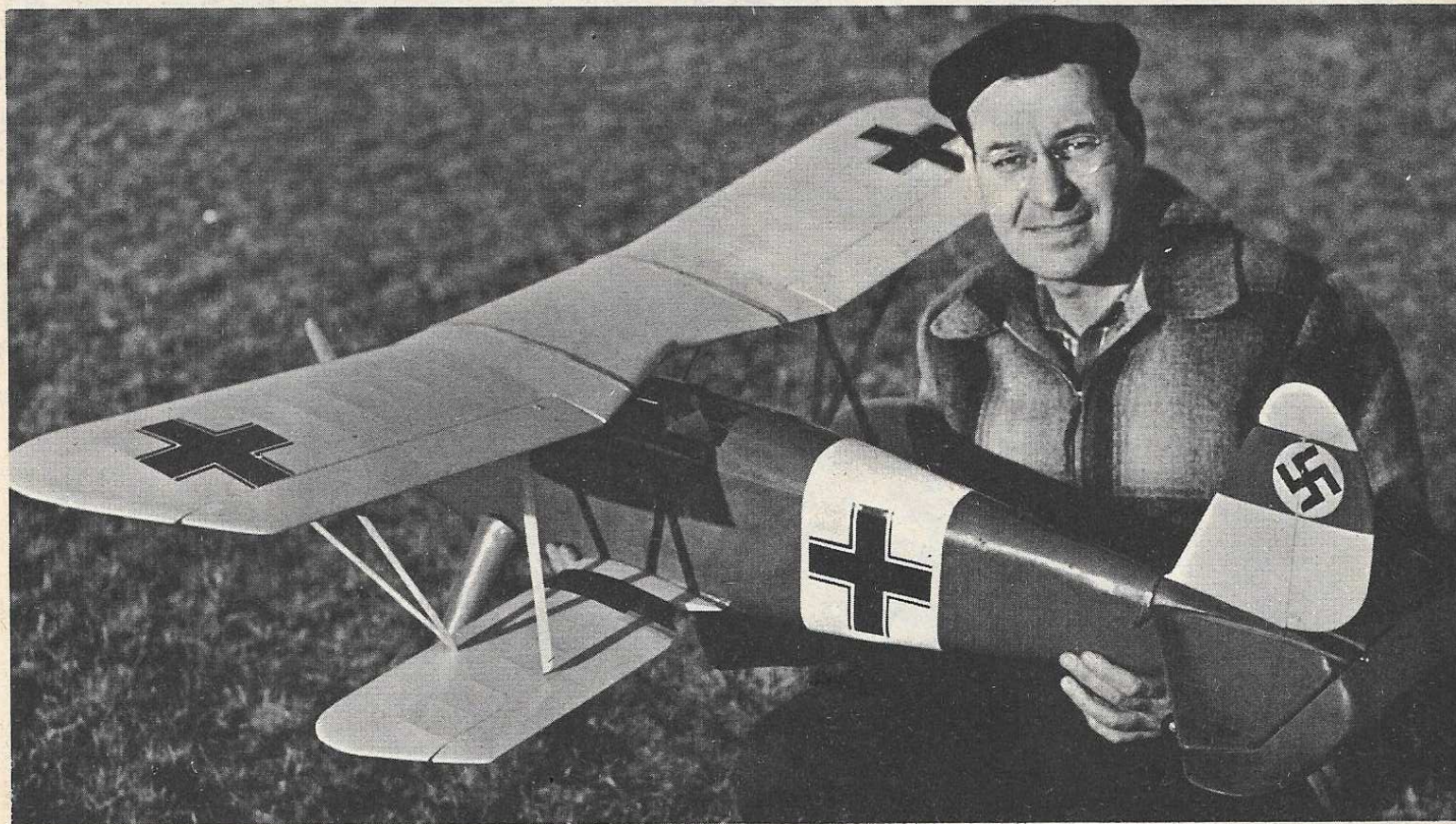


ARADO...for R/C



Winner of first National R/C event in 1937, Chet has been turning out winners ever since. Not enough space to list all of his scale model designs.

