

American

Modeler[®]

OCTOBER 1960

35 CENTS

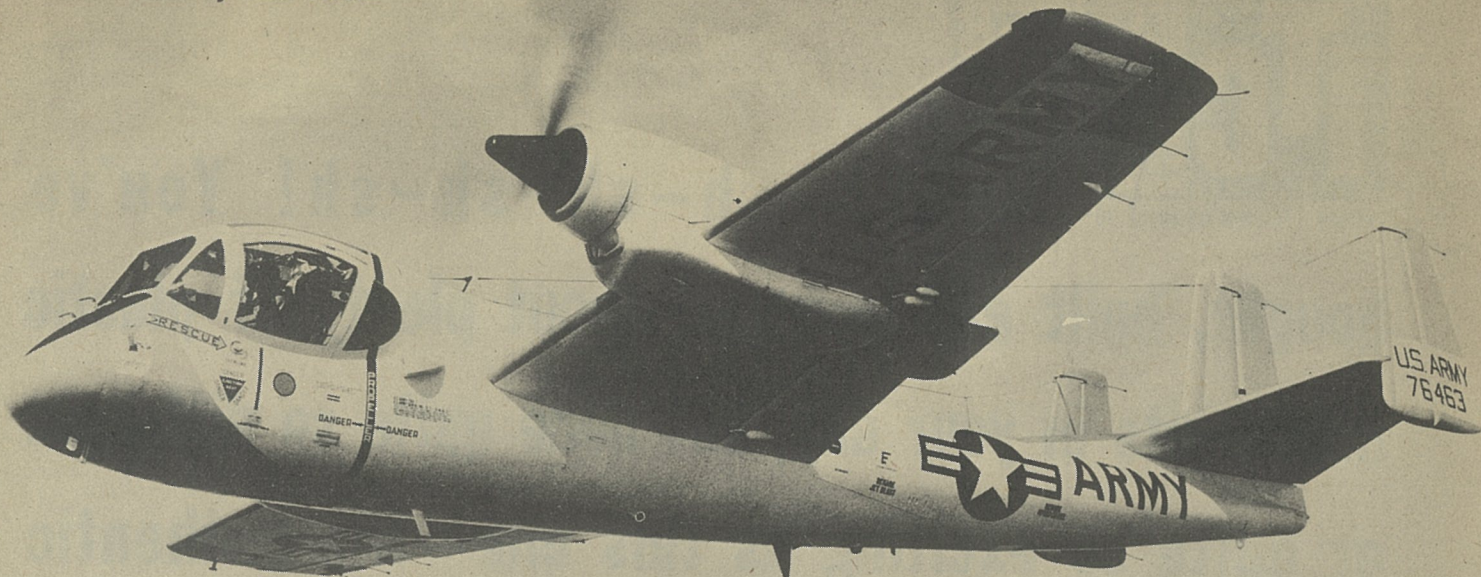
Planes / Cars / Boats / Radio Control / Rockets

**Young Tigers Wanted for the
AIR FORCE ACADEMY**



GRUMMAN MOHAWK
ARMY "STOL" FOR
FRONT-LINE OBSERVATION

- ➔ *Canadian Saucer for Radio Control*
- ➔ *Weightless Wonders of the Indoor World*
- ➔ *Grumman Mohawk Control Line Model by Paul Plecan*
- ➔ *Oklahoma "Twister"—Berryman's Winning Combat Fighter*



Grumman Mohawk is Spectacular Control Line Plane Project

■ Here is an unusual scale model with an unusual color scheme. Proportions for an authentic copy are excellent, with a long tail moment and general "clean" overall shape. The variety of contrasting colors is enough to pop the eyes of any judge at a flying scale meet.

Care has been exercised to stay within the "exact scale" area, with but two exceptions. One is the tail section, which is thinned for lightness and easy construction. The other deviation from scale is a simplified "greenhouse" up front. True scale here would mean carving large canopy forms and heat-forming the puffed compound-curved sections for all areas but the windshield, which is flat. Since a great many potential builders falter and quit when it comes to any "blown" style canopy, a somewhat simplified version is shown in the plans. Any celluloid of .020" to .035" thickness will do the job.

It is best to start with the wing of this particular design. Cut the required ribs, then the spar. It will be possible to cut a one-piece spar from a piece of 1/8" x 3" x 36" stock, but a spliced one will do as well, since the strength in this wing is in its covering and system of sub-spars. After cutting out a plywood spar brace, carefully attach it to the spar and allow to dry thoroughly. You can cut out formers or tail parts in the meanwhile.

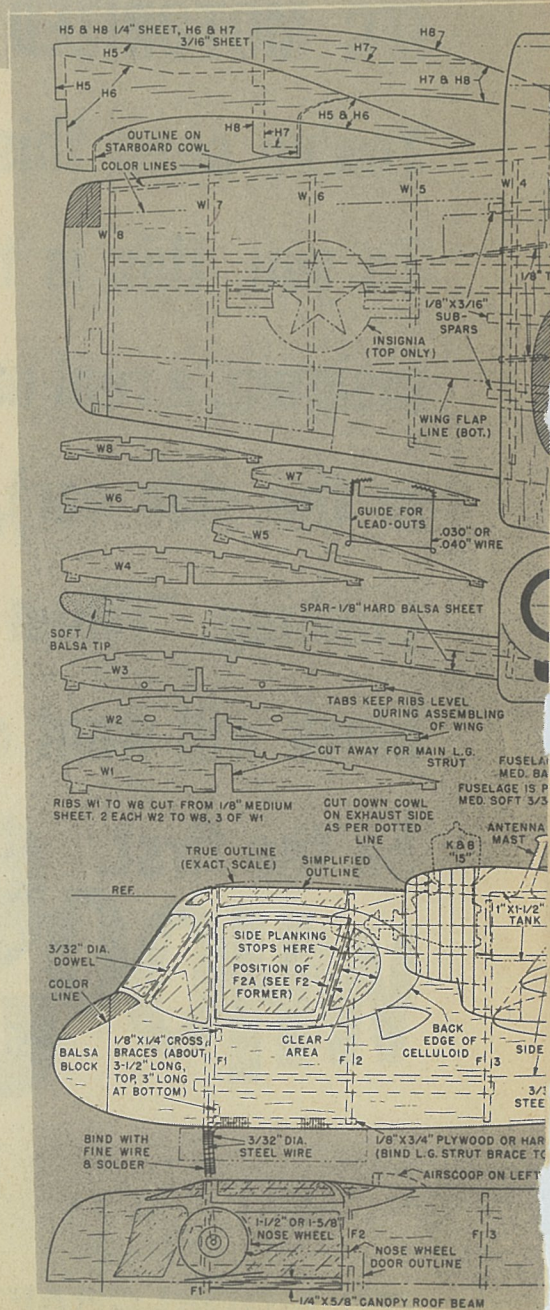
Once the rib positions have been marked on the spar, the center section can be assembled over the plan. A very slight crack is all that is needed in the 1/8" x 3/16" sub-spars where the dihedral starts. Now before sheeting is applied, mount the bellcrank. For the lead-outs to come through the wing in the required manner, mount the bellcrank platform exactly as

