

The Heath Super Parasol was designed, built, and first flown by Edward Bayard Heath in 1925. Ed Heath was born in Brooklyn, New York in 1888 and grew up in Amsterdam, a town 25 miles northwest of Albany, New York. Heath's interest in aviation started at an early age. His first successful aircraft, a Bleriot type monoplane was flown in 1909 on a flight of 40 seconds duration. This aircraft was severely damaged less than a year later, when in spite of Heath's small physical size (5' - 130 lbs.), the clearing of a 3' high fence at the end of the field became an impossible task for the fragile monoplane.

Young Heath then went to work for Curtiss in the hope of finding work in the aircraft division. As luck would have it, the only position open to Heath was in the motorcycle department. While employed by Curtiss, Heath acquired a thorough understanding of motorcycle engines and was able to at least study and observe the various Curtiss aircraft designs. This wealth of knowledge would be put to good use in subsequent Heath designs.

Being of a pioneering and creative nature; Heath was not to stay at Curtiss long and after returning to the Amsterdam area for a short time, where he rebuilt his original 1909 monoplane for use in country fair demonstrations;

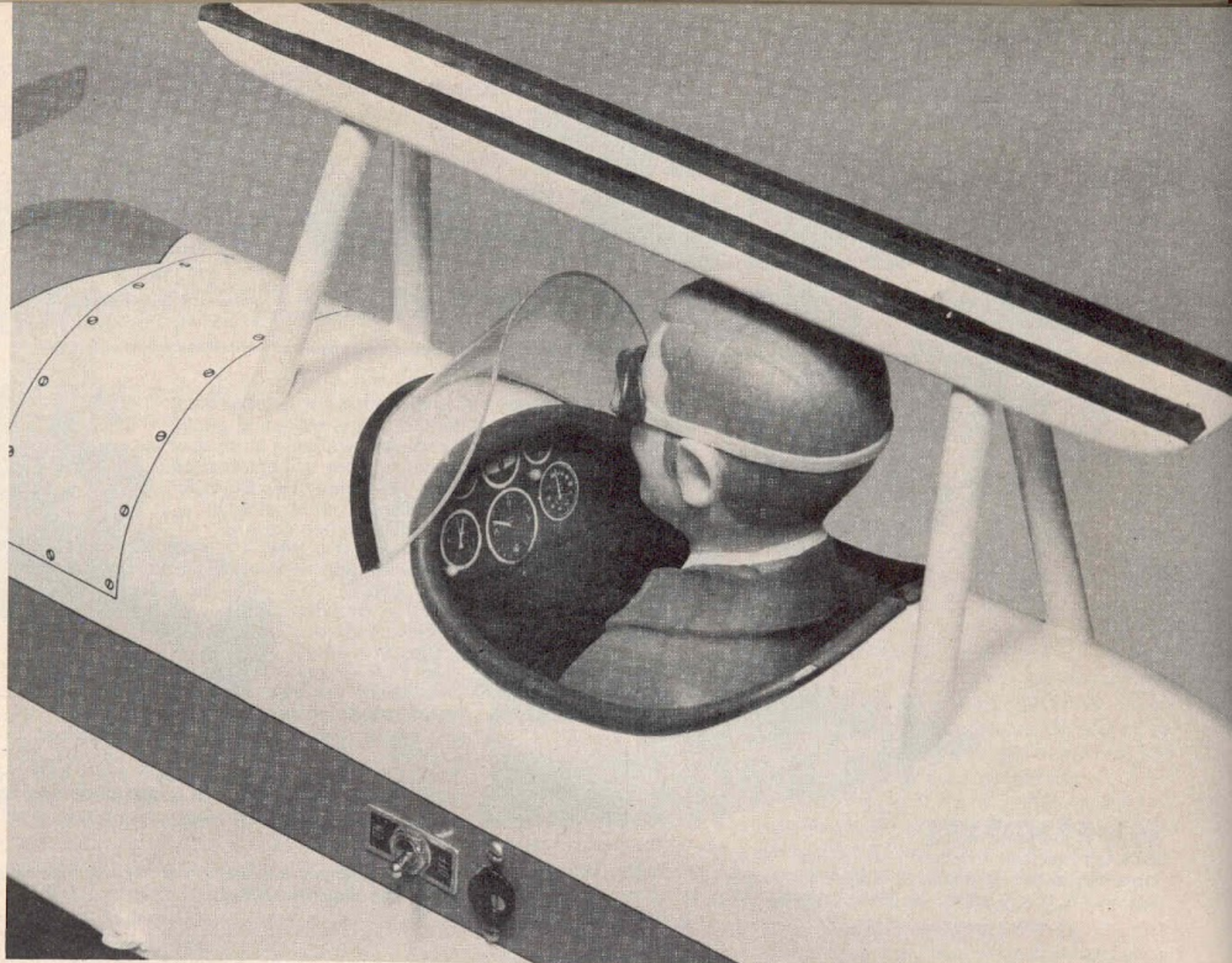
Heath headed for Chicago and formed the E.B. Heath Aerial Vehicle Company. This company, which provided the many sundry items to the infant aviation industry, flourished and it was during World War I that the prophetic Heath decided that what was needed was a low cost aircraft that would be within the average man's means. The resultant design was called the "Feather". It was a single seat biplane with a 20' wing span, weighed 270 lbs., and was powered by a 15 horsepower motorcycle engine. The Feather flew quite well, however, Heath's intentions of manufacturing it were scrapped due to the glut of low cost government surplus aircraft and engines, that were readily available after World War I. Heath instead, turned to providing replacement parts for these surplus aircraft. The company name was changed to the Heath Airplane Company and in 1921, Heath again turned to designing aircraft with a biplane named the "Favorite". This was a three place aircraft powered by a Curtiss OX-5 engine. The "Favorite" was flown by Heath to a third place finish in the "On to St. Louis Race" segment of the 1923 National Air Races. This success inspired Heath to design a shoulder wing monoplane type racer; with the help of an aircraft engineer named Claire Linstead, which was to win the Philadelphia National Air Race. The