By Chester Lanzo . . . Multi-Channel Scale Radio Control is always exciting but it is doubly so when we have the combination of a pre WW-II military biplane and one of the best model designers in the business.

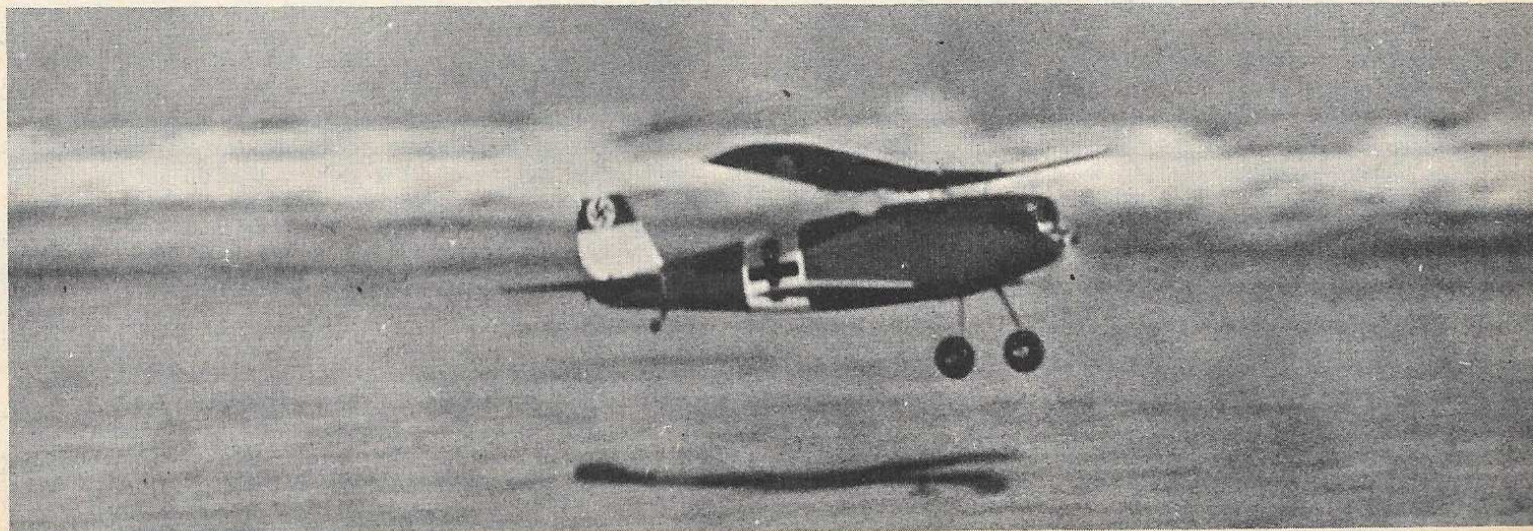
► The Arado A.R. 68 was a not too well known single place German fighter produced before World War II. Powered by a B.M.W. liquid cooled engine developing 750 horsepower, it could attain a top speed of 205 mph. The main wing span was 36 ft. and over-all length of 32 ft., almost equal to the wing span provides the ship with plenty of longitudinal stability. The short bottom wing 25 ft. in length gives it the appearance of a sesquiplane while overhead in the air.

