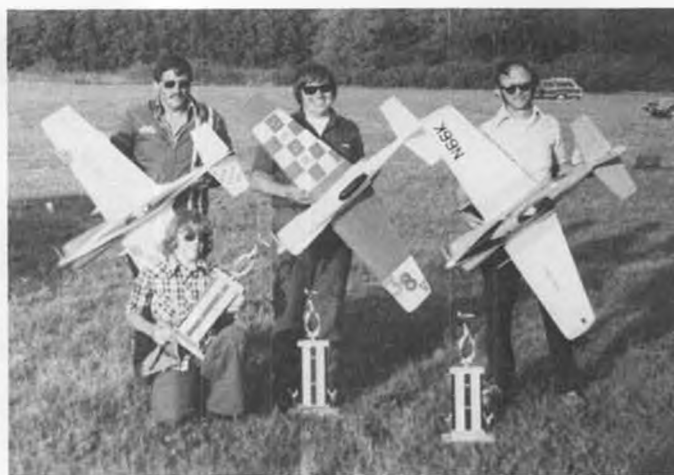
The accompanying drawings are based on prints obtained through Bob Coles of Hawker-Siddeley Aviation. Most were signed by none other than Sydney Camm, which should be proof enough of their official status.

Concluded next month.





QM winners at Dayton, Ohio, May 23. (l to r): Bill Weesner, 1st; Kevin Polzin, 2nd; and Ben Martin, 3rd.



Form I winners at Dayton, Ohio, May 23, (l to r): Bill Hager, 1st; Bill Weesner, 2nd; and Dave Keats, 3rd.

PYLON

JIM GAGER brings R/C racing back to the pages of MODEL BUILDER.

PHOTOS BY AUTHOR

"GO FAST AND Turn Left!"

● Boy, it sure is good to be back to RACING! The thrill of a new season starting can be likened to the fresh coming of spring. It's super to renew old friendships and make new ones, listen to the lying and B.S. of the other flyers, the sound of three or four screaming engines all running at the same time; even the sudden "whump" of an airplane going in can bring back memories of contests past. Hopefully, though, the "whump" you hear will be the other guy.

Well, I was afraid that with the Quarter Midget engine controversy being

resolved that there would be a lack of interesting items to write about. Such is not the case, however. First item to discuss is the statement by the NMPRA President Ron Schorr, in the April, 1976, NMPRA Newsletter, that Quarter-Midget flyers not belonging to NMPRA and wishing to fly in the QM Nats at Rough River, Kentucky, this September, are "freeloaders". According to the AMA rules, all you need to compete in an AMA sanctioned contest is to be an AMA member in good standing. While I am an NMPRA member and feel that it is desirable for all racers to be a member,

I think our approach to enlisting these non-NMPRA people into our ranks, should be of an educational nature as to the benefits NMPRA provides and has provided in the past, and how greater numbers of members will strengthen our voice where AMA is concerned. Let's not start a battle over NMPRA membership and possibly create a new problem of Formula I vs. Quarter-Midget flyers. We're all racers, whether it's Formula I or Q-M, so let's keep our house in order and work together.

The other problem area, and it's been with us for some time, that Ron pointed out, is the relativity of scale of Formula I aircraft to the full scale aircraft. Ron has suggested that NMPRA come up with official 3-view drawings that all planes will be judged against for handicapping. I think it's a great idea and feel that if it goes this way, we should not begin to use these 3-views until next year's racing season, as too many airplanes are already built for the 1976 schedule. Ron has asked for opinions and I would guess that he could also use some help in coming up with guidelines for setting up these 3-view drawings. While he may not be able to reply to every letter, you may send your suggestions to him. The address is Ron Schorr, 5224 Teesdale Ave., North Hollywood, Calif., 91607. Good Luck, Ron!



Our columnist, Jim Gager, checks over remains of last (obviously!) flight. Totally disinterested son, Allen, lends moral support. May 23. Dayton, Ohio O.P.R.A. races.



Dremel tool set-up for cutting grooves for 1/64 plywood inserts in sheet tail surfaces.



QM winners at Bloomington, Ill., May 16 (l to r): Phil Spies, 2nd; Denis Bielick, 1st; and Lynn Stevens, 3rd.



"How you goin' to keep them down on the farm?" Give them a toy airplane to race, and you won't be able to get rid of 'em!

RACE REPORTS

On May 15th and 16th, at Bloomington, Illinois, the Chicago Pylon Club sponsored a Quicky 500, Sport Pylon, and Quarter-Midget race. Beautiful racing conditions prevailed, as it was warm and sunny, with 5-10 mph winds. Four rounds of sport pylon left Ray Donovan in first, flying his OS 40 powered Cherokee; second place was taken by Earl Dalton and third by Larry Walters. Five rounds of Quicky 500 found the following winners; 1st, Denis Bielick; 2nd place, Russ Burnett; and in 3rd, Chuck Cappis. Five rounds of Quarter-Midget ended with Denis Bielick, flying a Rossi-powered Pro Model Product's "Li'l Toni", subject of our building article, in first place; Phil Spies, with a Rossi powered P-51 in second, also fast time of the day, 1:35; and Lynn Stevens in third place with his Rossi powered Miss Paranoia.

May 22 and 23 took us racing in Dayton, Ohio. Saturday's racing was taken up with Quicky 500, which was won by Ed Nobora, second place to Bill Hager, and Bob Buzash wound up in third. On Sunday, Q-M was first off with five rounds of racing. Weather was

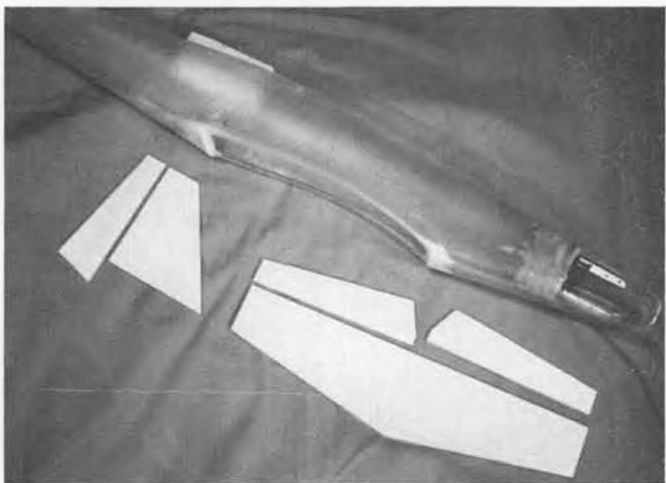


Site of the Bloomington, Illinois races is this beautiful farm land. The owner/farmer maintains the site, and it's for model airplane use only! Give us his name, Jim, he deserves recognition.

cool and windy, but by all means flyable. Bill Weesner, with his "Li'l Toni", took first place and also had fast time of 1:43; Kevin Polzin's "Cosmic Wind" landed him second place, and Ben Martin's "Cosmic Wind" grabbed third. The first five airplanes were all Rossi powered, and 14 out of the 18 entries were Rossi-run. Formula I had

Bill Hager winning with his ST X40 powered "Li'l Toni" and fastest time of 1:23; Bill Weesner copped second with his ST X40 powered "Li'l Toni" and Dave Keats claimed 3rd with his O.S. powered "Minnow" . . . Nice seeing you back, Dave . . .

This contest and the preceding day
Continued on page 64



Pro Model Products "Li'l Toni", tail surfaces cut out and motor mount installed.



Manufacturer's prototype of the Pro Model Products "Li'l Toni." One aileron (right) used on this one. Jim prefers two. See text.



John Minasian (of Helicopters Anonymous), and his Hughes 500 chopper. John installed Kavan Jet Ranger mechanics in this fuselage shell that was originally molded in fiberglass by Charlie Gilbert. Charlie had dropped the project to develop his successful electric chopper.

CHOPPER CHATTER

By JOHN TUCKER



• By the time this column appears, the Nats will already be under way, and the unofficial Helicopter Event, again run by Walt Schoonard, Chairman of AMA's Helicopter Advisory Committee, will be over. Even if you didn't attend or compete, why not dust off

your rotors and try the proposed maneuvers, as flown by the Nats contestants.

The proposed maneuver schedules are as follows:

GROUP ONE: NOVICE, K-FACTOR 15

1. Lift off, 15 second hover, land.

2. Lift off, hover forward 15 feet, land.
3. Lift off, hover backward 15 feet, land.
4. Lift off, hover to right 15 feet, land.
5. Lift off, hover to left 15 feet, land.
6. Lift off, hover constant heading Figure Eight, starting left, land.

GROUP TWO: INTERMEDIATE, K-FACTOR 15

7. Lift off, climb at 45 degrees to 25 feet.
8. One hundred foot straight flight.
9. Procedure turn, away from the spectators (ninety degree left turn followed by 270 degree right turn).
10. Return flight same path as No. 8.
11. Figure Eight away from spectators
12. Landing.
13. Lift off, starting left fly 360 degree fly-around and land (fly-around to be within 100 foot circle).

GROUP THREE, EXPERT FREESTYLE

(First number is K-Factor)

- 15: 360° hover, tail in.
- 25: 360° hover, nose in.
- 15: 360° hover, tail 45° low and in.



Skip Ruff's full-scale Focke-Achgelis 61 helicopter actually operates as an autogyro, and very well at that. Weight 4 pounds, OS .35, 3-channel, 37 inch rotor diameter.



Another view of John Minasian's Hughes 500, doing what it's made to do. Radio is Kraft Mode II.



Eastern chopper pilot, Horace Hagen, adjusting the Alouette II during the MAC Show in Anaheim, California.

- 25: Stationary hover, pilot circles 360° around helicopter.
- 15: Hover 50 feet, turn 180°, hover back.
- 25: Top hat. Fly 20 feet forward, climb 20 feet doing 360° turn, fly forward 20 feet, descend doing 360° turn, fly forward 20 feet.
- 15: Chandelle (Climbing 180° direction change).
- 20: Constant-heading loop entering from bottom, 50 feet diameter.
- 20: Constant-heading loop entering from top, 50 feet diameter.
- 30: Vertical eight. Ascending constant-heading loop, followed by descending constant loop, 50 feet diameter segments.
- 35: Loop.
- 35: Roll.
- 10: Stall turn.
- 15: Stall turn with 360° turn descending.
- 35: Auto rotation to landing.
- 15: Landing. This maneuver must start from at least ten foot altitude and is separate from auto-

rotation landing and must be part of freestyle selection.

TIPS FOR GYRO USERS

During the last MAC trade show in Anaheim, I had the pleasure of talking to Don Lowe, of Centerville, Ohio, who passed on a rather simple but effective tip for those of you who wish to fly with the Kavan Gyro, using only the radio battery for power. I was a little skeptical at first, but after looking over the schematics, I decided to give it a try. Sure 'nuff, it works . . . and it works well, without a single glitch, so we'll pass on the data to you.

If you'll remember from my September 1975 Model Builder article on gyros, it was recommended that the gyro motor be driven by a separate 4.8 volt nickel-cadmium battery. The reasoning behind this recommendation was that the 60 MA current consumption of the motor would reduce your effective flying time by 50%, if the radio battery was also used for the gyro power. You should also remember that the gyro contained two potentiometers; one of which was

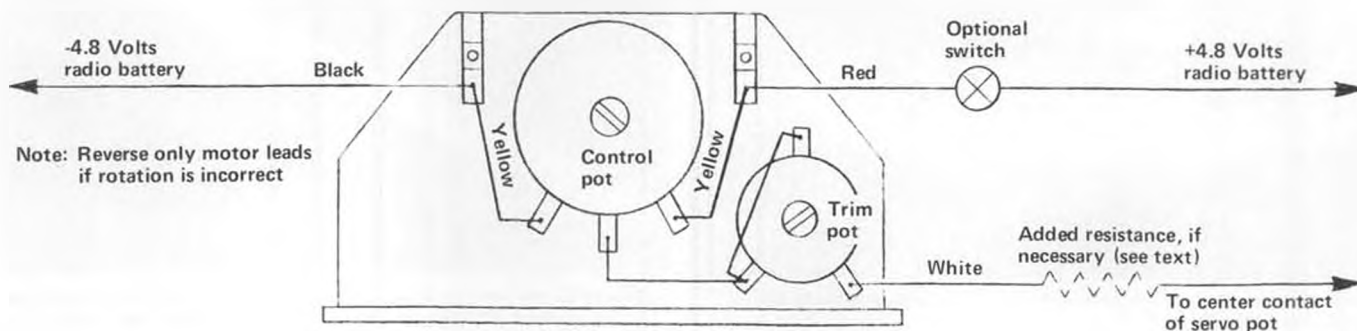
paralleled with the rudder servo pot, and the other to control the sensitivity of the device.

Don's idea is to eliminate the "extra" motor battery by connecting the red and black motor leads directly to the radio battery. A switch may be inserted in one of the motor leads for independent gyro control, if desired. An additional change in the wiring also eliminated the requirement for three wires running between the gyro and the servo, a single wire doing the job! This is accomplished by connecting the two yellow wires from the gyro pot directly to the nickel-cadmium radio battery (instead of to the servo). This is preferably accomplished inside the gyro case itself, by soldering the yellow leads directly to the motor terminal lugs where the red and black wires are attached. This leaves only the white wire, which must be run to the center contact of the servo pot, as before.

Now, let's review what has been accomplished . . . First, the gyro motor

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MODIFIED GYRO WIRING (FOR SINGLE BATTERY OPERATION)





The author's Gryphon, 400 feet over the Pacific Ocean, at Torrey Pines, California.



Clean lines of Scotty Jenkins' W-21 are evident in this head-on photo. Snug fit at root is important for maximum efficiency.

R/C SOARING

MODEL BUILDER's longest running column continues under a new by line . . . newly appointed President of the NSS, Dr. LARRY FOGEL.

● One of the attractive features of R/C soaring is the diversity of its aircraft. For example, there is the Gryphon, a thoroughly acrobatic, delta wing, elevon-controlled ship. Once properly balanced, it can execute inside and outside loops, Cuban Eights and of course, sequential axial rolls . . . and stay aloft even in light air. In flying this bird, you are struck by its quickness of response. Roll begins as soon as the stick is displaced, the roll rate directly reflecting the amount of that lateral displacement. The symmetrical airfoil (except for the elevon) makes inverted flight as easy as the conventional attitude. I was flying around in that attitude when a bystander commented, "Gee, you built the rudder on the wrong side."

This was the plane I entered in our

most recent acrobatic contest (flying against U-control profile ships and fully acrobatic birds like the Pterodactyl. The limits of its performance were mine, and even without the excitement of a contest, such a plane is bound to entertain the troops and thrill the spectators.

At the other end of the spectrum there's the new speed demon created by Scotty Jenkins. His W-21 (referring to the aspect ratio), sleek streak has been clocked above 120 miles per hour. The 8 foot-4 inch wing span, at 5-3/4 inch root chord, carries 24 oz. per square foot loading. The wings are formed of 6 pounds-per-cubic-foot styrafoam with spruce leading and trailing edges and full depth spars, covered with 1/2 millimeter 3-ply plywood, then 2 layers of fiberglass

inboard, stretching to 1 layer outboard. The rounded leading edge inboard becomes sharper outboard to aid the stall characteristics. Wingtip flares are used to reduce vortices and, thus, drag. Scotty claims the 2-7/8 wingtips exceed 70,000

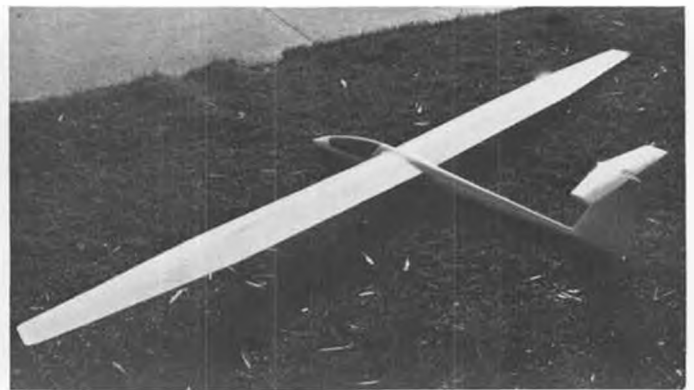
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Scotty Jenkins and his super-slick W-21 (which refers to the aspect ratio of wing).



Radio installation in W-21. Note that control tubes appear to be built into fuselage shell.



The W-21 has been clocked at better than 120 mph. Wings are dense foam, covered with ply skin and fiberglass, spruce LE and TE.



"If you don't send pictures, you'll have to look at my airplanes!" The author's House-Of-Balsa "Nomad" with .020, for 1-channel power soaring.

PHOTOS BY AUTHOR



The 'Lone Renger' himself, with profile Cassutt Special. Foam wing, .049 C/L stunter.

The 1/2-A SCENE

By LARRY RENGER . . . Beginning of a series on the most popular and versatile size of model airplane engine.

• I'll try to keep this introduction short. The purpose of this column is to present information which will help all modelers who use 1/2A and smaller engines for power. We will deal with all phases: free flight, radio, & control-line airplanes, plus a bit for boats and cars. You can expect information on speed and sport, aerobatics and high performance.

This should become your column. Without the support of your letters detailing your theories, experiences, ideas, designs and photos of your models, I'll be forced to inflict my theories, photos, ideas, etc. upon you.

Finally, allow me to introduce myself. I have been a modeler forever, it seems, and I have always concentrated on the small engines. My very first engine was a K & B .049, which I got at age eight over twenty-five years ago. I first learned control-line, then free flight

and finally radio control, all with 1/2A size aircraft. I have designed models for kits, articles, and the latest half-dozen or so Cox ready-to-fly aircraft.

The most important fact is that I sincerely feel that 1/2A size aircraft yield the most enjoyment in our hobby. This class of airplane costs less and is easier to store, transport, and handle than the larger classes. Also, it's easier to find convenient flying sites for the smaller, quieter models.

With the introductions completed, let's note where the action is. From my evaluation, 1/2A control-line trainers outnumber all other types of model aircraft. The numbers run into millions per year! Customers for ready-to-fly airplanes range from 11 to 14 years of age. That's where the juniors are . . . if you see one, for heaven's sake go help him!

For the enthusiast, 1/2A free flight

is the most popular competition, with 1/2A control line racing coming next, then 1/2A sport R/C aerobatics. Half-A R/C racing is coming up strong, and over the last year, there has been an upsurge in interest in serious 1/2A U/C aerobatics.

For sheer numerical entries, free flight has led the field at the Nationals since forever. Free flight scale is usually won by a 1/2A engine-powered model, and class A free flight is dominated by .051 powered Half-A models.

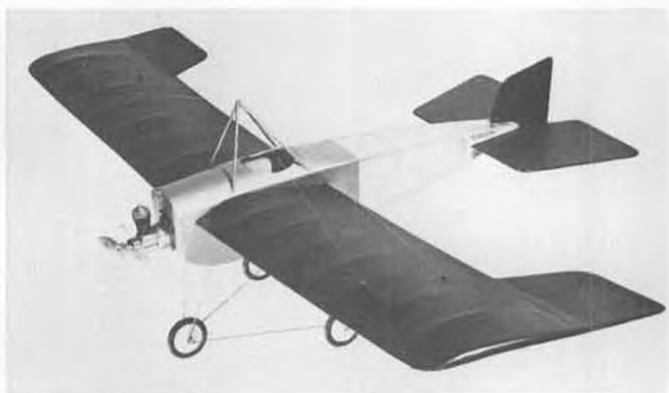
After over twenty years of sporty and trainer 1/2A R/C models in the magazines and kits, Ace R/C got serious with the Pacer kit, and gave us a model which looks and flies so well that no one need make excuses that it's great "for a small model." It's just plain great! Everyone and his brother has jumped on the band wagon, and there are over 50 1/2A R/C kits now.

Although there are very, very few kits available and rules are different everywhere, control-line "Mouse" racing and 1/2A scale racing seem to be the most popular 1/2A U/C events. Half-A combat comes next, and 1/2A control-line aerobatics is in its infancy, but is gaining some real enthusiasts. WAM has

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GMC's Half-A Chaos (Kaos?) has been modified with Sig canopy and starlight Ace wing, to look like Quick Fly. Aileron and elevator.



R/N Models' 1915 Lincoln Beachy is cute little scale free flight for .020 engine.



A LOOK AT **MODEL ROCKETRY**

By DOUGLAS PRATT . . .

● Competition has been important in model rocketry from the beginning of the hobby. At first, it was a legacy from the model airplane people involved in the formative years of rocketry; by now, when we're heading toward the

eighteenth annual NARAM (Nar Annual Meet), many events have evolved that are unique to the sport.

One model rocket manufacturer has always been able to say that it has offered a kit for each event in rocketry competition. Competition Model Rockets, was organized with that intention, and has a history of setting the standards of performance. This month we're going to review one of its newest special-purpose kits, and glance at some of their basic techniques while we're at it. Incidentally, you can get a catalog for 25 cents, I believe, by writing to CMR, Box 7022, Alexandria, VA 22307.

The Tachyon was developed as a somewhat-simple beginner's kit, with an interesting quirk in its ejection system. It is also an excellent model for Spot Landing, since its special parachute minimizes wind drift. The design is simple enough to be tackled by the younger modeler . . . this was part of the purpose of the kit. At a recent Pearl River Model Rocket Seminar, a five-year-old annual event sponsored by a New York school system, all of the participants built a Tachyon kit and fired it at least once; there wasn't a single failure. The picture was taken at the Seminar, and shows one of the students' kits lifting off with an FSI A4-4 engine.

Note the auxiliary tube to the right of the main tube on the model. This houses the parachute. The nose cone of the model is glued in and reinforced; and a port is cut between the main and auxiliary tubes. When the engine's ejection charge fires, the pressure passes through the port and fires the parachute out the rear. The model descends nose first with, as mentioned above, very little wind drift. This rear-ejection de-



Possible new FSI kit. Half-size scale model of Arcas sounding missile. Full size Doug Pratt holding. Photo by Dave Boynton.

sign concept can be applied to research rockets with extremely delicate payloads, since the payload would not be subjected to the shock of the ejection charge. The Tachyon is remarkable for the ease with which its chute deploys. cutaway drawing in the instructions. Construction is straightforward, with a couple of standard CMR features taken into account. First, the body tube is of a special lapped construction, which can easily be sanded to a very smooth finish with extra-fine sandpaper, such as Flexigrit. The nose cone is one of CMR's famous plastic jobs, which are so light you hardly know that they're there. They are moulded from egg-shell-thin plastic. The shoulder which fits into the top of the tube must be glued into the upper section of the cone. Airplane cement can be used, but must be applied very sparingly, as it can easily warp or melt the thin plastic. I've had much better luck with epoxy, being something of a fumbler . . . make a small batch to fit the shoulder in place, and then mix a larger amount to glue the cone to the top of the tube. Spread a layer of epoxy over the bottom of the shoulder before inserting into the tube. This will help reinforce it against the heat and pressure of the ejection charge.

A square of pasteboard is glued across the slanted top of the auxiliary tube to seal it. Again, I recommend epoxy, and a thick layer over the bottom surface of the cap. When the glue has cured, scissors can be used to

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PHOTO BY CRAIG KUHN

New CMR Tachyon kit, lifts from launch pad at Pearl River Modroc Seminar. Side pod contains chute. N.Y. looks cold!



PHOTO BY DEAN HENRY

Modified Estes Patriot. Extra tube and FSI D20 engine. At Rochester Rocket Soc. field.



John Kiker, builder of the shuttle model, and Owen Morris, manager of Shuttle Integration Program (left). Sterling Gazariator did lofting.



The Orbiter model being fitted to the pylon attachment system. Both models ballasted to simulate actual vehicle loads.



SPACE SHUTTLE

Special MODEL BUILDER Report

A modeler proves the value of his hobby to our space program. Let's see the CB'ers match this! By DOUGLAS PRATT.

• A space engineer's hobby has made a valuable contribution to NASA's Space Shuttle by simulating a crucial test in Shuttle development.

John Kiker, of the NASA Johnson Space Center, modified a 1/40 scale model of the Space Shuttle Orbiter that had been used earlier in floatation testing as a leisure-time project. He installed radio-operated servos to move the model's elevons for pitch and roll control, as well as rudder control.

Early in 1977, the real Orbiter will be lofted on top of a specially-modified 747 for the Approach and Landing Test (ALT). This critical test will give pilots and ground crews experience in a shuttle landing, which involves a glideslope of 21-24 degrees, and dead-stick touchdown at 185 knots.

The ALT concept originated with Kiker, and he now has responsibility for the separation mechanisms and landing gear.

In late November of last year, Kiker

began working up to his own ALT flights, using a sport model to loft the R/C shuttle. His project was sanctioned by NASA, but provided with no money or time; at that time, said Kiker, "The money was immaterial . . . it was a fun thing."

His flight tests were so successful that NASA gave the project full authorization, and Kiker began working on a 1:40 scale 747 model.

In an interview with MB in April, Kiker reported that the 747 was nearly complete. Two K & B 40 engines are being used to power the model, with Perry Pumps included to allow the use of a large central fuel tank. The outer two 747 engines are dummies. The model weighs 12 pounds, with 560 square inches of wing and with the Orbiter model aboard, the vehicle weighs 15 pounds.

"As it is now (with the sport model), I see no problems." Several flights were made, and Kiker expressed "a lot more

feeling of confidence" for the full test.

We have since been told that the 747 has made four successful flights, and that orbiter separation has been achieved. "The engines are fantastic," said Kiker; "they moved the model beautifully." NASA is preparing to gather data on more of Kiker's "mini-ALT" flights, and the project will make its contribution to the Space Shuttle program.

How much of a contribution? Well, NASA considered having the ALT simulated with models, but funding was cut back and the project was dropped.

Kiker's project will help to prove the concept in actuality, and may even uncover new data important to the flight. As John Kiker says, "The model has really done its job."



Orbiter and carrier plane climbing to position for separation test.



Carrier and Orbiter at takeoff. Scale model 747 has since been built for more accurate simulation of separation tests.



Separation accomplished! The Orbiter was then returned for a dead-stick landing, as will full scale Orbiter, in 1977.



Breathes there a soul so dead who has never constructed a Jim Walker "Fireball?" This one built by Mike Beach. This and other British C/L photos courtesy of Aeromodeller magazine.



Well known Aeromodeller Managing Editor, Ron Moulton, having a go with Mike Beach's O&R 60 powered "Voestak" at C/L OT meet.



PLUG SPARKS

By JOHN POND

• Old Timer Control Line in England! It was only a matter of time until this phase of old timer flying took hold in Merrie Olde England. I can hear the diehard free flighters moaning now, "Doesn't that Pond ever write about Free Flight?" Yes, he does, but not to the extent that we will only be talking to ourselves!

Organized by Mike Beach, the first "Fireball Trophy" vintage control line meeting was staged on May 2nd at Old Warden Aerodrome, England. (This is the location of the Shuttleworth Collection). This contest marked the first serious attempt to start old time control

line as a standard event.

Although this meet, hosted by Aeromodeller magazine, was intended strictly as a fun event, the trophy donated by Mike Beach proved a tremendous incentive. No less than 50 models entered! To say enthusiasm was tremendous would be the typical British understatement. The best part of the contest was the fact that contestants were able to fly all day despite the brisk wind that sprang up at noon.

Unlike the problems of free flight . . . a small field, and a steady wind . . . the modelers jumped at the chance to build that long remembered design. Fly them

they did, with no fear of losing that precious old motor, not to mention all the time and effort into building a model.

Models ranged from tiny diesel powered trainers to glow plug Hornets powering monsters on 90 foot lines. To show what a great time was had by all (and that they hadn't forgotten how to fly), crackups were at a minimum, with only one beautifully decorated and finished "Small Fry" succumbing to a vertical eight (the infamous figure nine maneuver!).

In true British fashion, many modelers went to extreme pains to reproduce the old control line model to exact authenticity. One contestant arrived with a superbly built Mills powered model and a can of the original 1948 diesel fuel!! It actually ran on this old mix!!

Judging was a real problem, as it was stressed that the trophy was more a token than a prize. Try telling that to the contestants!



Popular British old timer C/L Rick's "Box Car," at Old Warden Aerodrome, England.



Malcom Sexton shows off his winning "Hot Shot" with A.M. 2.5 cc diesel engine.



Phil McCary and his Shereshaw Cumulus, seen at Taft National F/F Champs.

When the dust had cleared, it was found that Malcolm Sexton was the winner with a stick flying "Hotshot" powered with an A.M. 25. Although the motor was not really an old timer, the competence of flying did it for Sexton.

In deciding who won, the judges looked for authenticity, workmanship, and performance relating to the original model. Under this system, it made no difference whether the model was a full fledged stunter, a trainer, or a speed model. In fact, the simplest and most popular model appearing on the field was the "Kan-Do", which had failed to do the pattern as outlined in the "Gold Trophy" days of 1940. Matter of fact, according to Mike Beach (our erstwhile reporter), nobody managed to get the faintest resemblance to the stunt schedule.

In conclusion, Beach reports that what was really impressive was the favorable reaction of the modelers, who sometimes find old time free flight contests a problem . . . with small fields, large and expensive models, plus windy days that seriously restrict flying. These reasons for the upsurge in control line interest in 1940, Mike finds, are just as valid now. Best part about this kind of contest, is the bonus engine collectors enjoy as they are able to fire up that old engine. Beach concludes by saying that old time control line will complement O/T free flight for years to come.

In another letter from Ron Raddon on the same subject, Ron noted that there were free flights and kites flying at the same field. However, these didn't seem to mix well (small wonder!).

Another facet of this good show was the establishment of a trading stand. The engine collectors had themselves a great day also. Appears this old Warden meet had a little for all old timer enthusiasts. We'll be looking for future progress in this most interesting phase of old time modeling.

MOTOR OF THE MONTH

If ever an engine looked like a real runner, then the Syncro Ace was the ideal representative. Unfortunately, when compared to an ugly engine like the Brown Jr., its performance was con-



The late O.C. Randall had a soft spot for O.T. Shown here with his Plecan Simplex.

siderably lacking. Even at its initial attractive price of \$13.75 (compared to Brown Jr. at \$21.50), it failed to gain many followers.

Designed by John L. Doll, the prototype was a pretty country fair runner, but when things got into production, this was a horse of another color. So another promising engine bit the dust.

Ralph Gould, who is responsible for sending literature on the Syncro Ace, claims his engine would start on the first flip. He further states his motor was the easiest starting engine he ever owned. He enjoyed competing with Brown Jr. engine owners as he could consistently out-start them every time. The motor he owns was used in a Buccaneer Standard, a popular five foot gas design by Berkeley Models.

Produced by Syncro Devices, Inc.,

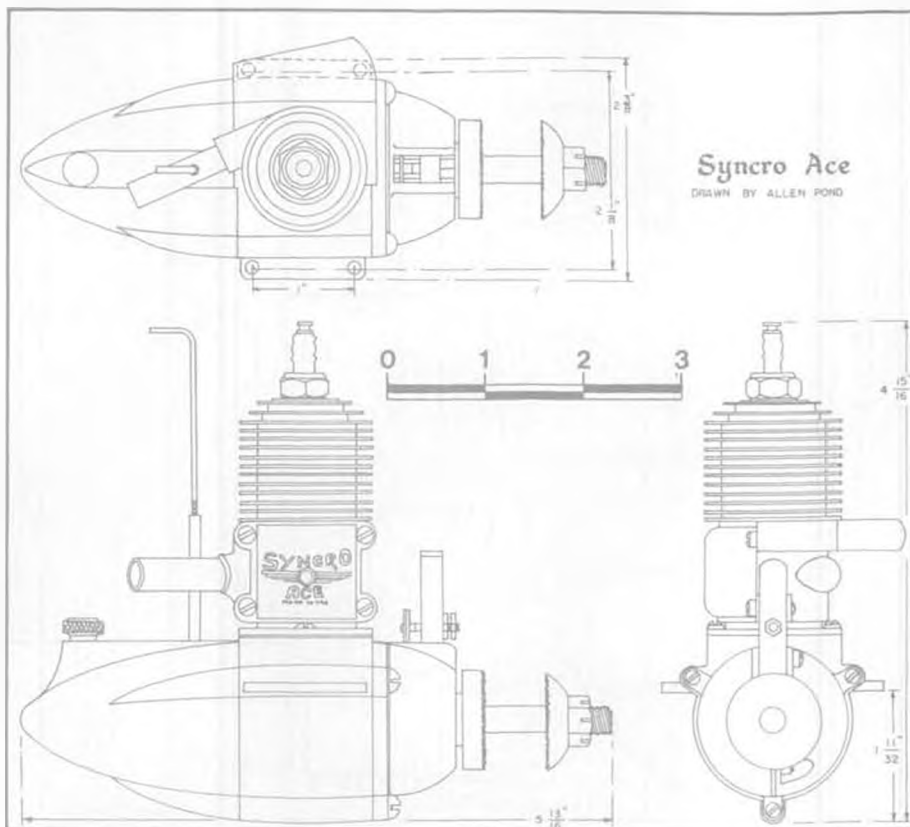


Sam "Micro Models" Blumberg with one of his products, an .020 Buccaneer.

743 Beaudien St., Detroit, Michigan, the engine came complete in the box with coil and condenser, the coil being a Delco-Remy. (Didn't know that General Motors built model airplane coils, did you?)

Interestingly enough, if you owned a Syncro Ace, you could get it repaired under factory guarantee for workmanship and material by enclosing 50 cents for charges! Some difference from nowadays!