shown in the side view. The rear part of the bell-crank mount is just about vertically centered on the rib where it touches the spar (or recessed 3/32" below the top edge of the spar). Do not mount the bellcrank yet. The short leading edge section used in the center section should be 1/4" x 5/16" medium balsa. Bevel the top edge so that the 1/16" sheet covering will go on smoothly.

When the sheeting is completed on the center section and the cement has had time to dry, remove any pins still holding the center section to the workbench. Now we tilt the wing assembly over to one side until the spar is flat on the plan and workbench. Pin the spar down and slide the various ribs into place and cement.

If you are working on the left (or "port") wing panel, be sure you have the lead-out holes cut into the W1, W2 and W3 ribs as shown. Also note that space will be left behind the spar where the landing gear strut later will be. Just slip a 3/32" shim in there and pin it in place if loose (but don't cement). Taper the leading edge as indicated and cement in place. Now sheet in the whole panel.

It will be found that small sections of 1/6" sheet will do very well in covering, but the butt-joints must be neat, or else do it in strips that go from the root to tip in one piece. Be sure that the sheeting extends beyond the rear tips of the spars. Neatly trim the trailing edge section of the sheeting as per plans. In other words, the sheeting should overlap a bit over 1/4" at the W1 ribs tapering to a 7/16" overlap at the tips. This overlap later is bevelled to take the bottom sheeting. About those sub-spars. Firm 1/8" x 3/16" stock, about 18" long



Triang

DIE CAST SHIPS SCALE

M 891 PRESENTATION SET
R.M.S. Queen Elizabeth



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COMPLETE

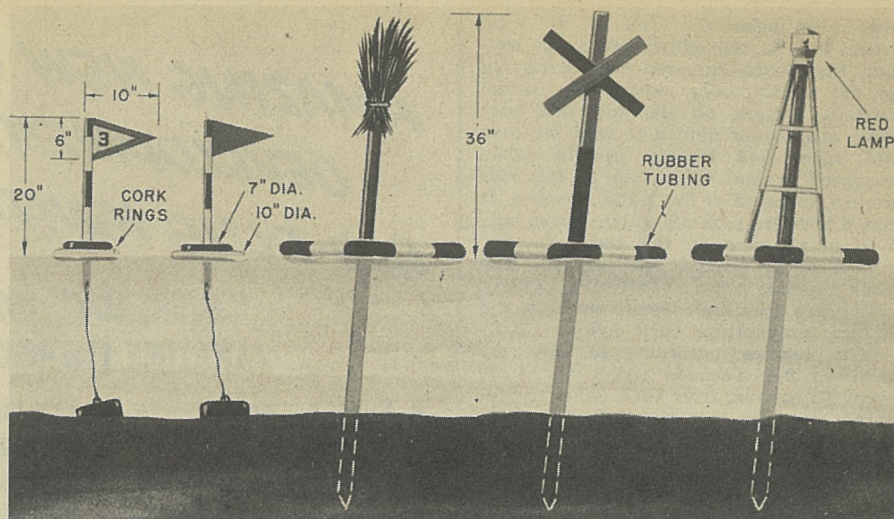
CONTENTS
R.M.S. Queen Elizabeth Breakwater, Angle Sections, left
Tugs Quay, Straight Sections Lighthouse, End Sections.
Cranes Unit Beacon
Storage Tanks Unit Illustrated leaflet
Warehouse Unit Packed in a beautiful colored
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BOATS... radio control, speed, scale

■ Model boating is a growing activity in Sweden. Radio controlled craft compete for the "Championship of Sweden" in September each year in a different city.

Willi Johansson (Gashallsvagen 14, Johanneshov, Sweden), who is chairman of the Svenska Modell Sport Unionen (model planes, boats, cars) and vice commodore of the Stockholm M.B.C., sends along the radio controlled course layout and marker details seen here.

Incidentally, the S.M.U. arranges 20 meets every year for air-modelers, 15 for car fans and 15 for aqua hobbyists. Willi has long been an enthusiastic member of the IMPBA.

circuit on page 31 of February 1960 A.M. Users of Citizen-Ship two channel receiver will have to insulate the two relays from the receiver; his work with the circuit was carried out with the Babcock two channel set, which has both relays insulated... so this point was not discovered until later. Mr. Roberatory has worked out new control arrangement which gives fully positionable rudder, plus operation as desired of drive motor control unit such as the Babcock. No tubes or transistors are added to the transmitter, receiving end is also quite simple (we will have data on this in future issue).

IMPBA Internats. Annual Regatta of the International Model Power Boat Association was held at Parsippany, N. J., July 16 and 17 at the pond created by Rich's Hobbytowne. All racing events were sponsored by the New York MPBC; Rich's backed the radio control competition.

Forty-four boats were entered. Max Biedermann of Garden City, N. Y., repeated his last year's win at Indianapolis by walking off with the International High Point Trophy (five wins, two 2nds, one 3rd—he placed in every event he entered!). Fastest average at the contest was 89.3 mph by Henry Parohl of Flushing, N. Y., running a McCoy 60-powered Class D-M boat.

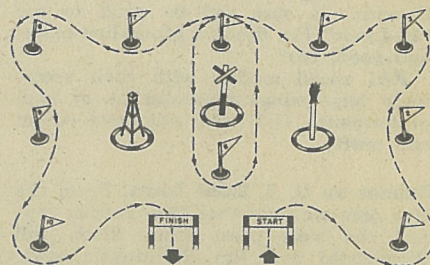
Details will appear here next month; exclusive photo coverage will be presented in our forthcoming *Model Annual*.