A .19 powered, 3 channel Stand-Off Scale/Sport flyer version of the 1928 original by the Heath Aircraft Company.

By Bob Wallace



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prize money from this race was put to use by Heath and Linstead in designing the first parasol model. Powered by a converted Henderson Motorcycle engine of 23 HP, the Parasol proved to be a stable, easy to fly aircraft. After building and testing several Parasol variations, the Heath Aircraft Company began in 1927 to produce the Super Parasol in numbers. The original factory fly away price was \$595.00! In the years that followed, the Super Parasol was offered in kit form with or without engine and propeller, or a complete set of blueprints could be purchased for \$5.00. Also available were kits in progressive groupings, wing ribs for \$12.47 etc., for the installment or "pay as you build" buyers. The Henderson motorcycle engine, an inline, upright, four cylinder, air cooled type, was modified by Heath and redesignated the Heath B-4 engine. It was available with propeller for \$285.00 or the "do it yourself" conversion kit could be purchased for \$65.00.

Between 1927 and 1930 many plans and kits were sold. The purchaser needed only basic hand tools to assemble his super Parasol. However, as is usually the case with home built projects, the quality of construction ranged from crude, poorly assembled models to modified "show piece type" specimens.

The Super Parasol had a wing span of 25', was 17' long, weighed 260 lbs. empty, and could carry a useful load of 300 lbs. The top speed was 70 mph, landing speed was a modest 28 mph and the cruising radius was 200 miles on 5 gallons of gas.

Although many Super Parasols were built and flown, virtually no two were built alike. This included the factory built Super Parasols, which were continually being improved and modified.

The Parasol design was also developed in a mid and low wing configuration. It was in the low wing version that Ed Heath was to be tragically killed, when the wing failed on a test flight in 1931.

The death of Edward Heath prompted the sale of the company several months later to a group of Chicago investors, who re-named the firm, The International Aircraft Corporation. In the years that followed, the Heath Super Parasol was offered by International in the conventional and mid wing configurations. The low wing version was never produced. The last Super Parasol was built in 1936, although parts and blueprints remained available up to World War II. The company which had by then become highly diversified, flourished and grew, particularly in the radio and electronics field. Today as everyone knows, Heath Kit Corporation is a giant in the electronics kit industry.