For the benefit of the technically minded, the Syncro Ace was nominally rated at 1/5 horsepower. With a bore of 7/8 and stroke of 15/16, the engine was a nominal .60 cu. in. displacement (actually .57) rated with a motor speed





An Arden .09 powered Cleveland Viking, by Al Heinrich, of Pomona, California. A real cutie!



Another South Bay seaplane model, this time a Sal Taibi Powerhouse, by the late Stan Smith. Nose appears to be stretched.

of 10,000 rpm. The aluminum engine featured a steel cylinder with aluminum piston and steel rings. Specifications call for setting the spark plug at .010 and the breaker points at .020. (The writer prefers .012 on the breaker points).

The engine collectors should be interested, as Ralph Gould has a Syncro Ace still in the box (although it has been run). Ralph says he is open for any offers, so if your stable of engines is missing a Syncro Ace, here's a chance to acquire one. Write to Ralph at 2344 Thorn Tree Lane, Ortonville, Michigan. 48462.

AMA'S 50TH ANNIVERSARY

Trust Bert Pond to take the writer to task for lightly glossing over the fact that the Nationals at Wright-Patterson AFB this year will be the 50th year of National model competition.

As Bert notes, the first meet was all

free flight, and 50 years later, the heaviest event entry is still free flight. This is a real landmark for any type of hobby.

As most of you old timers already know, the SAM Championships will be a part of the National Model Airplane Championships, leading off the festivities on July 31, Aug. 1 and 2.

According to SAM President Joe Beshar, the welcoming bean feed will *not* be held at Wright Field. The fun will be at the Student Union at Wittenberg University. Bob Laybourne has been able to get the local professional people to sponsor the entire cost. That ought to bring out you free loaders!

Also worth mentioning is that Joe Beshar has been busy scrounging donations off the various modeling magazines. He has gotten as much as \$250.00 apiece from Model Airplane News, R.C.M., Flying Models, and our own Model Builder. This makes \$1000 for

trophies. The writer wonders what the heck is going on. The original idea of fun appears to be evaporating with big fancy awards being put up for the trophy hounds. How about that Joe?

U.S. FREE FLIGHT CHAMPIONSHIPS

While the U.S. Free Flight Championships will be reported by many of the modeling magazines, this columnist will confine himself to observations on the Old Timer phase of flying.

Upon arriving on the field, the writer noted that the large horseshoe of cars, campers, tents, etc., that surround the flying site was a little lopsided this time. The east side, where the old timers were located, was without a doubt, the longest leg of the U-shaped perimeter. No question about it, the old timer activity was truly impressive, with 77 entries on Saturday and 74 on Sunday! As usual, there was no old timer flying on Monday,

Continued on page 66

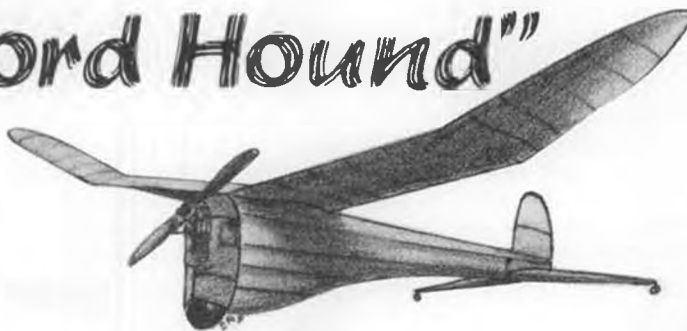
STRUCK'S "Record Hound"

OLD TIMER Model of the Month

Designed by: Henry Struck

Redrawn by: Al Patterson

Text by: Bill Northrop



● Though not as well known as some of the more popular Struck designs, the "Record Hound" had an unusually business-like appearance and incorporated many new ideas in design and construction techniques. Being true to its name, it set a 1939 NAA (before AMA was established) record with a three-flight average of 5:41, and this in relatively dead, mid-winter Eastern air.

The Record Hound was published in the August 1939 issue of *Air Trails*, from which our plans were drawn. Construction of the flying surfaces is pretty conventional except for the rib stiffeners . . . not caps as we use today,

but rather, strips of 1/16 x 3/16 glued perpendicularly along the side of each 1/16 sheet rib.

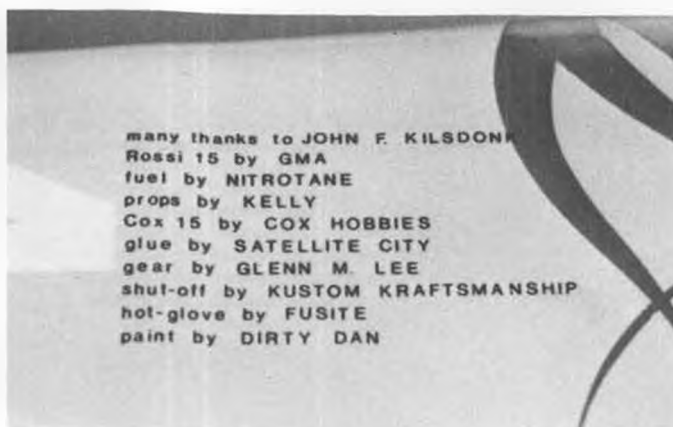
Without the four-step isometric drawings in the article, you may need help on the fuselage. The upper and lower frames are built first, over the plans. (Note that longerons overhang front crosspieces by 3/32 of an inch). The upper frame is then removed and mounted over the lower frame, using temporary spacers to maintain correct height while the uprights are installed. Next add the plywood firewall bulkhead. Now soak the bottom longeron in water and then run it over a soldering iron or other

hot metal until you have the approximate side-view shape. Mount the longeron by gluing to the firewall and fitting temporary vertical braces. Cut actual uprights to approximate length, glue in place against the corners of the longeron, and trim off bottoms when dry. Now cover the upper frame sides with 1/16 sheet. Finally, a 3/16 x 3/4 soft balsa cap strip is added to the bottom, side stringers of 1/8 x 1/4 are glued on, and miscellaneous fillets are added.

For once, we're not going to say that the O.T. Model of the Month will make a good R/C model . . . it just ain't the type! ●



Right wing panel on "Project Goodyear." Wing doesn't look this good any more . . . D.D. went and dinged it! Whatta cluge.



Left wing of "Project Goodyear" is the "payoff panel." Names are of manufacturers who contributed to the project.

Control line

By "DIRTY DAN" RUTHERFORD
PHOTOS BY AUTHOR UNLESS NOTED

● Last month we left Project Goodyear in the assembled, primed state; ready for the application of some "Some-Biz" paint. I'll go ahead and tell you exactly how I painted the Project plane . . . and then you can go ahead and paint in your usual fashion. Just remember that latex house paint is not fuel-proof, and only klutzes admire brush-marks!

First thing to do is to make a holder so you can easily position the plane while spraying. The holder pictured was cut out of some scrap aluminum I found on the floor (*Hope you wear shoes in your workshop, Dan! wcn*). The bolts screw into the blind nuts in the fuse, and jam nuts (on the other side of the holder) are cinched up against the holder to keep everything solid.

Now mix your paint (I used K & B Super Pox), thin it about 50% or so, and practice spraying on something smooth. Tin cans work okay for this. When you are sure the paint is the right consistency, and have confidence that you can shoot it without getting

runs, orange peel, over-spray, etc. get the plane ready for paint.

Start by either blowing lint off of the plane with the nozzle of the compressor or by vacuuming the whole plane. Either method works fine. Carefully pick up your tack-rag and shove it someplace appropriate. I don't care where you shove it, just don't use it on the plane! Been lots of good finishes ruined by the wiping of a tack-rag across a ready-to-paint surface. A clean, lint-free rag dampened with K & B thinner should be used to wipe down the entire plane just prior to applying the paint. Auto paint shops can supply special solvents for this, but K & B thinner works fine, and is probably closer to hand.

Grab the plane and the spray gun and start shooting . . . there's nothing to it. Well, maybe there are a few tricks, but I can't tell you how to paint . . . you're going to have to learn by doing . . . there's no other way.

With the K & B paint, I start at the front of the plane, being sure to get lots

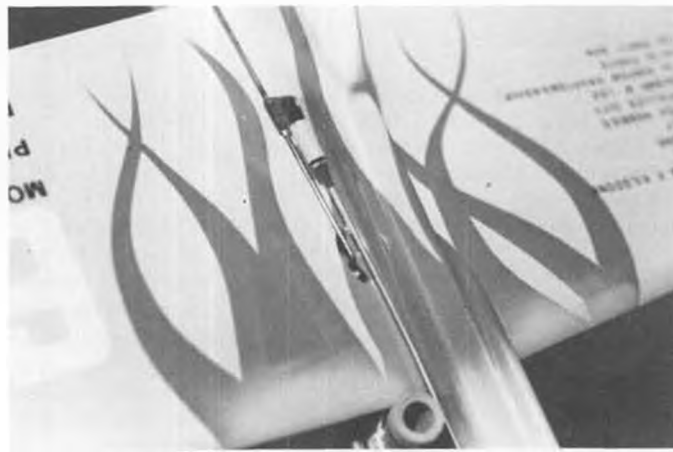
of paint into the motor mount area. Then I spray the entire fuse, being sure that each pass of the gun runs the entire length of the fuse to minimize the chances of dry spots and runs. With the fuse painted, I move to the wings and spray them complete, top and bottom. Be sure to get the leading edge, trailing edge and tips, these areas are easy to overlook. Now to the stab, again being sure to get complete coverage. As I use thread hinges for the elevator, I can paint the elevators separately, and I usually shoot them now.

Someplace in here, I should probably mention that the first coat of paint should not be very heavy. However, if you know how to spray, you already understand this, and if you don't know how to spray, you're going to hog on the paint no matter what I say. Get the message?

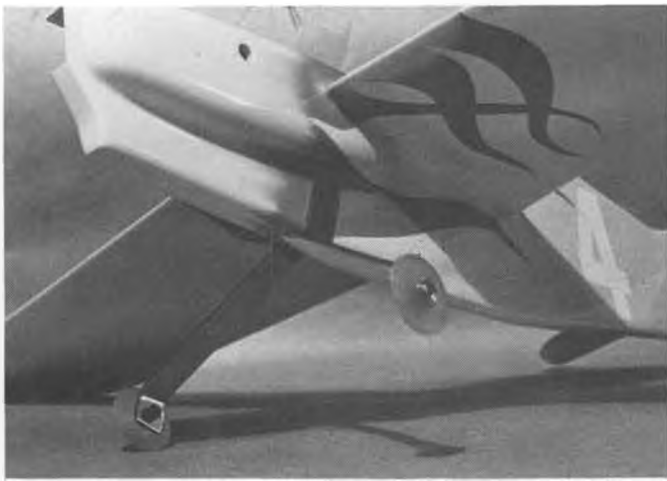
With the first coat of color applied, you can hang the plane up and wait for it to dry, which is probably what you're used to doing. However, with the K & B paint, I suggest that, upon complete



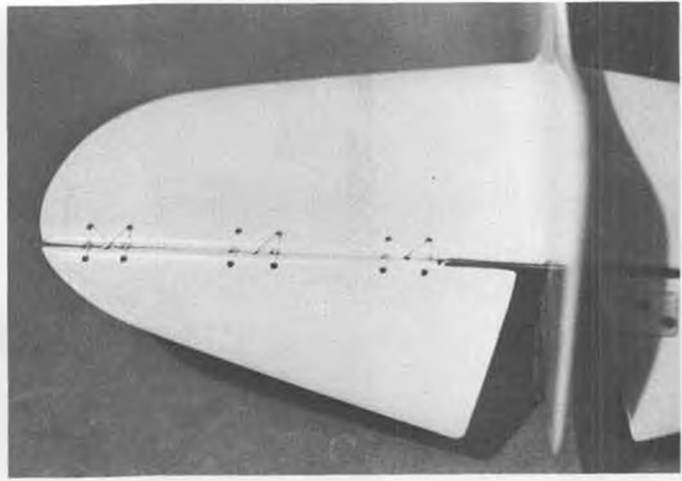
General view of engine/shut-off/tank arrangement. Avoid complicated set-ups. Simplicity is next to reliability . . . and that wins races!



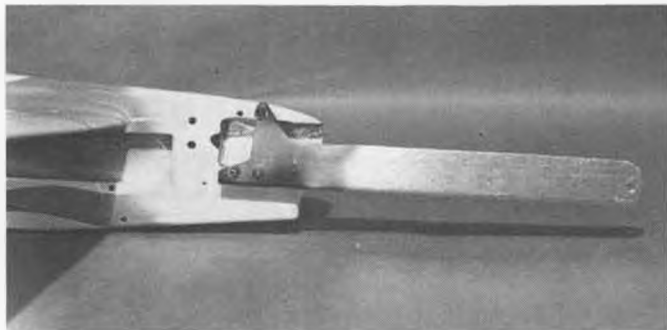
Linkage takeoff from elevator pushrod to actuate shut-off. Lock nut to hold adjustment. Brass horn silver-soldered to pushrod.



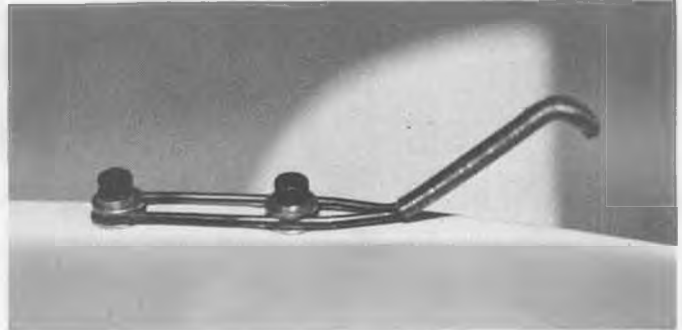
Glenn Lee titanium gear and molded wheels. Hole in cowl for reset button to Kustom Kraftsmanship shut-off.



Free-moving sewn hinges, with notches in edges for clearance. Joiner of 1/16 wire is removable.



Handy painting holder made from scrap metal. Can be hand-held or clamped in vise while spraying. Eliminates those finger prints!



Skid needs to be replaceable. This one of 1/16 wire was worn down a half inch after practicing and one race. Asphalt is very abrasive.

application of the first coat, you just go back to the front of the plane and start all over. The newest batches of K & B dry very quickly, allowing almost immediate application of the second coat. If the second coat doesn't cover to your satisfaction, you're probably doing something wrong. At any rate, keep on

spraying until you get the coverage and finish you want. Now hang the plane up and let it dry for about 24 hours.

Before doing anything else, clean the spray gun and do it right. That K & B paint that dried fast enough to allow complete painting of the plane in one night will also set up very quickly in

your gun!

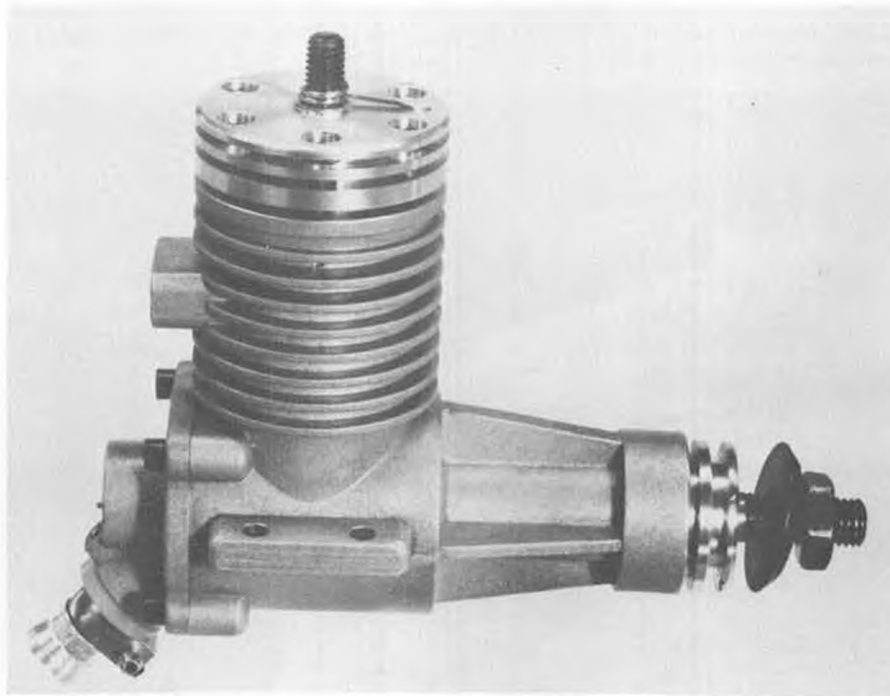
When the paint is dry, wet-sand the entire plane with 600 wet-or-dry paper. Use plenty of water and light pressure on the paper. At this stage, it's not necessary to use a sanding block any more, just be sure to sand in a circular motion and don't sand too much in any one area. Supposedly, you sprayed over a perfectly smooth surface, right? It's too late now to remove mistakes, you're just going to have to live with all those pin-holes!

At this time, I add the numbers and canopy trim. And I do the numbers, etc., the hard way . . . I paint 'em on. Use Monokote trim sheet if you want, it is a lot easier, but notice how ugly the numbers get after a few practice sessions.

The canopy is masked off with a good quality masking tape. The numbers are time-consuming . . . here is how I do it. Go to the hardware store and pick up some transparent, self-adhesive Con-Tact shelf paper. While at the hardware store, you may be able to locate some numbers that suit your fancy . . . or check with a stationery supply store for either stencils or stick-on numbers.

As the AMA numbers are the hardest, we'll do them first. On the *backing* of the Con-Tact paper, lay out a straight line and arrange your numbers, in *reverse* image, on the line. Outline the

Continued on page 78



Team Race diesel by Henry Nelson. Beautifully-done, and all reports say it is very competitive. For ordering information on this \$100 engine, see the text.

PHOTO BY HENRY NELSON



CONVERT T-6/SNJ TO CONTROL LINE CARRIER

PHOTOS BY AUTHOR

By ROLAND BALTES . . . Make Sig's T-6/SNJ a competition machine.

• If the lack of kits for Class 1 carrier has held you back from competition, you, like many others, have been overlooking the Sig T-6/SNJ kit, which has been around for many years. When modified as covered in this article, the Sig SNJ can be made into a competitive model which suits the new carrier rules that went into effect this year.

At a scale of 3/4 inch = 1 ft., the Sig kit provides all the basics to make a good flying model of a plane that probably trained most all military pilots during and after WW II, and still can be found at local airports. The choice of color scheme for the carrier event would be all yellow, which is quite a contrast

from the normally dark blue models seen at contests.

The major changes made in building the kit involve beefing up certain areas of the structure, landing gear, and tail hook and providing for the installation of a .35 to .40 engine. Before starting construction, get a 6 x 12 inch sheet of good quality 1/8 inch plywood, plus either a Roberts or G-S Products 3-line bellcrank, and a 2 to 3 oz. gas tank, which is not furnished in the kit. Since the size and type of engine to be used influences the construction, it should be on hand prior to starting construction.

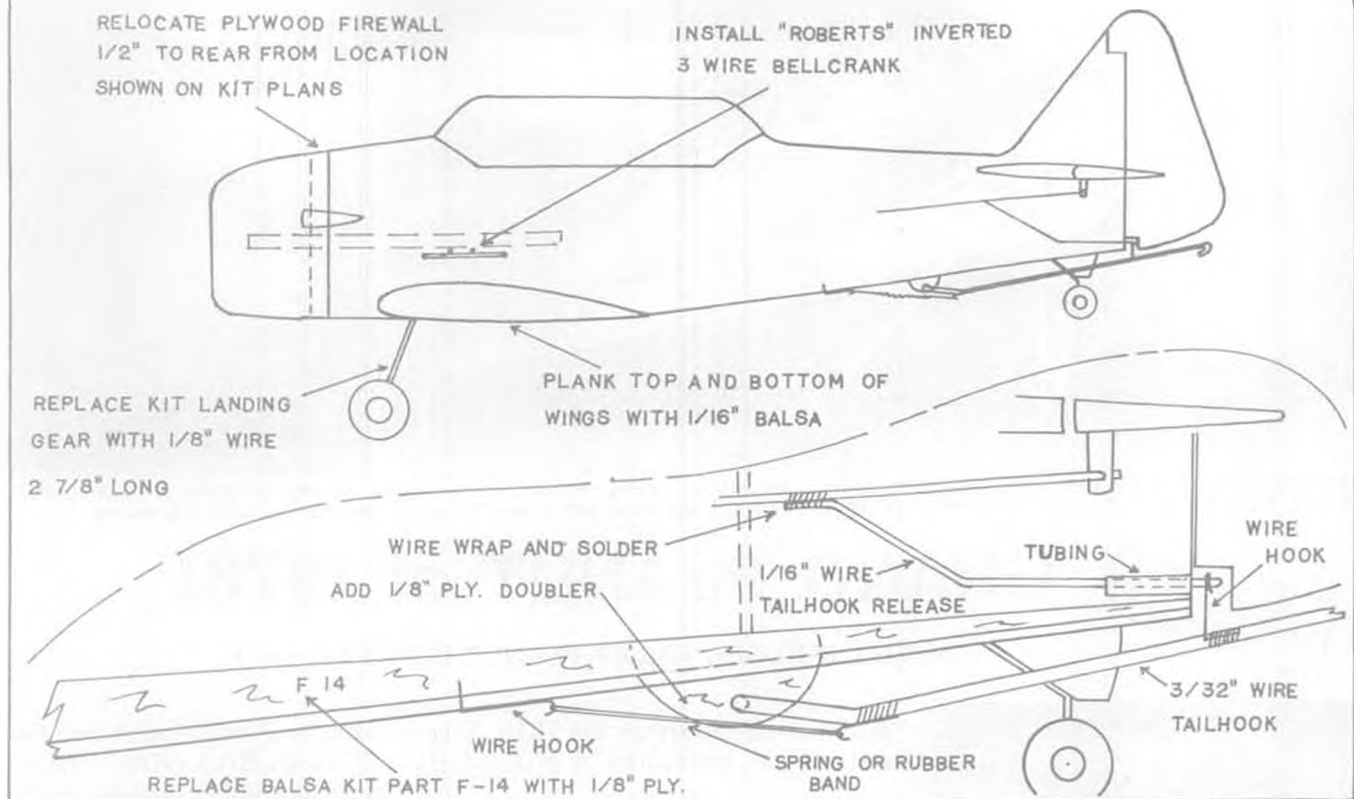
The steps outlined in the kit instructions are followed. This starts with the

wing. In Step 1, replace the center balsa spar (part W-1) and ribs (W-4) with similar parts made from 1/8 inch plywood. Trim 1/16 off top and bottom of ribs W-4 through W-10. This is to allow for sheeting the wings with balsa, rather than covering the wing with silkspan as suggested in the kit. In addition, use of a 3-line bellcrank will require running the center throttle line through the wing, similar to the rear elevator control wire. This requires two new parts W-11, which will have to be installed toward the front of the wing. I also installed 1/8 inch aluminum tubing as lead-out guides all the way through the wing. This makes it easier to get the wires through the wing after sheeting.



Wings of the modified Sig kit T-6/SNJ are sheeted with 1/16 balsa, replacing the silkspan provided. A Testor's .35 engine is a neat fit in the cowl.

"SIG" N.A. T-6/SNJ KIT MODIFICATION FOR CLASS I CARRIER



Replace the landing gears furnished in the kit with ones made from 1/8 inch music wire. These should be about 3/4 inch longer and slant forward to provide necessary prop clearance and improve ground handling. Install 2 to 3 ounces of weight in the right wing tip, then sheet top and bottom with 1/16 sheet balsa.

In constructing the fuselage, two modifications will have to be made to allow use of the larger .35 to .40 engines. First, the motor mount spacing will have to be widened, which means new motor mount holes in formers F-1 through F-3,

and the firewall. For strength, make new parts out of 1/8 plywood.

The tail hook installation was also revised from that shown on the kit plans. Make a new part F-14 out of 1/8 plywood and add a doubler (as shown on sketch) to provide for a tail hook mount. The hook itself is bent from 3/32 music wire, spring loaded when installed, and dropped during flight by a momentary full down elevator control movement.

After installation of the 3-line bellcrank and throttle push rod to the engine, the remainder of construction is

as per kit instructions. I found that the canopy provided in my kit was shorter than that required and depicted in the kit plans. This necessitates adding scrap balsa ahead of former F-5 to provide for a proper fit. The kit wheels leave much to be desired and should be replaced with a better quality pair. When finished and decorated with the decals provided, the model is a real eyecatcher. Use of epoxy type of finishing materials is suggested because of its fuel resistance qualities. After all, this model should provide you with lasting flying pleasure.



Author/builder's son Mike with finished model.



The center throttle wire through the wing is obvious in the photo. Sig kit decals are excellent.



The GRAND PEANUT for 1976! This Lacey M10, built by Jim Gerz, of Chicago, Illinois, was the highest overall point scorer in the 2nd annual MODEL BUILDER PARCEL POST PROXY PEANUT contest, which was flown off on May 22 and 23. His prize is a Kraft R/C system.



GRAND PEANUT of 1976!

• • • MODEL BUILDER PROXY PEANUT CONTEST • • •



About 90 Peanut scale models, in the process of being judged or flown.

A statistical report on the 1976, Second Annual, Parcel Post Proxy Peanut contest, sponsored by MODEL BUILDER. By BILL NORTHROP.

MODEL PHOTOS BY WARREN SHIPP
ACTION PHOTOS BY BILL NORTHROP

● At long last! Someone has finally taken away the huge multi-engine trophy, donated by TWA pilot Ed Toner! Ed donated the trophy last year, to be awarded to the highest scoring multi-engine Peanut Scale model that qualified. Two multi-engine models were entered in 1975; a Vought-Sikorsky "Flying Pancake", and a Handley-Page Bomber (honest!). Neither one qualified; not able to make a 10 second minimum flight time.

This year, both Bob Haight's Dornier DO-335 and Gerhard Ringel's P-38 seemed to have equal qualifying potential, but after the dust had cleared (or the rubber lube was mopped up) Ringel's P-38 had qualified and Haight's Dornier had not. Walt Mooney gave the Dornier a good try, but it apparently couldn't be tamed down enough to fly indoors.



Award for best shipping container went to Jack Little, Menlo Park, California.



Highest scale points went to John Krekovich, Overland Park, Kansas, for this Blackburn Monoplane. It was one of three entered.



Best Golden Age entry was this Comper Swift, by Clarence Mather, last year's champ. It was also third highest overall.



Moving day! On the Friday before, all entries, still in containers, were taken to the contest site and set up for the static judges.



Close-up shot of the Krekovich Blackburn. Remember, this is only Peanut scale . . . 13 inch span maximum!



Krekovich again! His Bucker Jungmann took 2nd in Golden Age. Had 20 second flight.



Bob Stewart, from Canada won the World War One event with this Fokker E-II.



Chuck Conover's non-kit Nesmith Cougar was 3rd in Modern. Highest scale in category.



Judge/proxy flier Bill Stroman launching Douglas Hinkel's Fairchild PT-26.

QM racer and columnist, said it flew right out of the box . . . no adjustments needed.

Incidentally, second highest total point score was another Lacey M10, by Dr. John Martin, of Miami, Florida.

Winners in each category were as follows:

PIONEER - John Krekovich (Kansas), Blackburn Monoplane, 92.5 (scale pts.) 18 flight pts. - 110.5 (total).

WORLD WAR I - Bob Stewart (Canada), Fokker E-II, 53.5 - 65 - 118.5.

GOLDEN AGE - Clarence Mather (Calif.), Compet Swift, 80 - 41 - 121.

WORLD WAR II - John Blair (North Carolina), Piper L4B, 67 - 10.5 - 77.5.

MODERN - Jim Gerz (Illinois), Lacey M10, 68 - 80.5 - 148.5.

Other awards were as follows:

Most Static Points - John Krekovich, Kansas, Blackburn Monoplane, 92.5 pts. (Hannan Trophy).

Best Workmanship Points (Foreign) - J. F. Frugoli, France, Hirondelle, (Hannan Trophy).



Judge/proxy flier Bill Hannan about to heave Dan Walton's Curtiss SO3C. Second in WW-II.

To start right at the top, Jim Gerz, a barber from Chicago, Illinois, won the Grand Peanut of 1976 Award (and a Kraft radio system), flying a model typical of several which some modelers would like to see put into a separate class, the Lacey M10. This ship also registered the longest flight of 1 minute, 24 seconds . . . not bad for a 30 foot gym! Proxy flier Fred Reese, an active

Best Workmanship (USA) - John Krekovich, Bucker Jungmann. (Hannan Trophy).

High Point Biplane - John Krekovich, Bucker Jungmann (86 - 18 - 104).

High Point Female Entry - Jill Peck (California), Ganagobie, 59.5 - 26.5 - 86.

Best Score by 15 Year Old, or Younger - Matt Johnson, I4 (California),

Continued on page 89



John Blair's beautiful geared drive SE-5A. Highest scale points in WW-I category.



Bert Kriebel's DH-6, from Mooney's plans in Model Builder. Fourth in WW-I.



Dr. John Martin's Santos Dumont. Highest in flight, lowest in scale, Pioneer category, 5th.



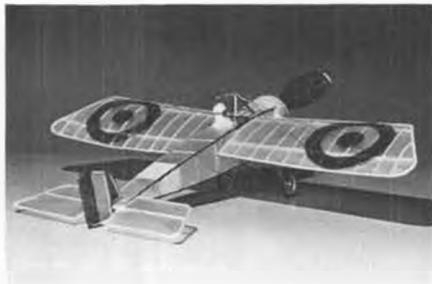
Jack Little's Consolidated PT-1, 8th in Golden age out of 23 entered. Scale rib spacing.



Sabel, of Germany, entered this Farman last year. Stored by Bob Peck and entered again!



John Blair's Travelair 2000. Highest scale tab in Golden Age. Placed 3rd. Highly accurate.



Doc Martin's "ghosty" Morane Saulnier, 6th in WW-I category. He's from Florida.



Nieuport Delage, entered in Golden Age category by Roger Aime, of France. 7th.



Second highest overall flight of 77 secs. by Fred Hall's SE-5. Mooney plans, 2nd, WW-I.

FREE FLIGHT SCALE

• The weekend of May 22 was pleasantly spent judging and flying peanut scale models for the 2nd Annual International Parcel Post Proxy Peanut Contest, sponsored by Model Builder magazine. This two-day affair is truly a learning experience for both judges and flyers. To be able to see first-hand the different models and the way they are constructed is really an educational

experience. This month I will cover some of the contest and perhaps, point out areas that could be improved upon.

For me, most of Saturday was spent in judging of the models. There were six scale judges, with each one doing a particular portion of the judge sheet. That is, one judge was responsible for wings, another for fuselages, and one each for landing gear, engine detail, tail,

MODEL PHOTOS BY WARREN SHIPP

By FERNANDO RAMOS

ACTION PHOTOS BY BILL NORTHROP

color and markings. Using this system accomplishes two things. One is that it makes the judging go much faster. I've been in judging situations where four or five of us deliberate over each category, and by the time one model is judged, a great deal of time has elapsed. Another is that if one judge is extremely easy or harsh on his evaluation, he can only prejudice one portion of the judging. In



Peerless Peanut Potentate, Walt Mooney, launching Blair's gear-drive SE-5A.



Fernando Ramos couldn't resist a flight with Roald Tweet's fun-entry Peanut Korda!



Don Eble launches Daniel Walton's tricky Henderson HSF-1. Golden Age category.



Really getting down to work, Walt Mooney launches Fred Hall's SE-5 on one of its long flights. Prop too long for R.O.G.



MB draftsman, Al Patterson, holds Dave Stott's Kalenin K-5, as Doug Mooney puts in the winds. There really is a rubber there!



Who said proxy peanut flying is a lot of hard work!? Judge/fliers Jack McCracken and Bill Stroman (right) compare experiences.



Sandy and Bob Peck, Peck-Polymers proprietors, prepare the propeller on the P-51 presented for proxy flying by Jack Little.



Gerhard Ringel's P-38, winner of Ed Toner's Multi-Engine trophy. Cleverly built.



Leduc RL-21, entered by Vlad Weclawick, of Czechoslovakia.



Dave Stott's Kalenin K-5. R.O.G.'s and spring plowing are a simultaneous action.



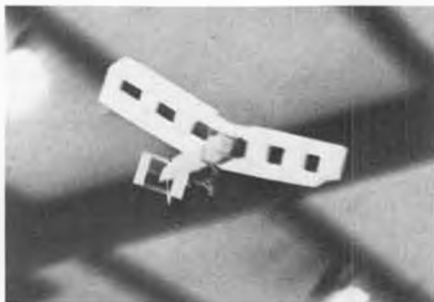
How much nuttier does a Peanutter have to be to fly a half-Peanut? Chuck Conover, Lacey.

this way it does not really affect the overall score.

It is interesting to note that for the most part, there are two extremes as far as the judging is concerned. There were those models that had a tremendous amount of detail and those that did not. I'm not going to get into the good or bad side of Peanut rules, but it is still obvious that flying is the main criterion of this event. The answer to this parti-

cular problem is a most difficult one, since Peanuts evolved to be a 100% FUN event. Unfortunately, there are those few who hold winning as everything, and these individuals can find loopholes in the rules that make winning much easier. So it is clear that many modelers with their very detailed, but somewhat heavier models, entered knowing the odds against winning. This is one reason I'm happy to see so many different categories. This way you have a much better chance of winning in a particular category in addition to the best overall Peanut. On the other side of the coin, there were several models that were "stark" in detailing, and there were many in between the two extremes.