Modification Suggested. R. J. Roberatory (511 87th St., North Bergen, N. J.) suggests modification to his boat control

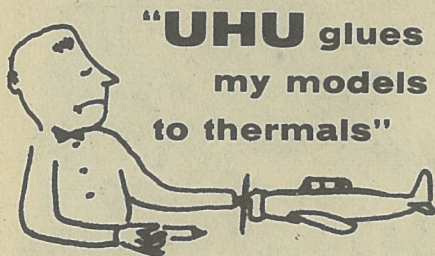
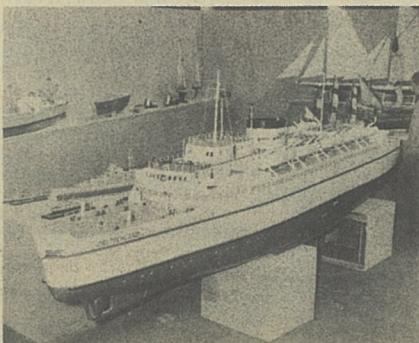
Pirates Meet. Big event on the West coast was meet sponsored by Pirates MBC of Los Angeles at Legg Lake. According to West Coast Model News, there were 74 entries (all ran off in a single day!) so you can imagine that things were humming! Weather was perfect for the meet directed by Tony Chiboucas (dressed appropriately in pirate costume with cap-and-ball pistol stuck in his trousers). Top winners were: *Gas Precision*, Carl Leno Jr. (Pirates) 337 pts.; *Electric Precision*, Leonard Gross (Pirates Auxiliary) 422 pts.; *Two-Lap Speed*, Carl Leno Jr., 57 sec.; *Beauty*, Paul Johnston (Pirates) 85-2/3 pts.

During a lunch break, R/C speed trials were run with a semi-electronic timing system. Several craft ran through the traps attempting to break the record set some time earlier by Frenchy La Junesse of Martinez. When the water

(Continued on page 61)



Swedish R/C course measures 30 x 50 meters. German exhibit brought out this scale copy of ferry boat "Deutschland." Note size compared to spectator at right. Some "model"!



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who were using the Cox 15. In most cases, due to the additional power output, the models required more trimming to fly satisfactorily during the power pattern. Details on the new mill are: Rear shaft rotor pinned so that the needle valve will remain upright when mounted normal 45°, right or left side mount, inverted or left hand rotation. It has a pressure pick-off which allows only 1-lb of pressure on the tank, the 3/8" dia rotor is ground and lapped. The back cover is plastic (DuPont's Delrin), which has very high tensile strength and higher temperature than nylon.

The engines, according to Bill, will turn an 8-4 Tornado nylon at 14,800 rpm. To convert from reed valve to rear rotor, they say that they will have kits available but they do not expect to make the conversion at the factory. We tried the disassembly and assembly of one of the engines and found it very easy, so don't hesitate to try it—there is no high degree of skill required.

Ocie Randall tabulated the results and found that there were 12 OS engines, 10 Cox, 4 Torps, 4 Olivers, and one each of Barbini, Hornet, Super Tigre, Fox and Rivers. The two top men both used the OS 15.

Free Flight Finals. The following day, Sunday, saw Ed Miller and Paul Kaitukoff fly off for the right to go to Cranfield, England. Both started off with max's for the first 3 rounds. On the 3rd round, Miller cracked a pylon so elected to fly his 2nd model. Each had a max on the 4th and each missed on the 5th with Miller's flight slightly longer. During the 6th round each maxed. On the 7th, Miller looped in with his 2nd model so flew his first entry to a max while Paul fell short again. At the start of the 8th and last flight tabulations showed that Ed needed 2:12 to beat out Paul. Ed launched first and while he didn't max he easily passed the 2:12 mark for the free trip to Jolly Olde England.

This flyoff was full of suspense, both fliers being members of the same "Max-Men" club. Each helped the other at all times but still each tried to keep the pressure on, either by waiting it out or by flying first to get a max. This jockeying continued thru the last flight. It was a real show with expert spectators timing every flight.

World Ukie Trials. The Los Angeles FAI U-control fly-off was fascinating. Bill Wisniewski was supplying engines to most fliers—it seemed like everyone had a Wisniewski 15. Chuck Schuette, who showed up with some of his usual beautiful models, was putting in a good flight till the bird went straight in on the asphalt—why, no one knows. Jim Nightingale brought over a contingent from Phoenix. It sure did us good to see "Bi-Liner" Jim flying a Mono-line model and good, too!

FAI speed models with their seemingly huge wings reminded us of high performance U-2 type sailplanes—clean and pretty.

Palmer on U. S. Stunt Team. From the Bay area we hear that Bob Palmer topped the west coast stunt fliers, Bill Wisniewski and Jim Nightingale made the speed team. Bill turned a sizzling 144 plus but clocked in too soon by a few laps. Later the bird was churning at the rate of 156 plus. Bill says he has discovered a new fuel that added the 20 mph on his engine—wow!

(Continued on page 44)

American Modeler — October 1960

AMAZING NEW BATTERY DEVELOPMENT IN GLO-PLUG IGNITION!

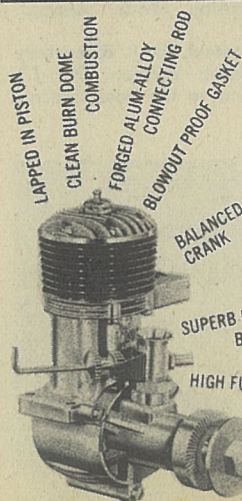
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\$14 ⁹⁵	\$19 ⁹⁵	\$19 ⁹⁵	\$24 ⁹⁵