What first prompted me to consider building a R/C model of the Heath Super



HEATH SUPER PARASOL

Designed By: Bob Wallace

TYPE AIRCRAFT

Stand-Off Scale/Sport

WINGSPAN

52 1/4 Inches

WING CHORD

9 1/2 Inches

TOTAL WING AREA

490 Square Inches

WING LOCATION

Parasol

AIRFOIL

Flat Bottom

WING PLANFORM

Constant Chord

DIHEDRAL, EACH TIP

2 3/8 Inches

OVERALL FUSELAGE LENGTH

34 1/4 Inches

RADIO COMPARTMENT AREA

(L) 5 3/4" x (W) 3 1/8" x (H) 2 7/8"

STABILIZER SPAN

16 Inches

STABILIZER CHORD (incl. elev.)

5 3/4 Inches

STABILIZER AREA

85 Sq. In.

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top of Fuselage

VERTICAL FIN HEIGHT

6 1/8 Inches

VERTICAL FIN WIDTH (incl. rudder)

6 5/8 Inches

REC. ENGINE SIZE

.19 Cu. In.

FUEL TANK SIZE

4 Ounce

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

3

CONTROL FUNCTIONS

Rud., Elev., Throt.

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa & Ply

Wing Balsa, Ply & Spruce

Empennage Balsa

Wt. Ready-To-Fly 50 Oz.

Wing Loading 12.5 Oz/Sq. Ft.



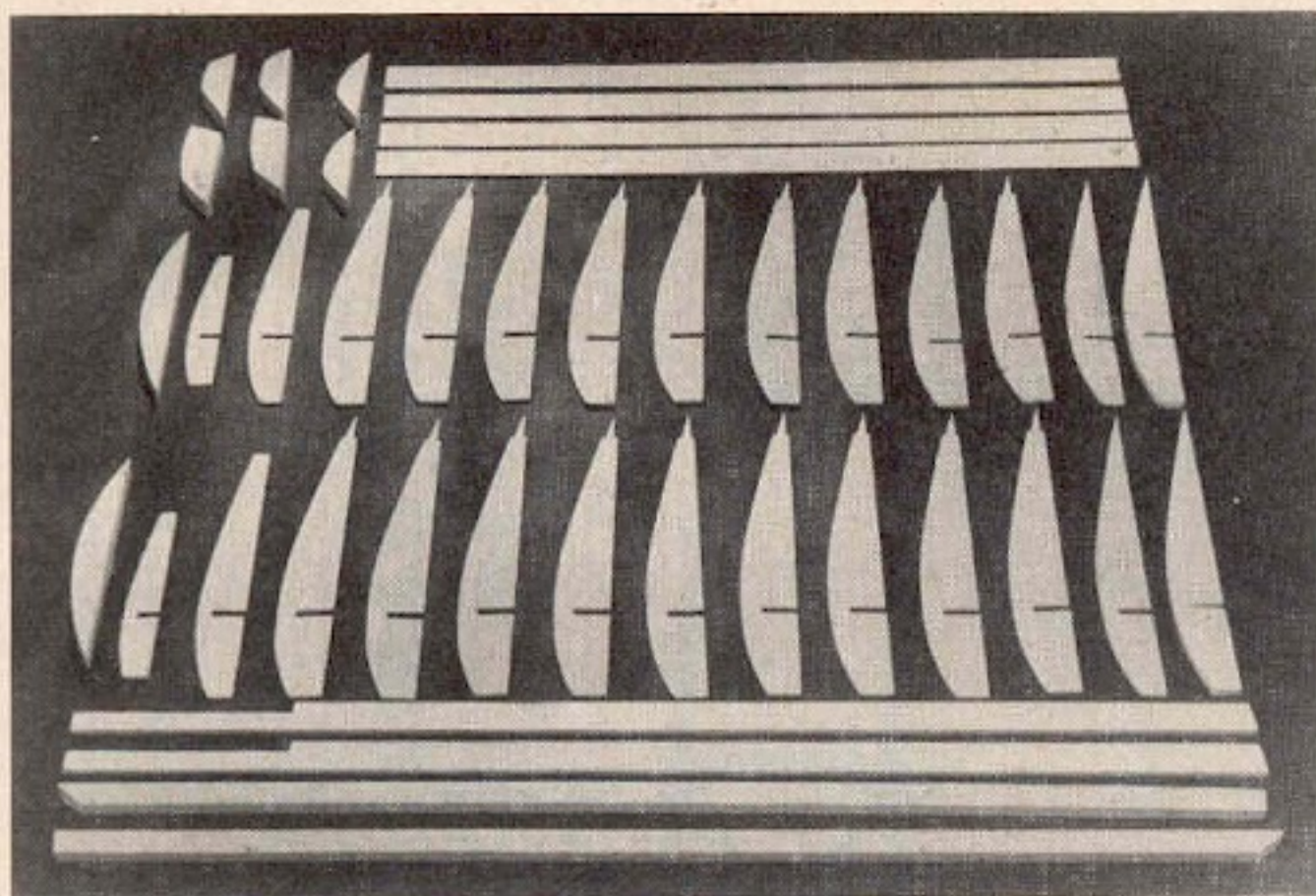
Parasol was a strong interest in home-built aircraft of the 1920-1930 era. The Bradley Air Museum in Windsor Locks, Connecticut has on display, a partially restored Super Parasol. After viewing it, I simply had to build one. The Super Parasol shown in the accompanying plans is intended as a Stand-Off or Sport Scale project. The nose has been lengthened slightly, but the only substantial change is the reduction of the elevator and rudder surfaces for better R/C flight characteristics.