Okay, let me discuss some areas of concern, both from the judging and flying standpoint. There must have been at least fifteen entries that had absolutely no 3-views of any kind. All that was provided were the building plans for the model. From a judging viewpoint, it



Doc Martin's Santos Dumont backs its way toward the gym ceiling. Did 48 seconds.

made our job easier, since we didn't have to award scale points to these models. If we wanted our job made easier we wouldn't be doing the judging in the first place. So, next time around, if you are in a bind for a 3-view, let me know personally and I'll try and locate one for you. Ironically, those models that needed 3-views were of rather commonplace aircraft. None of them were of a subject

Continued on page 82



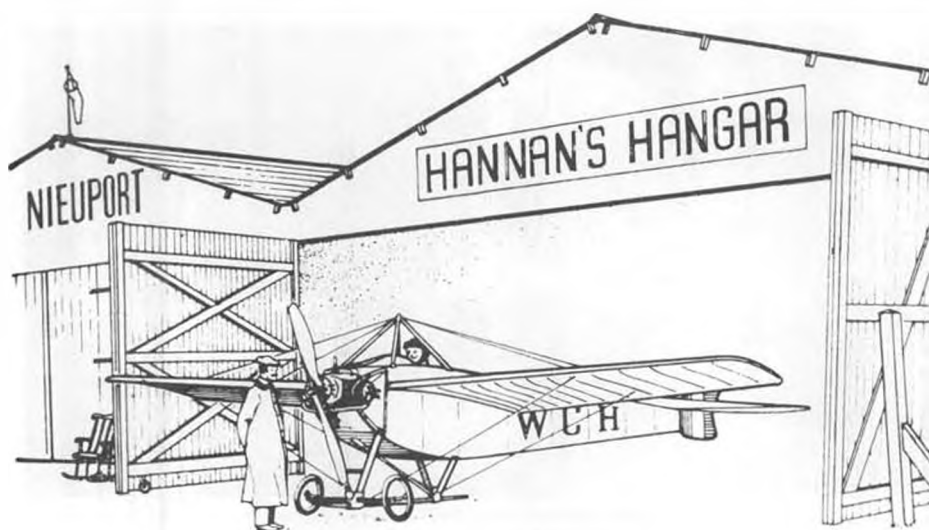
Just for area comparison; Tad Weclawick's Bonzo, and someone's Clipped Wing Cub.



Hirondelle, by Jean-Francis Frugoli, of Marseille, France. We have plans.



A cutie pie! John Blair's EAA Baby Ace, 7th in Modern. Are you lookin', Bob Upton?



"Look before you leap, think before you ink."

... which is certainly proven out when anyone makes any generalizations about real aircraft, especially historical ones! Our lead-in this month is a Gillical extraction, which fits our first topic perfectly. The late William Fleming's comments and questions regarding the trans-Atlantic Bellanca, usually called the "Columbia" brought forth several replies from our readers. First to arrive, was a note from Ron Moulton, editor of the line English publication, SCALE MODELS. Ron sent along photos of the aircraft in question, taken after it was flown across the Atlantic during later, Canadian ownership. Piloted by J. Errol Boyd and Harry Conner, the machine landed on Tresco Beach in the Isles of Scilly. Note the markings which include the Canadian maple leaf emblem on the fuselage side, yet retain the U.S. rudder registration characters, with the "X" rather crudely replaced with an "R". At this point in time, the machine evidently was known as "Columbia" and certainly the female on the rudder lends credence to it being considered that gender.

A second letter, concerning this aircraft, was received from George R. Nelson, of Pennsylvania, who informs us that Mr. Preston Snyder, personal friend of Chamberlin and the Bellanca family, has restored a "Pacemaker" in the markings of the original "Columbia". He describes the early logo (not the lady shown in our photo) as having a head of Columbia in browns and tans, with red, white, and blue surrounding rings. This emblem appeared on the left rudder side and the right side of the fuselage below the rearmost cabin window. Our thanks to Ron and George for this information. "A scale modeler's work is never done..."

"SECRETS ABOUT THE PEANUTS"
... is the title of an article appearing in the June 1976 issue of the French magazine "Le Modele Reduit D'Avion", by "Le Saint". We are indebted to Georges Chaulet for the translation, from which we have abstracted the following: "Cacahuettes is the name given to small plane models, rubber driven, with a 33cm wing span, looking approximately (like) full size planes



WARREN SHIPP PHOTO

Famous English aviator, Frank Courtney, in front of 'Semi-Demoiselle' at Ramona Airport.

really flying. Projects of planes which never flew are not admitted. The two characteristics which must be strictly respected are the wingspan, its shape and width, and the moment lever of the fuselage. So it is allowed to put some dihedral on the wing to improve stability. It is allowed, too, to enlarge slightly the tailplane, which is often very small on full size planes. Same thing about the prop diameter. According to these allowances, one can build pretty scale planes which can really fly, to content the builders and the onlookers.

"Attraction of the Formula: The reasons of the success of this layout (more than 100 models at the last [Paris] contest) are due to several advantages. At first, these models are small, which gives the opportunity to build and fly them in a small space, with only a few tools. They are cheap, and rapidly built. They can be kept in the house discreetly (There's a new one! W.C.H.). They can fly when there is no wind in walking places, such as woods, country, sportplaces, beaches.



The Bellanca "Columbia." Photo furnished by Ron Moulton. See text.



Close-up of "Columbia" rudder. Photo from Ron Moulton. See text.

It is even more fun if one can use a covered stadium or meeting hall.

"There are more advantages. When one is enjoying holidays, you can leave your wife reading a book or knitting, while you can take off a small piece of wood (to be used as a shipyard), and you can bet that one hour later while your wife is wanting to go out for a walk, you will want to keep home for your building!

"Enthusiasm of the Young: One is well aware of the youngster's enthusiasm about full size planes, and their scale reproductions. Unhappily, the large scale models are too often subject to bad building and bad checking. And the young guy, disgusted, does abandon modelism.

"With Peanuts, the passion of young boys, although there are some difficulties in building, can lead to making true their dreams. The budget is low, and there is almost never (serious damage) according to the fact that the Peanut is launched above the grass land, without wind. Even if the model is not well built, there will be but a very few repairs. The passion keeps there. The friend wants to do like you, and quickly it is quite a small team which will work altogether. And if somebody can help them, these youngsters will be caught by modelism. All the teachers and responsables of the Youth Associations can go along with us: This new form of aeromodelism is quite a fine way to take the attention of young boys.

"Oldtimers Go Back to Modelism Passion: Peanuts were needed. Free flight does need plenty of time, money, and possibility to cover large distances to reach a flying field. So, we are seeing now a return of Oldtimers to the Cacahuettes. Thanks to Walt Mooney, thanks to Bill Warner, thanks to Bill Hannan, thanks to Jacques Pouliquen. The Saint thanks you everybody and salutes you!" (More hails to oldtimers).



Quarter inch scale solid (yes, Junior, solid!) scale model of Ford Tri-Motor, built around 1948 by William Kee, Twin Falls, Idaho. Skelley die-cast engines. Dudley Studio photo.

So there you have it, folks, umpteen million Frenchmen can't be wrong. The Paris Peanut meet was even featured on television!

AND SPEAKING OF PEANUTS . . .

Donald E. Brown, designer of the Lanier Paraplane Peanut featured in Model Builder a few issues ago, now offers a selection of new plans, including some real rare birds, such as the Breda-Pensuti Triplane and the Makhonine 123 Polymorphic (how's that again?) retractable wing aircraft. Readers may receive a complete list for 10 cents and a stamped envelope. Write to: Square Deal Scale Models, Route 4, Box 303W, Tampa, Fla. 33615.

WELCOME CARL!

Living legend Carl Goldberg is now a firmly established member of the Southern California community, in case you hadn't heard. Now they will *have* to hold a Nats on the West Coast!

THE WARNER WEDDING

And, while we are passing out congratulations, we should certainly include same to Bill and Phyllis Warner, who had an appropriate, for air enthusiast's, nuptials recently. While the two were exchanging vows in a delightful outdoor setting, a bluejay watched, not

six feet away, and a North American P-51 droned overhead. When questioned about these remarkable coincidences, Bill replied, "It cost us a fortune to hire that bird!" The jay later turned bandit, and took off with an entire cookie, at a steep angle of attack, looking for all the world like a blue canard.

THE BUZZIN' BUZZARDS

We were favoured by a newsletter from the above named club recently, which prompted us to realize that a good percentage of our newsbits originate with such publications. Unless one has tried a stint at the helm of such a newsletter, you can't begin to appreciate the amount of effort involved. Our hats off to newsletter editors! In this instance, Frank Scott is the duty yeoman, and manages to sprinkle in a bit of humor among the contest results. Example (after mentioning the increased female participation in club contests): "Have you noticed that gals nowadays are more competitive? Now they are out to win! In the old days, Lady Godiva rode to show."

AND STILL MORE PLANS

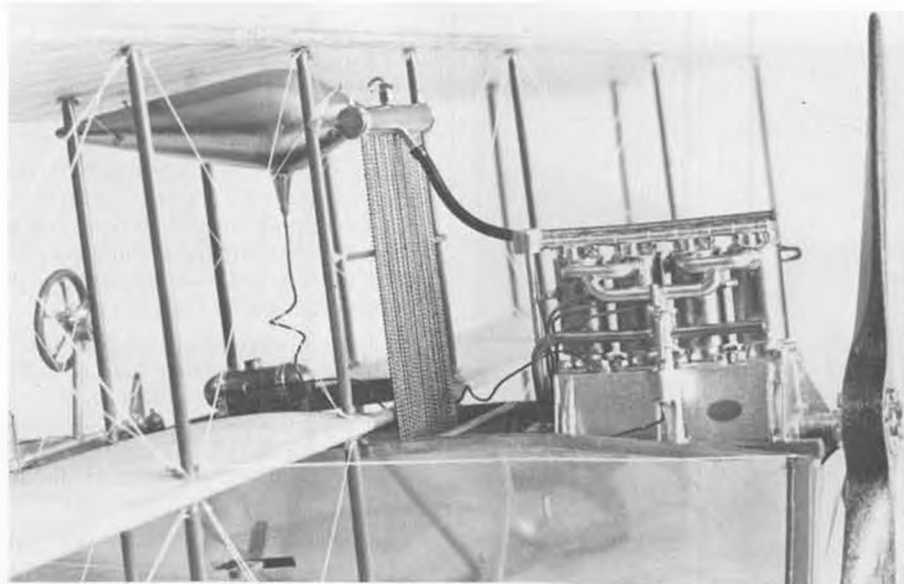
Bob Holman, who has been selling plans for many years, now has what must be one of the largest arrays of offerings available. Included are the Aeromodeller scale drawings, as well as many large R/C scale types. Additionally offered are such products as scale canopies, fiberglass fuselages, and now, balsa wood. A dollar will bring you a copy of Bob's complete catalog. Tell 'em Model Builder sent you! Write to: P.O. Box 741, San Bernardino, CA. 92402.

THE MILE-A-MINUTE MODEL

Dave Gibson sent us a copy from the "Boy Scouts Year Book," 1922 edition, which featured plans and instructions for a model which could be constructed as either a twin-pusher or a quad-pusher. The article, by F.A. Collins, who had earlier published a complete book on the subject of model aeroplanes, contained a few passages which we found worth repeating:

"Model airplanes have been flown over a measured course at a speed approximating a mile-a-minute. . . A

Continued on page 86



Superbly detailed non-flying model of 1910 Roe IV Triplane, spanning 32 inches (110 ribs!). Built by R. Booth, Canada, for Geoffrey Verdon-Roe, son of real craft's designer.



PHOTOS BY FUDO TAKAGI

Peanut 'Ol' Ironsides'

By WALT MOONEY . . . A possible threat to the "Big 3", Lacey, Cougar, and Tailwind, this easy-to-build model has all of the requirements.

• Here is a little homebuilt that has all the right shapes to make a great little peanut scale model. The Tailwind, the Cougar, and the Lacey have, to some extent, dominated the peanut scale contests, so when a three-view of Ol' Ironsides turned up, it looked like a natural to give the T, C, and L a little competition.

This model has the same general configuration as the aforementioned trio, with what appear to be some possible advantages over them. First, Ol' Ironsides is a single place airplane and thus has a narrower and therefore lower drag fuselage. Second, the original airplane has plywood structure, and is absolutely slab sided. Third, it has simple, straight-

edged surfaces.

The model has sheet balsa fuselage structure and built-up tissue covered wings and tail surfaces. After extensive flying tests, the size of the vertical tail was increased to that shown on the plans. The model will fly very well outside with the scale vertical, but it would not turn in a small enough circle to fly indoors. With the larger tail, it will circle safely inside the width of a basketball court.

All of the wood structure utilizes balsa. Music wire is used for the landing gear, propeller shaft hook, and the rear motor peg. Use wire of 1/32 diameter or smaller.

Start building the model by cutting all

the parts out of balsa sheet. The fuselage sides, bulkheads, "C", "D", "E", and 12 ribs are cut from 1/32 sheet. The top and bottom of the fuselage is also made from 1/32 sheet aft of the cowl area. The cowl sides, wing tips, and bulkhead "A" are cut from 1/8 sheet. Bulkhead "B", 4 wheel pant sides, and the vertical tail is cut from 1/16 sheet, as are the two root ribs. The nose block and the 2 center parts of the wheel pants are made from quarter inch thick balsa.

Save the circles cut out of the thin bulkheads to be used as the side reinforcements for the rear motor peg. Save the square cutout of bulkhead "A" to use as a backplate on the nose block. Make the wheels from 3/16 balsa, or use hardwood wheels.

The leading and trailing edges of the wing, the trailing edges of the horizontal tail and the tail tips are made from 1/16 x 1/8 sticks. The wing spar is the same. The leading edge, spar, and the ribs of the horizontal tail are made from 1/16 square sticks.

The top and bottom of the cowl is made from 1/16 thick sheet.

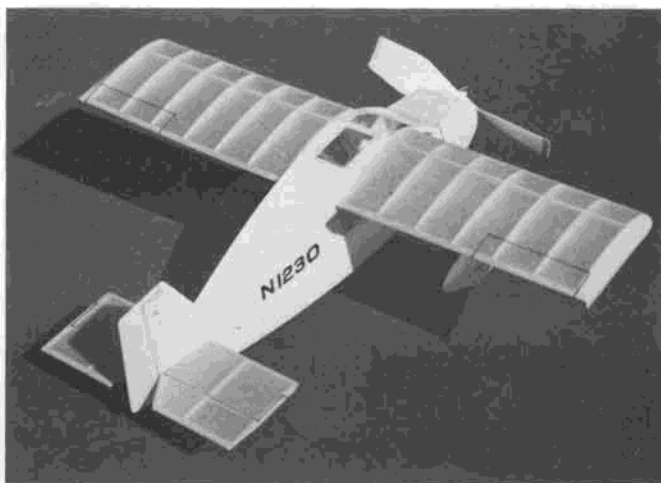
Note that all of the various thicknesses can be built up of laminations from the thinner sheet if desired, but if you have been building models for a while, your scrap box probably can supply all the thicker balsa required.

Construction follows standard practice. The wings and tail are built directly over the plans. Sand the leading and trailing edges to the correct cross-section after removing them from the plan. Sand the vertical tail to the correct airfoil section.

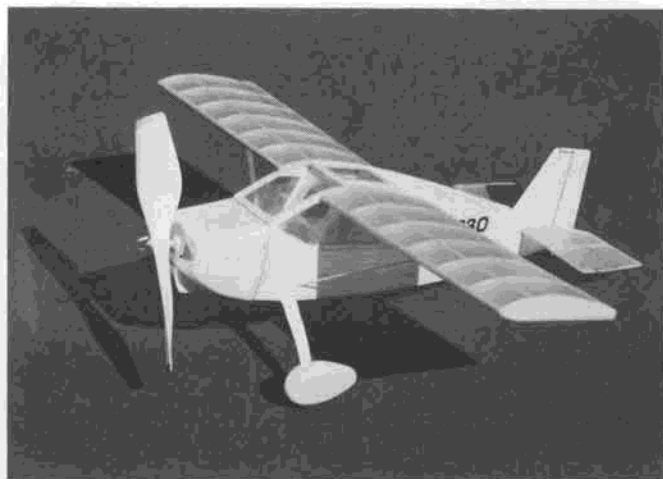
Care should be taken to insure that the fuselage is assembled with the same amount of bend in each side. If possible, get both sides from the same, or identical



Couldn't be simpler . . . a box fuselage, and straight-edged surfaces. It's obvious the designer had good visibility in mind when he drew this one up.



This one should really make the Lacey's and Cougars sit up and take notice! Sheet fuselage and wheel pants add weight, however.



A good model for the beginner in scratch-building; no teeny pieces, no molded canopy, all standard wood sizes.

pieces of balsa sheet. If one side is made from harder stock than the other it will be almost impossible to obtain a "true" fuselage. Start by cementing the sides together at the back end. Place them over the top view with the correct angle between them, to dry. When the back end is dry, bend the front ends toward each other and cement "A", and "B", in place. Then cement the top and bottom of the cowl in place. Make sure that these pieces are very carefully cut with 90 degree corners, and set very carefully in place, because they set the alignment of the fuselage.

The rest of the fuselage parts are cemented in place, and then the top and bottom skins are added. Care must be exercised around the window and windshield frames, because these areas are weak until the assembly is complete and the celluloid windows are cemented in place.

The built-up surfaces are covered with Japanese tissue, water shrunk, and given two light coats of dope.

The wood parts do not absolutely require doping, but they will look better and stay cleaner if they are given a coat of sanding sealer and at least one coat of clear dope.

Let's add details on the model. Paper landing gear legs are cemented onto the wire. A balsa tail wheel is made from 1/8 inch balsa, the wire is just poked into the wheel, and the fork is painted on. Wheel pants are laminated out of three layers of balsa and carved to a streamlined shape. Wing struts are made from a hard balsa stick, 1/16 x 1/8, sanded to a streamlined cross-section. The strut attaches to the middle rib of the wing, located as shown on the side view.

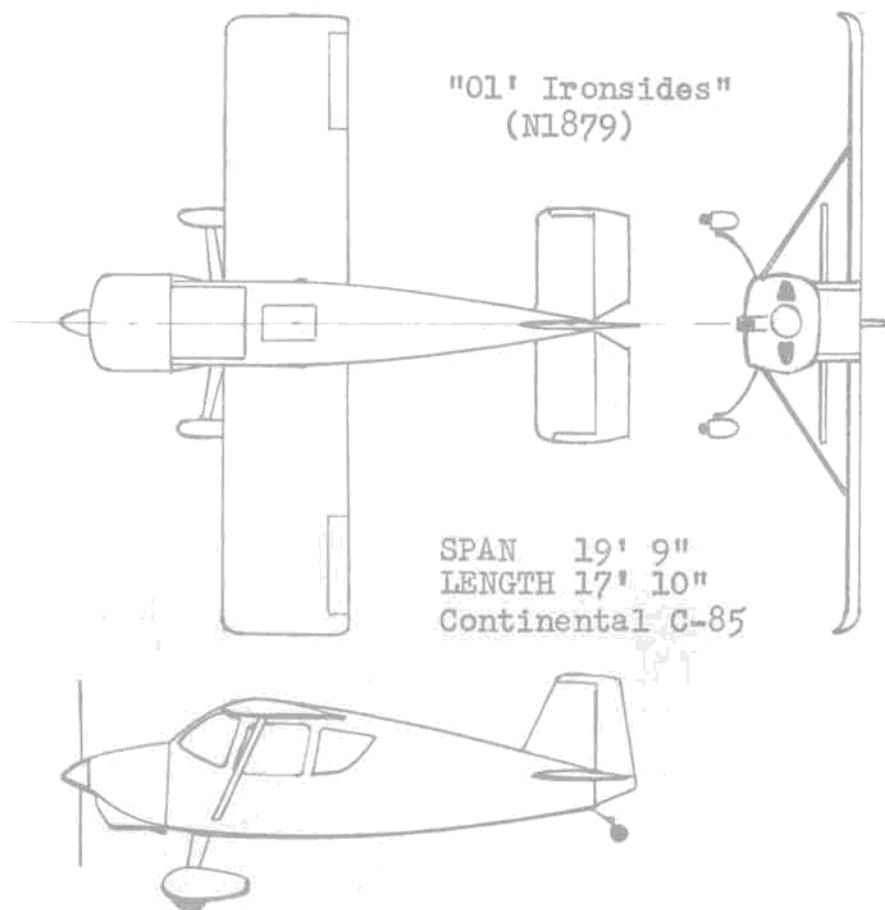
The air inlet to the carburetor is block balsa. The cooling air holes are simulated by painting them onto the front of the noseblock with flat black paint, as is the airfilter opening in the front of the air inlet block. India ink is used to draw on the surface outlines and

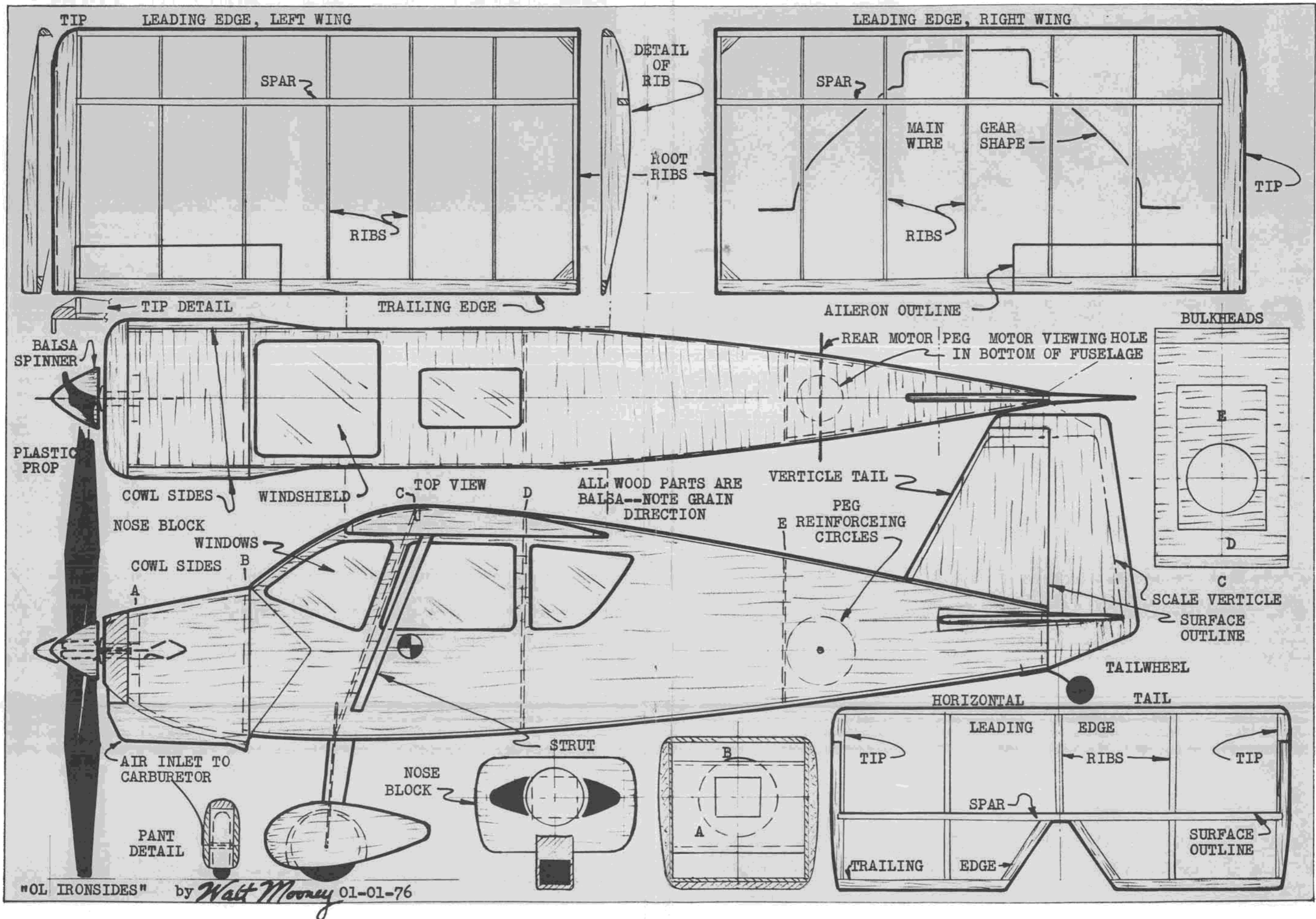
the cowl separation lines.

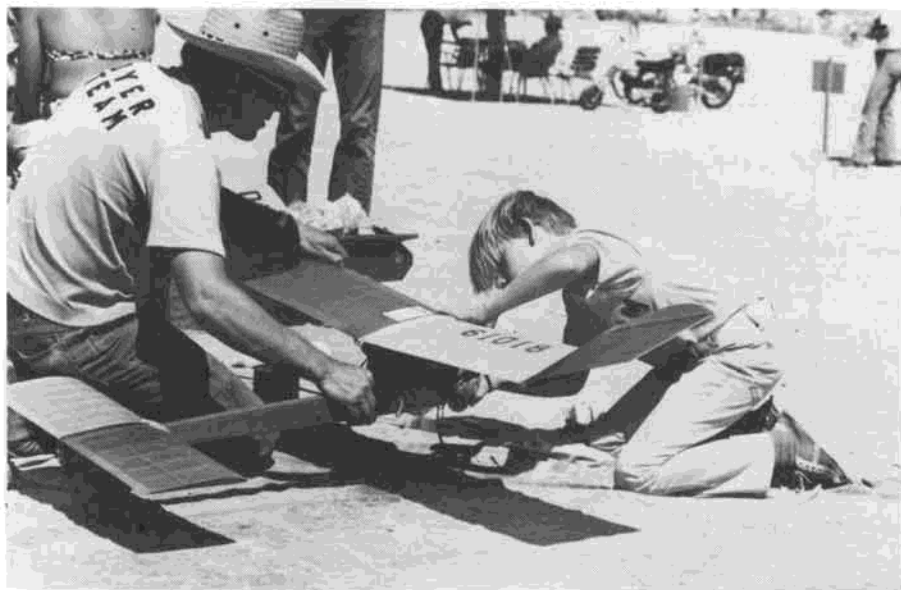
Use a commercially available plastic prop, or carve your own from balsa. The spinner is balsa, and is not absolutely required. It was left off of the model in the pictures.

The model was built with almost no dihedral and flies really well. What was put in was done to keep the wings from looking like they droop. A completely flat high wing appears to droop, so put the wings on with about a sixteenth of an inch of dihedral. Add the little tip plates to the underside of the wing tips as shown in the tip detail.

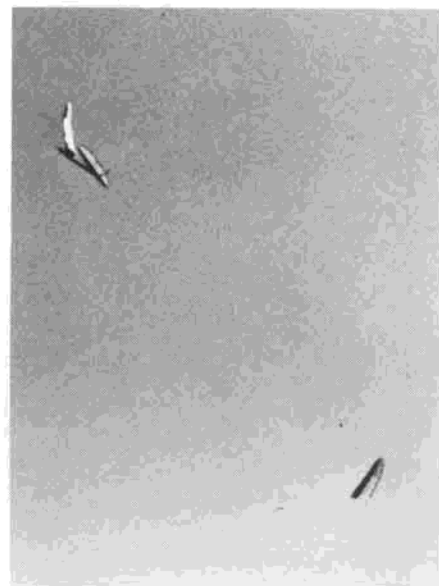
A single loop of one-eighth rubber powers the model. Before flying the model, make sure it has about an eighth of an inch of washout in the tip of each wing. That is, warp the wings so that the trailing edge at the tip is higher than at the roots. The model should be balanced so that it holds a level attitude when it is supported under the spar. The model in the pictures required downthrust to prevent a stall under high power at the beginning of a flight. A paper match between the nose block and the top of the cowl was enough.







Jerry Dyer holds while Eric cranks like mad as thermal comes through. Engine refused to cooperate this time. National Free Flight Championships at Taft, Memorial Day Weekend.



"No, no, dummy . . . FIRST the engine shut-off . . . THEN the DT!"

FREE FLIGHT

By BOB STALICK

PHOTOS BY BILL NORTHPROP

• This issue of Model Builder should hit the stand just about the same time as that annual modeler's madness called the Nationals hits Dayton, Ohio. With all of the advance publicity which has been reaching this mailbox, chances are that Dayton may not recover. Consider the possibilities: 1,000 modelers and their accompanying 1,000 helpers, family members, and friends, descending on the Air Force Museum. Will Wright field ever be the same? Have you ever wondered why the Nats hasn't been at one site for more than one year running (except for Glenview and Lake Charles? I have. I think it's because there needs to be several years of rest before the population can recuperate from the onslaught. Not that modelers aren't nice people . . . it's just that there are so many of them . . . talking funny talk; "d.t.'s, snuffers, R.F.'s, ARES, and Rats." Doesn't inspire confidence.

So, everyone going to Dayton for the 1976 Nationals, let the locals know that we're really good people. While

competing hard for the trophies, don't forget that you are also a good neighbor and concerned about the well-being of our hosts and their property. I hope to see you there, too. Say "hi."

MYSTERY MODEL FOR AUGUST

Who says electric flying is new? Back in the pages of history, this little ship was presented to the American modeling public. To quote, "For some time we have been exploring the possibilities of a new type powerplant for model aircraft . . . electric motors. Based on the improvements made in lightweight motors during the last two years, there is no doubt that electric power for model airplanes is here, and to stay."

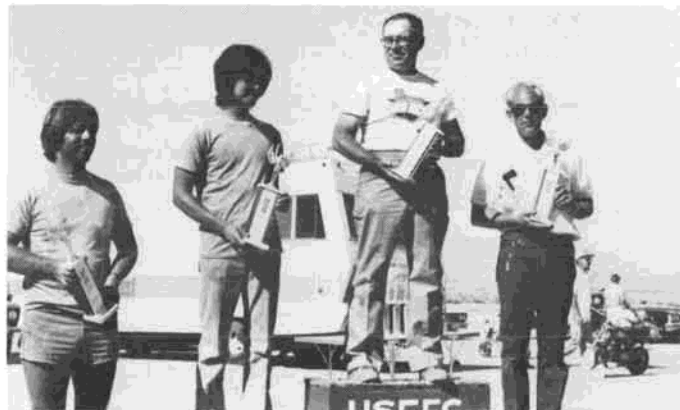
Even though the technology expressed in this month's model motor and battery set-up is less sophisticated than that offered by the current (pun) Hy-Tork and Astro Flight units, this ship would be a possibility for such contemporary power plants with practically no modifications. If you know the name of the design, mail that name in a

letter to Bill Northrop and you have an excellent opportunity to win a free subscription to America's favorite model magazine (Model Builder, in case you forgot).

Three is too much! Hans Hansen's 1953 World Champ Nordic, the Mystery Model for May brought us many correct answers, and three readers tied for a free subscription: Ed Hopper, Baltimore, MD., John Toth, Columbus, Ohio; and Stan Smith (how's your tennis?) Titusville, Florida. Another reader, John Bortnak, of Calgary, Alberta, Canada, reports that he is still placing in A/2 contests with his!

Rich Tanis, Hawthorne, New Jersey, purchased a Zaic "Floater" kit as a boy, but didn't build it until after WW-II. He added a Cox .049 engine, an escapement, and flew it on Citizen Ship radio with the North Jersey R/C Club. He also was first to identify it as the June Mystery Model.

Not too many answers came in on the July Mystery Model, but Jack Balaam,



B Gas winners (l to r): Nick Cacci 5th, Cliff Tanaka 2nd, Mark Valerius 1st, Ray Sahlberg 3rd, Bob Scully (missing) 4th. New record for Mark at 46:55.



Rocket (Jetex) winners (l to r): Andrew Barron 5th, Harry Steinmetz 2nd, Irv Acker 1st, Jim Crocket 3rd, and Bill Haught 4th. Acker set a new record.

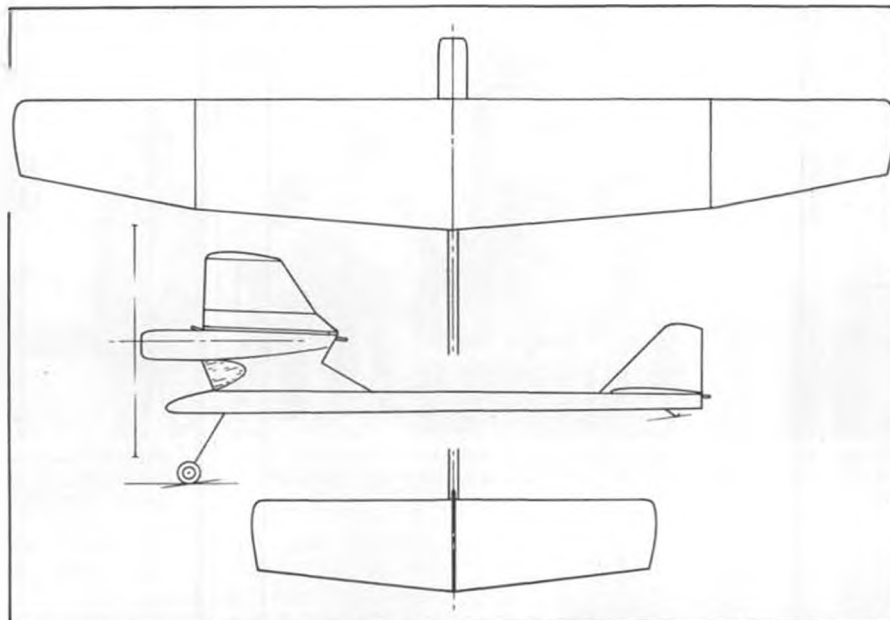
Morrisville, PA., was first with the correct answer . . . Frank Ehling's "Lazy Daisy."