35's in each of above models at same price... 8 models in all

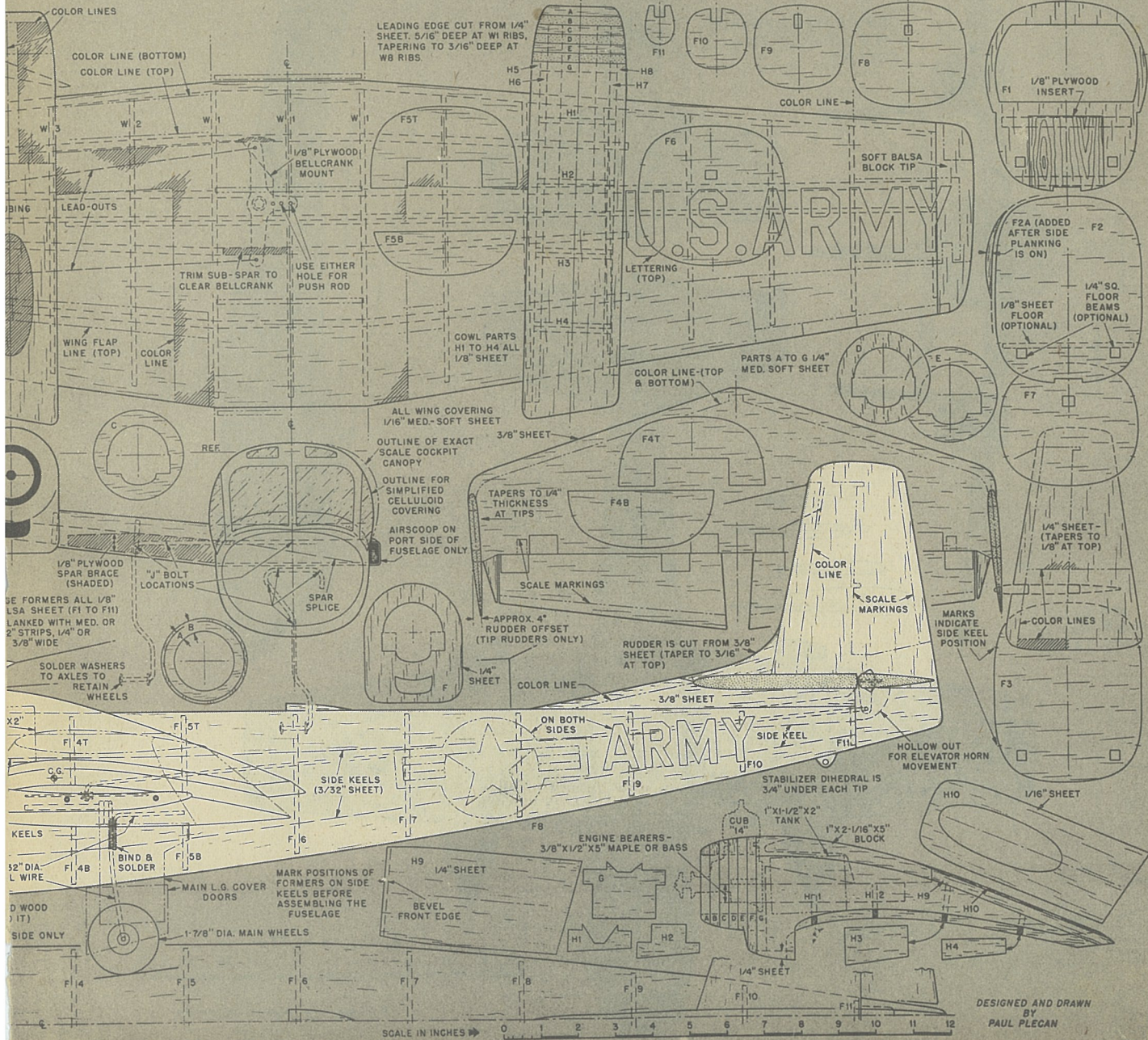
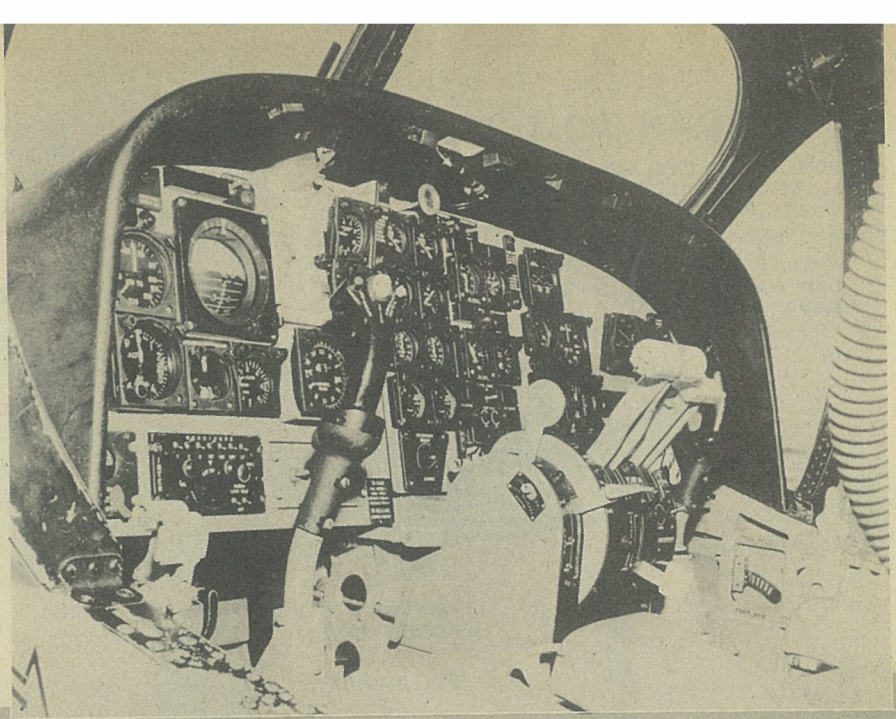
ASK YOUR DEALER about a trade-in!
FORSTER-APPELT Mfg. Co., 88 Lanark Avenue, Lanark, Illinois

does the job. No need for these beyond rib W4, as the spar and sheeting make the tip area more than strong enough.

Once the cement has dried on the wing panel that was assembled, the wing assembly is rocked over to the other tip and that panel is assembled in a manner similar to the first. Allow sufficient time for the cement to dry well before removing the wing from the workbench.