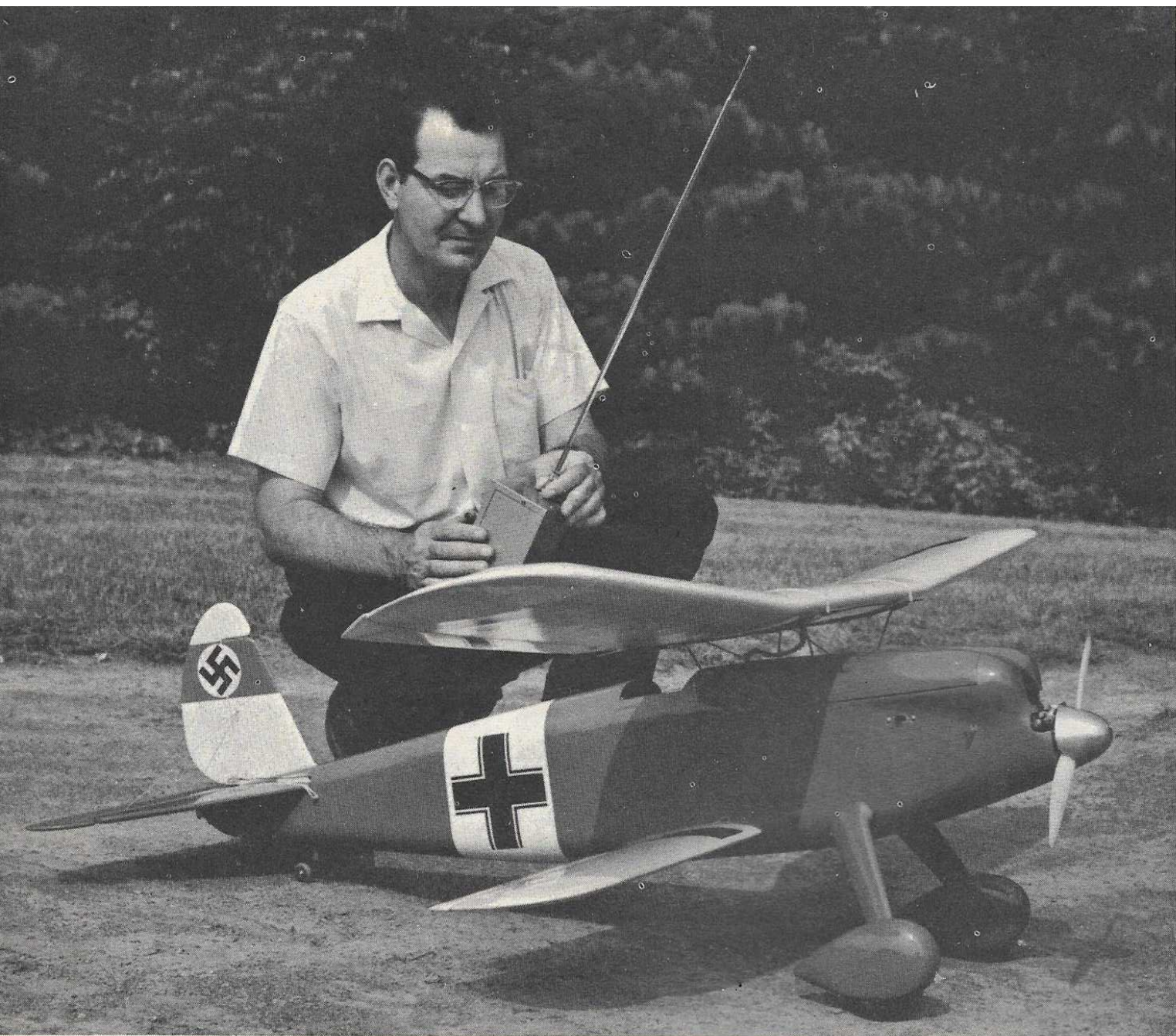
All biplane models in flight give a very pleasing appear-

ance and this model with its unusually long tail moment arm is a very appealing sight.

The Arado is scaled down to obtain a span of 59 inches and a chord of 11 inches giving an area of 615 sq. inches. Added to this is the area of the bottom wings of 240 sq. inches which sums up to a total of 855 sq. inches. The total weight of the ship with radio is 7½ lbs. Landing gear is of the torsion type with large air wheels for good take-offs. Using an 8 channel reed receiver, the following movable controls are obtained. *(Continued on next page)*

Don't know of anything prettier than a scale model when it is breaking ground on a stable take off. Wing and landing gear struts off for flight.





Chet is best known for his ability to design scale to fly, equally famous for his excellent finishes and fidelity to scale for exterior details.