DARNED GOOD AIRFOILS . . . Benedek B 9304B

This section is presented as an alternative to the B-8353 B-2, which was featured several months ago in the column. With a slightly higher top camber and less undercamber, it is well suited to the large area and lightweight type of AMA gas ship, as well as the underarea FAI power model. It is a bit slower than the 8353, but should have a better glide. It would also be worthy of consideration on a 1/2A model of about 300 to 330 sq. inches. Don't pass it up.

STERLING PRODUCES FREE FLIGHT RUBBER

I've located another source of rubber, now that the Pirelli/Filati market has dried up to zero. Sterling Models, which has recently introduced some new Peanut Scale models, indoor winders, multiple sizes of plastic propellers and the like, has also come forth with an excellent quality rubber strip. Although it has yet to be tested, it has many of the same characteristics as FAI Rubber, except that it seems to be a bit tougher. Time will tell what it will do, but if initial samples are any indication, it appears to have a decent future. Comes rolled 215 ft. to a spool of 6mm x 1mm for \$8.00. I had a difficult time reading the printing on the spool as it was written in Japanese . . . which offers a clue as to its origin. While on the subject, Sterling has also produced a neat little booklet entitled the "Secrets



MYSTERY MODEL FOR AUGUST

of Model Airplane Building." Price is 25 cents. It features reprints of articles and data sheets from some of the older magazines dealing mainly with free flight, but some control line has also been slipped in. For the beginner, or even the not-so-beginner, it is a good source manual to have in the shop, as well as to lug with you on your first trim flights.

JIM CROCKET STRIKES AGAIN, AGAIN

Just when you think you've seen all of the gadgets and gizmos that you

could possibly imagine, someone (usually Jim Crocket) comes up with some new ones. Latest from the Fresno factory: 1. A Seelig Timer winding tool. For those of us who have attempted to wind up these little critters with our castor oil-soaked fingers, Jim has cast a winding tool that slides right over the present Seelig winding arm and helps to get that main spring wound up all the way. 2. A self-contained d.t. snuffer tube with rubber hold-down knob. This gadget, when I first looked at it, came across as a funny looking thimble for a

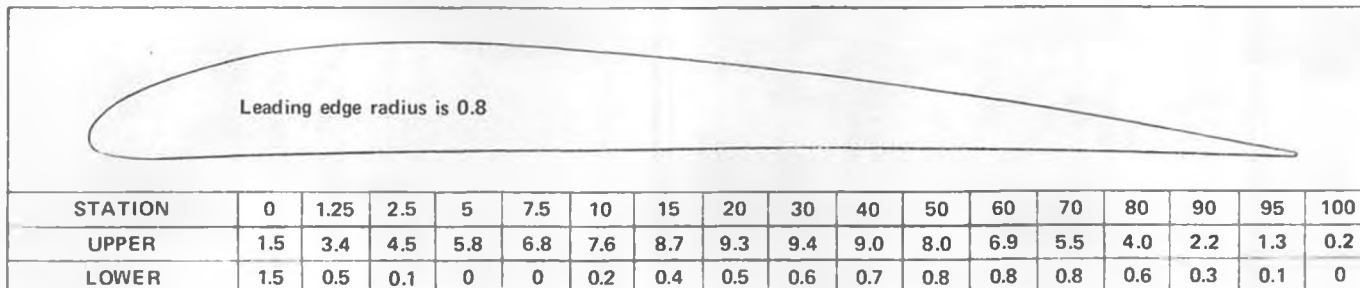


Winners in A/1 Open (l to r): Russ Backer 5th, Bob DeShields 2nd, Bill Xenakis 1st, Jack Moreland 3rd, and Bob Critchlow, 4th.



Winners in A/1 Junior (l to r): Danny Diez 5th, Jim Garaghty 2nd, Ed Wogulis 1st, Eric Dyer 3rd, and Dean Koesling 4th.

DARNED GOOD AIRFOIL – BENEDEK B-9304-B





Winners in B/C Junior Gas (l to r): Daniel Hannah 4th, Eric Dyer 2nd, Jeff Cunyngham 1st, Keith Morgan 3rd, and Fred I. Calhoun 5th.



Wakefield winners (l to r): Irv Acker 5th, Bob Piserchio 2nd, Les DeWitt 1st, Jim Quinn 3rd, and Bob Tymchek 4th. The "Great Casey", Bob White, was "downed" out!



A/2 Nordic winner, Bob Isaacson, doing some kite flying in the flyoff with Cusick.

winding ring, remove the dowel and you're set to go. No more muss and fuss. Jim Crocket Replicas.
NATIONAL FREE FLIGHT SOCIETY PICKS ITS TOP TEN FOR 1976

Bob Dodds, chairman for the NFFS Model of the Year Awards, announces the following selections:

- International Classes**
 Rubber Power: Joachim Loeffler of East Germany for his Wakefield.
 Towline Glider (Nordic): Tom Hutchinson of the USA for the Ultimate Dragmaster.
 Engine Power: Eugene Verbitski of the USSR for his BE-34 Power Model Series.
 Coupe d'Hiver: Louis Dupuis of France for his ZeBul 10 C'dH model.

- AMA Power Classes**
 Small (1/2A) Model: Russ Backer, for his Simplex 1/2A.
 Large (B-C) Model: Jim Scarborough and Ed Miller for the Texan design.
 Rubber Powered Indoor: Bucky Servaites, for his Plain Vanilla duration model.
 Hand Launch Glider Indoor: Ron Wittman, for his Supersweep 22.
 Special Award to John Pond for his development of the Old Timer concept.
 Special Award to Giulio Pelegi, of Italy, for his work with Rubber Powered Helicopters.

This marks the 7th consecutive year



Clarence Haight winds up his Curtiss Robin for scale rubber. He placed 5th.

person with short fingers. Not true, I soon found out. Light weight, just drill a hole in your fuselage and epoxy the thing in place . . . presto, instant snuffer tube and rubber hand retainer.
 3. Rubber motor loading stick ends. This small device would be very useful for small rubber models . . . such as Peanut Scale or Coupe d'Hiver. Simply attach it to either end of a dowel or aluminum tube, slip the rubber motor through the forks in the end and slide into the ship, hook on the prop or

of these awards. Nominations were received from the world's modeling communities and the selection committees made their decision on the basis of popularity, competitive record, technical advancement, and impact on the sport. Most of the winning models will be on display during the NFFS Symposium held at the Nationals this August. Drawings, photos and articles describing the models' development will appear in the NFFS Report, which will

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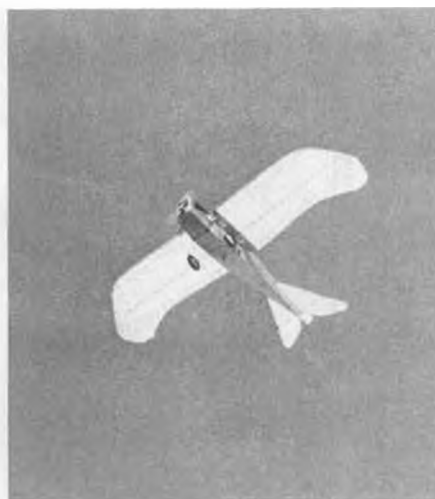
Mark Valerius in the process of establishing a new Class B Gas record. He hand launched every flight to make the record valid.



"The world's only genuine surfing elephant" . . . according to Dick "Hobby Fair" Miller . . . Scotty Harte, launches his Class D ship.



The big winners at Taft (l to r): Grand Champion, Chuck Broadhurst Memorial Trophy, Bruce Hannah, Jr.; Senior Sweepstakes, Andrew Barron; Junior Sweepstakes, Eric Dyer; Open Sweepstakes, Irv Acker; Ocie Randall Memorial trophy for High Time AMA Gas, Doug Galbreath (trophy held by Dick Myers). Contest Manager, Jim Scarborough, on the far right.



Bill Stroman's Taube drifts overhead, powered by Astro 02 electric motor. Ship was construction feature in June issue of MODEL BUILDER. No electric event, so it flew in Scale Gas.

NATIONAL F/F CHAMPIONSHIPS

PHOTOS BY BILL NORTHROP

After a long struggle, the National Free Flight Championships has been rated as an AAAA contest by AMA. The NFFC Contest Manager gives us a first-hand report, with results to 5th place. By JIM SCARBOROUGH.

• They came from all over and stayed to set 8 records before the curtain came down on Monday. This year's USFFC saw the highest times posted of any yet . . . Three days of intensive

flying that rewrote the record book. Doug Galbreath won the Ocie Randall Memorial with a fine 70:00 minutes in C gas, using a Cox 40 in a GYSOB. Doug went on flying after the 5 p.m. closing to add another 7:29 to his total. The 77:29 less 15:00 (Doug VTO'd on his first three maxes) gave him a new record of 62:29, besting the existing record of 60:00 set only three weeks prior. I believe MB will soon showcase the GYSOB. (By great coincidence, it was featured last month, appearing just weeks after the record flights! wcn).

We were able to sign up 305 entrants from 15 states and two countries. France had a proxy entry from Pierre Chaussebourg, and Mexico had a team of six entered. Texas led the out-of-state entries with 10. There were six women registered and they won their share of hardware. Just look for Leslie Norman's name under old timer events! She tied with her husband for first in A-B old

timer pylon. They decided not to fly it off. Penny Johnson took second in 1/2A junior. The number of entrants was up by 4 from last year, but the total event entry was down by 45 to a



F/F Executive Director, Hardy Broderson, tests FAI power ship, "Saltpeanuts."



Contest Managers fly too! Anybody need to know what Jim is launching? Orange, natch!



Bill and Carolyn Burks. She built and flew Bill's design in the Class B event.



Reid Simpson launching on final FAI flyoff flight that beat Al Bissonette by ONE second!



Ray Berens releases his big rubber powered Skyfarer. He placed second with this seasoned veteran of many Jumbo Scale contests.



Larry Clark's pretty George Reich "Albatross" climbs out overhead.



In which we take a picture of Dick Mathis, who is taking a picture of Dick Myers, who is holding his huge 1-1/2 times Lucky Lindy, Class D Gas.

still whopping 715. How'd you like that total for your annual?

The senior sweepstakes winner, Andrew Barron, and his dad, flew via commercial from Virginia. He managed to bring all his models with him and only had to hand carry one wing too big to box. When there's a will, there's a

way!

Eric Dyer was a repeat in the junior sweepstakes. He didn't win by the large margin he compiled last year, but win he did.

The winner of the six foot grand champion award, Bruce Hannah, Jr., bested the runnerup, Irv Aker, by only

28 points. Irv lost because C gas was one of his events and Doug's out of sight time compared to Irv's mediocre time only gave him 10 points! Irv is a fellow club member. We belong to the Thunder Bugs and he is a strong competitor. I predict him to be around at the finish next year.

Mark Valerius set a record in B gas with a fine time of 46:55. Since he was hand launching, all of this time stands. Not so for Randy Weiler, a prior winner of the high time gas award. Randy had the second high time of the meet, an excellent 62:02 in A gas. Randy VTO'd his first three flights, so his record in A gas will be 47:02 . . . a fine time no matter how you slice it! My 25:39 in A was only good enough for 3rd place.

These high times might start you thinking the field must have been like a stove top, generating thermals every 10 seconds! No so. This year's meet was flown in cool weather. The temperature never got over 90 degrees. Nobody suffered from heat prostration this year. The wind was light, never a problem except for the first hour-and-a-half on Sunday. Then it was brisk, causing most



Al Bissonette readies his FAI back-up ship, with Cox engine, for the final fly-off flight. Number One ship was brought back with only a couple of minutes to spare. A close one!



Al launches No. 1 (Rossi powered) for fly-off that was 2 seconds short of a win.



Bill Warner's VL electric powered Desoutter hums overhead. It placed 3rd in Scale "Gas."



A "Taft Trash Mover" in action. When one of these came along, you grabbed everything in sight and held your breath for about a minute.



Two Night Flying winners (l to r): First, Vic Cunnyingham, Jr., and Jon James, 3rd.

event usually judged in tenths of seconds, this is a real clobbering. Lee Hines just couldn't get it together this year, and failed to place. Young Steve Wittman took Junior IHLG with a 58.2 that would have put him in 3rd in Open!

In outdoor handlaunch glider, the old pro, Bill Blanchard, returned to the wars after a long hiatus. He cleaned up on the likes of Hines, Harper, and Wittman, all of whom you'll note didn't place.

In indoor peanut, Hal Cover took his perennial fourth place. Clarence Mather once again won penny plane and EZB. For some reason he didn't place in indoor peanut (maybe he didn't fly?), but showed he doesn't need a ceiling over his head as he got a 2nd in outdoor peanut.

(Speaking of outdoor peanut, Mike Mulligan, flying a Nesmith Cougar, and timed by Bill Warner, who followed the model in Texaco Trophy style, set a new peanut duration record of 22 minutes, 1-1/2 seconds! wcn).

Nite gas saw another Cox 40, in the hands of Vic Cunnyingham, Jr., put his model up for 5 maxes to easily outpace the competition. It was a beautiful evening for flying. No wind at all 'till around 11:00. By then all contestants were finished. Bill Hunter missed his



Joan Calhoun applies Satellite to the Calhoun does-everything-but-fry-eggs magic field box.

fliers to wait and see. By 9:30 it quit. The rest of the day was beautiful, as Eric Dyer (a junior) put up 36:11 to Guy Kirkwood's 37:35 in 1/2A gas. Both those times are records, by the way.

The cooler weather made the indoor site much less humid this year. It was a real pleasure to sit and watch the battle going on down on the gym floor without feeling you were in a sauna. The weather must have been just right for the world's oldest young man, Bob Meuser, as he whipped all comers by nearly a four second margin! In an

second flyoff max by 9 seconds to come in at 24:51. Hulan Mathies overran on his second flyoff attempt, or it could have been a real battle.

A/2 glider came down to a flyoff between Bob Isaacson and Craig Cusick. Bob bested Craig 1636 to 1605 seconds. Nobody else was able to make seven maxes. This year A/2, Wake, and Power were flown by rounds (7) for the first time. It seemed well received.

A long standing record in rocket was broken by Irv Aker. He won the contest with 12:00 minutes and then after the

Continued on page 76



Bruce Hannah, Sr., with his stretched "Classic." Power is an ST .23. His son, Bruce, Jr. won the Grand Championship.



Lee Hines, "You wanna win a trophy? Try Class D Gas. It's easier than Hand Launch Glider." Jim Scarborough places trophies.



Attractive Gail Roberti holds the Mk. V Javelin. Based on the long, slender, tubular fuselage, the name is very appropriate. Building technique is fully explained.

PHOTOS BY AUTHOR

The *Javelin* MK. V

By RON BOBERTI . . . This Unlimited Rubber model is contemporary in design and construction, and will provide the beginner or expert with the best in competition equipment.

• The Javelin Mark V is a very competitive Unlimited Rubber model, with an excellent contest record. For beginner or expert, it will give much satisfaction and hopefully a lot of wins. The Javelin V is simple in design and simple to build. The basic design was built many years ago, and as you older modelers can see is Hatscheck influenced. During the last 2 years, I have really started to improve the airplane. I built 5 models in 2 years until the final result was what I wanted; consistency being the ultimate goal and finally the end result. Let's build this thing.

The most important part of building the Javelin is the weight. It carries a lot

of rubber, so keep it light. The total weight of the Mark V model was 8.45 oz. with the rubber, which is pretty light considering its size.

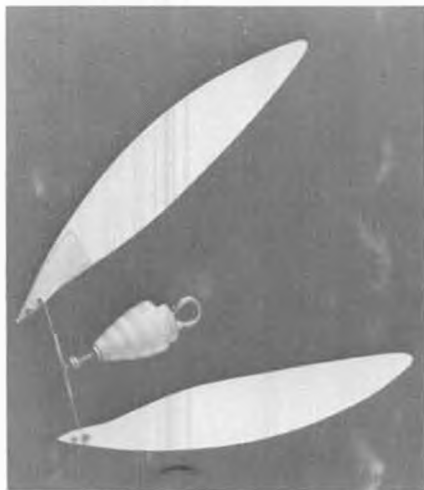
FUSELAGE

The fuselage is made of one sheet of 1/16 x 4 x 48, very light, tangent cut, and rolled on a 1-1/8 inch form into a tube. Soak the sheet in water and roll it on the form using heavy brown wrapping paper. It's a little too large to fit in an oven, so let it stand in the sun until it is dry. When dry, remove the paper and

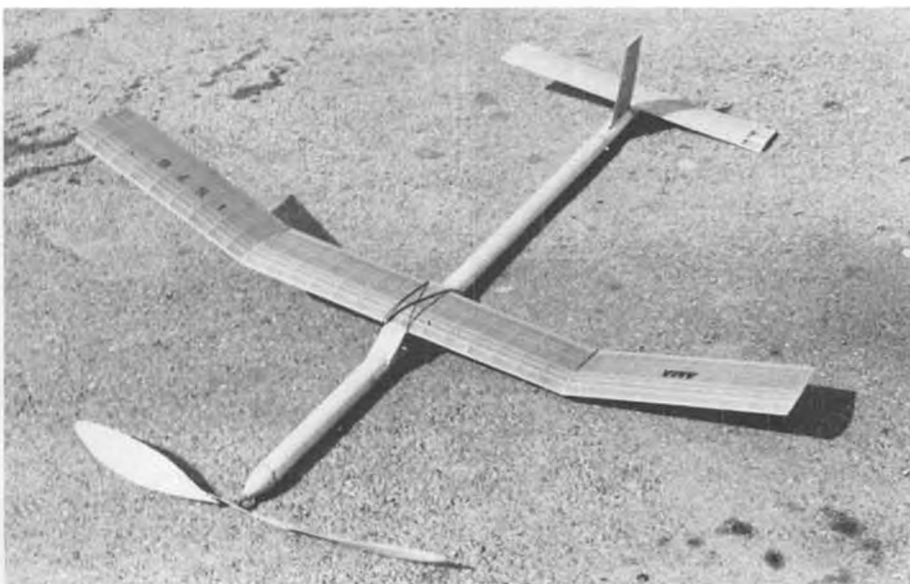
rolled tube from the form. Now tape a small strip of waxed paper about 1 inch wide down the length of the form so the glue at the seam of the motor tube will not stick to it. Install the tube on the form and carefully glue the seam of the tube together. The most important part here is making sure the seam is glued perfectly straight. This will prevent the tube from having a bow in it. A tube that is bent or bowed is no good because it loses its strength. So be extremely careful here. When the tube has dried, remove it from the form again and check it for alignment. If it is true and straight, put it back on the form.

I use a slightly different method in tissue covering the tube that adds no more weight but quite a bit of strength. Instead of covering with tissue using a single sheet, I cut the tissue in 3/4 inch strips and spiral wrap it so it looks like a peppermint stick when finished. When you have completed this, brush on 4 coats of 50-50 dope and let dry at least overnight. When the tube is dry, remove it from the form. Cut two strips of .032 aluminum 1 inch wide. Bend them around a form and glue one in front for the nose block insert, and one in rear for the motor peg. The rear insert should be put in one inch forward of the rear of the tube to give clearance for the tail boom. Glue both inserts with epoxy and drill a 1/4 inch hole through the rear insert for the motor peg. Now make a 1-1/16 inch dia. circle of hard, 1/4 inch thick balsa. Cut off a small end and glue in place in front end. This is the nose block key. The remaining piece we will use on the nose block.

The tail cone is made of 1/32 sheet, 10 inches long and rolled to a tapered tube in the same manner as the motor tube. I use a tapered pool cue as a form. Tissue wrap it and insert 1/8 thick circles of light balsa in front and rear for strength. The tail boom insert is made of



Most important part of any competition rubber model, the propeller. Sheet blades.



Efficiency comes through simple, functional design. Ron admits to strong Hatscheck influence. Ship weighs just under 8-1/2 ounces, with rubber.

1/16 x 1 inch sheet balsa formed in a circle to fit inside the rear of the motor tube. Glue this to the tail boom and add hooks to the tail boom and motor tube as shown on the plans. The hooks are standard dress hooks and are purchased at the local 5-and-10 or sewing shop. The stab platform is made of 3/32 balsa, making sure you have 0 incidence in the stab when completed. Add DT hook, snuffer tube, and DT string as shown. The fuselage and tail boom are complete, so let's get to the stab and rudder.

STABILIZER

The wood for the stab should be very light, using 1/32 quarter grain for ribs and medium hard for the leading and trailing edges. Leading edge is 3/32 sq. and the trailing edge is 1/4 x 3/32 tapered stock. All spars are 1/16 sq. Build stab in conventional manner, on the plans. When dry, add one coat of dope to the tip ribs, leading and trailing edges and sand to shape. Covering is very light tissue, covered with the tissue grain running cordwise to prevent warps. A tip on preventing warps is to wet tissue and pin the frame on three sticks of 1/4 inch balsa, one at each tip, and one in the center. This will help keep the tissue from warping the frame. I use this method, and it seems to work real well. When this is done, brush three coats of 50-50 dope on the tissue and pin the stab back down on the 3 sticks of balsa and set it aside for a couple of days. Hook for DT string can be added at this time. Epoxy wire to top of trailing edge.

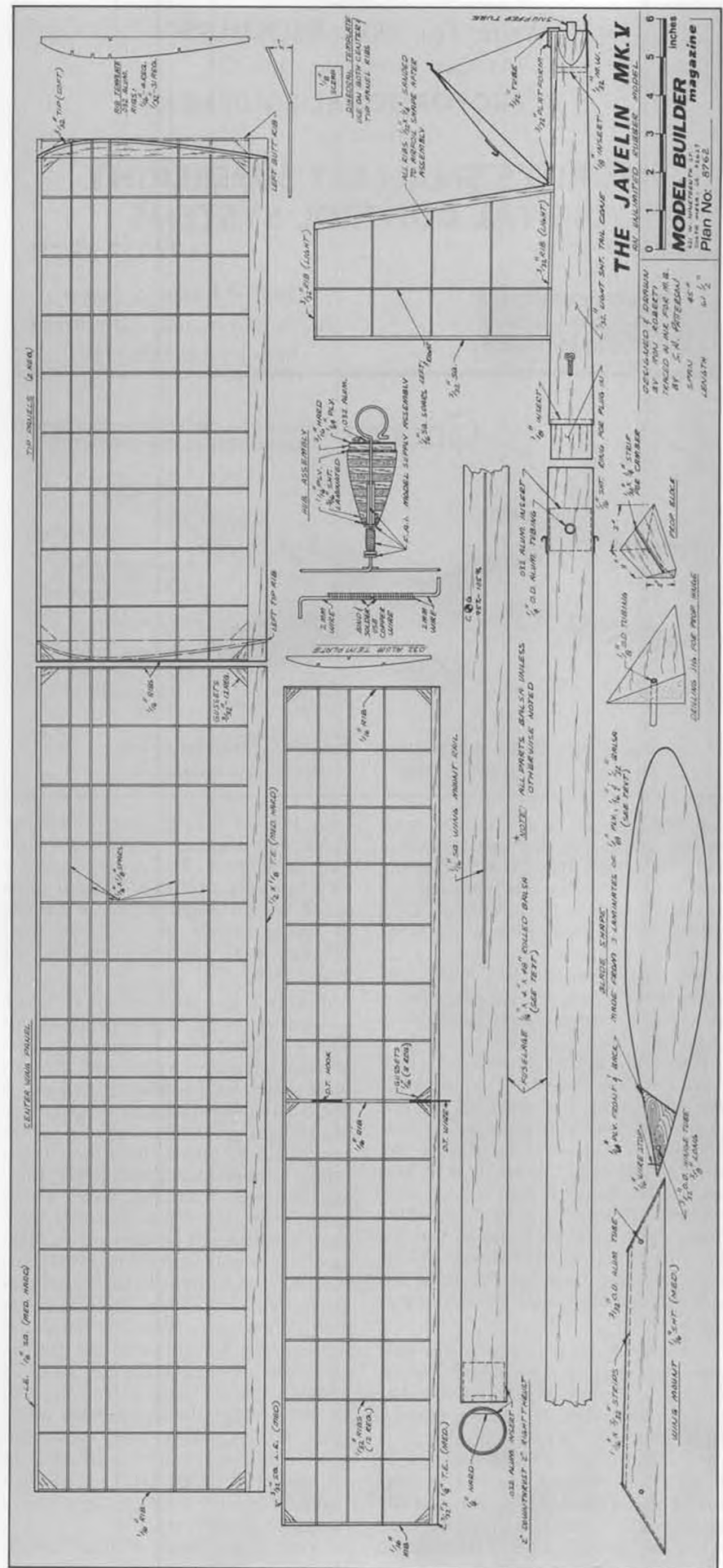
RUDDER

The rudder is built exactly like the stabilizer. Build this very light also. The top and bottom ribs are 3/32 sheet. The rest are 1/32 sheet cut rectangles for ribs. Add spars to both sides and sand to an airfoil shape with the curved side on the right for left glide wing.

WING

The wing is built in the same conventional manner as the stab and rudder. Carefully select good light 1/32 quarter-grain sheet for ribs and medium hard strips for leading edge, trailing edge, and spars. The plans show the center section and one tip. You can build both tips without oiling up the plan by just moving the tip rib to the opposite side as shown. Make sure that you use a straight edge for pinning down leading, trailing edges, and lower spars. Make an .032 aluminum template of the ribs so they will all be exactly alike.

After the leading and trailing edges and lower spars are in place, add ribs, as shown on the plans, making sure you use the template for the dihedral break. Dihedral is made by butt gluing the center panel rib to the tip panel rib. Tip ribs are 3/32 soft balsa as shown. Add top spars. When dry, remove each panel from the plans, sand leading and trailing edges to airfoil shape, and brush two coats of dope on the frame. Cover



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with light tissue and use the same method of pinning down each panel as explained on the stab. Do not build any wash-in or wash-out in the wing. It is not necessary. Two to three coats of 50-50 dope is sufficient. When each panel has dried for a couple of days, glue the tips to the center sections, and if the template for the dihedral was used properly, you should have the same dihedral on both tips.

The wing mount is made of 1/16 med. sheet as shown on plans. Make sure you have 2 degrees of positive incidence in the wing mount. The wing mount slides are 2 strips of 1/16 sq., glued as shown to the motor tube so it can be moved fore and aft for C.G. purposes. Dowels of 3/32 diam. aluminum tubing are used for rubber banding the wing mount to the fuselage and the same pegs are used for mounting the wing to the mount. Now the hard part.

PROP

As you know, the prop is the most important part of any rubber model. Extreme care should be taken here. The prop on the Mark V is 24 x 26 inch pitch, with laminated blades. The prop form is cut from a block 3 x 2 x 11 inches as shown on plans. Use prop outline to cut the 3 laminations you will need for the prop. The laminations are as follows: Bottom sheet, 1/64 plywood which you can get from Sig. Second

layer is 1/16 quarter grain light balsa. Third lamination is 1/32 straight grain light sheet balsa. This makes an extremely strong, warp-free blade with a thin airfoil section. Slight camber is achieved by gluing a strip of 1/32 hard Balsa 1/4 inch wide down the center of the prop block.

Cut each lamination about 1/16 inch wider than blade on the plans so that you will have room for trimming. After all the lamination are cut out, glue the three sheets for one blade together with 50-50 water and Titebond. If you try to use the glue at full thickness, it will be very difficult to sand the blades (I have ruined a lot of blades). While the glue is still real wet, form the blades to the block, using 1/2 inch wide elastic bands from the 5-and-10 or fabric store. Make sure that as you wrap it the sheets don't slip and that no bubbles form inside the blades. You can secure the elastic tape with thumb tacks. When the blade is all taped, spray it with water and put in a very low oven and bake for 20 to 30 minutes. Let cool before removing. You can now make the other blade in the same manner. When both blades are completed, put one on top of the other on the prop block form, wrap them together and let them sit for a couple of days to sort of cure.

When this is done, drill the holes in the blades as shown on the plans, using

a piece of 1/8 I.D. tubing as an aligning tool for the drill. The tubing is glued parallel to the bottom of the form so that the hole is drilled in the center of the blade 3/4 of an inch from the blade shank. When this is completed, add 2 pieces of 1/6 x 12 inch plywood one on each side of the blade shank for strength and then drill the hole for the hinges as explained above. I used Hot Stuff here because it's strong and fast.

Sand the blades to airfoil shape and install 3/32 diam. tubing in the holes for the hinges. Hot Stuff these in place. Ream the holes with a number 43 drill. This will give you a 2mm hole for the wire hub and hinge you will use. Finishing the blades is simple. I use 2 coats of K & B polyester resin, sanding between coats and finishing with rubbing compound and clear shop polish. Well, you now have 2 perfect blades! If you used wood from the same sheets to make each blade, balancing should be no problem. Using a balance beam, you can add weight to whatever blade is necessary. I used masking tape in the tip of the lighter blade and it works real well.

The nose block is made of laminated pieces of 3/16 sheet, glued with Titebond and clamped until dry. At this time, add the rest of the circle block we cut for the nose block stop. Fit the complete block on the fuselage and trim as needed. The prop hub is made of 2mm pre-shaped wire that you can get from F.A.I. Model Supply. It comes complete with wire, shaft, spring and thrust bearing. Solder and bind shaft with copper wire as shown on the plans. The plans explain it better than words.

Finish nose block the same as the blades, install the blades, and add blade-stops of 1/16 wire, making sure that the prop tracks evenly. This is important. If the prop is out of track it will make the airplane vibrate. Always take a little more time in balancing and tracking the prop. When the entire assembly is complete, install the nose block to the fuselage, find where the blade will fold flat with the least amount of resistance, and install the stop screw. Remove the nose block and sand in 2 degrees down thrust and 2 degrees of right thrust at the nose block insert on the motor tube. This is a good starting point, as fine thrust adjustments can be added at the flying site. Well now lets assemble the Javelin and send it up.

The power I use for the Javelin will vary with the wind and weather conditions. Anywhere from 14 to 18 strands. Most of the time I settle for 16 strands of 1/4 inch Pirelli or Filati. F.A.I. rubber is okay to use, but it is heavier than the Italian rubber. I have used F.A.I. rubber but, more turns are needed. You will just have to use what is available. I won't go into pre-stretching rubber because that has been covered by many other articles.

TRIMMING & FLYING

First locate the C.G. It should come out anywhere between 95% and 105%, the airplane being so long it is more than safe between these points. Test glide the model until a smooth, flat, slight left circle is achieved. Add positive or negative to the stabilizer as needed to achieve this. When this is done, wind the rubber to about 400 turns (don't forget the fuse), and let it go. All of the 5 Javelins flew well right off the board. The airplane should have a nice flat circular climb to the right, with a good transition to a left glide. Watch the glide closely. If it needs more glide turn and the power pattern is okay, tilt the stab.

Do not use a rudder tab. None of my airplanes need a rudder tab. If the power pattern is not good, add shims at the nose block for thrust adjustments. Now that its trimmed, try 800 turns, as she should climb with her nose high in right circles. As I said, use thrust adjustments as needed, this seems to be much safer. At full turns (I usually get 1,000), the airplane, if trimmed correctly, will pretty nearly climb out of sight. Using 16 strands and 1,000 turns, my motor runs have always been at least 1 min., 35 secs., which is more than enough.

I think you will enjoy building and flying this model at your next contest. It's as competitive as any, and if you have any problems, drop me a line at 1629 Claudia Drive, Norman, Okla. 73069.

Good luck. ●

Rocketry Continued from page 30

trim to the shape of the tube. I used a sanding block to get it to its final shape; it should conform to the top of the tube in order to cut down on drag. The plans call for an 1/8 in. wide slot in the auxiliary tube to match up with one on the main tube, but I widened this a little to make it easier to align the tubes. Measure the two tubes carefully, and follow the instructions closely at this point, and you will have no difficulty. Once the tubes are solidly joined, glue down a layer of silk or gauze reinforcing over the slotted area to form a good gas seal. Mount the shock cord as shown, but don't use too much glue, as the auxiliary tube is pretty small to begin with, and it could block it off and impede parachute ejection.

Engine mount construction is again straightforward. Take care that the forward centering ring is strongly glued; it must provide a gas seal for the ejection charge. The tube extends up in the model past the slot that connects the auxiliary tube, and the end of the mount is sealed off. Holes in the mount tube allow the ejection gases to pressurize the auxiliary tube. The instructions say to seal the end of the mount tube with a plug of glue-soaked tissue; this works fine if you remember the

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drying characteristics of white glue. If too heavy a layer of glue is applied, it will set from the outside in, and the inside may never dry at all. Apply just enough glue to moisten all of the tissue, and leave it in place until all of the glue has dried; then you can add more glue to seal any gaps. Once again, I used epoxy, which relies on chemical action for curing rather than exposure to air.

CMR usually cuts its fins from ultra-thin plywood or plastic stock, however, since they are a little difficult for the inexperienced to work with, the fins included with the Tachyon are balsa. The short fin goes on the auxiliary tube; the other two go on the main body 120 degrees from the first. They should be sanded to an airfoil shape, and then finely sanded all over, before they are glued to the tubes. I suggest using white glue, which can form a stronger bond than epoxy because it soaks into the wood and the cardboard tube. Apply a liberal layer of glue to the fin root edge, and press it in

place along the body. Remove it, leaving a line of glue on the tube, and rub the glue into the fin edge a bit. In about ten minutes, after the glue has dried a little, run another thin line of glue along the fin and apply on top of the glue on the body. This trick, called "double-gluing," will form a much stronger bond, and also has the advantage that it holds the fin tightly in position, almost like contact cement. This avoids the drooping-fin syndrome common to model rockets. After this final layer of glue is solid, run a line of glue along the fin-body joint on both sides of the fin and smooth it out to form a fillet. This helps hold the fin as well as streamlining the area.