The R/C Super Parasol is both easy to build and fly. If you have a yen to build a "fun to fly" R/C model, with a vintage home-built look, the Super Parasol should be of interest to you. Whether you build it as a Sunday sport flyer or a more detailed contest type model, you won't be disappointed. For the contest type of model, two excellent sources of scale detail information on the Super Parasol are available from the following: The Thomas Studio of Melville, New York, who offer an outstanding historical documentation booklet on the Heath Super Parasol and the Historical Aviation Album, P.O. Box 33, Temple City, California, which has an issue (Volume IV) that covers Ed Heath and his numerous designs.

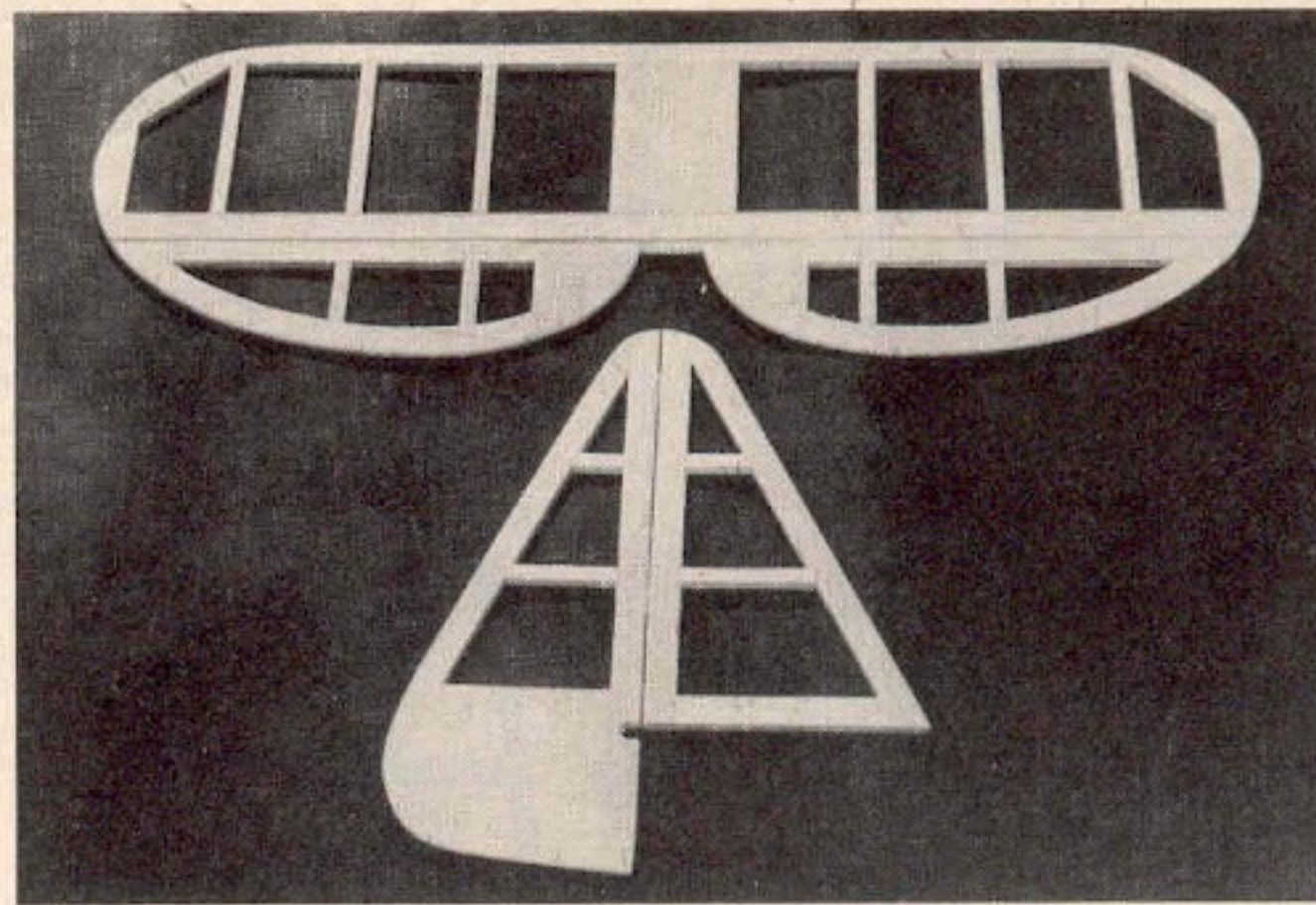
CONSTRUCTION

Wing:

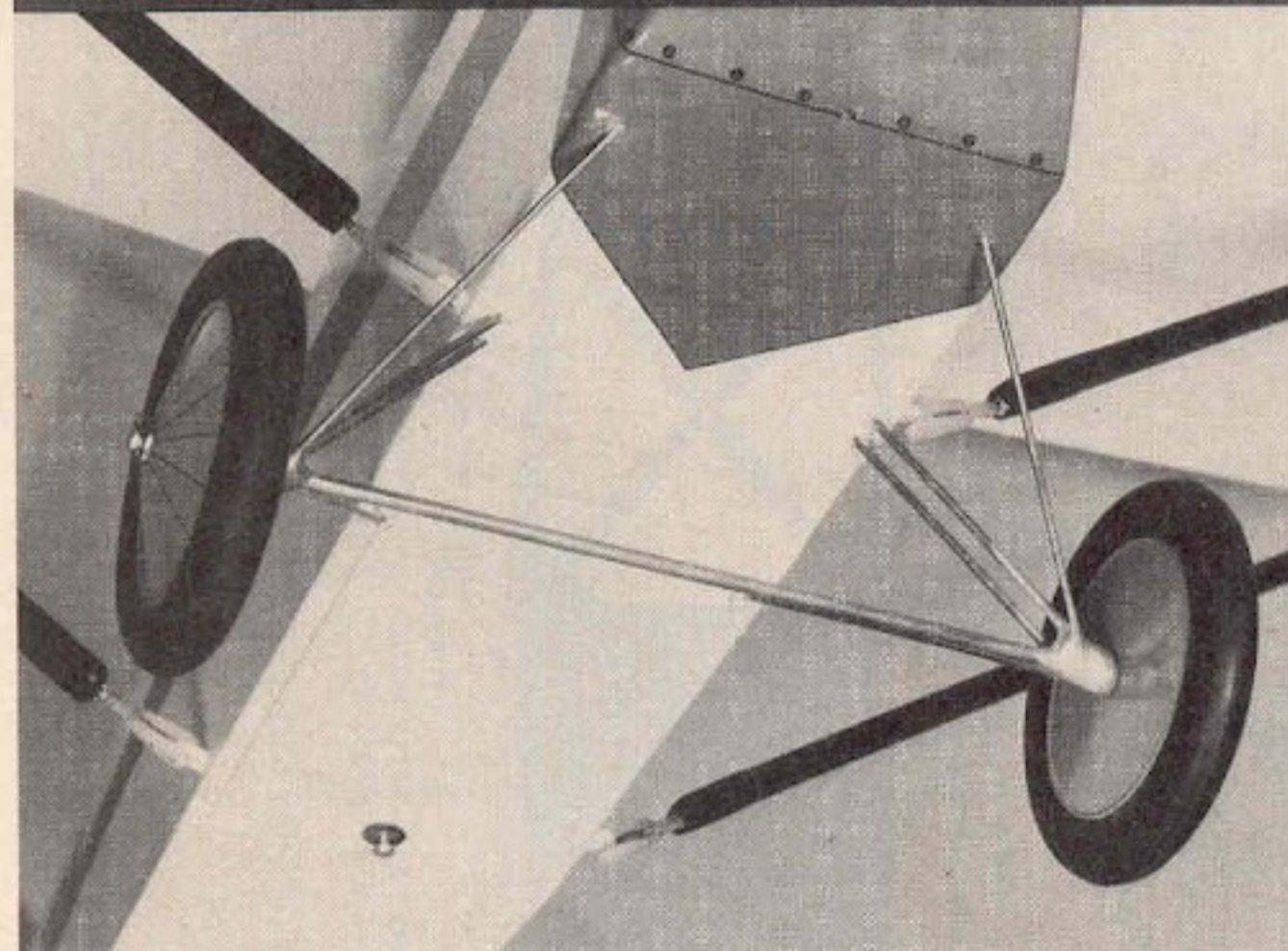
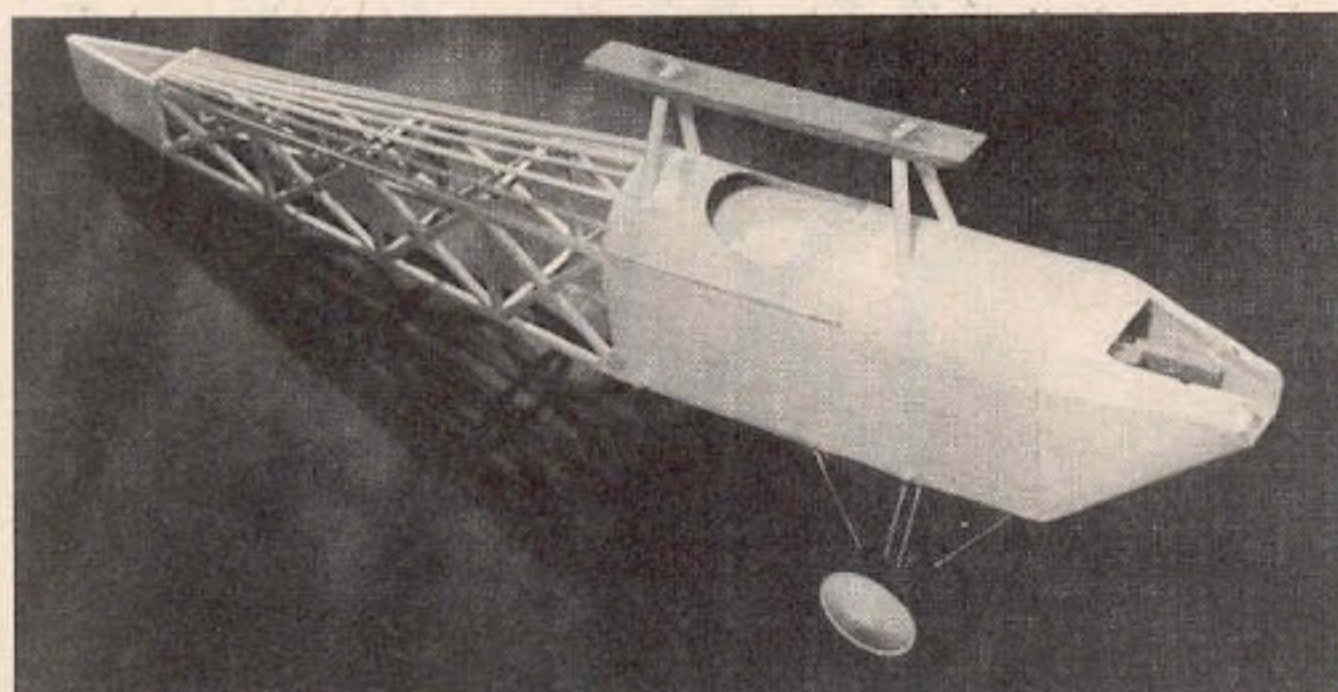
Start by cutting out the ribs, using the outlines shown on the plan. All ribs are 3/32" sheet except the two center ribs; which are made from 1/4" sheet. Stack and pin all the wing ribs according to their respective numbers and sand to a uniform contour. Cut the wing tip pieces (WT1, WT2, WT3, & WT4) from 1/2" sheet. Cut out the 1/8" and 1/16" plywood strut support pieces and the 1/4" x 1" x 1" hardwood wing bolt blocks. Pin the 3/16" x 3/4" main spar in place over the plan (be sure that your building surface is absolutely flat), this spar should be either hard balsa, spruce or pine, and the step down cut from rib W3 to the tip should be made prior to pinning it in place. Pin the bottom trailing edge 1/16" sheet in place. Position several ribs on the pinned down main spar and use them to locate and pin the 3/8" x 3/4" leading edge in place. Pin and glue the bottom 1/16" center section sheeting between the leading edge and main spar, and the trailing edge and main spar. Pin and glue all the W1 and W2 ribs in place. Since the bottom center section sheeting covers the rib locations in this area, use the rib positioning lines which are shown beyond the leading and trailing edges. The 1/4" center rib should be angled 5° to produce the proper dihedral angle. Pin and glue the 1/2" wing tip pieces in place and add the W3 and W4 ribs. Glue the 1/8" plywood strut support plates in place along with the 1/4" triangular stock reinforcement pieces. Glue the 1/4" x 1"