The main landing gear is bent per the dotted lines shown in the front view— $3/32$ " steel wire does the job; all of the bends are radiused generously to retain strength. Sharp bends, as made in a vise with the aid of a sledge-hammer, have a tendency to crystalize the metal, with a crack (or even a complete break) as a reward for one's hurry. As long as the tread is even close to that indicated, and as long as the axles aren't cockeyed, the job is okay. Before attempting to install the main landing gear strut, note from the side view that the strut bends slightly backwards about halfway down to the axle. Once this bend is made, the

(Continued on page 54)



DESIGNED AND DRAWN BY
PAUL PLECAN

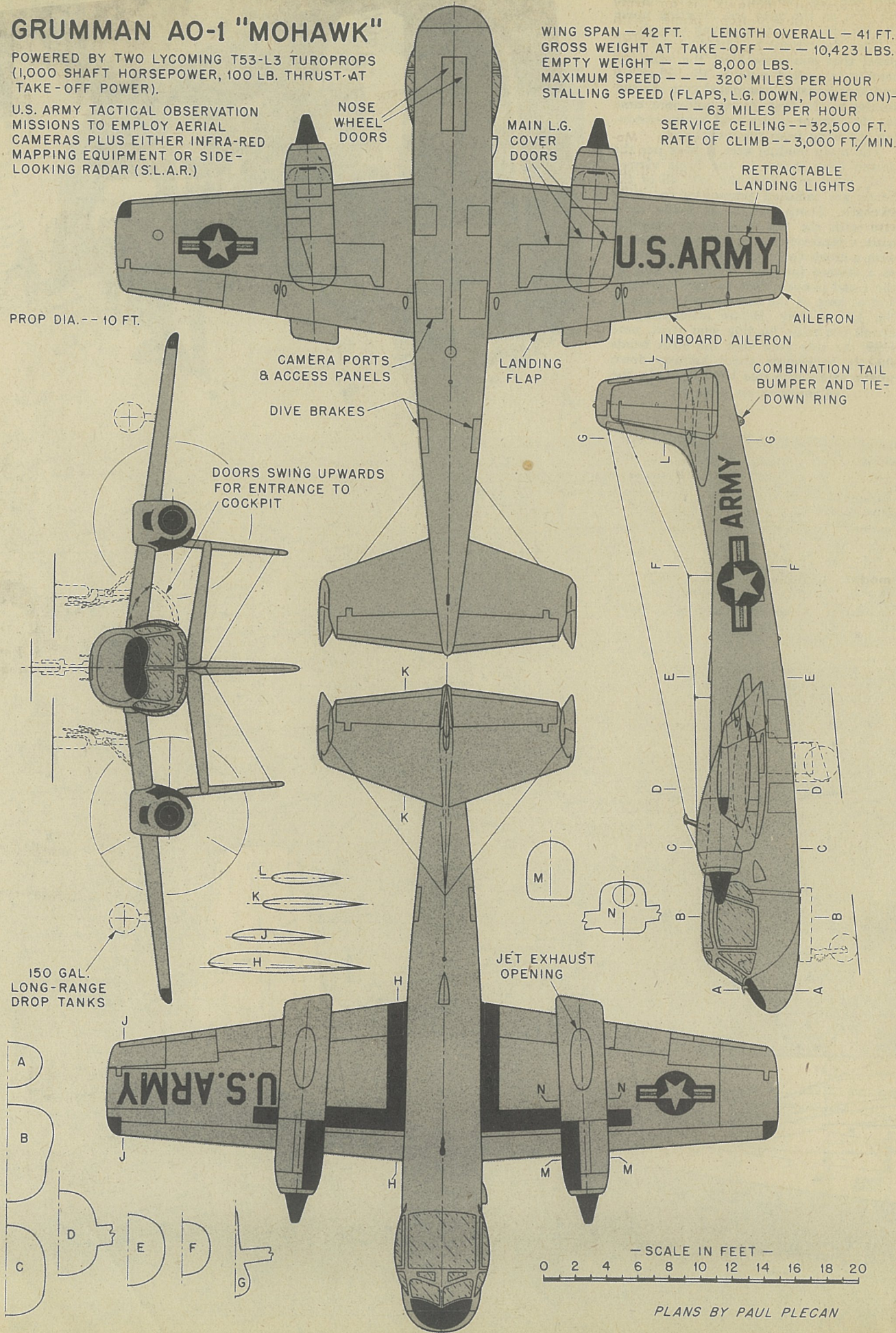
GRUMMAN AO-1 "MOHAWK"

POWERED BY TWO LYCOMING T53-L3 TUROPROPS (1,000 SHAFT HORSEPOWER, 100 LB. THRUST-AT TAKE-OFF POWER).