The chute is cut out to a cruciform, or cross-like, shape. This is designed to bring the bird down in a smaller area with less drift. CMR uses very thin aluminized mylar for its chutes; this is great stuff, but very heat-sensitive. Use sufficient recovery wadding to avoid melting moth holes in the mylar.

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Moving right along, we come to our Howzat-Grabya Department wherein we pass along news notes of interest to model rocket enthusiasts. One of our pictures this time was submitted by Dean Henry, who runs a hobby shop in New York. It shows the takeoff of a modified Estes Patriot kit, from the launching field of the Rochester Rocket Society, in Rochester, NY. I understand

the RRS flies on what used to be a sanitary landfill; they say it has an advantage . . . if something crashes, no one gets a ticket for littering! Also pictured is your humble author, holding a scale model of the Arcas sounding rocket. This model was built by Lonnie Reese of Flight Systems, Inc., and is being considered for release as a kit. The model is half-size, or 1:2 scale (wow!); I know it doesn't look that big, but consider the fact that the gentleman holding it is 6 1/2 feet tall, in 1:1 scale. This picture was taken during a recent visit to the office of Model Retailer magazine, by a friendly, if somewhat frightened, editor.

Coming up in the future, we will have reviews of new kits from Kopter and Estes, as well as plans for converting the excellent Airfix Saturn 1-B plastic kit to flight. We encourage you to send in pictures, questions and ideas of your own; we'll be very glad to hear from you. ●

Remotely Continued from page 17 watching the model activity. Small wonder that seating was at a premium and the restaurant was jam packed all day.

Full credit for a smooth running contest should be given to Lou Delatuer, C.D., and his gang of officials, including the recorder, tabulator, starter, etc., etc. With large signboards available, every contestant knew how he stood in the contest at all times.

Might mention that Eric Clapp, the Contest Manager also did the microphone duties. Eric kept the crowd fully entertained and informed as to what was transpiring. Given a few more years, Eric may get to the class of the late Bud Kosby, a model airplane announcer second to none.

The judging staff, headed up by "old tough guy" Duke Crow, did a very creditable job. This writer couldn't help kibitz the scores of the judges as they were reviewing the points, and without a doubt, judging was quite uniform regardless of whether they scored high or low. Matter of fact, this was the first contest this writer attended where no bees were encountered over the scoring.

Weatherwise, this contest was perfect with only a five mile-an-hour wind occasionally springing up. With conditions like this over a two day period, the flying quality was excellent. Very few flying scale entries failed to complete their pattern. By the second round of flights, the boys had found out how to land in the grass without turning over.

The meet was marked with a considerable number of twin engine entries, the largest being three North American B-25 types. It was suggested the three models fly formation across the field, but time did not permit. Wouldn't that have been something!

Contestants came from all over California, with a large contingent noted from Southern California. Quite a few of the southerners went home with hardware and prizes. Dale Sebring, from Valley Fliers, had an excellent looking and equally well performing Italian Macchi Fighter. Needless to say, Dale didn't go home empty handed.

The meet did not feature any formation flying and/or "dogfights", as is exhibited at the later-in-the-season World War I roundup. However, excellent fly-bys exhibiting flaps, retractable landing gears, and bomb drops more than offset the loss of the spectacular World War I combat type meet. Interesting enough, Joe Oseghada had experimented with a whistler on his Stuka JU-88 in

an attempt to simulate the terror-inducing screams that so cowed the Polish population in the rapid-fire Blitzkrieg of that nation. This gimmick, if perfected, should be a real crowd pleaser. Another interesting trick on Sullivan's Stuka was the method of simulating rivets. Sullivan had developed a glue gun that would put out a drop of white glue exactly the size of a rivet. Allowed to dry, and when painted over, the effect was startling. Of course, both Stuka models exhibited excellently done cockpit details.

The winning Messerschmitt ME 109 in AMA Scale featured in-flight adjustable incidence in the stabilizer by means of an elaborate worm gear system. The model exhibited all the poor ground handling characteristics of the original full sized aircraft. Very careful flying was necessary on taking off and landing. Once in the air, it flew like a champion.

Tom Mincer gave the writer and a few of the spectators a thrill, as his heavy 11 pound P47 Thunderbolt failed to lift off for a considerable length of the runway, finally, at the last minute the model managed to waddle its way into the air over the heads of the sideline spectators. Once up to speed, the model flew great, being fully equipped with retract, bombs, etc.

We could go on and on describing the activity, but it was quite noticeable that the spectators who came to watch, stayed!! A mark of a well-run and interesting contest. So get yours ready for next year. It'll be here before you know it.

RESULTS

OVERALL CHAMP-Don Lien (Spitfire) AMA SCALE

1. Earl Thompson (ME 109)
2. Dan Sullivan (Stuka)
3. Howard Oseghada (Stuka)

SPORT SCALE

1. John Lockwood (F4U Corsair)
2. Dale Sebring (Macchi)
3. Virgil Van Bibber (P-51)
4. Mike Valko (P-40)

CALIFORNIA SCALE (Team)

1. Pat Ray (B-25)
2. Dave Steinel (P-51)
3. Ron Grigsby (B-25)
4. Gene Pond (B-25)

Soaring Continued from page 28

Reynolds Number. Surprisingly, the plane operates best with the c.g. at 60% of the chord. It stalls somewhere between 35 and 40 miles per hour. Scotty only flies on high-lift days at Torrey Pines, but that's worth waiting to see.

According to a number of accounts, there's been some serious night soaring in Texas. That same bug has now bitten some of the Torrey Pines Gulls. Walt Pfiffer strapped a Cyalume tube to each wing of his Hobie Hawk and threw it onto the gentle lift at Torrey as the sun was sinking into the blue Pacific

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(I'm still waiting to hear the sizzle as the sun touches the water, but no luck so far). Ken Banks thought that a single Cyalume tube under the fuselage would be sufficient. Steve Neu took a different view and built a far more elaborate configuration which included an electronic flasher which activated small incandescent bulbs inside the wingtips and on the tail of his Ocatillo. These brightly illuminated the yellow Monokote and everyone there commented on his need for choosing red and green covering on the appropriate wings! You should have seen these three UFO's gyrate in complete darkness. And they landed? . . . Well, yes. But only after a number of flashlights were used to illuminate the "runway." Happily, the air was sufficiently calm to allow a smooth final approach. Greater light would surely have been required had there been more turbulence. Ken Tagami tells me of his plans to strap a searchlight to the plane so that it creates its own landing light. We'll see (*Pun intended? wcn*).

Have you seen the new orange and white Hi-Start chutes produced by the White Company of Huntington Beach, California? Jim White designed one of the conventional size, but having a somewhat larger opening to insure that the chute will return quickly, thus reducing the chance of off-field entan-

glement in the face of crosswinds. I have tried this one and it works well. He is also producing a chute of about 1/2 the size for manual launching of R/C gliders (i.e. grab the other end of the tow-line and run!). I am afraid my own experiences in this arena is quite limited. It's really spectacular to see a 12 foot aircraft rise from your hand even within the short field of a baseball diamond. Frank Dies provided that thrill last year, simply as a demonstration of the efficiency of manual (foot?) launching an aircraft even as large as my Legion-Air, but here in California there's usually sufficient space for a Hi-Start, and where can you find a friend willing to do the leg work while you have all the joy at the control stick?

Different people have different ideas. I use 40 pound test monofilament on my Hi-Start. This works well. In particular, I want to congratulate the Garcia Corp. of Teaneck, New Jersey, which puts out an inexpensive line trademarked "Cherokee." It withstands a lot of wear and tear, including cars running over the line on gravel, before I get to the point of stretching a new line as a safety measure. That company also recommends using a double, improved, clincher knot. According to their instructions. "Double 6 or 8 inches of line.

duke's mixture



Special thanks to GARY FROST & DICK RITCH who took several days of their time to help me de-bug our 1976 Combat Special. As a result of their contributions we have re-made the heads to accept more nitro & the rods to have more beef. These motors are now being delivered and we think you will like them. They are fitted for a bladder tank, but we are including a conventional needle valve and carb insert so they can be run in Slo Combat, beginners sport models or whatever.

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Pull doubled end 1/2 way through eye. Double it back and make 5 turns around main line. Pass end of the line through back loop. Pull knot up tight . . . slowly. Cut off the two ends. This knot is practically as strong as the line itself." Got that?

I am sure you are all aware of the moon illusion . . . that the moon appears to be large when near the horizon and much smaller when overhead. Could it be that there are similar illusions when you fly a sailplane? For example, at low altitude the plane appears to fly slowly. Yet at high altitude, with the same trim, it appears to go much faster (at least as I see it.) You bring your aircraft into a tight, constant altitude circle in a strong wind and it drifts downwind. But from what I have seen, that drift appears to be much slower than the wind speed. With less bank angle, the circle is wider and now appears to drift downwind faster. In the limit of straight crosswind flight, the downwind component seems to match the wind speed. Is this an illusion, or am I missing something quite understandable from the physics involved? Would you care to voice your opinion?

Rod Smith was the first President of the National Soaring Society. This month he resigned, for personal reasons. The

Board of Directors had a telephone conference and requested the Treasurer to assume the presidency until a new President is elected. It's my pleasure, therefore, to serve as President of the N.S.S. My intent is to revamp and activate our policies which will benefit the beginner, the sports flier and, of course, those who are competition oriented. I hope that in a short time you will note a new activity level within N.S.S. and find that it brings greater scope and pleasure to its membership and the soaring community at large.

In the meantime, local organizations are performing the function well. For example, the SC² (the Southern California Soaring Clubs) coordinates the competitions and other activities of this region; the NWS² (the Northwest Soaring Society) performing the same function for that region of the country. Bob Hand, of N.S.S., has now become Secretary of the TS³ (the Tri-State Soaring Society) which will serve to unify the various clubs in Pennsylvania, West Virginia, and Ohio. The newsletter is called The Sandbagger (hopefully without any encouragement of the technique by that name whereby contestants find excuses for not flying until the lift is advantageous). These organizations are to be encouraged, as is their affiliation with the N.S.S., so that this Society can better represent the entire soaring community to the Academy of Model Aeronautics.

To give this matter a point, last Sunday four sailplanes were shot down at Torrey Pines while operating within the 27 MHz band. I can only believe that some irresponsible CBers took delight in destroying these aircraft. I have reported this incident to the F.C.C. If you know of any such violations of our frequency prerogative, please report them so that the facts are well represented as we face the "frequency front". The N.S.S. has also presented the case for our having a sufficient number of secure frequencies.

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R/C Pylon . . . Continued from page 25

were a complete disaster for your writer. Saturday night I took last year's "Ricky Rat" out just to practice and lost the right wing panel in flight. Needless to say the remains were just scrap. I then proceeded to remove the landing gear from my LR1A, which left me with a late night repair job. A Sunday morning "fender-bender" in a store parking lot while getting film for photographs for this column (better run them, Bill) didn't start the day out too well. The day didn't end very well, either, when my new K & B wound up being \$80 worth of aluminum scrap and I was

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blinded by the sun on landing approach and really "dinged" my plane. Oh, well, things will get better . . .

Things ARE getting better! Read on . . .

May 30 found us in Pontiac, Illinois, for a race sponsored by the Chicago Pylon Club and the Pontiac Chiefs RC Club. Despite the cool and rainy weather, there were plenty of fliers on hand for the Quarter Midget races. They got to see Dan Kane cop first with his Rossi powered "Li'l Toni", Dan Santich take second place and your scribe wind up in third. Fastest Q-M time was shared by Dan Santich and Denis Bielick with a 1:43 . . . See, I told you it'd get better. Formula 1 found itself with a

poor turnout, as I suspect many of the regular participants stayed home because of the lousy weather. First place was won by Bill Weesner, second place by Dan Kane and third place by yours truly. Of course, after the racing was over, the skies cleared and the sun came out, but that's par for the course . . . whoops, that's from the wrong hobby. Our thanks to LeRoy Webb for a good contest in spite of the adverse conditions. BUILDING PRO MODEL PRODUCTS "Li'l Toni"

As the plans that come with the kit are somewhat sparse on information, we will cover the building of the airplane in depth. We will also mention products used that we have personally found to be good over a period of time. This is not to be taken as the only way to build, or the only products that will work, just what has been proven to us.

Here's what you get with the kit: A choice of 4 oz. epoxy resin fuselage, or 4.75 oz. polyester resin fuselage, cheek cowl, foam wing cores, motor mount, canopy, and wheel pants.

Here's what you need to buy: Four sheets medium-light 1/16 x 3 x 48 inch balsa, one sheet hard 3/16 x 3 x 36 inch balsa, one 1/4 square x 48 inch spruce, one landing gear (Halco or House of Balsa), one Top-Flite elevator horn, two aileron torque rods, and normal miscellaneous items.

FUSELAGE

Begin by cutting the cowl down to its approximate finished size and trace the outline of it directly on the fuselage. Mount the engine to the motor mount and hold next to the fuselage in the approximate position it will go and mark the location of the firewall on the fuselage. Now use your Dremel tool and cut undersize on the outline you've made.

Slip the motor mount and engine into the opening and mount the spinner you intend to use; a plywood ring 1/32 to 1/16 of an inch thick and slightly smaller in outside diameter than the spinner should be installed between the spinner and nose of the fuselage. Now by lining up the engine the way you want it to fit, and by keeping pressure against the spinner so as to keep from losing the alignment you just set up, insert the firewall through the wing saddle opening and push it up against the motor mount. You can lightly "Hot Stuff" (or whatever is your favorite brand of cyanoacrylate, wcn) the mount to the firewall so as to free a hand to allow you to mark the holes to be drilled for the motor mount blind mounting nuts. Remove the firewall by lightly tapping on the motor mount. Drill holes, and install blind mounting nuts on rear of firewall. Remove engine from motor mount, push firewall back in place and attach motor mount, reinstall engine along with the plywood spinner spacer and the spinner.

With everything lined up so there is no side or down thrust, you can either five-minute epoxy or "Hot Stuff" the firewall temporarily in place. Remove the engine. Now through the wing saddle opening, use 4 to 8 oz. fiberglass cloth and long-drying epoxy to permanently install and reinforce firewall.

Refer to last month's article on how to tie down the front end of the motor mounts . . . you *do* have that issue, don't you? If not call a free flight or peanut scale buddy and borrow his copy, or better (*Best! wcn*) yet, send the appropriate amount of money to Bill Northrop and I'm sure he'll send you the July issue. You can also find out how to attach the cowl by referring to that article.

If you elect to use the cowl (we're not), make sure you cut out plenty of exhaust outlet area. At a minimum, this should be three to four times the intake opening. This is important, as not having enough opening to allow the expanded air to escape will prevent cooling air from entering and will detrimentally affect engine performance and could possibly ruin an engine.

Rough-cut the canopy along mounting line formed on it by the vacuum forming process. I usually do this by using the thin Dremel carbide cutting wheel. Wear safety glasses and be careful not to bend the carbide disk, as this will cause the disk to shatter. Tape a piece of 100 grit sandpaper to the fuse in the approximate area the canopy will go. Now, by sliding the canopy back and forth over the sandpaper, you can get the canopy to the exact fuselage contour so that after painting the airplane you can "Hot Stuff" the canopy to the fuselage and have a good, close fit. Canopies can be dyed any color you like by using "Rit" dye mixed in hot water; the longer the canopy is immersed, the darker the color will be, so go slow and keep checking till you get the color you want.

WING

Cut the wing skin sheeting so as to have at least a 1/2 inch overhang at the trailing edge, and use "Hot Stuff" to join the sheeting together. I like to use "Hot Stuff" on one side and then turn it over and rub 'Micro balloons' in along the sheeting joints, gently blowing off the excess 'micro balloons' and applying "Hot Stuff" over the joints. I find this makes for much better joints.

Sand wing cores and wing skins. Mark wing skins on both sides for the 1/2 inch that we want to overhang the foam cores. Use masking tape to keep from getting contact cement on this 1/2 inch overhang. (I prefer to epoxy the 1/2 inch overhang together, as this stiffens up the trailing edge and also allows you to sand the trailing edge down to a knife edge and still have strength and toughness back there). I like to use "Styro Stik" contact cement. Sheet the bottom of



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the wing cores first, while leaving them in their shells. Apply the contact cement to the top wing skins. After it dries to the correct degree, apply long-drying HobbyPoxy to the 1/2 inch trailing edge overhang on both top and bottom wing skins. Attach top wing skins. Now, on a flat surface with Saran Wrap or similar material underneath the wing halves, bottom side down, lay a long, weighted straightedge on the trailing edge and let dry. This will give you a strong, straight, and warp-free trailing edge.

Attach 1/4 inch square spruce leading edge and hard balsa wing tips. Draw a center line on the leading edge and remove excess wood. An easy way to do

this is with a Sure-form file, finishing up with sandpaper.

Glue wing halves together; the plans do not specify dihedral. I have found that between 5 and 6 inches will give a stable flying platform and makes for a good-turning airplane. Install landing gear and wing mounting block of 3/16 inch plywood. I usually completely cover the wing at this point with 3/4 oz. fiberglass cloth over the top and bottom of the center section (Insert a plywood support plate in the bottom of wing skin where rear wing hold-down bolt goes, to prevent crunching wing when attaching to the fuselage).

Cut out aileron, or ailerons, as is your preference. The manufacturers pro-

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totype has just one large aileron on the right hand wing panel, and it flies just great. I prefer two ailerons, as it gives me a greater feeling of security to see them both moving when I check to make sure everything is working before the start of a race. Now cut out a quarter-inch wide slot in the bottom of the wing to allow installation of the torque rods. Use 5 min. epoxy to hold torque rod tubing in place. Reinstall the balsa wood strip you removed, with "Hot Stuff". Any surface deviations can be filled with polyester resin mixed with 'micro balloons'.

HORIZONTAL AND VERTICAL TAIL SURFACES

Using your Dremel tool and a .015 thick saw blade, cut along the edges of the surfaces to allow the installation of 1/64 plywood inserts. This allows you to sand the leading and trailing edges to a sharp point and still have plenty of strength and resistance to "dings" in the leading and trailing edges. Cover with 3/4 oz. fiberglass cloth and two coats of polyester resin, sanding lightly between coats.

Cut opening in rear of fuselage for horizontal stabilizer; a line has been molded into the fuselage for location of stabilizer. Check to make sure it's lined up 0-0 with the wing. Install vertical fin.

At this point you're ready for priming, and since magazine deadlines don't

wait, we'll leave you here and next month we'll complete the article by describing our finishing method and how to paint with "Imron".

See you at the races! ●

Plug Sparks . . . Continued from page 35
as most fellows want to get back home early. Neat idea!

Weather was the finest ever seen, as a cold front had come through the northern portion of the state, effectively dropping those excessive 100 degree temperatures to a high of 85. This was simply perfect, as humidity was quite low. It all led to some pretty tremendous times, with most all of the O/T Events being won with perfect "max" flights.

The Fort Worth couple, Bruce and Leslie Norman, again made life miserable for the westerners, with Bruce winning Class A-B and Class C Pylon. Not to be outdone, wife Leslie Norman tied hubby for first in Class A-B, placed 3rd in Class C Cabin, and fourth in Antique. That car must have been overweight with trophies on the trip back to Texas!

That versatile fellow, Bob Oslan, not only won .020 Replica (which enjoyed the highest number of entries at 39) and placed second in Class A-B, but also won the rubber event with his very reliable Flying Cloud. Struck would have been proud of the way this model

flew!

Otto Bernhardt (77 Products) was particularly pleased to see his ignition conversions (O.S. series of engines) win all of the pylon events. No question about it, Otto's carefully handcrafted timer points make any engine run good, regardless of whether it was originally a glow or ignition engine. The reliability factor was what impressed the writer the most; also the ease of starting, and smooth power output. If you haven't tried conversions, don't knock them! In spite of all the screams about more power, the big thing is that these engines start easier and run smoother.

Before wrapping up this report, some of the better times were had after the regular flying ceased. Saturday night was the scene of a big O/T celebration at Buck's Steak House in Maricopa. Better than fifty showed up to honor birthdays of Jack Jella and Harry Lowe. Jack was so touched at the sentiment, that he offered to buy a round of drinks for the crowd. That's a little too much! Even the crowd agreed, as no one took him up on the offer.

NIGHT FLYING OT F/F WITH R/C ASSIST

Sunday night, the traditional sport for night flying came in for some novelty. Northrop and Pond had planned to fly their R/C assist old timers directly after sundown.

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Several familiarization flights were taken just at dusk, but unfortunately Pond's motor developed ignition trouble after two flights. This left it up to Northrop to fly in the dark.

The green liquid chemical lights (Cyalume) were affixed to each wing tip and one to the tail making a neat triangle. Directly after takeoff, problems immediately developed; there was simply no way of telling which light was a wing tip or a tail. Northrop nearly smashed the model, as all orientation was lost. Luckily, he was able to land it successfully.

For the next flight, the light under the tail was covered with red transparent monocote and a strobe light attached to the bottom, under the cabin. This was to offset the flashlight which was attached to the top of the wing center section during the first flight, and was next to useless as it could only be seen in head-on situations (*It also screwed up rudder effectivity, probably because of the odd slipstream it created. wcn*)

The second flight was almost as hairy, as the red covered light was indistinguishable over 100 feet away. The strobe light was simply great as a locator, but did not give any indication as to the altitude of the model. However, Bill backed the K & B 40 down to cruising and gradually climbed to about

300 to 400 feet, where the Powerhouse quietly cruised around the whole F/F site, keeping clear of the vertical-climbing free flight models which were engaged in the regular night flight competition. This was easy, relaxed flying that lasted about 10 minutes. Again landing was a problem, as very few of the lights could be seen. After dropping to 25 feet, Bill lined the ship up for a known clear landing area, chopped throttle, and cautiously help up-stick as the model settled in the dark and finally made contact with a loud clump (*It was a very welcome sound! wcn*). No damage was incurred.

Conclusions drawn were that, even with slow O/T R/C flying, the situation was hairier than a Borneo gorilla. Bill ventured the opinion that reflective light strips (similar to last year's glider flying night trials) should be employed on the underside of the wings. Spot lights could then be directed at the model to outline its position. This would be particularly handy in blind landings.

Free Flight night flying differs quite a bit, in that the model is stable and flies with no further help. Biggest problem is tracking it in the dark and spotting the model on the ground.

On that basis, the writer will again offer trophies for the best night flying F/F old timer. Two years ago this offer

was made, but inasmuch as the O/T flying concludes on the second day of the three-day meet, no one was around Sunday night. This time, we will try it on Saturday night and see what results we get. You should try the fun. It's a whole new ball of wax!

FIELD, FIELD, WHO'S GOT THE FIELD?

Is that ever a familiar cry! The AMPS of Northern California find themselves exactly in this predicament, as the house builders have finally encroached on the flying field to the extent that retrieval of the models is a major problem.

It now appears the modelers will have to travel at least 100 miles plus to get to a flying field, as the only active free flight fields left now are the NCCFC Waegill Field and the Madera-Fresno GMA site. Small local contests will be held at Milpitas, with severely restricted flight limits. "Progress" surely gets in the way at times.

ANZAC ANTICS

Ivan Tallen, of Levin, New Zealand, writes to state that old timer event at the N.Z. Nats came off in great style, despite the crummy weather that plagued the meet. Same old story . . . cold and windy, with the drift taking the models off the airport in two minutes or less.

Tallen says he was lucky to win, as the O/T Contest was a precision meet

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plastic model, tho' it may need some modification). They are just perfect to learn to fly on (First time flight instructions on plans). Everyone of them flies just great—and you can't hardly hurt them—because they're light and rugged. We've got 15 in the line now—priced so low, you'll want to build a fleet. Wing Span's are all about 21" and the tools you'll need are usually found around the house—So get over to your dealer and take a look—they're the most . . . for your fun . . . for your dough!

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where two minutes is the target time. Ivan posted the close time of 1 min., 58 seconds! Can't gettun much closer than that.

His model, interestingly enough, was a Modelaire "Skyrocket," an Australian kit produced in 1942. The design is a dead ringer for the Thermal Thumber, except the fuselage is a box. The writer knows of many modelers who scaled up the plans and missed the triangular part so clearly shown in the photos of the model. Perhaps, when plagiarizing the design, the same thing happened? (MB's plans show correct fuselage, wcn).

Anyway, using an English 2 cc diesel, an E.D. Competition Special, the model flew great. Plans are now available from Pond O/T Plans (plug, plug!)
REBEL RALLY

Latest letter from Jim Kloth, Editor of the F.M.A. (Florida Model News), indicates that the Rebel Rally "enjoyed" rotten weather. In short, Jim says entirely too much rain.

Highlight of the meet was the "Red Barron", otherwise known as Bryton Barron, a 70 year old competitor who is killing the other boys. In a letter from Bryton he announced that he took first in O/T Ignition, 3rd place in O/T glow, and then apologized for taking two firsts in modern free flight competition. Watch that stuff!

All joshing aside, it is really spectacular to watch this 70 year young

modeler get around. To show he is no slouch scholastically, he was a Rhodes scholar, listed in Who's Who, and is a fantastic person to talk to. Hope he can make it out to Taft sometime for the Free Flight Championships to show the rest of us duffers how.

Completing the report, Jim also notes that P. Brown won the O/T glow and the O/T .020 Replica events. Between Brown and Barron, they didn't leave much for the other fellows. Perhaps, next year, the weather will be better at Jacksonville, and draw more entries.
OCIE RANDALL MEMORIAL CONTEST

Here is a contest that is dedicated to one great fellow, Ocie Randall, who practically carried the Fresno Gas Model Club for 25 years. True, other members were active, but Randall was the backbone that was responsible for the Club's survival.

All the credit in the world should be given to "Chris" Christenson for inaugurating and continuing this meet dedicated to Randall's memory. The only tough part about this meet is that Chris gets caught between the SCIF Kickoff, SCAMP Texaco, and the U.S. Free Flight Championship Old Timer Events. More than a few modelers skip this good contest as they are simply running out of models!

Despite this, the Bakersfield O/T Contest came off in great style, with

fifteen to choose from!

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excellent weather over the May 8-9 weekend. Inasmuch as the contest was held on Mother's Day (just try to get out for a contest on that day!), all ladies on the field received a carnation corsage.

Heavy winners were Sal Taibi (2 first, one third), Larry Boyer (2 firsts, 2 thirds) and Larry Clark, with two firsts.

OHLSOON 23 CONTEST

As noted previously, Bill Daniell has announced he will sponsor an old timer cabin event limited to Ohlsson 23 engines for power. October 24 has now been set as the date for this event, happily being held as part of the SCAMPS ROW Contest at Elsinore.

Noted in a recent issue of "Hot Leads", as edited by SCAMPS Jimmy Dean, is the idea of building a 70% size Buzzard Bombshell. No question about it, this would make an admirable model for the event, but this columnist can't help wondering if the original concept of free flight old timers isn't being subverted. After all, the rule of "no scaling" should be clarified, otherwise, we are going to get into that Pandora's box of ills that is plaguing the R/C O/T group.

MORE ENGINE CONVERSIONS

We have mentioned many of the fellows producing glow engines converted to ignition, such as Bernhardt, Fechner, Barrows, etc., but it appears

the writer has overlooked Jim Dean, editor of the SCAMPS Newsletter, "Hot Leads". Jim turns out very creditable work in fitting up glow engines with ignition points.

Jim makes his own complete timer assembly. He fits any engine, even those old ignition engines that are missing the timer points and/or assembly. Point in case is that he just got through re-fitting an Arden .09 for Gene Wallock.

As Jim modestly states, they won't do for a collector (that's what you think!), but they do work well. Jim likes to convert K & B Torpedo engines, and has a few motors on hand for sale. Eventually, he will have K & B .09, .15, .35, and .45 available, in addition to the present .19, .201, and .29 series.

For further information write Jim Dean at 2218 S. Ross St., Santa Ana, CA 92707.

MORE SPOT SHOTS

That effervescent Randy Carman, editor of the "SPOT SHOTS" Newsletter, did it again. Just received their latest publication, which features a beautiful multi-color logo on the masthead. According to Carman, this work of art was the result of Joe Krush's labor. Joe is from the Valley Forge Signal Seekers Club.

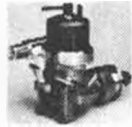
The logo is interesting in that it shows a miniature Red Zephyr inside a glass dome-like display case and wood base surmounted with a banner of SPOT.

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Also noted is the club shirts in two colors, red for the girls and yellow for the boys. A real novel idea for finding your spouse on the field in a hurry. After all, how many red shirts can there be?

SLAM NEWS

The Salt Lake Antique Modelers report another good turnout at their May meet. The Spring Tune Up Old Timer Contest was staged in absolutely perfect weather. To show what great flying weather was available, Jay Jackson put up six straight three-minute flights with his O & R 60 powered Westerner.

Incidentally, (if the writer might

digress), the Foote Westerner is the best gliding model ever seen. This "finless" soarer set all sorts of early AMA records when it first came out in 1940. The only drawback to the design (besides being downright ugly), is the weakness of the wing. In tight spirals, the wing will wash-out very similar to an indoor model, which abruptly terminates the flight with a rapid spiral dive. Keep them in wide circles!

The SLAM Club is also running numerous O/T fun-flies, with most of the flying starting late in the day. Incidentally, if anyone is interested in viewing some excellent flying sequences, the writer will again mention that Lin

Haslan has some fine 8 mm films. Write to F.R. Haslan, 3731 So. 5450W., Salt Lake City, Utah. 84120. You pay the postage!

THE WRAPUP

Ed Lidgard, Chicago Aeronut, who now resides in Perry, Georgia, was out for the U.S. Free Flight Championships. During one of the bull sessions in the Northrop motor home, Ed recounts an anecdote on Raoul Hoffman, now deceased.

Hoffman, an introvert type, was always deeply involved in the technical aspects of model aviation, and spent many tedious hours in mathematical solutions of best airfoils, wings, etc. After months on his latest love of labor, the best wing plan, he presented his findings at a Chicago Aeronut Meeting. The long and short of the discourse was that the 2/3 ellipse, as so successfully used by the Spitfire, was found to be the most efficient. Raoul had no sooner finished on his final analysis, leading to the finding of the most efficient wing plan, than Milt Huegulet stood up and waved no less than six different gliders featuring various wing forms stating, "you mean like this?"

Completely unabashed, Raoul exclaimed in his heavy guttural tones, "Ya, das is exactly vat I mean. Practical experiments vill always confirm the mathematical approach." How do you top that squelch?

Incidentally, in closing off, it would be well to note that every real modeler should have a copy of Raoul Hoffman's book, "Model Airplanes Made Painless." Get it through your AMA Model Services.

Fokker Continued from page 12 shown. But at bulkhead "C", A 1/16 x 1/4 piece runs vertically to provide a covering joint around the landing gear. Don't forget V-shaped sheets of 1/16 at front, as this is part of the metal cowl on the real ship. Also, 1/16 pieces will have to be placed around windows for covering. The block that forms the top front of the fuselage is now laid out. It is 1-1/2 x 6 x 10 inches. Carve the block to sections, starting at nose ring "D", section "A", section "B", and to fit against Bulkhead "C".

I will deal with the assumption that an OS-40 is used. Mount motor as far back as possible in Tatone mount. Glue ring "D" to block, using center-line on both. Spot-glue block to fuselage. Now make 1/8 plywood thrust shim, tapered to nothing on one side. Rotate it on back side of mount so you have equal down and right thrust. Then in this position, shape it to back of mount and lightly glue it to mount. Now position mount and motor against firewall. Center motor shaft with "D" ring. Do this by viewing motor shaft *end* from *directly* in front, then carefully mark around motor mount as far as possible. Remove

block and motor from mount. Mark holes in shim and remove it and drill holes same size as holes in mount. Make sure all holes match. Now take shim and place it on firewall where it was marked, and mark holes for blind nuts in firewall and drill firewall (be sure bottom of block is hollowed as shown on print, for motor clearance). Epoxy blind nuts to rear of firewall plywood. Now fit and epoxy 3/8 plywood wing hold-down piece, also 1/4 x 1/4 pine under and against bulkhead "C".

LANDING GEAR

The landing gear has shock absorbers built in vertical legs. The 3/16 wire is lightly epoxied to bulkhead "C" so that it can be swung back after removing 5/8 at point shown on drawing. But *before* doing this, fully assemble all wire members of landing gear. The 3/16 music wire will not cut easy, but I did it with 2 new hack saw blades (*A Dremel with cut-off disc is less work and less nerve-racking wcn*). Now swing back top of 3/16 legs and slide on both sections of brass tubing and ball-point pen springs. Swing back down and solder brass tubes at top, and all positions shown on drawings. Don't forget to round off top of bottom half of 3/16 wire. The fairings as shown on the drawings are needed on vee-struts of landing gear to stiffen them so they only flex at fuselage, thus helping ball point springs bear landing loads. You will note landing gear clears nacelles with cutout in bottom of nacelles. I did not want these landing loads transferred to wings as on the real ship. Remember these cutouts later when building them around nacelle hangers and before assembling wing sections.

WING

The wing is foam-cored. I got my foam at an insulating supply house. It was 3 inches by 8 ft. long by 2 ft. wide. As the wing is 71 inches long and center section core 12 inches, there was some waste. It is made in 3 sections, the center section, right wing panel, and left wing panel.