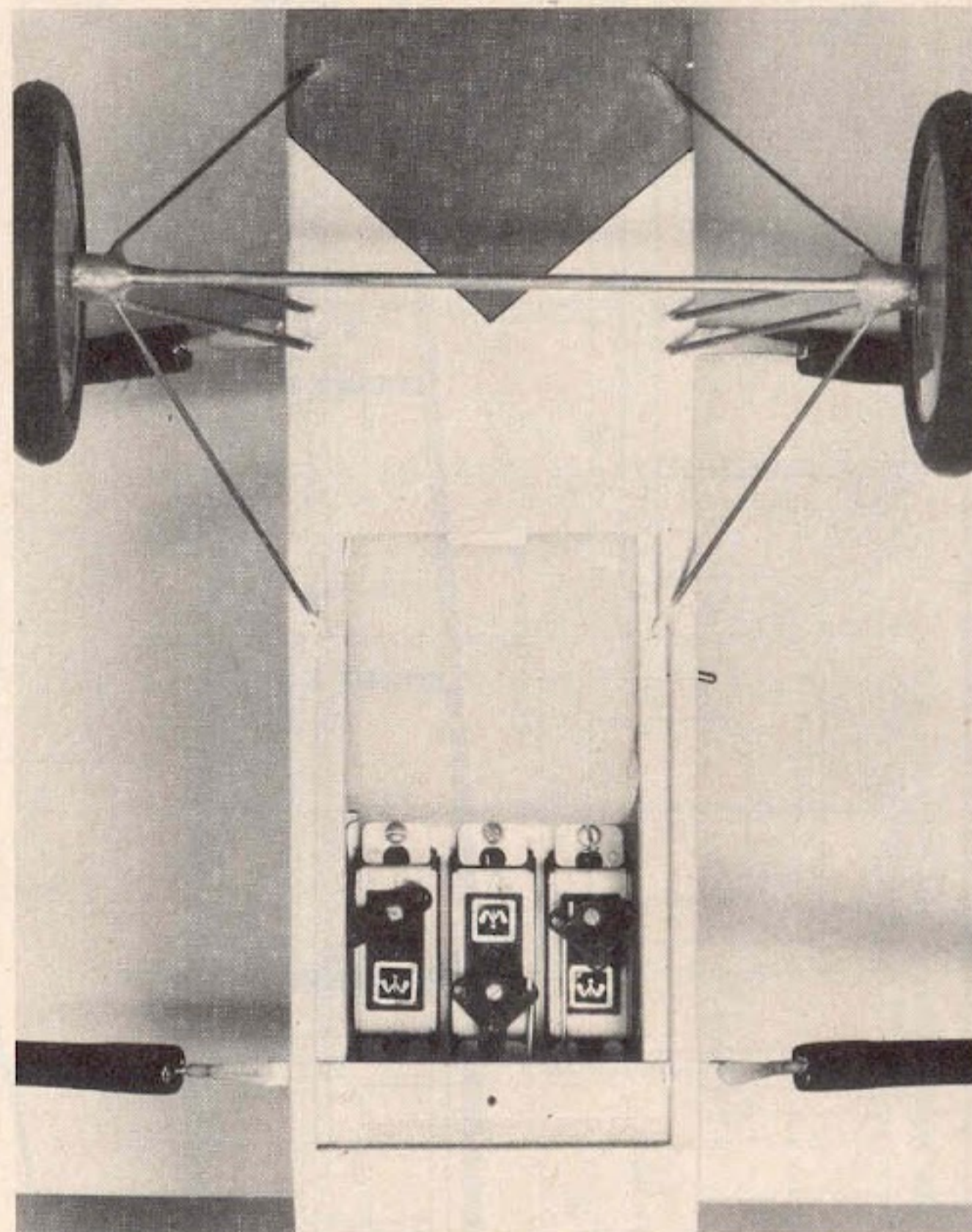
Complete wing kit made up and ready to glue together.