ARADO . . . for R/C—continued

Full motor trim, steerable tail wheel, ailerons, elevator and rudder. The bottom wing flaps can be connected to the engine control for their operation at low speed if wanted.

Introduced into this model is, I believe, a new concept to obtain good inverted flight characteristics.

The bottom wing airfoil on the model is a Clark Y type with its excellent normal flight abilities but the larger upper wing has an airfoil similar to the N.A.C.A. 2412. With these two airfoils, one working best in the upright position and the other taking over in the inverted position an excellent combination of both types of flying is accomplished.

The power for the model is a vertically mounted K&B .45 or Supertigre .49 with a simple radial mounting for ease in adjusting the down and side thrust of the engine. Although the plans show 0-0 thrust adjustment, place 2 degrees down thrust and 2 degrees right thrust when mounting by slipping washers behind the radial mounting.

The bottom wing of the Arado is mounted with a tongue type of fitting. This method has proved very useful in hard landings as the wing panel will pop out of its mounting in a hard landing rather than shearing itself in half upon striking the landing gear.

FLYING THE ARADO

The ship, after trimming, was found to have very good flight characteristics in both the upright and inverted positions. In the air the Arado behaves in much the same manner as most stunt R.C. contest type models. Rolls are executed very easily and quickly with no apparent loss of altitude. The model acting as if it were strung on a wire through the longitudinal axis. The stall tendencies of the model are gentle and not as abrupt as in most monoplanes.

When test hopping the Arado, remove all the unnecessary struts, pants and other gadgets that do not contribute to the actual flying needs thus eliminating damage to these parts. Next, check on the C.G. making sure it is in the position shown on the plans, if not change the position of the R/C components until it does.

Be careful that the C.G. is not ahead of the position shown in the drawing as a very unstable condition will result causing the model to go into a series of stalls and thus making the model almost impossible to control.

Because the ship has aileron control most turns in the air are made with them but rudder turns are found to be almost equally as good with a small loss in altitude.

As in all (bang-bang) R/C (Continued on page 36)

STILL'S STUKA STUNT

Sensation of stunt control line circles is Don Still's world famous STUKA STUNT semi-scale. Don was the top placing member of the winning U.S. team at last years World Stunt Championships, Budapest, Hungary. Test proven for over a decade, this design has also won at two Nationals. Span is 47" and the model is suitable for all .25 to .35 size engines. See it at your dealers today.



CUSTOM KIT C5-

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Designer Don Still
— and one of his
Stuka Stunt ships

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Soon to join the STUKA STUNT in the Ambroid kit line, is Bill Werwege's sleek ARES (52" span, for .35 engines), with which he won the Sr. Stunt event at the '61 Nats. Bill's model was built with Ambroid cement (some years ago!), as were Open Winner Lew McFarland's SHARK and Jr. Winner Jim Vornholt's AIRON. These leading stunt men know that it takes a rugged, well-cemented structure to stand up to present day stunt flying, so they naturally insist on using the #1 cement — "Regular" Ambroid!



Coming next in the Ambroid kit line:
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Look for the kit boxes
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Arado . . . For R/C

(Continued from page 12)

systems, the flier is cautioned against holding control positions for a long period. It is usually best to give short pulses for control rather than prolonged holding. This not only allows a better and safer control but the model doesn't appear to be as jerky in the air.

To get the Arado into the air a long clear runway is needed as the model will run on its wheels with the tail horizontal for about 150 feet before lifting. Never yank the ship into the air by giving up elevator for a long period. This will usually result in a stall with sad consequences. If the field is too small for take-offs, try a hand launch. Place the left hand near the landing gear and right hand near the leading edge of the stabilizer, then while running into the wind at a fast pace (ED: he means a smart gallon) push the model smartly into the wind with the right hand at about 10 degrees up from the horizon.