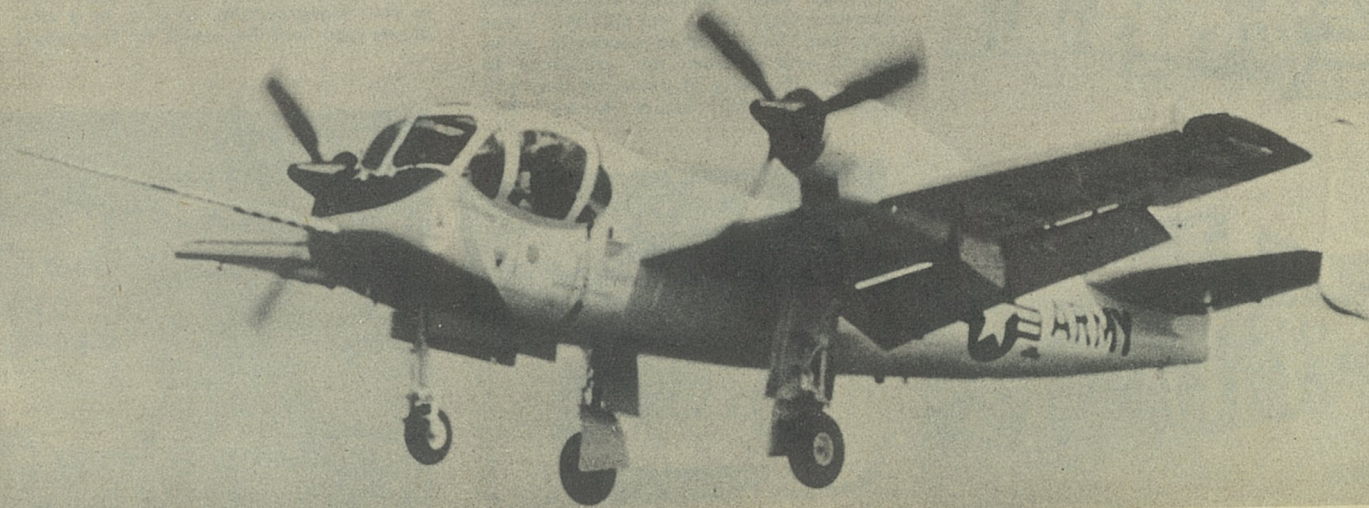
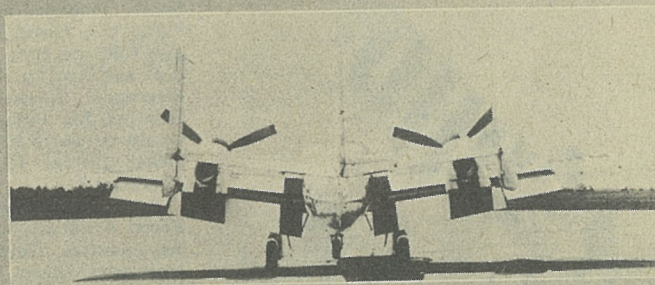
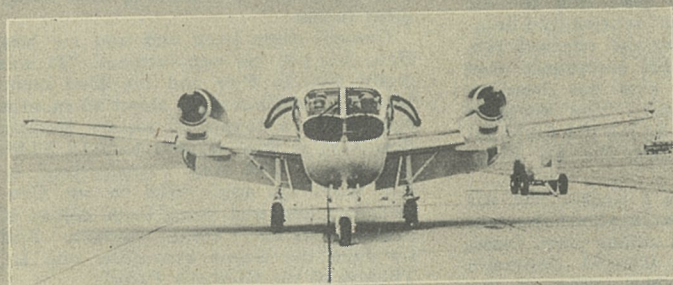
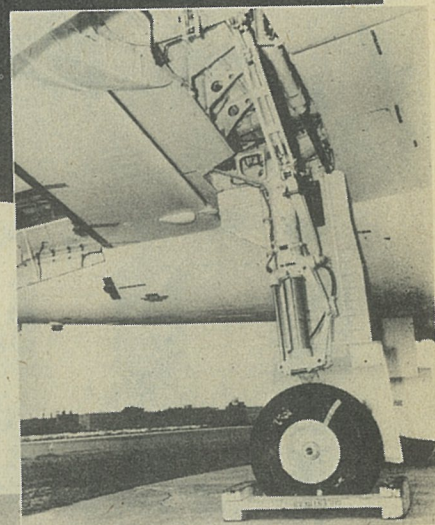
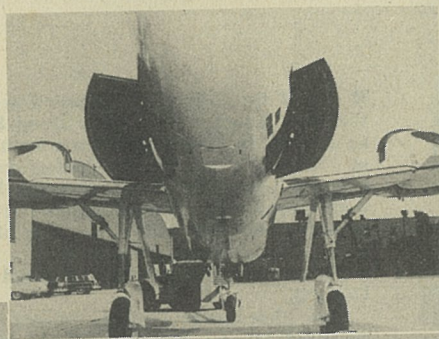
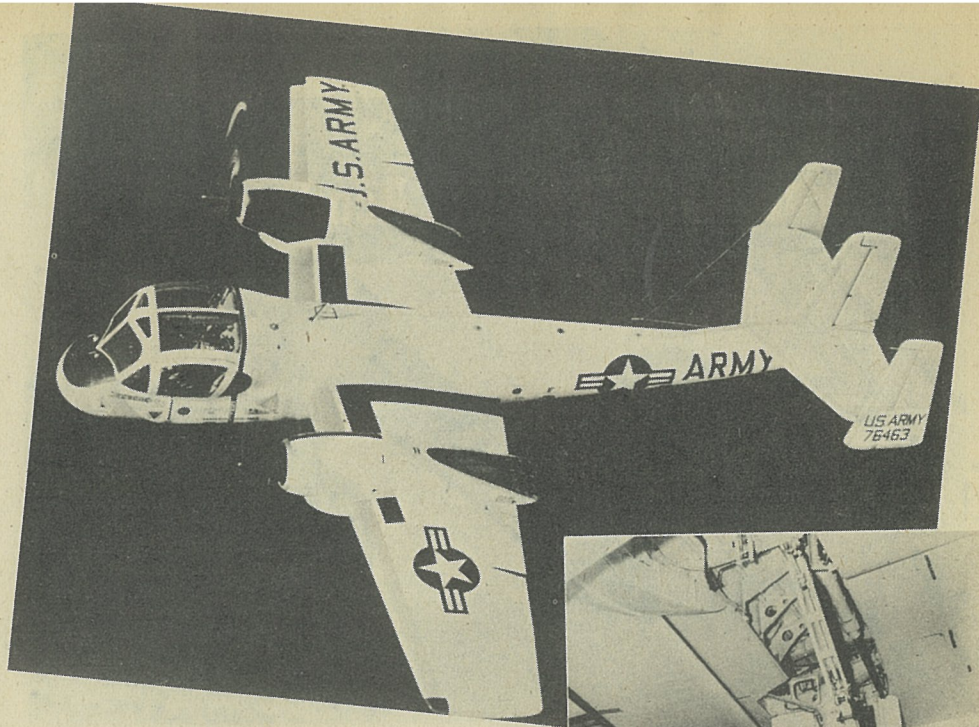
U.S. ARMY TACTICAL OBSERVATION MISSIONS TO EMPLOY AERIAL CAMERAS PLUS EITHER INFRA-RED MAPPING EQUIPMENT OR SIDE-LOOKING RADAR (S.L.A.R.)

WING SPAN — 42 FT. LENGTH OVERALL — 41 FT.
 GROSS WEIGHT AT TAKE-OFF — 10,423 LBS.
 EMPTY WEIGHT — 8,000 LBS.
 MAXIMUM SPEED — 320 MILES PER HOUR
 STALLING SPEED (FLAPS, L.G. DOWN, POWER ON) — 63 MILES PER HOUR
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 RATE OF CLIMB — 3,000 FT./MIN.

PROP DIA. — 10 FT.