Since full details on a foam wing could be an article in itself, I will only touch on points that may be different from some others. The method I used will require a table saw. Rip from original block a *precise* piece 14 inches wide. We now have a block 2 inches wider than core at root-cord, and 3/4 inches thicker. Now, cut two outer wing panels to length and one center section. Cut these a little long as ends are hot wired to size. Cut slots in them for spars and aileron controls as per drawing on table saw. An 8 inch saw blade will make a 1/8 slot. Remember 1 inch excess at leading edge of block and 3/8 on bottom. Both to be hot wired off later. Now make plywood templates for hot wiring foam. Two root templates and 1 tip template.

At this point or maybe before, if you have never made a foam wing, it would be wise to get some help from someone



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who has had some "hot-wire" experience. The side view of the wings on Sheet One shows washout at tips, also relative positions of root and tip templates on foam block.

Take the top parts of the foam that are cut off of the core and glue them together for a jig to later assemble all the wing parts. The aileron parts are installed before covering foam with 1/16 balsa. Notice the 1/2 inch balsa pieces, which are cut down the middle when the ailerons are finally cut out. Cover all three panels with 1/16 balsa, carefully sanding edges so as not to remove any foam (I used 3M No. 77 spray-on adhesive). After sanding edges,

epoxy leading edges and wing tip blocks in place. Shape wing tips and sand leading edges of outer panels to shape but leave final shaping near center section until later, as all three have to match after assembly.

Because the outboard motor hangers have to go between the 3 sections at assembly, build nacelles to hangers, shape, sand, and paint nacelles and struts to final finish. *Be sure* to mask off airfoil section of hangers before painting. As I used monocote on wing, this saved masking wing. The nacelles would be hard to make any other way, since they are part of plywood hangers. Now very carefully cut out ailerons. Angle for

CONGRATULATIONS to Bill Stroman whose Astro 020 powered Gotha Taube (shown) was 1st in Free Flight Scale at the Flightmasters Annual ALL-ELECTRIC MEET.



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down deflection will have to be cut or sanded on ailerons (see cross section on Sheet Two). Do not install ailerons now.

Take center section, determine center at trailing edge, and cut out area for hardwood block. Now carefully cut back the 1/16 balsa covering (as shown on plans) on both top and bottom. Remove this, trying not to disturb the foam. Now fit and epoxy bottom piece of plywood on wing. Make pine block and epoxy that in place, leaving room for the final plywood top cover.

Now you should be ready to assemble all parts of the wing. You should have a flat surface for the foam jig. If the unsanded areas of leading edge interfere,

sand back this part of foam jig slightly. Leading edge overhangs jig anyway.

Now the 20 inch spars are epoxied into center section. Make sure spars butt in center by laying them out first. For wing epoxy, use only the slow-setting kind, not 5-minute type.

Now the motor hangers are slid on and epoxied to foam ends of center section. Now push small (whole wing has to be done at one time . . . don't try to do part of it and leave) pins through spars next to motor hanger so spars will not move in center section when outer panels are pushed on. Cover spars generously with epoxy when pushing them into both center section and outer

panels. Now check whole wing to make sure it is flat, with no one corner high or low, you may need to shim foam jig. If you do, make sure that what ever you use has enough area not to push into foam. When all is as it should be, put on weights and leave it overnight.

Now the servo area has to be cut out. There are many ways this can be done. I simply took a sharp, thin knife and cut out foam all the way down to the top balsa skin. Work it out slowly, a little at a time, keeping sides vertical. Make sure the hole you cut out will work with your servo and is lined up with slot in wing. As noted on plan, layout is for KPS-15 servo. The KPS-15 on mine is completely down into the wing, as wing is so thick at this point. Line this servo compartment with 1/32 balsa all around. The bellcrank cutout was done the same way. Then cut pieces to fill in below bellcrank to give angle back to aileron horn. On both sides of servo (cutout), remove balsa over slot in foam to bellcrank cutouts. Make each cut at an angle so that cross-section is smaller at bottom and will reglue back in without falling through. As noted on plans, 1/16 M.W. pushrods slide in 16 inch long pieces of Golden Rod. After servo is installed, hooked up to push rods and bellcranks, and all works free, epoxy Golden Rods for most of full length, then reglue cut out pieces over push rod slots.

The front hold-down, "F", on wing, is carefully centered. Balsa covering is removed on front side of spar and foam removed down to top of spars, allowing part "F" to fit down flush with bottom balsa skin at ends. Now epoxy ends of spars very well to part "F", using slow-setting epoxy. Make sure this is a good joint, as it is all that holds front of wing to fuselage. Screw on part "G", adjust for fit on fuselage, and epoxy it.

My wing is covered with transparent orange monocoat to simulate the varnished birch plywood of the Fokker wing. After covering, install ailerons and hinges. Hook up pushrods to aileron horns. At this point, extra struts shown on print are added to nacelles. These are set into wing and nacelles so as to make good bond. Use slow setting epoxy for this.

TAIL SURFACES

These are made of 1/4 sheet balsa with 1/16 x 1/8 simulated ribs glued to them, to give built up effect. Sand leading and trailing edges to streamline shape before gluing on 1/16 strips. After these strips are added, sand leading and trailing edges.

DUMMY MOTORS

In the beginning, it was planned to use Williams Bros. 1 inch scale Whirlwind cylinders. But as I had not started the drawings until after Christmas '75, time became a big factor if I was going to make it a Bicentennial project. Also, after pricing 27 Williams Bros. cylinder

kits, I decided I just might make stand-off Whirlwinds a lot faster and less expensively.

They really are not hard to build (of course mine are all done). The main crankcase is cut from 5/8 inch plywood. The cylinders are also 5/8 dowel part "C". They are epoxied together on flat surface. If you care to (I wish I had) wind cylinders with heavy thread for fins, crankcase will have to be raised the thickness of the thread. For the notch in the top of the cylinders, I made a small aluminum jig with curve to fit diameter of cylinders and a notch in top to mark off each top of cylinder on all 3 motors after joining crankcases with cylinders. If you wind thread on cylinders, cut notch after winding, as fins go up sides higher than notch. I then cut notches on my Dremel saw.

"D" section is only needed on nose engine. "B" section is needed on all three, with the center cut out on nose engine only. As noted on plans, both "D" and "B" parts were cut out on my Dremel saw with table tilted. Now glue parts "B" to front of each engine. Do not attach parts "E" yet.

To position and attach the pushrod housings (nails), I made a very simple jig out of .020 steel. This lays flat against part "B" with 90° bend that fits against cylinder. With jig against front of motor and cylinder, put whole thing in vise, drill hole short way into part "B". Jig will wear a little before you get to number 27 cylinder, but not bad if you are careful.

After these holes are drilled, epoxy on parts "E", or rocker arm boxes. Then epoxy pushrod nails in place. Of course, as plans show, center engine has to have hole cut through it for OS-40. Also parts of 7, 8, and 9 cylinders are removed on back side. The outboard dummy engines are attached with 4-40 continuous thread, epoxied into nacelles and held on with 4-40 nuts, so they can be removed in case of damage.

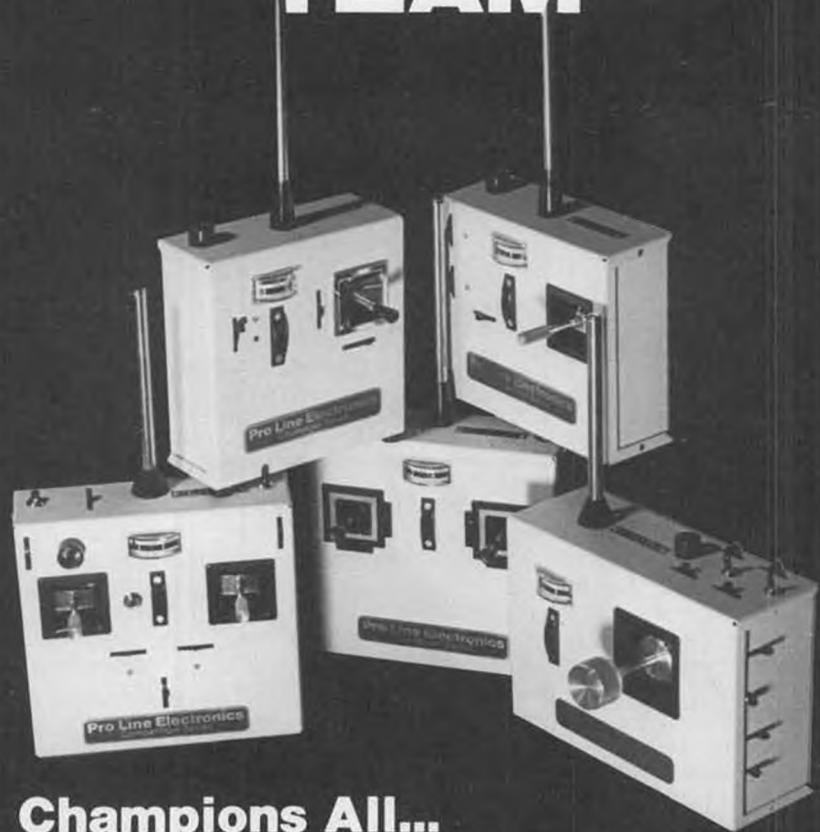
STATIC SCALE PROPS AND SPINNERS

The props were cut from Rev-Up 9-6 props as shown on plans. It is important to recarve pitch from original leading edge down to modified straight trailing edge to increase pitch. This will reduce drag if flown with these on. Also 1/8 has to be cut from rear of scale props so they will fit William's spinners.

The spinners are William Bros. No. 115. Four were modified, 3 for static display and 1 for flying prop on OS-40. I put a 1/4-20 bolt in spinner rear half, tightened nut against rear, attached front half, chucked bolt in electric drill, and with drill running, cut 3/4 inch off front half with hacksaw.

Then epoxy balsa (pine would probably be better) blocks onto front with grain going straight ahead. Rechuck them in drill, and shape them as per drawing

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with coarse file, followed by sandpaper block.

PILOT'S CABIN

Glue a small block to rear of already-formed front top block to form rear of cabin. Notch this block for wing leading edge and flush with top of fuselage. Now form rear cross section of cabin from line "A" on side view to shape shown on front view of ship where cabin joins wing. (Note angle at this point on side view).

The two halves of 1/16 plywood that make top of cabin are now fit and epoxied to back top of cabin. These are supported at front by 2 pieces of flat toothpicks pushed down into block and epoxied.

Now glue 1/16 plywood piece back of cabin for screws to go through to fasten main block to nose of ship. Also 3/16 plywood piece between longerons for blind nuts. Drill through block to locate blind nuts. Epoxy blind nuts and fasten down block with screws. Leave room on each side of these screws for fill-in between cabin rear and bottom leading edge of wing. To do this, install wing with wax paper taped around leading edge. Make 2 small pieces of 1/32 balsa that fit into this area. Glue these to back of cabin and block about 1/8 in from sides. Also, because wing curve will not fit straight against cut behind cabin, glue small dam-like piece horizontally between these two pieces, low enough to

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clear wing. Fill in these areas with plastic wood, both top and sides, against wax paper on wing. It will take a second application to cover shrinkage of first. After dry, remove wing and front block from fuselage. Sand plastic wood-filled areas, using cabin sides and top as guides.

As you will notice on drawing, wind-shield projects beyond side windows. The real ship had this feature. All corners on mine simply connect (see photos). Now make 1/16 ply pattern (two halves, with center angle) of top front glass and tack-glue to permanent ply top (it will later have to be removed). Carefully cut window groove into sides and front of block. Use top of cabin and temporary front glass pattern to keep angle correct.

Now inside area of cabin has to be painted flat black and rest of nose gloss black. Next, pilots are glued in. Make sure painting is finished on block so you won't have to mask windows later.

Post card patterns are made of side and front windows. With slots in block, no glue is needed on bottom; also patterns and windows don't need to fit so exact. Now temporary ply front top is removed (touch up edge with black paint). Cut windows from patterns out of .010 plastic. Insert sides and front pieces in grooves. They should fit well at corners. Take Hot Stuff, and with a toothpick, place small drop at top inside of 3 joints and let run down and set. This will also attach them at bottom. Now, holding block upside down, run Hot Stuff along top of side windows at plywood junction. If done right, very little will show on joints.

The front top piece is cut out, leaving about 3/16 extending beyond front and sides. This will have to be bent down the middle to match plywood rear. Make good joint for fit against ply. Now take transparent Scotch tape and place it on back of plastic so it will

half lap on plywood when put on. Run Hot Stuff along front edge of 1/16 plywood permanent top and place top plastic (centered) against it, rubbing down Scotch tape. This will make a flush joint here (tape will come off after Hot Stuff is set). Now turn *upside down* again and do each of four joints, one at a time. Hold top firmly against side and front windows. Run Hot Stuff along outside joint. If done one at a time and held tight, it will not run inside. Trim off 3/16 excess and add 1/8 D. J.'s Multi Stripe for framing. Now pilots are entombed forever . . . we hope. **FLYING**

The ship was test-flown by Lon Sauter, who claimed, "Trimmed out, it flies hands off." Shock absorbers and free wheeling props make takeoffs, flight, and landings quite realistic (no wing tip bounce on landing).

It is quite a building project, but well worth it once you see it in the air. This bird tracks!

CONCLUSION

I would like to thank and give credit to the club members and friends who have helped. Lon Sauter and his wife, Marge, of the Syracuse Thunderbirds Aero Radio Society, cut the foam wing parts. He is President of the club, and Marge is editor of our club's newsletter Plane Prop Wash. My good friend Ken Little, took all of the pictures and also found some data on the ship from his collection. Others include, Walt Throne, Frank Hogg, both of the A.R.C.S. (Aero Radio Club of Syracuse), Karen Schulz who typed up this mess, and my good wife Rena, who has put up with this (too short in time) project. ●

F/F *Continued from page 52*
 be on sale at the NATS or by mail order after the NATS.

Addenda: The Texan was featured not only on the cover of Model Builder

earlier this year, but also as a construction article in that same issue. And Tom Hutchinson is kitting the Ultimate Dragmaster in two versions: Full kit for \$22.50 and short kit for around \$12.00. I am writing a product review of this kit for an upcoming issue of Model Builder.

HINTS AND TIPS

From the Flight Plug: Cut the bottom 3 or 4 inches from a plastic anti-freeze bottle for a perfect container to wash engines and parts. It is impervious to all solvents, including acetone.

From Gene Pape: Tired of trying to get your leading edge planking to stay in place? Gene uses Hot Glue from one of those nifty glue guns. Cut the planking to shape, put the hot glue on all of the ribs or spars to be covered, fit the planking in place . . . after the glue has set, heat up the planking, glue and all, with a hair dryer. The glue will soften and adhere the planking in place. Simple. **DESIGN YOUR OWN FREE FLIGHT Part 2**

Last month, I gave you a homework assignment. Look over the magazines and try to get some basic design features down on paper . . . or in your mind. This month, the lesson will continue with some basic design parameters. Let's go:

What do you want?

Yes, what kind of model do you want? I know, you would like one that climbs like a super-charged skyrocket and glides like an underweight A/2. You can't have it! This ideal has yet to be reached, but you can come close to it. How? Decide what you would rather have . . . then compromise. You will find this to be the secret of a good competitive design:

A. Salient features of fast climbing models:

1. Light weight, say 5 to 6 ounces.
2. Thin, flat-bottomed airfoils of 6 to

7%.

3. Small areas . . . 150 to 225 sq. in. wings.
4. Streamlined profiles.
5. Hopped up engines and fuels.
6. Thin, wooden, high speed props.
7. Near zero-zero incidence angles.

Designing one such as described above would produce a very rapid climbing model, but it would be prone to a number of defects; lack of structural rigidity, poorer glide capabilities, possible difficult starting, lack of consistency in performance due to marginal stability.

B. Salient features of good gliding models:

1. Light weight
2. Thicker (9-10%), usually undercambered airfoils.
3. Long tail moment.
4. Larger areas, 350 sq. in. wings or more.
5. Streamlined profiles
6. Moderate incidence angles on the order of 2 to 3 degrees.

A ship designed like this would be decidedly slower in the climb, with similar power considerations. Its glide, however, would be closer to that A/2. You can also see that there are several features of each type which are useful for both fast climbing and good gliding models . . . light weight and streamlining.

Before we go on, consider whether most of your flying will be done on Category I or Category II fields. Is the weather condition normally such that there is little wind (0-5 mph), moderate winds (5-10 mph), or high winds (above 10 mph)? The longer a model must stay in sight ie; 5 minute maxes vs. 3 minute maxes, or light windy conditions vs. high winds, the larger the model must be just in order to allow the timer to keep track of it before it goes out of sight. If high winds are the usual order, then a model which is capable of penetrating those winds is also desirable . . . this means a slightly heavier model for a given wing size. (The possibility of Category III sites . . . 2 minute maxes, 7 second engine runs . . . is also in the works, so other considerations need to be made in this regard, too.) Another consideration to power vs. glide can be omitted, if one were to utilize a multi-function timer to change incidence angles, allowing the model to fly under power at near zero-zero, but with a change to a 2 to 3 degrees angle for glide.

Intentional Hole-Digging

A power model, more-so than any other type, flies under a wide range of speeds . . . from a climb that may reach up to 50 mph, to a glide of near 2 or 3 mph. You have to design for this variation. Don't give up. Here are the hints:

1. Dihedral: Without it, you will intentionally dig holes in your flying

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field. Dihedral is what gives your model lateral stability. How much? What kind? Look at the plans of successful models. Compute the area they have and at what dihedral angles. A sample guide might be: Main panels 3/4 to 1-1/4 inches per foot of span, tips 3 to 4 inches for each foot of span. As a rule of thumb, the more wing area for a given engine size, the lesser amounts of dihedral necessary for stability. Also, the less dihedral, the less area necessary in the fin on any given design. However, too little dihedral and you are back to digging holes. Models are flying now with 3, 4 and 5-panel wings with 4 being the most common. Why? Because a 4-panel wing has fewer joints subject to breakage or warpage, and it also lines up evenly on the wing platform. One other advantage of the 4-panel over the 3-panel is that it doesn't have the characteristic rocking motion of many 3-panel designs.

2. C.G. location: The farther back, the better the glide and the steeper the climb, except, the farther back you go, the more longitudinally unstable your model becomes. Result: you have to pull your model out from the mud again. Rule of thumb: C.G. placement should fall between 70 and 80 percent for a comfortable compromise between performance and stability.

3. Thrust lines: High thrust, low thrust (pylon), take your pick. Each has its advocates. High thrust lines usually are

easier to trim than pylon types. They don't, in my experience, seem to glide as well. High thrust line models can be flown in a straight or left climb. Pylon types are more difficult to trim, but seem to hold the adjustments more readily; they can be flown straight or with right climb only. Pylons normally use downthrust of varying degrees to control the tendency to loop; whereas, the looping tendency in high thrust is much less.

Finally, for this issue: I would like to give you some idea of the kinds of models I fly for our Northwest conditions. Normal N.W. conditions are light to moderate winds on sites that have trees in the vicinity. All meets are Category II. All my models are pylon types. In 1/2A, they are, or have been RamRod 250 models or derivatives, a DaBox of 240 sq. inches, 1/2A Stiletto of 290 sq. inches, and now the Fast Rod, with 260 sq. inches. Since the removal of the VTO engine run rule of 11 seconds, I have had to go to hand launch. With 9 seconds of engine run time, the power phase is critical. Wing areas will need to go down, with 260 probably being the optimum for a 3 minute site under normal conditions.

The next installment of this series will go into pylon height, nose and tail moments, airfoils, aspect ratios, area percentages, rudder placement and size. See you next month. Right here!

In closing, I'd like to point out that the Free Flight Contest Board is now taking initial action on rules change proposals. This is the beginning of the new two year cycle. There are some 11 or so changes being promoted. If you have feelings about them, or would like more information, CONTACT YOUR DISTRICT F. F. CONTEST BOARD MEMBER. He would appreciate the input before the vote . . . not after. Remember the flap caused by the no-VTO vote; most of the it came after the rules change had passed, not before. By the way, there is no rules proposal to bring back VTO. I find that strange, don't you? There are proposals on the following, though: Category III Events (2 minute max., 7 second engine run), definition of engine runs, allowing binoculars for timers, adding Class D as an event, modifying the timer position rule to allow movement of the timer beyond 200 feet, adding a weight requirement to indoor cabin models, prevention of EZB and Penny Plane entries in other classes of indoor, expansion of specifications to Indoor Cabin, change indoor steering rules.

If any of the above get to you in any way, let the man know.

Until next time, have a good Nationals and a good summer season of flying. Thermals!

USFFC Continued from page 55
close of flying put up a 5:31 to best Ray Hansen's mark set at the last California Nats. Last year's winner, Jim Crocket, had to settle for third place.

A contest of this magnitude just doesn't happen. It takes teamwork between the fourteen clubs involved and the management provided by the FF-MAASC. Jean Bogart sets up and runs registration, ably assisted by Ross Steckel and Judy Scarborough. Overseeing all this is the CD, Joe Norcross. Joe in turn delegates the running of the indoor events to the assistant CD, Lee Hines. My function is to handle all the finances, which in a meet of this calibre, exceeds 2,000 dollars. Bill Bogart signs the checks and keeps the bank book balanced (or so we hope)!

The end result was what you saw if you came this year. Beautifully customized trophies, rental toilets, trash containers on the field, the field marked and posted into various segments, and a hired man to patrol the Kitty Litter factory.

Please put this contest on your must list for next year. We'd like you to be part of the 300 plus contestants who were here this year. Remember the USFFC's motto: Bigger and Better. All taking place at the world's best free flight site, Taft, California.

1976 USFFC RESULTS 1/2A OPEN

Guy Kirkwood	37:35
Glenn Christensen	36:01
Andrew Barron	32:26

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Mike Kerzie	20:56
Randy Weiler	17:11
A JUNIOR	
Parker McQuawn	16:37
Flaxen Johnson	15:00
Jeff Cunynggham	14:03
Eric Dyer	10:16
Keith Morgan	9:28
C GAS	
Doug Galbreath	70:00
Randy Secor	42:26
Bill Hunter	33:30
Chuck Thompson	24:36
Tom Scully	24:19
NITE GAS	
Vic Cunynggham Jr.	25:00
Bill Hunter	24:51
Jon James	24:44
Hulan Mathies	20:00
Jack Moreland	19:46
OHLG JUNIOR	SECS.
Fernando Diez	360
Danny Diez	296
Steve Wittman	274
Bruce Armstrong	265
Marvin Miller	219
A/2	
Bob Isaacson	1636
Craig Cusick	1605
Tom Hutchinson	1242
Geo. Xenakis	1208
Wayne Drake	1200
WAKEFIELD	
Les DeWitt	1236
Bob Piserchio	1214
Jim Quinn	1202
Bob Tymchek	1183
Irv Aker	1125
1/2A JUNIOR	
Eric Dyer	36:11
Flaxen Johnson	20:00
Jeff Cunynggham	12:19
Guy Nennano	11:35
Fred Calhoun	8:27
B GAS	
Mark Valerius	46:55
Cliff Tanaka	31:12
Ray Sahlberg	25:00
Bob Scully	21:40
Nick Cacci	20:00
D GAS	
Raymond Smith	25:00
Ken Bauer	21:52
Lyman Armstrong	20:00
Bob Coombs	16:31
Steve Calhoun	15:00
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Bill Davis	600
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Mark Valerius	996	A/1 JUNIOR	
A/1 OPEN		Ed Wogulis	736
Bill Xenakis	1440	Jim Geraghty	696
Bob DeShields	1071	Eric Dyer	670
Jack Moreland	967	Dean Koelsing	596
Bob Critchlow	890	Danny Diez	580
Russ Backer	859	PAYLOAD	
ROCKET		Terry Thorkildsen	8:06
Irv Aker	12:00	Ron Wittman	7:11
Harry Steinmetz	7:06	Scott Valentine	5:42
Jim Crocket	6:27	Bill Valentine	4:37
Bill Haught	6:19	INDOOR PEANUT	
Andrew Barron	5:00	Mike Mulligan	
A OPEN		Bill Warner	
Randy Weiler	62:02	Bill Stroman	
Nick Cacci	28:00	Hal Cover	
Jim Scarborough	25:34	Larry Moss	
Russ Backer	22:50	IHLG OPEN	
Bob Scully	22:50	Bob Meuser	62.0
B/C JUNIOR		Ron Wittman	58.5
Jeff Cunynggham	25:53	Bob Boyer	54.9
Eric Dyer	12:07	Bob DeShields	54.5
Keith Morgan	11:44	Phedon Tsiknopoulous	54.3
Daniel Hannah	11:04	A-B OLD TIMER PYLON	
Fred L. Calhoun	5:44	Bruce Norman	15:00
FAI POWER	SECS.	Leslie Norman	15:00
Reid Simpson	1579	Sal Taibi	13:36
Al Bissonette	1578	Otto Bernhardt	12:53
Don McGhee	1224	Larry Boyer	12:44
Dick Myers	1166	30 SECOND ANTIQUE	
Bruce Hannah	1144	Wade Wiley	15:00
OHLG OPEN	SECS.	Fred Emmert	14:07
Bill Blanchard	871	J. W. Savage	13:28
Randy Secor	455	Leslie Norman	10:53
Bill Xenakis	390	Jerry Otis	10:17
Geo. Batiuk	353	OUTDOOR PEANUT	
Jon James	349	Bill Warner	
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David Steinmetz	807	Mike Mulligan	
Greg Richardson	444	John Oldenkamp	
Van Richardson	427	Larry Moss	
Eric Dyer	247	PENNY PLANE	
Jim Geraghty	173	Clarence Mather	404

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Earl Hoffman	362	Ron Martin	14:09
Bob Meuser	349	Bob McBride	13:31
John Magnus	320	Toby Blizzard	12:01
Bill Xenakis	181	Russel Adamczuk	11:52
IHLG JUNIOR		OLD TIME RUBBER	
Steve Wittman	52.8	Bob Oslan	15:00
Jim Geraghty	37.9	Ray Berens	12:25
Eric Dyer	37.8	Wade Wiley	11:42
Steve Mounsey	24.4	Irv Aker	10:40
Bret Payne	17.6	Russ Backer	10:36
C OLD TIMER CABIN		SCALE RUBBER	
Fred Emmert	14:30	Hal Cover	138
T.C. O'Meara	13:28	Ray Berens	121
Leslie Norman	11:19	Larry Moss	100
J. W. Savage	11:16	Clarence Haught	98
Spiro Nicholau	9:45	Dave Haught	93
020 REPLICA		GRAND CHAMPION	
Bob Oslan	11:27	CHUCK BROADHURST MEMORIAL	
Jack Jella	11:00	Bruce Hannah Jr.	407
Thomas Kepler	9:37	OPEN SWEEPSTAKES	
Brick Brickner	9:00	Irv Aker	379
Bruce Hannah, Jr.	8:43	SENIOR SWEEPSTAKES	
SCALE GAS		Andrew Barron	310
Brick Brickner	664	JUNIOR SWEEPSTAKES	
Hal Cover	611	Eric Dyer	385
Bill Warner	595	TEAM CHAMPION	
Bill Stroman	547	1. Uncle Sals's Flying Circus	514
Larry Moss	521	Bob White, Sal Taibi, Lee Hines	
EZB		2. Team Max Flyer	374
Clarence Mather	600	Ray Harper, Reid Simpson, Bruce Norman	
Earl Hoffman	549	HIGH TIME AMA GAS	
Mark Valerius	433	OCIE RANDALL MEMORIAL	
Ken Bauer	301	Doug Galbreath	70:00
Keith Morgan	228		
A-B OLD TIMER CABIN			
Hal Cover	13:51		
Bob Oslan	12:14		
Bruce Chandler	11:47		
Bob Dittmer	11:25		
Ralph Pray	10:34		
C OLD TIMER PYLON			
Bruce Norman	15:00		

sent you! Yuk, yuk!!

You have now made yourself a stencil, peel off the transparent paper and carefully lay it in the appropriate position on the wing. Your numbers will probably look better if you also put the centers of the O's, etc., into position.

The racing numbers on the upper left wing panel, both sides of the fuse and rudder are next, and are pretty easy to do. Go back over the stencils and rub the edges down real well so the paint doesn't bleed underneath.

Don't trust yourself to be able to spray the numbers without getting some over-spray on the rest of the plane. Using masking tape and newspaper, mask off the whole plane. Now go ahead and shoot the numbers and canopy. If the first coat doesn't cover very well, just keep on spraying until you get coverage. Clean the gun and then get right to work removing the stencils. This is a little touchy, as the paint is still wet to the touch, but is necessary if you don't want ridges outlining your numbers. With the stencils removed, the paint will flow out, leaving very smooth numbers.

The next night, you can wet-sand the numbers, feathering the edges down until only a very slight ridge can be felt at the edges. Be careful not to sand the numbers off, however.

At this point, most modelers will be satisfied with the job and lay on a coat of clear, or just rub the paint out and go flying. I am of the opinion, however, that Racing planes deserve something more than your average plain-Jane paint job. With Project G/Y, I figured a good ol' flame job might be kinda trick. The flames are simply masked off with Sig's 1/8 inch masking tape. Lay on the tape, stand back and eye-ball things. If it doesn't look right, pull the tape off and start over. When the outline of whatever design you're applying looks right, fill in between the 1/8 inch tape with wider tape, 1/4 inch seems to be easiest to work with. When the basic design is complete, mask off the rest of the plane with newspaper and 1 inch

C/L Continued from page 37

numbers with a pencil and then cut them out with an Uber Skiver. When responding to Model Builder for an Uber Skiver, tell 'em Model Builder

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masking tape.

Double-check all of the masking to be sure it is laying flat and that the whole plane is masked. You'll be sorry if you don't.

Now spray the trim, clean the gun, and pull off the tape. For those interested, Project G/Y is all yellow with white canopy and numbers. The nose of the plane is light yellow (1 part yellow to 1 part white) with the light yellow being fogged into the orange flames. The fogging is easy enough to do. The light yellow is sprayed first, being sure to spray the light yellow back far enough to allow over-lapping with the orange. When the light yellow looked good, I cleaned the gun (quickly!) switched to orange paint and finished off the flames by misting the orange over the light yellow so there is a gradual transition from color to color.

The next night the flames were dry enough to sand and a little additional sanding at the color junction got the flames blended about like I wanted. Nothing's perfect, ya know!

The lettering on the wings was done with Chartpak Velvet Touch Lettering. This is easy to do, although it is time-consuming. One caution . . . be sure to use only the best quality dry-transfer lettering material. The cheapies are only trouble.

With this beauty wrapped in "Showbiz" paint and hours worth of lettering on it, there is only one way to finish off the job properly . . . and that is with a coat or two of clear. The clear doesn't like to lay perfectly flat on the transfer letters, so I had to spray one coat of clear, let it dry, wet-sand the whole plane (paying careful attention to the lettered areas) and then put one final coat of clear on.

Done painting at last!! I just know that most of you are saying "Jeez, whatta waste of time. Flames, lettering, painted numbers, ugh! What's he doin', building a Stunt ship?", so I guess I should explain why I go to so much trouble painting my Racing planes. First off, I really enjoy painting. To me, it's not work, it's fun. Next, Racing planes just plain deserve to look good. Third, a "Show-Biz" finish is very smooth and slick. Whether it makes the plane go much faster, I'm not sure, but I do know it can't possibly slow it down! The fourth reason is the biggie, at least in my book. A plane that glistens and shines, and is also as simple as possible, is much easier to keep in race-ready condition than a junker. On a junker plane, little things that might keep you from finishing a race are too easily hidden by trash. With a clean plane, broken bits 'n pieces, loose odds and ends, show up like a cut flippin' finger. Think about it.

The last step in finishing is a good session with rubbing compound and wax. It's worth the trouble. Be sure to

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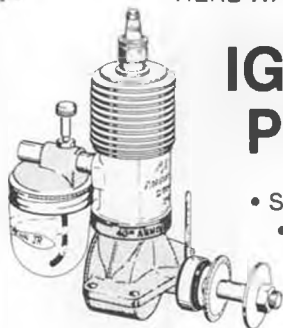
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let the paint dry for several days before rubbing it out. Although it may feel dry to the touch in 24 hours, it is not fully cured and shouldn't be rubbed out until it is cured.

Now bolt on the engine, tank, landing gear, shut-off, etc. As you already fitted these items prior to painting the plane (you did, didn't you?), everything from here on out should be basic nuts 'n bolts.

Starting at the front of the plane, I'll mention a few things I did that seem to make sense. Use Allen-head cap screws for mounting bolts and snug 'em up tight. Doubled tubing is used at the needle valve, fuel filter, and pressure fitting to insure that the tubing cannot come off these fittings. Medium surgical tubing is used for the fuel line and short lengths of Sullivan tubing (the kind with the yellow coating . . . it matches the paint!) are slipped over the fuel line before slipping it on the fittings. The tank is simply strapped in with rubber bands, but I also put several globs of Dow silicone seal in the cut-out for the tank before installing the tank. The silicone seal forms itself to the tank, giving a solid, yet vibration-absorbing mounting for the tank. The silicone seal will hold the tank in without the rubber bands, but use the bands for insurance. If the tank needs to be removed later on, a couple of tugs and

twists will break the silicone loose.

The gear is installed with 6-32 cap screws and Loc-tite. Same for the wheels. Be sure to use Loc-tite on the wheel bushings. You'll have trouble if you don't. Notice that the clevis on the push rod for shut-off is jam-nutted to keep it from turning and also has a tubing keeper on it.