MANEUVERS

The inside loop is the easiest maneuver to perform and is done as follows: After gaining about 200 ft. of altitude head straight into the wind and level off the wings to the horizon, apply a little down elevator to gain speed and then give full up until the ship has almost completed the loop. Just before becoming horizontal, neutralize the controls. Do this over again for as many loops as you want. To do outside loops hold the wings level into the wind and apply down elevator and neutralize just before being in the horizontal position. Allow more altitude for outside loops than the inside because of the fact that more is lost in this maneuver. Rolls are a snap with the Arado, head the model up wind and give full aileron in either direction, the model will keep rolling until the ailerons are neutralized without much loss of altitude. Spins are not too difficult either, just hold full up elevator with low engine speed and then give full rudder when she stalls. Hold the controls until you wish the spin to stop. Neutralize the controls and the ship will pull out of it automatically without further application of any controls. Inverted flying is done easily by placing the engine into high speed and doing one half of an inside loop and then giving full down elevator and holding. Ailerons are used to control direction in the inverted position. For power on landings head into the wind with low engine power. When about a foot off the ground apply a quick short blip of up elevator to drop the tail. After touching the ground, give full engine speed and taxi at high speed until the plane leaves the ground again.

The glide flight is excellent and no trouble should be experienced with landing dead stick. Some difficulty was experienced with the model tipping over due to the unusually high scale landing gear being a bit too springy but this has been corrected with 5/32 in. wire called for in the plans rather than the 1/8 in. that I used.

WING

The full size Arado used a wing section similar to the N.A.C.A. 2415 but slightly thinned out in depth. The right wing panel is shown on the drawing, so to make the left panel, just pin the trailing edge in place of the leading edge and because the rib spacing is identical you will have the opposite wing panel. You will notice that the center section has no dihedral. Build the center section first then add the 1/8 in. plywood dihedral braces and join to give 3/4 in. dihedral under each

wing tip. Notice also that the strut-retaining tubes are blocked in with balsa and cemented securely before covering. The leading edge is sheeted with 3/32 in. balsa on both top and bottom of wing.

The wing is mounted on the wire mount with rubber bands to allow them to knock off in a hard landing (an effective shock absorber). Three degrees incidence in the upper wing, zero degrees incidence in the lower wing, with zero in the stab seems to work out best. This gives good recovery from a dive or stall condition. Ailerons of solid soft balsa will further simplify wing construction and increase the ability of the surface to take punishment.

FUSELAGE

Start the fuselage by pinning the 1/4 in. sq. hard balsa longerons on the plan then fill in the sides with 1/4 in. sq. uprights to the rear of the cockpit. The remaining uprights are 1/8" x 1/4" balsa. The same goes for the fuselage top cross pieces. Next, add the formers to top and bottom of fuselage and plank with 3/32 in. sheet balsa covering. Solid balsa blocks are cemented to the nose section and then blended into the contour of the fuselage. A 1/4 in. plywood firewall (F2) is cemented to the fuselage nose to provide solid mounting for the radial mount. When mounting the engine cut plenty of clearance around it to allow good cooling air circulation.

After the 5/32 in. wire landing gear is bent to shape and installed against the 3/16 in. plywood floor with "J" bolts the removable pants and struts are (made from 1/2 in. sheet) blended into a streamlined shape. Cover the body and pants with nylon.

If the weight of the Arado is kept below 7 1/2 pounds the .45 engine should be adequate power. Mounted behind the firewall is a six ounce plastic fuel tank. The vent line should be extended out the side of the fuselage to get rid of the overflow as the tank is filled from the throttle side. Block in the tank with a sheet balsa to keep it from shifting around. The four sets of inter plane struts are made from 1/8 x 1/2 in. balsa with 1/32 in. wire extensions that plug into the 1/16 in. dia. brass tubing in the wing. The two front struts are in the shape of a "V" with the bottom of the V resting near the bottom wing leading edge.

RUDDER & FIN

The fin is constructed from 1/4 inch sheet medium balsa and streamlined by rounding off the edges. Hinges are the old reliable figure 8 or S type made from heavy nylon cloth cemented in place after covering is completed.