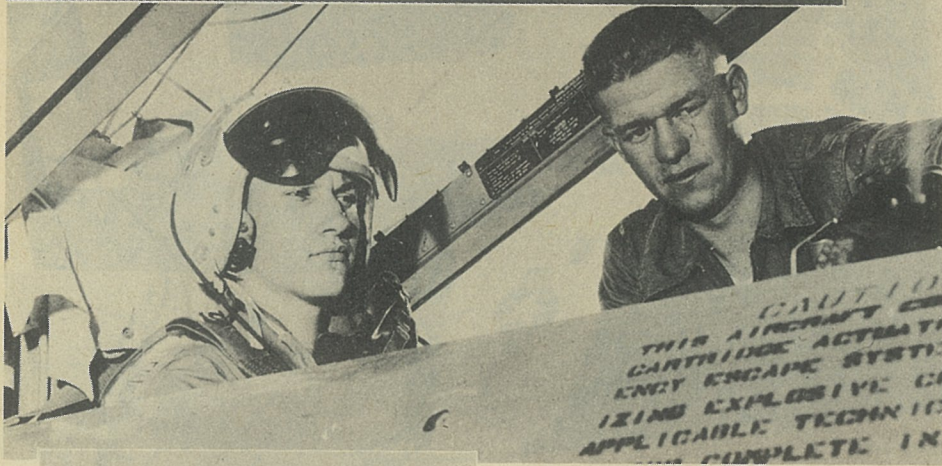


The Grumman "Mohawk" is an Army high-speed observation plane with STOL characteristics capable of operating from small, unprepared strips. The "Mohawk" is intended for use as a combat surveillance platform. A successor to SLAR (side-looking airborne radar) presently in use is being developed as a component of the "Mohawk" surveillance system. The plane has a top speed of 316 mph; climbs at 3000 ft/min; has a service ceiling of 32,500 ft; endurance of 2 hours at cruising speed of 230 mph at 5,000 ft altitude. Landing speed is 64 mph. Two under-wing 150 gal fuel tanks can boost endurance to almost 7 hours, giving the "Mohawk" a range of 1670 miles at a cruising speed of 239 mph at 25,000 ft altitude. The craft can clear a 50 ft obstacle at take-off in 655 ft run, lands in 776 ft over 50 ft obstacle. Wing span is 42 ft; length 41 ft; height 12 ft, 8 in; empty weight 7,772 lbs; useful load 2,316 lbs; gross weight 10,088 lbs. Powerplants are Lycoming T-53-L-3 turboprops developing 1005 eshp each. U.S. Army initially ordered 9 service test and evaluation YAO-1 models, followed with an order for 35 AO-1AF production craft. More recently, an order was placed for an additional 42 "Mohawks," which probably will be the improved AO-1BF model. Additional orders expected in the near future will provide hundreds for Army Aviation.—Howard Levy.



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Sipping a Coke, I waited for Caswell to make change for a customer and reviewed in my own mind some of the activities I had seen at the Academy. For instance, I spent an afternoon at nearby Petersen Field watching Air Force Academy cadets learning to fly in the local Aero Club. Then I got to talk with a couple of cadets who were raising Falcons for "fun and profit." The latter may sound like something out of the Middle Ages, but actually the official mascot of the Academy is the Falcon so falconry—that ancient and honorable sport—has been revived and the birds are actually used for exhibitions during half-time intermission at Academy games. And if you follow the sports pages at all, you know that the Academy is fielding some really great teams.

Caswell came back and told me how Bob, Jr., got his appointment. "It was really simple. Bob and his Dad came into the store one night about 12 months ago to buy a couple of postage stamps. Seems as if they wanted to mail Bob's application. The way I understand it, Bob wrote an application to our Congressman and sent along some copies of recommendations from teachers, Phil Carlsake the Scout executive, and Lt. Thomas of the Civil Air Patrol."

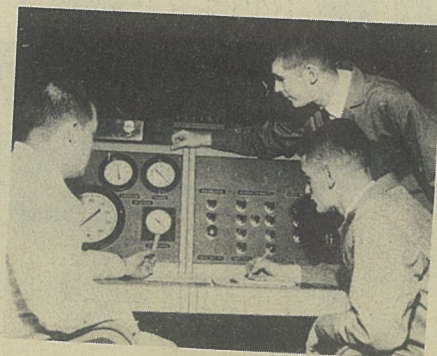
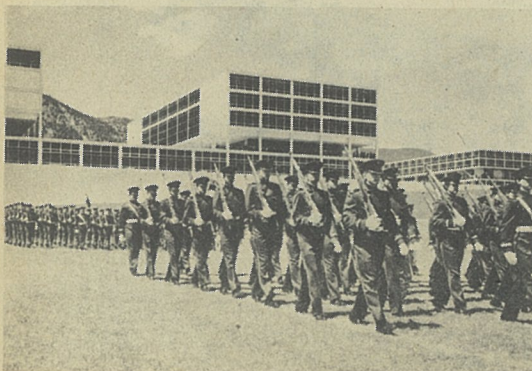
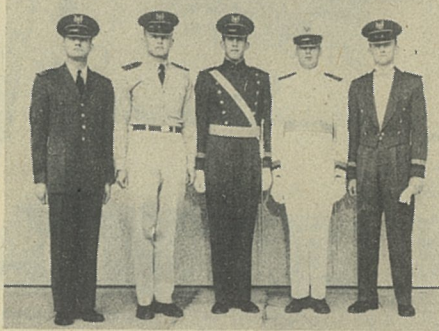
The U.S. Representative in our District replied to Bob's letter and explained how selections for appointments are made. Here's how it works. You write to your Congressman. In turn, as a candidate you will be asked to take some

■ All of the kids were gathered around the back booth at Caswell's Drug Store as I came in. The attraction wasn't one of "Caswell's Castilian Confections"—a gooey peanut iccream liberally laced with maraschino cherries. Instead it centered around Bob Miller, Jr., one of the nicer kids in our neighborhood.

"What's the excitement?", I asked Doc Caswell.

The pharmacist replied, "Bob's been accepted by the Air Force Academy as a cadet!" While the boys in the back booth goodnaturedly gave Bob the old "Hut, two, three, four" routine, the druggist told me that Bob had received official notification of his acceptance that afternoon. Caswell, who has teen-age boys of his own, said, "You know, it would be worth a lot to me if I could get either Jim or Ray into the Air Force Academy."