At the back end we see the skid. Gary gave me a little kidding about the skid being so big and ugly, but this is the best kind of skid I've found (*Gary Stevens is DD's pit-man wcn*). The skids on a G/Y take a beating and have to be replaceable . . . and tough. The skid shown only lasted through five practice sessions and one race.

Next we look at the sewn hinges. As pictured, they are done with dacron line and only a single wrap. After two practice sessions, a couple of the hinges broke, so I'm now doubling the hinges at each location. I'm not very satisfied with the dacron line for the hinges, anybody got a suggestion for a better material? Gary thinks we ought to use nylon line, we'll try that next, I guess.

Gee, looks as if we've finally got this camel put together, I hope you've learned something from all of this, it's been a lot of work on this end.

Although I've made an effort at using off-the-shelf items for Project Goodyear, there are a few things that require mail-

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order. We'll start at the front of the plane and work back. Al Kelly offered to supply props and they have worked real well for us. Contact him at: Kelly Products Inc., P.O. Box 38, Western Springs, Illinois 60558. When preparing for the Project, I also wrote to K & W asking about their props, but never got an answer, so I don't know what the situation is with them.

Next item is the Rossi. Not just any Rossi, you understand, this is a GMA Custom done by George Aldrich "hisself." Absolutely super motor, it has run great from the first break-in run. More on the motor when we get to the flyin' part, but I would like to say that I definitely recommend GMA as having the good touch with the Rossi's. Write to: Aldrich Products Inc., P.O. Box 1426, Mission, Texas 78572. George will send you a listing of his products and services. An important introduction to Aldrich services is on the first page. *Read it and believe it!!!* GMA also stocks Kelly props, incidentally, in both glass and carbon fibre.

The shut-off is from Kustom Kraftsmanship, P.O. Box 2699, Laguna Hills,

California 92653. This shut-off is really nice and I recommend it. We have had absolutely no problems with ours and it makes for a nice, clean installation, as you can see from the pics. KK owner Joes Klause also has many other accessories for Racing and Speed fliers and does engine rework on most anything. He claims quick service and, in my only dealing with him, he sent along the shut-off the same day I called him to order it. Joe also stocks glass 7-6 and 8-8 props. (He's also the source of the former Kirn-Kraft line of Cox .049 hopped-up engines and accessories.)

The tank is a 3-1/2 oz. Rat tank from Randy's (used to be Don's). Other than shortening the fast-fill riser tube a 1/2 inch or so, the tank is absolutely stock and works very well. We're getting over 85 laps per tank without going lean, so we can pit whenever we want to. The fast-fills are also from Randy, but I can't find much good to say about them. Some work, some don't. I have to throw away about half of them due to leaks. The tanks and fast-fills should be available in most hobby shops. If you can't locate them, write to: Randy's Model Aeronautics, 515 Coleman Blvd., Mt. Pleasant, S.C. 29464. Randy also has a bunch of Stunt tanks, including 5-1/2 oz. tanks for the 46's.

The titanium gear is from one of my favorite people-type person, Glenn Lee. The gear is available several different ways. Gear alone in either 15° or 35° forward sweep is \$1.50. The wheels are \$2.00/pr and are available in red, yellow, black, green or blue. Drilled sets of gear, complete with wheels, are \$5.00/pr. I would suggest ordering the drilled sets, it's the easy way to go. I'm using the 15° gear, while Kilsdonk is using the 35° gear and seems to prefer it.

Space Age Fuels (Nitrotane) supplied a bunch of fuel and it is working great. Nitrotane is a good fuel and is available

in high nitro blends. If you haven't tried it yet, you really should. Most shops stock Nitrotane, or at least have access to it through one of their distributors. Or write to: Space Age Fuels, RR. 3, Kewanee, Illinois 61443.

Although not pictured, Gary is using a Fire Plug from Fusite (makers of Glo Bee plugs) for his hot-glove set-up. Works super and is definitely recommended. Should be at your dealers by the time you read this and the asking price of \$26.95, while not cheap, is reasonable, considering what you get and the convenience it offers.

Just one little detail to finish up, and then we'll get off Project G/Y for this month. Before installing the tank, very carefully check it, and the fast-fill, for leaks. With tubing on the pressure line and feed line, pinch one of them off, apply pressure to the other with a fuel bulb, while the complete tank is immersed in water. Don't be satisfied with hitting the tank with all the pressure you can get and not seeing leaks. The tank is okay to check this way, but a fast-fill should be checked with low, medium and high pressures to be sure it's working.

With that, we have this hummer ready to fly . . . next month.

NEW FROM NELSON

Back on the photo pages is a picture of Henry Nelson's FAI Team Race motor. Pretty, isn't it? Not knowing anything much about diesels (I tried to start one once . . . it bit me and I decided glow engines are best for me!) I can't comment too much on this motor but I keep getting reports of excellent performance from TR Freaks. Tom Knoppi, the N.W.'s only Team Race nut has new Nelson and he really likes it. Built a new plane expressly for this engine and will have it at the Nats.

I do know that good TR motors have been hard to come by and Nelson is out


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to correct this problem. He says that everyone pays the same price (\$110.00) for the engine and everyone will get the best motor he can produce. No favoritism to be extended, so don't even bother asking for a "special" motor.

Henry is also destroying HP 40 RV's down to 36 for use in Slow Rat. Write to: Nelson Competition Engines, 729 Valemont Drive, Verona, Pa. 15147 or call (412) 793-8062 for more info.

'76 N. W. REGIONALS

As most have noticed, I'm not too much for reporting on contests, but here's a few words about one of the very best contests on the West Coast. My apologies to those either not mentioned or events not covered . . . I'm a competitor, not a reporter!

This year we had rain, for the first time in years and years. Not soaking rain, but it was a nuisance. Saturday saw Racing, and Project Goodyear was run in competition for the first time, getting a second place. Dave Corey (GMA Rossi for power) beat us by 2 seconds and Ron Scoones came in third, only 4 seconds behind Gary and myself, so it was good, close Racing. Gary and I were pleased with the way the Project plane ran, but we made a couple mistakes that slowed us a little bit. More on this in future Project G/Y installments.

For the first time, N.W. Sport Race was run . . . and it sure is slow! Still, it looked like a lot of fun and should prove to be a popular event. In a future column I'll probably publish N.W.S.R. rules, if the event continues to work out. Tracy Brazzle won here, with a time of 10 minutes flat for the 140 lap final. Told you it was slow!

Gary and I planned on running the "cheater" K & B 35 in Slow Rat, just to blow everybody's doors off, but had tank problems and had to leave the motor home. Tested a Slow Rat with

one of Gary's G-21's on Friday, but he didn't want to ruin it, as it is one of his best Combat motors. Scrounging around Friday night for a motor that was competitive, yet expendable (after realizing our super motor wouldn't be ready, we had decided to not take Slow Rat too seriously), Ron Scoones mentioned that he had his Fox 36BB Slow Rat motor with him. And he said we could use it! Alright, nothing more expendable than a borrowed motor! Ron's offer was especially good, as this Fox of his had won in Slow Rat at the three previous Regionals . . . it goes fast and restarts very well.

Gary got the engine mounted, we put up a couple of test flights on Saturday, and then proceeded to qualify second fastest with it in the 70 lap heats and win the Final going away with a time in the mid-6's. So Ron's motor has powered the winning plane in Slow Rat for the past four Regionals . . . an impressive record for a motor that only cost about twenty bucks! Oh yes, thanks Ron, we'll give you part of the trophy (it got broken on the way home)!

Fast Rat is supposedly on the way out in this area, yet we had six or seven entries and some pretty fair times. Ron, Gary and I teamed up and tried to make a showing with a Hooptee I built 5 years ago, a very worn Series '72 K & B and some fuel that we weren't too sure about. We tried, but couldn't do anything worthwhile. Mike Hazel was running real well with a Rat of his own design and an OS 40 for power. However, Bob Thompson was running better with an HP 40 and came in first.

Jr/Sr Goodyear was won easily by Willie Naemura. Willie pitted and I flew for him. Willie used a GMA Rossi that looks very good (I think Willie's motor quite possibly has more potential than the one used on Project G/Y, in case

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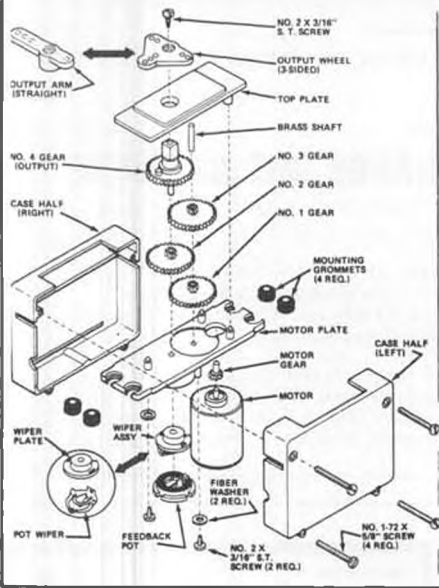
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you people are assuming Aldrich made a super-special motor for me). Willie is using Magnum 40% fuel, Glo Bee plugs and glass props from Kustom Kraftsmanship (I think they are K & W props).

Jeff Rein and Marty Phillips won in Open and Jr/Sr Profile Carrier. Jeff and Marty are two very good Carrier fliers and easily broke the existing record for Profile, although they didn't bother to apply for the record, as both feel the wind bothered them considerably, keeping them from doing their absolute best.

The rain prevented us from having our usual .049 Combat Bash Saturday evening, which was a little disappointing. I had a couple of new planes with me and was really looking forward to showing Rich "von" Lopez, "Fast" Ed Bridant, Herman Yue and all the other guys from Cal what a really good .049 Combat plane is capable of. Rich accused me of using FAI planes for .049, as my latest design is almost 180 square inches. Yeah, it's big, but you oughta see it turn!! Super quick. Pardner, if you can fly one of my latest .049 planes, you can fly anything.

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Spent some time Saturday evening talking to Arlie Preszler and company concerning Stunt. Neat people, too bad they had to fly in some rain and wind on Sunday. Spent *lots* of time eye-balling Don Shultz's new Stunt ship. Oh gracious, it's fantastic! A very nice paint job with trim properly laid out so everything is balanced and pleasing. Setting off the plane is some of Don's outstanding cartoon work (really!) and super fogging of colors.

The rain also kept us from showing outdoor movie that Rick Wiklander brought with him. Ever see movies in the middle of a "tent city"? Come to the next Regionals and you will!

Sunday we were up early, as Slow Combat started at 8:00 am. We elected to fly Slow with a "no-kill" rule, counting cuts only. This is becoming very popular here in the N.W., and seems to promote better flying, longer matches and fewer mid-air. Try it some time, I think you'll like it.

However, I almost lost in the first round, due to this "no-kill" rule. Very early in my match with Ken Ferris, I put a kill on him and had to fly defensively the rest of the match. Thanks to help from Ken's engine not running too well and the flying ability of my "Cheater Slow", Ken couldn't get close, but I had to work more than I like to.

The rest of Slow went pretty well for me and I beat Tracy Brazze in the final match, two cuts to zip. A disappointment was seeing Drew Lance get eliminated. I was all psyched to fly against him again in Slow, and I know *for sure* that Drew was looking forward to flying me! Guess I'll have to wait 'till next year to beat him again. What say you, Drew!

As in '75, Fast Combat looked to be real tough . . . and it was. The guys from Cal were *ready*, but so were the N.W. fliers, and I was predicting that either Gary Stevens, Ron Scoones, Phil Granderson or Dirty Dan (I'm not

modest) would win. However, (oh, how I hate to write this) the Condor Legion couldn't be beat, and Norm McFadden came out on top with Rich Brasher placing second. Scoones did place with a third, preventing a clean sweep, but it took six planes to do it. Ron broke all four of the planes he brought, plus two "borrowers" from Granderson.

Ron's trashing of six planes aside, Fast saw very clean matches and only minimal mid-air. Lots of kills, air-time wins were few and far between. I think Brasher had four or five kills to his credit, one of which I was privileged to see from the center of the circle! With over thirty entries (the weather kept the entry down, we were expecting over forty) and the majority of them being highly-skilled Combat artists, this was a hard contest to win. Congrats to McFadden and Brasher.

Worthy of note was Brasher's new foamie design, the "Rotation Station" (Gary James please take note of the name!). Very simple to build and competitive against the best built-up designs. Hard-to-build Combat planes are on the way out, folks. I personally have vowed to never build another Combat plane with cap-strips, leading edge sheeting, etc.

In the future, look for wood planes with a very "naked" look to them, or foamies, and with a *minimum* of 450 square inches. Brasher's plane is slightly over 400 squares, I'm using 420 squares, and will soon be going bigger yet. Planes in the 500 to 600 square inch class aren't that far off. Laugh if you want, you haven't yet seen a 600 inch Combat plane turn!

My only involvement in Speed was trying to *hand-launch* Scott Newkirk's Asymmetrical-wing FAI plane. Told Scott I didn't think it would work. Sure enough, it didn't . . . Splat!

I did hear of some records being broken; I think the Snyders went in the mid 140's in Formula 40 for a new record. I'll have a picture or two of this very trick plane next month. Mike Hazel polished off the day's Speed flying with a run in Jet. Love to hear them jets! The Regionals just isn't right without a Jet flight or two, thanks Mike!

Rotten ol' Bob Stalick didn't show for our .049 Combat/OHLG duel, so I guess I win by default! No fun to win that way, but the brew will still taste good! Bob, I'll take whatever you can afford, although I don't particularly care for Rheinlander. Gotcha!

Man, the ol' typer is just getting warmed up and it looks as if I'm up to (or over) my loosely-defined limit for the C/L column. Be back in thirty days or so. (*You're d--- lucky it's loose or I would have cut you off in the middle of Slow Rat! wcn*).

F/F Scale . . . Continued from page 43
that would be difficult to find documentation on. The unfortunate part was

that in many instances, these models needing 3-views were very well constructed and detailed, yet, we could not give them the points they deserved. There were a few who used the silhouette type of 3-views, and Xerox copies to boot, which is almost as bad as not having one at all. This type of 3-view shows very little more than general outlines.

Construction of nearly all of the models followed pretty much the standard practice for Peanut models. Many had exact structure for the fuselage, wings, and tail. A few had separate ailerons and hinged tail surfaces. Surprisingly, few models were constructed with 1/20 square or sheet balsa. This alone would appreciably cut down on weight. Laminated tail surfaces and wing tips were much in evidence, and certainly, these help the scale effect and also cut down on weight. Only a few had sliced wing ribs. Curiously, with minor exceptions, models that had laminated tail surfaces and sliced wing ribs, would have a rather bulky and heavy fuselage. Sliced wing ribs are usually used in order to keep weight down. So, try and keep this concept throughout the entire structure of your model, and not just in one or two areas.

There were several models which had exquisite engine detail. It is always a pleasure to see a model with an exposed engine that has been carefully constructed and painted. Since most models require nose weight, engine detail is a good place to get it. Others had well detailed engine cowlings with clean exhausts and engine porting.

One area of great concern, and that cannot be stressed enough is the removable nose section of the cowl used for winding. I would say that 40 to 50 percent of the models had an extremely sloppy fit of this portion and would often fall off just by picking up the model. I cannot convey strongly enough that this is a serious error. With this type of sloppy fit, there is *no way* a thrust adjustment can be made and maintained throughout a flight. I reiterate, please don't let this happen to your model! Snug the fit by using strips of tissue glued onto the portion of the nose-block that fits into the fuselage. I have tried using epoxy for this, but have found that if you overdo it, then it's difficult to sand if the fit is too snug. Since there is no give to the epoxy, forcing it into the slot could crush the front of the fuselage. To get a nice tight fit, use model cement to glue down a couple of strips of tissue, then recoat with glue. That's all there is to it.

Incidentally, there was only one model out of all that were entered that incorporated an adjustable thrust button as designed by Jim Dean (*and that was Jim Dean's Corben! wcn*). I know that it takes a bit more time to make this neat little contraption, but the results

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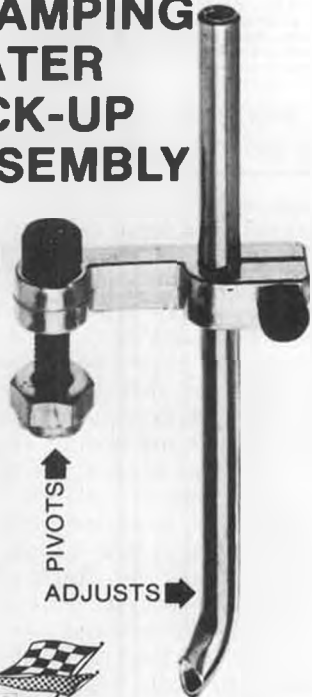


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should more than compensate. There's nothing niftier than turning a couple of screws for making a thrust adjustment, and it sure beats using shims! Once installed into the nose-block, it is hardly noticeable.

Landing gears seem to be one area that is generally overlooked for detail. Mostly you see a piece of music wire dangling from the bottom of the fuselage with nothing more. One exception was a Bucker Jungmann that had exceptionally nice wheel fenders. This was quite a job to accomplish. Many of the pre-WW I type aircraft had neat gear installations, using Hungerford spoke wheels for that added touch.

In the color and marking category, there was quite a cross-section of finishes. The predominant one of course, was the use of different colored tissue. However, there were many which used Floquil, some used dyes, while still others used colored dope. For markings, most models used appropriately colored and trimmed tissue, several used decals, and others used what appeared to be a Monokote trim material. Needless to say, the latter is heavy and doesn't always lay flat on compound curves.

The covering job on most of the models was very well done. Many were absolutely flawless, without a single

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wrinkle in the covering. Wherever silver was used, to simulate cowlings, too often it was very rough as the result of not preparing the surface underneath. As all of you are aware, silver shows up every flaw in the finish. There are several ways to avoid this, and most of them take time and effort. If you don't want to take the time to fill and sand, fill and sand, etc., there's one way around it that will be more than satisfactory, but obviously not as good as fill and sand. That is, use the silver and put in a few drops of black in order to kill some of the gloss. Using Liqu-a-plate Number 2 is super for this application.

One error that was very prominent in several of the models was that of leaving the tail structure perfectly square. This is okay for a non-scale sport or stick model, but certainly not for a scale one. On most of these, the covering was trimmed to leave the edges exposed. In other words, the tissue was not folded around to cover up the bare wood. I grant you that it takes a bit

longer to do it the right way, but again, the results are definitely worth it. Without harping on an old subject, the use of thinned-out white glue truly makes this operation an easy task. Dilute the white glue with water (a ratio of about 6 parts glue to 4 parts water), brush onto the edges, and fold the tissue over the glued surfaces. When dry, use some 400 grit sandpaper and sand the excess tissue off. In a few minutes, the whole job will be finished.

One of the more interesting subjects, from my point of view, was the Nieuport Delage entered by Roger Aime, of France. This early racing plane was built completely by planking, in order to best simulate the construction of the full-size machine. Unfortunately, this bird had a difficult time getting qualified, but I was sufficiently impressed by it to decide to make a F/F gas powered version in the near future.

Another design that I have always liked is the Comper Swift. This particular Comper by Clarence Mather, was

the prototype version, for which, unfortunately, little information is available.

A biplane that has all of the neat things going for it, yet is seldom seen as a model, is the Consolidated PT-1. The one entered this year by Jack Little was very cleanly built and well detailed.

There was a most exceptional SE5-A by John Blair, which had all of the scale structure throughout. One interesting item on this model was the reduction gear box in the nose. It flew very well, but had a best duration of only 19 seconds.

I have several comments regarding the flying aspect of the contest. It is still quite evident that many models, far too many actually, had never been test flown. I realize that sometimes a model cannot be finished until the last moment, but it is not the way to go . . . flying was in somewhat confined quarters, with very hard walls and floor . . . no place to be testing someone else's airplane. Yet, this is exactly what had to be done! As for directions for flying, too often there were none. Others had very vague instructions. All I can say is, if you want to do well in this particular contest, or any other for that matter, then you must have a well-tested model. Fortunately, there were many that only required winding and launching!

It is curious to me that about 90% of the models entered were equipped with a plastic prop of one type or another. Mostly the Peck-Polymer version. Plastic props are an easy way out of carving your own prop. However, in my opinion, several of the models would have done a whole lot better if they had a prop to fit the particular design. Many models were flying much faster than necessary. One reason for this could be that these were tested outdoors, where more power is usually necessary. It might be a good idea to provide an extra prop, with either more pitch, or blade area, for next year.

Fellows, it is still incredible that there were so many airplanes that had absolutely no way to either put in a rubber motor for the first time, or to replace a broken one. It almost looked as though the motor was put into the fuselage before covering. I'm not saying this to be critical, but to point out items that can be improved for the next time around.

Some modelers included in the directions for flying information on how many winds should be given to the motors provided. This is really helpful. Another item seldom mentioned was the direction in which the model flies. At first, one might wonder why is this important. Characteristically, the majority of the Peanuts fly to the left, yet one does not know for certain. So as you launch the model for the first time, you normally provide enough space for the usual left hand turn. Then all of a sudden the model veers to the right and eventu-

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ally into the wall. Fortunately, most Peanuts bounce, but this isn't the way to do it. Next time, please advise which direction the model circles.

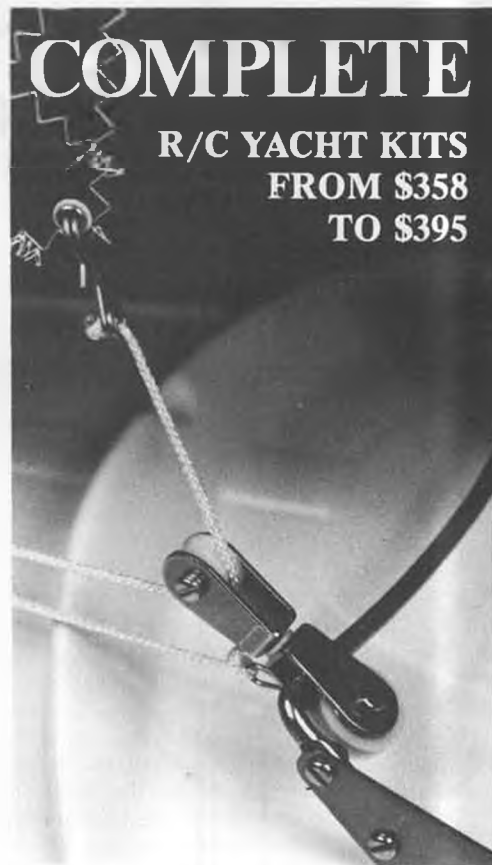
Another area for concern is the number of warps on the flying surfaces of many of the models. It is awfully hard to get a model to fly in any kind of consistent pattern when there aren't any straight panels. I've mentioned how to help eliminate this problem before it actually starts in past articles on covering, so I won't take the space here. When your model is completed and a warp develops, use some dry heat . . . like from an electric heater, toaster, etc., and hold the panel over this heat, twisting opposite to the warp. It may take two or three applications of heat to get it out. Just don't twist too hard, or you will still have the warp, but in the opposite direction!

All in all it was another great and fun contest for those of us participating. I know that I personally learned a great deal, and Bill Hannan and I had a great opportunity to sit and talk over the interesting little aspects of each design, while we were judging. This doesn't happen often.

One special highlight to this event that was totally unexpected, was having the good fortune of meeting Howard Levy, the well-known aviation photographer! This gentleman has been filming aircraft for a long, long time. This happy incident came about because he accompanied his good friend Warren Shipp who is also a well-known photographer, and who photographed each and every model with professional care.

On the news front . . . seems as though there hasn't been too many new items in the F/F scale line, but one new little device is for the Peanut and Walnut modeler, as well as for the sport rubber modeler. Jim Crockett Replicas, 1442 N. Fruit Ave. Fresno, Ca. 93728, has added another item that will make installing that rubber motor an easy task. It is simply called a rubber motor installer. There are two sizes available, with the smaller one going for \$1.00 and the larger one for \$1.50. These can be soldered onto a brass tube of appropriate diameter, or joined onto a dowel using a brass sleeve. Jim's company has truly come out with a great number of interesting items for all phases of modeling. If you want to see all of the goodies he has available, write for his catalog.

Peck-Polymers has a couple of new releases. Two are peanut scale models. One is the Gypsy Moth, which is a beautiful classic English biplane, and the other is the "Ganagobie", a novel French home-built aircraft which has a diamond shaped fuselage. Both of these models have been designed by Bob Peck, and are considered deluxe kits. They include contest balsa and basswood parts, detailed plans with photo instructions,



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tissue covering material, contest rubber motors, plastic props and wheels, etc. The "Moth" kit includes a vacuum-formed cockpit and engine cowl. The kits sell for \$3.49 each, and are available at your dealer, or direct from Peck-Polymers.

Lastly . . . the way this year is slipping by, I thought that I would include a few contest dates on Flightmasters scale events for local modelers. On September 4th, the Rubber Speed Event will be held at Palomar Jr. College, in San Marcos. October 2, 3 are the dates for the 27th Flightmaster Annual, which is the biggest scale event around these parts. October 24th is the date for an

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Choppers *Continued on page 27*
has been connected directly to the radio battery so that power is available to the gyro and radio from a single source. Second, the gyro pot yellow wires have also been connected to the radio battery instead of to the servo pot. Since the servo pot is already connected to the radio battery through the electronic circuitry of the receiver, it is now unnecessary to run the yellow wires between the gyro and the servo. Third, the white wire, which is still connected between the center contacts of the gyro and servo pots, carries the information to the servo pot to achieve the desired results. These modifications should be simple if you follow the schematic diagram.

We have found that in some radio installations, the sensitivity of the circuit is such that the gyro will cause greater than normal servo arm movement, or, the gyro pot must be rotated considerably "off-center" in order to center the servo arm to its regular position. The desired servo arm movement (with gyro in operation) should be a little greater than normal, i.e., about 50 to 60 degrees on each side of neutral. This can normally be accomplished by adjusting the small trim pot inside the gyro . . . clockwise will increase the servo arm throw, while counter-clockwise will decrease it. If the trim pot cannot handle the situation to your liking, it will be necessary to change the electrical resistance of the trim pot by inserting an additional resistor, or resistors, in series with the trim pot (white wire).

In case the trim pot cannot reduce the servo arm movement sufficiently, I would suggest you increase the resistance in the circuit by soldering a small resistor in series with the white wire from the gyro. Start with a resistor of around 1,000 to 1,500 ohms. If this still doesn't reduce the throw enough, add another

similar resistor in series with the first, or replace the first resistor with one of 3,000 ohms resistance. The more resistance added, the greater the reduction in sensitivity. Experimentation between 1,000 and 3,000 ohms will usually do the job. Once the desired resistor is found, it is best to disconnect the white wire from the trim pot and solder one end of the resistor directly to the pot, in its place. The white wire is then connected to the other end of the resistor.

FINAL APPROACH

The Alouette II is still flying great. We've been able to pile-up a few hours on it without piling it up! The reports I receive on its performance indicate that it is an exceptionally good chopper for the expert as well as for the beginner, and confirm that it flies about the same as the Jet Ranger!

Hannan

Continued from page 45
high-speed model capable of flying a considerable part of a mile at this breathless rate may be constructed by the average boy at very trifling expense . . . The mile-a-minute model is driven by strands of rubber under tension like any other model. The surprising speed attained would seem to prove once for all (sic) that the rubber motor properly handled is the solution of the problem of motive power for model airplanes. The motors are no more powerful than those used in other models, but it is the first machine to be equipped with four such motors instead of one or two motors . . . The four propellers of the mile-a-minute machine are placed at the rear of the machine. They are mounted in a row so that their driving force is directed in the same general direction(!)."

But here's the hooker, folks, the rubber employed for this model was not your ordinary garden variety at all, but strands *one inch wide!* No wonder the author concludes his article with this advice: "It will be well to practice with short flights until all details of the machine have been thoroughly mastered."

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THE SPEED SEEKERS

It isn't often that we run across a book written in recent times that causes us to run out of flattering adjectives. It isn't often either that we run across a book retailing at \$45 that we feel is well worth the money. But such a book is "The Speed Seekers," by Thomas G. Foxworth, which is bound (*pun intended? wcn*) to have an appreciable impact upon model builders everywhere. Made and printed in Great Britain, the book is distributed in this country by Doubleday & Company, Inc., New York.

Our review copy was loaned to us by Russ Barrera, of the Russ-Craft model museum, to whom we extend a hearty thanks. We assumed that we would be able to read the admittedly rather large and weighty tome in perhaps a week of spare time. Ha! It turned out to be more nearly a month! The work is so well researched and full of detailed, important information, that it is almost impossible for any serious enthusiast to skim read any portion. I tried, and failed. Such is the author's power to drag the reader into the depths of his writing, that I found myself studying my way through chapters that were supposedly outside my particular area of interest! One feels obliged to seize the rare opportunity to soak up the education presented upon these pages, even though it borders on being hard work.

And the illustrations. Quite obviously, Mr. Foxworth took the advice of super model builder Paul Matt (who he thanks in the forward) by including a wealth of three-view drawings and photographs, of the type eagerly sought after by modelers. Many authors underestimate the percentage of model builders and three-view collectors around, but not Mr. Foxworth! We do not know if the author is himself a builder, but he certainly must have a complete understanding of the species.

Foxworth also does some trail-blazing by devoting a sizeable portion of his book to aircraft engines, accessories and their designers. The more common approach examines only the aircraft and the "hero pilots" who generally collect

plenty of glory on their own. But where, for example, does one go in search of information on Lamblin radiators, or skin radiators, or the heritage of any aircraft racing engine? Not at your neighborhood book store or library, that's for sure! Until now.

Special applause is due Mr. Foxworth for his efforts in digging up color information, a vital modeler's need often overlooked by authors less astute. And instrument panel photographs. If there is one item more frustrating to a dedicated scale modeler than the paucity of such information, we have not been made aware of it. Oh, they're not all there, but it is clearly apparent that Foxworth has snagged all he could find. As an airline pilot, he was in the nearly unique position of being able to readily travel to the world's museums and archives, and if necessary (it always is!) make return trips to complete unfinished business. Additionally, his energy must have been expended for many years in writing letters and tracing down slim leads to additional information. Those of us who have conducted research on even a very few aircraft, can well appreciate the job magnitude of trying to describe in detail dozens of machines!

At this point, you might gather that we are rather enthusiastic about this production. More than that, we will confidently predict that it will be *directly* responsible for many new scale models. We know of four Flightmaster members who either have this book on order or are already in possession of a copy. The great popularity of the rubber-powered scale model speed meets on both the East and West Coasts is almost certain to be further enhanced by the availability of many *fresh* subjects. Let's face it fellows, as beautiful as the Thompson Trophy and Bendix racers are, most have been modeled again and again. How refreshing it would be to see some previously unseen models out on the field! Why not expand some of the events to encompass the many fine Gordon Bennett and Pulitzer Prize aircraft? Or the English Derby machines or

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the Coupe Deutsch racers?

And for several years, Granger and Larry Williams have been trying to generate some interest in Schneider Trophy R/C races. This book makes easily accessible enough information to construct your choice of many types . . . domestic and foreign . . . flying boats and floatplanes!

Have we no criticisms whatever of this publication? Well come now, an epic of this scope almost challenges a reviewer to find at least something to nitpick! At that, the few minor errors we found may well have been those of the typographers and printers, rather than the author. Surely the Wright P-2 Cyclone engine, for example, is flying in the inverted position? We *need* to find a few assurances that this is indeed a human production. What more can we say; buy a copy. If you can't afford it, how about having your club buy one?

HOWARD HUGHES AGAIN

While the various "court jesters" are running around in circles trying to figure ways of getting in on "a piece of the action" regarding the Hughes millions, aviation enthusiasts remain more interested in the man's accomplishments. In our noting of the Hughes passing, we asked if anyone knew of any aeromodeling connections in the man's background. Internationally respected model designer Frank Zaic provided at least a

partial confirmation of our suspicion, by sending a clipping from the "Evening Graphic", March 30, 1932. In a report of a contest held indoors, and attended by some 1,346 boys and girls (*was there room to fly?? wcn*), the most sought-after prize was the HOWARD HUGHES TROPHY! Winner was John Zaic, who also was awarded a two-day trip to Washington.

A few other names, still well known in the hobby, were also mentioned in the winner's list: Joseph Kovel (The "K" of KG); Emanuel Radoff (the Manny Radoff of present-day indoor flying fame); and of course, our old friend Frank Zaic! Incidentally, Frank's glider pilot's license bears the signature of another well known aviation personage . . . one Orville Wright!

LIKE TO FLY A B-52?

Don Typond mailed an interesting report, from the National Aeronautic Association, describing the flight characteristics of the 8-jet powered B-52 bomber, from which we have selected the following passages: "Upon watching the monster takeoff, at first they seem to hardly move at all and then in slow motion at some point the wings begin to flex, straighten and curl upward. Any ordinary airplane would now point its nose to the sky and climb. Not the B-52. It seems to hoist its tail and claw its way upward almost horizontally. Its

massive size and weight (475,000 pounds) creates the illusion of painfully slow speed, casting considerable doubt as to whether it will remain airborne. According to some observers, "It doesn't takeoff; it just scares the earth away." *How does it fly?* The standard reply is "Like a Mack Truck with flat tires."

"Is it fun to fly? Well, it does have enough aluminum and steel in it to make 20,000 garbage cans . . . and if all of its wire and cable were laid end-to-end, it would stretch 100,000 miles. The combined power of its engines is equal to 12,000 locomotives. The saying goes that it flies like "12,000 locomotives pulling 20,000 garbage cans on the end of 100,000 miles of wire . . ." ●

Workbench . . . Continued from page 6 times every day. While the fuel pump didn't cause the accident, I feel it could be a source of danger. If you do use an electric pump, keep the wires in good shape and be careful of batteries around that metal can. I personally plan to use plastic jugs for fuel and a hand crank fuel pump from now on. I do not advocate leaving fuel cans or jugs in hot cars or out in very hot direct sun.