STABILIZER

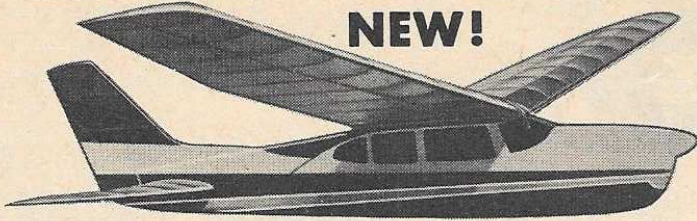
The stab is very straight forward and is made by pinning the 5/16 inch leading and trailing edges down and then gluing 3/32 x 5/16 inch balsa pieces between them as ribs. Later the 3/16 x 3/8 spars are glued on top and bottom. Then the additional 3/32 x 3/16 pieces are added to the top of the ribs and sanded to a streamline section. The elevator is made of 1/4 inch sheet and sanded to the outside shown. The fin is cemented solidly on top of the stabilizer in a neutral position and then blocked in place with the solid balsa fill in pieces as shown. Both stabilizer and rudder are removable as a single unit.

COLOR SCHEME

The ship was covered with nylon and then given three coats of clear butyrate dope, followed by two coats of colored butyrate. Color scheme may be any combination of dark and light colors. I used rust brown for the body and stab, and

(Continued on page 38)

CESSNA 210 "SOARING GLIDER" NEW!



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Here's a giant size (160 sq. in. wing area) glider that really performs like a dream! The complete pre-fab kit comes with all die cut parts and silkspan covering material.

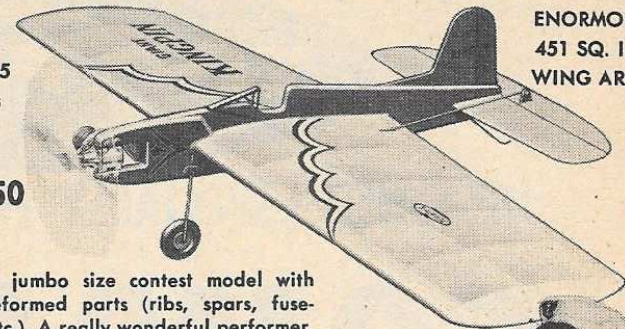
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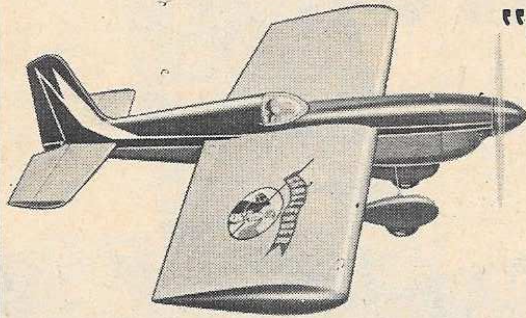
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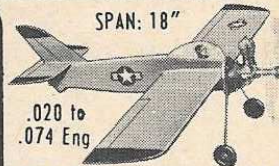


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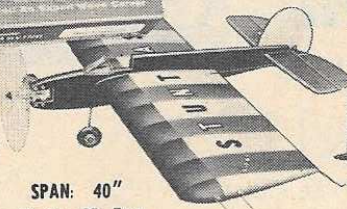
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SPAN: 18"
.020 to .074 Eng.

CESSNA "180" \$1

Arado . . . For R/C

(Continued from page 36)

cream for the wing and rudder. The swastikas were black as well as the crosses. **RADIO INSTALLATION**

Shown is a typical installation for an 8 channel receiver, any type receiver may be used. Shift the units back and forth to change the C.G. Motor control servo will be placed on side best suited for the particular throttle and motor used.

In closing, I would like to express my thanks to Dee Harwell of Parma, Ohio for help in the preliminary testing of the model. At his suggestion, the down neutralizing wire for the elevator was cut so that a completely trimmable down is had. This proved to a very valuable asset in trimming the ship. Also many of his excellent suggestions on construction were used in the building of the Arado. Because of the fact I fly nervous proportional at all times, I found it a great relief to have had an outstanding pilot like Dee Harwell at the controls of the ship in the initial test, as well as the final.