Some months ago, I visited the Air Force Academy to learn about the new Astronautics Course which was being pioneered there by Colonel Benjamin Blasingame. During the course of my visit, I met future Air Force Officers who are learning the fundamentals of aerospace subjects such as ballistic missiles, satellites, space vehicles, aerodynamics, electrical engineering and the like. I was told that "only a broad education background will prepare our graduates to meet the diversity of problems they will encounter in their future careers." The



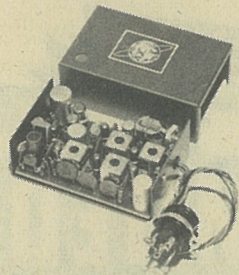
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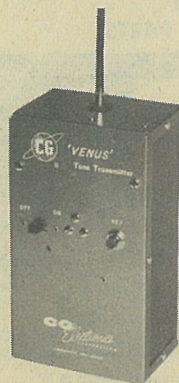
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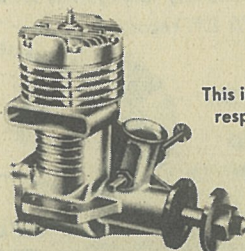
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Mohawk

(Continued from page 15)

strut is fastened to the rear face of the spar brace. Any strong joint will do, "J" bolts are about the best, next-best being fine wire "sewing" through the spar assembly. This requires many small pre-drilled holes, which is no trouble if you have a small high-speed electric hand-drill and #50 or 1/32" drill bits. But the attachment of the main struts must be strong.

Do not forget to add the small "L" struts aft of the main struts to brace the strut against collapse in a really hard landing. The small leg of the "L" is wrapped and soldered to the strut before cementing the large leg of the "L" to the underside of W2. Sewing it on with thread or using a bit of crinoline or cloth will help hold it to the rib firmly. Fibreglas and resin would be best, if you have any. If not, lots of cement!

The bellcrank is mounted now, with lead-out wires to follow either now or when the cowlings are on. Better do it now. If any holes are required for slipping the bellcrank into place, they may be cut out of the sheeting near the bellcrank mount. One or two holes, up to 1" x 2" in size, will not affect wing strength. Note that ample clearance is afforded the bellcrank by cutting away portions of sub-spars as shaded in on the wing plan.

Remember not to loop the ends of the lead-out wires (okay at bellcrank end), as cowl parts slip onto these wires and small lengths of tubing for reinforcement have to be added to cowl. Approximate placement in side view. Tip guide not added until cowls are in place.

Now the fuselage can be started. Part of the wing bottom must be sheeted in order that the wing may be handled in ensuing construction. When all of the center section and even half the rest is done, we'll proceed.

With the utmost care, mount the top and bottom halves of formers 4 and 5, taking care to center them. These parts are marked F4T, F5T, F4B and F5B. Now the side keels are slipped over the wing panels toward the wing root. You will find that the landing gear struts will be in the way. Merely make a small cut where required at a slight diagonal angle to get the side keel past the L.G. strut. Even cutting a section out of the side keel is okay, but replace it as accurately as you can once the side keel is past the L.G. strut. A small doubler on the inboard face of the side keel where the cut was made will reinforce it as good as new. Some sanding will be necessary to get the side keels to fit the center section. Once fit is obtained, cement only to the formers. Work back toward the tail and up toward the nose, cementing the formers in place as you go. For the side keels to fit flat against all the formers, it will be necessary to dampen the outboard faces of the side keels so that they curl slightly to follow former contours.

After all the formers are in place, sight along the fuselage from the rear to check alignment. The top of the fuselage is straight, and can be used as a reference line as marked on the plans. Pin a strip of scrap balsa along the tops of the formers to check this. If slight relocation or sanding is required, do it now. Once you are happy with the overall line-up, put on the second coat of cement where formers touch side keels and where side keel meets wing sheeting.

Specifications: World Wide Electra 27 mc non-selective tone receiver. Case size 1 3/4" x 2 1/2" x 1". Weight 2.4 oz. 5-lead cable includes two wires for battery, three from relay. 100 ohm Deans relay used. Single adjustment for tuning. Antenna length between 18 and 30". 800 cycle tone is optimum, 85 to 100% modulation. Battery Supply—3 volts. Current with no input, 8 ma; with carrier only, 3 ma; with signal from Electra transmitter, 32 ma. Battery should be changed when it drops to 2.3 volts with tone signal tuned in.

Electra transmitter, 27 mc R/C frequencies. Ne-2 neon AF oscillator, 3A5 as modulator and RF oscillator, 3V4 power amplifier. Normally supplied with 26.995 mc crystal. Panel has on-off power switch, button for keying tone, small bulb for tune-up and monitoring RF output. Case measures 7-5/8 x 5-15/16 x 3-1/16". Total weight with batteries and antenna is 4 lb. Osc. tuning sealed; amplifier tuning by means of ceramic variable condenser. Antenna is 3-section collapsible type, 16 1/2" long folded and 46" when open. Battery Supply—A power required is 1 1/2 volts at 250 ma (one Burgess 4F or equivalent). B power, 135 volts (two Burgess XX45 batteries in series or equiv.); current drain with carrier only is 24 ma, with tone key depressed, 22 ma. "A" battery should be replaced when it drops to 1.2 volts under load, "B" batteries when they drop to 105 volts with power switch on, key button up.

"Twister"

(Continued from page 31)

can be reinforced greatly by simply drilling down through the assembly about 7/8" or 1" back of the leading edge. Go all the way through, using a 3/16" drill. Then coat a 3/16" dowel with cement and tap through. Once the cement has dried a few hours, trim the protruding dowel flush and dope it.

To help maintain line tension, sand rudders to airfoil shape and mount at an offset as shown. To further strengthen the model, cover the stabilator with silk and dope it. Also use silk on the motor mount area, especially where it meets the wing. The control horn is mounted and the pushrod bent to fit (when both bellcrank and stabilator are in neutral). Either a washer, soldered to the end of the pushrod, or a drop of solder can be used to keep the pushrod from slipping out of the control horn.

The whole model is doped. I prefer 5 to 6 coats of clear all over, using color sparingly. Usually I just color the center section, as this needs all the fuel-proofing it can get anyway. Weight is an important consideration, so don't use colored dope throughout.

I designed this job for all-out competition, so a really "hot" engine is a "must." The Johnson 35 Combat engine is my recommendation. But there will be other options—the best I can say is for you to contact the active combat gang in your area and get the engine that has stood up in action. I usually clock almost 100 mph with the streamer on, which is 5 to 10 mph better than other combat jobs with similar engines. A 9 x 7 Top-flite or 9 x 8 Power Prop will be just right.

Build her strong, cover neatly, use a hot engine, and when the smoke and dust clears away, your opponents will know that their streamer was clipped by a Twister.

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