"One last parting thought is that I do credit my emergency training as a pilot with keeping me calm and really saving my life. Keep calm and you can help yourself through many perilous situations, but if you panic, it can mean disaster in many cases. Remember . . . be careful."

"WHO DONE IT" . . . WITH R/C

The other night we were watching a British movie with a strong flavor of international intrigue, done in the usual mumble phrased, underplayed style so typically British. In one scene, as our hero drove up to an ivy-covered country brownstone mansion and popped out of the right hand seat, the unmistakable recorded, mosquito buzzing sound of a model airplane engine made us jump to attention. Not so our hero, however. He walked on into the building. But the camera's eye swung in the opposite direction, and picked up an R/C model airplane, sort of a twin boom job with tractor engine in the center pod, being looped and rolled by a middle aged gent. There was no dramatic music and no words said, but we suspected that in typical British underplay, a scene was being set.

Meanwhile, back at the ra---, no, inside the building, our hero was getting his partial assignment from the boss, meeting the girl he would eventually shack up with, and talking with a mysterious professor so-and-so, about whom the whole bloody plot revolved.

Finally, hero came out of the building, walked to his car, and miracle of miracles, paused to look toward the source of the tinny mosquito sounds. Sure enough, an R/C'ed P-51 was buzzing around, and the camera zoomed in on a faceless body

holding a Ripmax transmitter, with hands properly placed on the 2-stick box. The left thumb very precisely pulled the stick back, but . . . returning to the plane . . . the P-51 neither slowed down (Mode 1) nor looped (Mode 2). Instead, it dove very precisely into our hero's car and blew it to kingdom come . . . of course hero had already diagnosed the pilot as a Sunday flier and dove safely into the chrysanthemum bed just before the supposedly bomb-laden plane completed its Kamikazi mission. The professor and the girl were thus both saved from later disappointment.

The name of the movie was "The Price of Violence." Not bad, really.

LIFETIME SUBSCRIBER

Repeating our offer during the Toledo Trade Show, MODEL BUILDER put a lifetime subscription up for grabs during MAC Show in Anaheim, California. The winning name was drawn from those who sent in special subscription cards passed out during the show. The winning card was drawn by Guy Kirkwood, San Diego, who had dropped in to look over our new office.

The winner? H. L. Wittenberg, of Hacienda Heights, California. May we deliver, and you receive, for many years to come.

BULL . . . ETIN BOARD

For those who like full scale air races, the Reno National Championship Air Races are scheduled for September 10 through 12. The organization has just been awarded a 5-year contract with the city of Reno, which assures that the races will be held at Reno/Stead Airport for at least that many more years. This will be the 13th annual for this modern racing classic.

Free qualifying events will precede the three-day race and show, which features race competition between Unlimiteds, Formula I, Sport Biplanes, and AT-6/ SNJs. In addition, there are aerobatic shows by such notables as Art Scholl, Lefty Gardner, Bob Hoover, The Red Devils, and The Stardusters (all girl parachute team).

* * *

A little late, but the West Jersey Radio Fliers are having a Scale and Sport Scale Jamboree on August 15, at Thompson Park, N.J. Formerly for WW II scale only, it's open to all scalers this year. Contact L. Jezorek, C.D., phone (201) 889-6594.

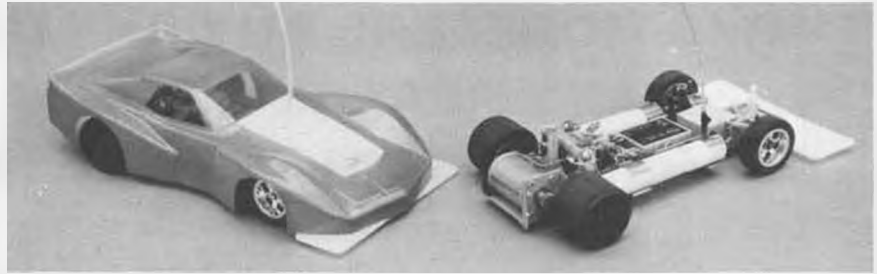
* * *

The Southern Alameda County Radio Controllors is holding an Open Pattern and Sport Biplane contest on September 18 and 19, in Newark, California. Contact Dwight Hale, 41484 Mahoney St., Fremont, CA 94538, for further details.

SPEAKING OF BIPES

About two or three months ago, this writer was elected president of IMAC (International Miniature Aerobatic Club), the sport R/C biplane club founded by Jerry Nelson a couple of years ago. To

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show how much it is in need of organization and drive, we have yet, at the time of this writing (July 10), to receive official notice of our election!

To get things . . . er, re-rolling, we have contacted Jerry, and expect to have all the pertinent data and records in our hands soon. Meanwhile, we'd appreciate hearing from existing and potential members of IMAC with constructive criticism and suggestions for improving the organization.

POET'S CORNER

The following was passed on to us by Bill Hannan. It came from Randy Wrisley, of Fullerton, California.

"Dear Bill:

This poem came to me in a flash. Normally, when I have hot flashes, I take 2 aspirins and sit in a dark closet. However, this one got away from me. Hope you enjoy it!

MODELERS LAMENT

The boy stood by the burning wreck,
His model plane just hit the deck.
He looked at me and swore "by golly".
Why did I ever start this folly!

It started many years ago,
Before I was old enough to know
That models were never meant to fly,
On that sea of air, like birds on high.

Two tons of money, I spent with glee.
On models intended to fly so free.
And that they did, with a graceful spin,
Never to be seen again!

I watched my model disappear from sight
On that fatal, final flight,
Then a voice came to me, from down below,
It said, "You must buy a radio!"

Five tons of money went real quick,
On a small black box with a little stick.
Now my model on high could ride,
And land so softly by my side.

To my chagrin, I learned too late,
Radio ships carry devils freight.
With speed and power, controlled, not free,
They crash with amazing regularity.

So you pay your money and take your choice.
The builder really has no voice.
The free flihter's losses do abound,
While the radio boy digs his out of the ground!"

Proxy Peanut . . . Continued from page 41

Luton Minor, 63.5 - 30.5 - 94.

Best Peck-Polymers Kit Entry - Dan Eble (under 15), California, Piper J-3 Cub, 54 - 31.5 - 85.5.

Best from Mooney Plans - John Krekovich, Bucker Jungmann (both he and the Lacey will have to be put in separate categories!).

Youngest Qualifying Contestant - Debra Deffler, New Jersey, age 9-1/2, Piper Vagabond, 43.5 -17 - 60.5.

Oldest Qualifying Contestant - A tie between Jim Dean (California) and George Dearborn (Florida), was broken by George's higher score with a Nesmith Cougar, 51 - 14.5 - 65.5.

Dave Linstrum, still camped in Dhahran, Saudi Arabia, again won the "most

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distant contestant" award . . . a free gallon of 70 cent U.S. gasoline!

Franz Czerny and son, from Austria, had the dubious distinction of sending the entries most damaged in shipping. It was unfortunate that the completely destroyed models had to travel so far and not be able to compete. Maybe next year . . .

The best shipping container came from Jack Little, of Menlo Park, California. The sturdily constructed box was built to resemble a shipping container for live pet birds, complete with screened ventilation holes! Stenciled on top of the box, in strong black letters, was the following, "RAREBIRD BREEDERS AND TRAINERS, INC," and by the

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breathing holes, "DO NOT BLOCK." Inside each Peanut was carefully strapped down to a ply shelf, which, when the screwed-down side panel was removed, could be pulled out from grooved runners, much like a bureau drawer. Needless to say, the "Rare Birds" arrived without one ruffled "feather!"

Generally speaking, both the static and flying quality of the peanuts was higher than last year. Certainly a higher percentage qualified (one 10 second flight is the minimum), though the total entry count was down slightly.

Although the "guaranteed flier" type of airplane (Lacey, Cougar, Tailwind) dominated the Modern category, it was satisfying to note that most modelers still build for the fun of reproducing a variety of aircraft, knowing in most instances, that the "GF's" will beat them out.

In Pioneer, Dr. John Martin's slightly "ghosty" Santos Dumont pusher-canard put up a long flight of 48 seconds, backed by another of 45. However, Krekovich's Blackburn Monoplane, with 92.5 out of a possible 100 scale points, was an easy category winner with an 18 second average. In fact, his 110.5 total point score placed him 5th overall.

Fred Hall's lightweight SE-5, with paddle-blade prop, registered the second highest single flight of 1 minute, 17 seconds, solidly proving that the "guaranteed fliers" can be beat. In spite of its low scale points, it was only 1/2 a point under Krekovich's Jungmann for the "Best Mooney" award. Close behind, with highest WWI scale points of 84, was John Blair's beautifully built and detailed SE-5A, featuring a reduction gear drive! Walt Mooney, who strangely enough drew all three SE-5's to fly, made a 19 second flight with this model, which was powered by four

strands of 7/64 rubber. The third SE-5A was cleverly constructed of sheet balsa throughout, by Chuck Conover, yet put in a 21 second flight. There was much speculation about his tight-fitting monofilament flying wires, which terminated at the wing surface, but did not go through, even though the wings were of 1/32 balsa . . . tricky!

Golden Age attracted the most foreign interest, with entries from Canada, France, Czechoslovakia, and Rhodesia. John Martin's tiny Cessna AW, a little bit raunchy-looking with what appeared to be loose-fitting silver micro-lite covering, produced a 51 second flight that took it from 18th in scale points to 5th overall in the category.

It's worth mentioning here, that John Blair's models were consistently high in scale points (Pioneer-2nd, WWI-1st, Golden Age-1st, WWII-1st, Modern-2nd), but suffered in flight times. In some cases, the proxy fliers hated to subject his models to rough treatment, and would beg off further flying once the ships were qualified! He still placed 4th, 3rd, 3rd, 1st, and 7th, respectively. Had there been a sweepstakes award, he and John Krekovich would have had a close battle. Luckily for MB, Blair's models came through without scars, and will appear as mobiles, prominently located in our new office!

The World War II category produced the consistently lowest scores, both in scale and flight. Naturally, it's difficult to duplicate metal covered low wing fighters with sticks and tissue, but even Blair's Piper L4B scored lower points for him than his other entries. Best flight times showed no consistency either, with John Hutchison's Piper L4 and William Manwill's Zero each registering 23 seconds. Out of 13 entered, this category also came up with the most non-qualifiers, three in number. Gerhard Ringel's P-38, however, brought fame to the category by capturing the anything-but-peanut size trophy for best multi-engine qualifier. The neatly-built model, with obviously little wing area within a 13 inch span, managed a soul-stripping flight of 13 seconds, flown

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by Doug Mooney. It was flown with the plug-in landing gears removed.

The Modern category drew the most entries, with all 33 qualifying. High wing cabins took the first 5 places, followed by two parasols; young Matt Johnson's Luton Minor and Blair's EAA Baby Ace, then three more cabins. Dave Gibson's Davis DA-5 low wing finally broke the chain, in 11th place. As mentioned previously, Jim Gerz' "Grand Peanut" Lacey M10 was first, followed by Dr. John Martin's Lacey. The Gerz Lacey had the longest flight overall at 84 seconds, but Martin's 62 max flight was pushed to fourth best by Fred Hall's remarkable SE-5 (77 seconds) and Bob Stewart's Fokker E-11 (71 seconds).

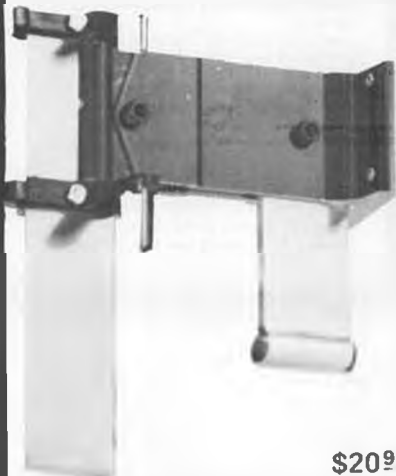
One problem that caused some concern this year was the categorizing of models. For example, a J-3 Cub could qualify for Golden Age, World War II and Modern, although the original J-3 came out prior to World War II. The ageless P-51, if finished in someone's racing colors and modifications, could go as modern, though it first appeared during WW II. And some pioneers saw

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action in the early days of World War I. One thing certain, all models of a particular aircraft should be competing against each other. The decision as to whether the basic aircraft should be rated according to its birth date or according to the restoration and decoration of a particular S/N at a later period, will have to be decided before next year's contest is announced . . . oh yes, we'll do it again in 1977!

Local modelers and members of the Flightmasters contributed to the contest by performing all of the scale judging and proxy flying. The scale judging, headed by Russ Barrera, was performed by Bill Hannan, Fernando Ramos, Bill Stroman, Warren Shipp, Jack McCracken, and Howard McLeod. Proxy fliers, joined after their judging duties by Hannan,

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Ramos, Stroman, and McCracken . . . included Clarence Mather, Fred Reese, Walt and Doug Mooney, Don Eble, Chuck Conover, Bob and Sandy Peck, and Dick Baxter. All of this action was under the command of C.D. Carl Hatrak, who did the timing and recording, assisted by Russ Barrera.

All-in-all, it was another successful proxy peanut contest, and we hope the contestants who sent in models enjoyed it as much as those who had the opportunity to examine and fly the entries.

It has been said by many that you must have to be nuts to enjoy this

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hobby. All we can say is that until you've built and flown a Pea . . . nut or two, you'll never really know . . .

RS/Spirit Continued from page 19 racing could be a real ball with this quickly-built ship. One hint . . . finish the top and bottom in different, contrasting colors . . . it can get a bit tricky at times.

The radio we used provided us with our first experience with the 'new' RS, as currently manufactured by Tech Serv Company, 5301 Holland Dr., Beltsville, MD 20705. This particular model, an

RS-5-DO five-channel dual open-gimbal stick transmitter, RS-5-AB receiver, combined with an RS-6 dual servo-brick, met with all our expectation, both with regard to mechanical quality and operational reliability.

The airborne system, consisting of the above mentioned receiver, dual servos, and RS-M 225 mah nickel-cadmium battery meets all the size and weight requirements for a small airplane such as the "Free Spirit." A 1.66 ounce and 1.4 cubic inch savings in weight and space is realized by using the 225 mah RS-M battery instead of the usual 500 mah battery. The latter weighs 3.63 ounces, and measures 3.72 cubic inches in the square configuration.

All models of RS transmitters are rated at one watt output, with 1.3 watts input to the final RF amplifier. This indicates a very efficient design, with almost all the power consumed being out there where it belongs; at the antenna.

The receivers are adjusted for a sensitivity of less than two microvolts and have a current drain of 23 ma. Voltage regulation is included, which keeps the receiver working down to 3.6 battery voltage (one cell out). The receiver occupies 1.68 cubic inches (about the size of a pack of gum), and weighs in at 1.35 ounce.

The servos used in the brick are rated at 19.52 ounce-inches output power, with an idle current of eight mils, and a stall current of 400 mils per servo. The transit time is a snappy .4 second. Travel for this dual rotary output servo is plus-or-minus 45 degrees, or a total of 90 degrees stop-to-stop, certainly adequate for all normal installations. The centering accuracy is plus-or-minus .5 degrees. Weight and size for the servo brick is 2.61 ounces and 3.77 cubic inches, respectively.

Single servos are available, in various styles and sizes, to fit various uses. The smallest has a volume of 1.62 cubic inches, weight of 1.23 ounces, and is rated at 17.5 ounce inches of torque. A high power servo for gear retraction and similar uses is available in the RS-5, which is rated at 40.2 ounce inches.

At the field, and in the air, where it all counts, we found this system to operate perfectly at all times. Adequate range was displayed, with no 'funnies' due to antenna-to-antenna orientation or shoulder-to-shoulder flyers on other frequencies.

We found the RS system a pleasure to install and operate, and it worked perfectly on every flight that we made. This radio is available in from two to six channels, with all normally requested options such as one or two stick; Mode One or Mode Two; Buddy Box; and 27, 53, or 72 mhz frequencies. An interesting feature of the five and six channel systems is the "QFC", (Quick Frequency Conversion) modules that permit rapid in-the-field frequency changes.

Half-A Continued from page 29 held 1/2A stunt contests for years, and finally the rest of the country is catching on. This year's 1/2A event at the AMA Nationals promises to be the best 1/2A stunt flying anywhere, ever!

Half-A R/C racing has surged in the last three years. By now, most active clubs hold one or more races each year for these small speedsters. Rules vary, going from strict adherence to a single design (such as the Jr. Falcon), through RCM's rules to super-fast models with an engine displacement limit only. Speeds run over 90 mph currently, even with RCM's rather limiting rules.

There is a two month lag between writing a column and publication, so you'll have to put up with me for two more issues. To remedy this, please send letters with your experiences, handy hints, theories, hop-up tips, photos, etc as related to 1/2A modeling, to me, Larry Renger, c/o Model Builder. Do it now! Also, manufacturers please send photos and descriptions of items specially intended for the 1/2A model enthusiast.

THIS MONTH'S MODELS

House of Balsa kits the Nomad R/C sport soaring model in two forms. This

photo is of the early Ted Strader design, intended for rudder-only and Pee Wee .020 power. The model here had silver wings and red fuselage. It was not stressed adequately for a roll. The Nomad II, however, is bigger, stronger, takes 2-channel gear easily, and will do simple stunt maneuvers without structural problems.

Next is a kit modification. I started with GMC's 1/2A Chaos. The only parts replaced were the foam panels (changed from tapered to straight), a new canopy (Sig's 12 inch cut to 8), and some balsa scrap for wing tips. Since this picture, I've added taildragger landing gear.

Third model is R/N Models' free flight scale Lincoln Beachy. This manufacturer specializes in pre-World War I kits, and we will see more photos of this line as the months go by.

Well, I had to sneak 'me' in here somewhere. The model I'm holding is a Cassutt Special. Wing is one that was made by Jim Walker and now put out by G & S Products. Profile construction with added cheek cowl yielded a good flyer, which was easy to build. Powered by a Tee Dee .049, it weighs just 10 oz.

Finally, we have Midwest's "Super Sniffer." The model shown was displayed at the 1976 MACS show in Anaheim. It had two-channel radio control and a Tee Dee .049 to make it go. Look! A muffler! Good show! Sorry, I failed to get the builder's name.

Coming up: How to scale down that .35 or .60 ship and make it work right; how to get the most out of your engine; and more!

Handy hints corner: Due to the difficulty of fitting an adequate size bellcrank in a 1/2A stunter, use closer line spacing at the handle to obtain the correct sensitivity. The handle space should be about 1.5 to 1.75 times the bellcrank size. That is, a 3 inch bellcrank needs 4 to 5 inch spacing, a 2 inch bellcrank gets 3 to 3 1/2 inch handle spacing.

See you next month. ●


Stopwatch Continued from page 18 counters simultaneously to time two separate, but related, time intervals. Counter A, operated by the S/S switch, does all the tricky stuff, while Counter B just keeps on counting from the start of an event until it's over . . . when you press the F/S button. Functions 6 and 7 provide up-count and down-count capability, and audible alarms can be plugged into the watch to sound the end of these counts.

In Function 1, you can time individual laps while dumb ol' Counter B just keeps on timing the whole event.


Function 2 provides sequential-total elapsed time. You can time the space between two cars or planes in a closed-course (lap) race.

Function 3 provides accumulated-total elapsed time. Time the engine run of a

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free flight, and continue counting its total air time.

Function 4 provides split-total elapsed time. Stop and record a skier's time at particular points down a course, to compare with others at the same points, plus get the total time.

Function 5 gives start/stop-accumulated activity time. You can measure driving time between stops and keep track of actual driving time.

As we said before Functions 6 and 7 offer programmable up and down count. The possibilities are almost unlimited. Count-down for precision R/C sailplane events, is one example.

Already there are digital stopwatches on the market for less money, that offer less functions, and possibly, some of these may be more practical for modeling alone. But for all-around versatility in timing total "events" as well as portions of the same "event", the Heath digital stopwatch can do it all. ●

Counter Continued from page 8 without some necessary or desirable features missing.

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two kits are available individually, as replacements or for the scratch builder. Some are packages, i.e., a deck hardware package. But if your needs are as small as one cotter pin, you can obtain it from this progressive company.

If you are 'just looking,' with the desire to learn more about R/C sailboating, or if you are an experienced sailer, and want an assured source of supplies, look no further, Vortex is as near as your mailbox.

By mail only, for more information or supplies, Vortex Model Engineering, 210 E. Ortega St, Santa Barbara, CA. 93101.

Millcott Corporation, one of the newest entries into the radio control electronics field, has announced immediate availability of its MC-1 servo, which is designed primarily as replacement for and improvement over the older Orbit and Micro-Avionics servos. The electronics are designed around the latest IC from Texas Instruments; the mechanics are the performance-proved DS3P's from D & R. Improved resolution and centering are claimed, with an idle current drain of only 7 mah, and a torque of 16 ounce-inches. The speed ratio is 186/1, with a weight of 1.2 ounces each.

Each servo is individually adjusted

for resolution, dead band and throw, and the centering is externally adjustable.

The MC-1 is directly interchangeable with all 1970 and subsequent Orbit and Micro servos; compatible with Ace, Cannon, Royal, MRC, and some EK systems. They are also adaptable to Kraft, RS, Heath and Pro-line R/C systems.

For more information, including pricing, contact Millcott Corporation, 1420 Village Way, Unit E. Santa Ana, CA 92705.

* * *

The Peanut People, Peck-Polymers, have come up with two 'must's' for collectors of these clever minis. First is a "Ganagobie", a diamond-shaped fuselage French home built aircraft. Second is the beautiful classic English biplane, the "Gipsy Moth".

Both are Bob Peck designs. The deluxe \$3.49 kits include contest balsa and basswood parts, detailed plans and instructions, covering, rubber, props and prop hardware, decals and wheels. Three-views of the real aircraft are included, in addition, the Gipsy Moth includes a vacuum formed cockpit and engine cowl. However, you do have to get your own "Lucky Pierre" to fly the Ganagobie.

Try your hobby shop first, if not available, file a complaint, and then order direct from Peck-Polymers, PO Box 2498, La Mesa, CA 92041.

* * *

Are you trying to get your stuff together? Try Kwik Set epoxy, available in your choice of colors, as long as your choice is Hot Pink, from Gas Model Products. Actually, the pink color indicates the latest formula, designed for maximum shelf life, which so far is believed to be indefinite. This is a medium working time epoxy that begins to harden in five minutes and sets firm in fifteen minutes. In easy-to-use, no waste, flip-top spout containers, 16 ounce net weight, economically priced at \$5.95.

Another interesting product from GMP is ZIP model engine additive. This certainly appears to be a step in the right direction, as the intent seems to be to cure the disease and not the symptom. We all know what a problem it is to remove varnish from engines, and what a loss of performance is experienced due to excessive buildups. A squirt of ZIP in the intake with the engine running and another squirt after the day's flying is claimed to keep your power plant clean and free of varnish and related problems. Price for a flip-top, four ounce container is only \$.98.

Check your local dealer, or Gas Model Products, 9376 Wilcox Drive, Cincinnati, Ohio. 45239.

* * *

How many places do you know of, where you can get a DT fuse holder? A rubber motor installer? A Seelig timer winding key?

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PEANUT PLANS \$1.00: E-1, D-VIII, Gere Sport, many more, plus Jumbo/Walnut. Free catalog S.A.S.E. Aero Era c/o Tom Houle, 11333 N. Lake Shore Dr., Mequon, Wisc., 53092.

WANTED - 1930's celluloid dummy motors, wheels, and pants; aluminum cowls, drag-rings, wheels, and nose plates; M&M wheels (1 to 3 inch); compressed air motors (1 to 4 cylinders). John Waller, P.O. Box 2208, Newport Beach, Ca. 92663.

Many of us will say "very few"; most of us will say "none" (and some will say "What the h— are they? wcn). Well, Jim Crocket Replicas not only has these hard-to-get items, but just about anything you need for free flight of all types, gas, rubber, CO₂, Jetex, or gliders, both hand launched and tow line.

Most of these items are produced and designed by Jim Crocket, who does not hesitate to admit that the ideas come from active competition flyers of these events. Very reasonably priced, the DT fuse holder is \$1.95; rubber motor installers are \$1.00 and \$1.50 for the small and large models, and the Timer Key, which fits all Seelig Timers, is only \$2.95.

A complete catalog, profusely illustrated and full of building suggestions, and procedures, is available for \$1.00 from Jim Crocket Replicas, 1442 N. Fruit Ave., Fresno, CA 93728.

* * *

A Nobler by any other name is still . . . George Aldrich. Both have been around in the modeling world for enough years to be a household word. Based on his experience in the hobby, George has available a number of interesting products and services for the engine powered flyer.

The Aldrich 'Magnum' glow plug, available in both idle-bar and racing types, long or short, is different enough to have a number of patents pending. This plug has been specially engineered to withstand the heat and pressures of modern engines using high-nitro fuels. It incorporates a non-leaking seal, and

heavy duty platinum element.

Also recently announced is the Magnum Glo Fuel, claimed as a totally new concept and which promises to give you 30% longer running time, 15% cooler temperature, and a 20% lower idle. An increase in engine and plug life can also be expected.

For more information of these fine products, as well as on the famous Aldrich custom engines, accessories and custom engine work, write Aldrich Products, Inc., PO Box 1426, Mission, Texas 78572.

* * *

Service and quality around the world is the byline of Emandi, a California company that distributes, imports and exports the products of most major US and foreign manufacturers. Of prime interest to US flyers are some of the imported items available.

The well-known Seelig timer, described as the most advanced and sophisticated free flight timer on the market, is available as a one, three, or four function device. This timer, used by most of the top free flighters of the world, uses a watch gear mechanism to provide smooth and constant movement. Prices are \$14.95, \$19.95, and \$23.95, for the one, three, or four function models.

Another item successfully used by many world wide champions in free flight, R/C, and controline, is the German-made Bartels fibreglas molded propellers. This hand-made prop is supposedly the strongest in the world, with true pitch and being free of vibration up to

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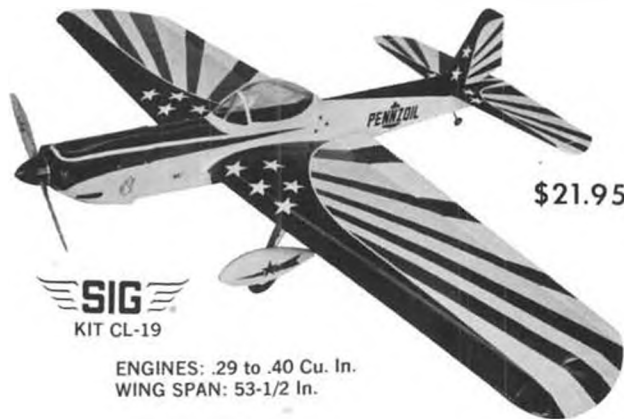
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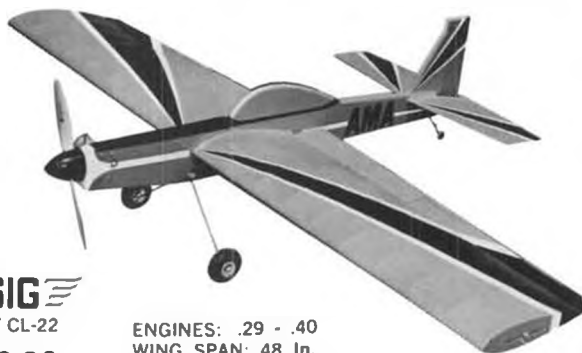


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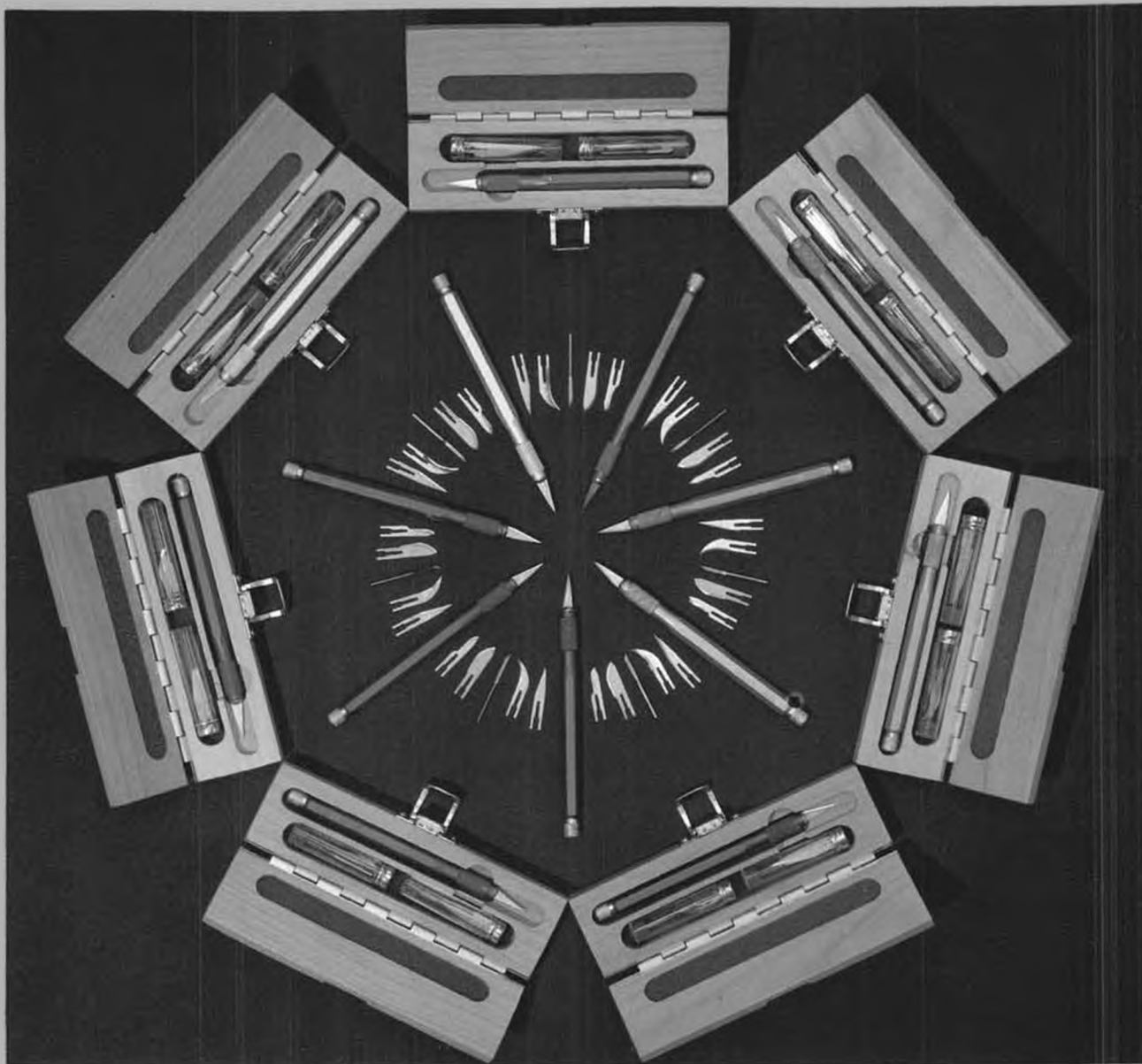
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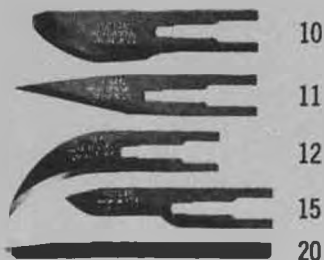
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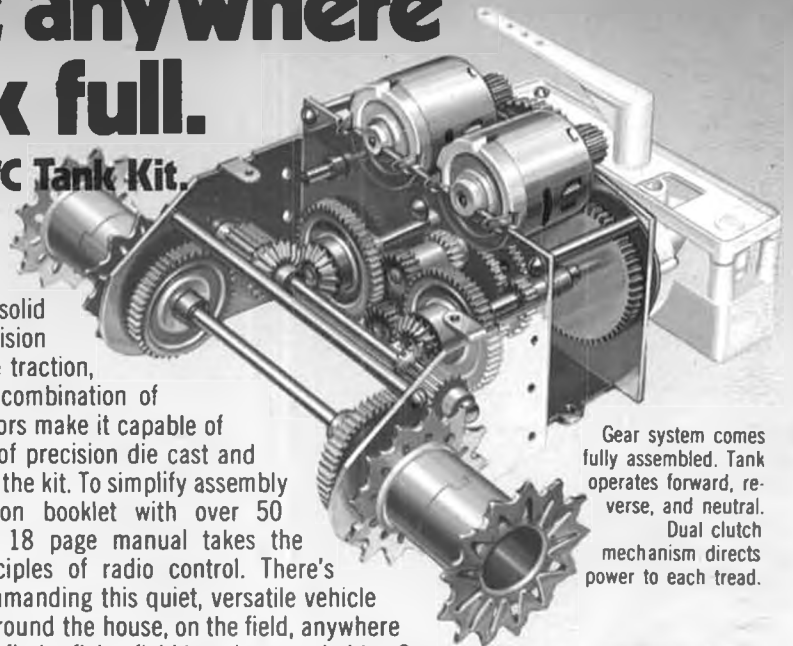
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