Completed tail feathers sanded and hinges fitted in place.



TOP: Fuselage sanded and ready to be covered. ABOVE: Note excellent soldering done on landing gear. Simulated cowl screws inked on with draftman's pen.



View of radio compartment hatch removed. Very neat installation.

x 1" hardwood wing bolt blocks in place. Be sure that you have bevelled the bottom of these blocks as shown before gluing them in place. When dry, remove the pins from the trailing edge sheet and add the top 1/16" trailing edge sheet. Add the center section top 1/16" sheeting over the W1 ribs. Let assembly dry. Repeat construction sequence for the opposite wing panel, except for the wing bolt blocks which were installed in the first wing panel. These blocks should slide into the notches cut in the 1/2" center rib of the wing panel that you are now building. When both wing panels are dry, they may be removed from the building board and joined together at the

proper dihedral angle. Be sure that no twist or warp is built in when you glue the two wing halves together, by pinning them down at the center on your building board, and blocking up the tips to the indicated angle. Glue the 1/16" plywood strut attachment plates into the 1/8" plywood plates. Shape and sand the leading edge and wing tips to the proper contour. Sand the center section sheeting to a smooth ridge free surface and apply a 3" wide strip of fiberglass cloth to the center section joint with polyester resin or thinned down epoxy. An easy method to apply the fiberglass cloth and resin is as follows: Cut the cloth strip about 20" long. Apply the

resin liberally to the center section area to be covered, with a brush. There is no need to be fussy in applying the resin. Lay the cloth onto the resin and wrap it around the leading edge. The two ends should overhang the trailing edge. Gently smooth out all bubbles and wrinkles and then blot off all excess resin with toilet tissue or paper towel. Don't worry - - it won't stick to the cloth or pull the cloth up! Let the resin cure and harden. Trim off the excess cloth which extended beyond the trailing edge and lightly sand off any high spots and feather the cloth edges. The wing can now be fine sanded in preparation for

text to page 144

SUPER PARASOL

from page 35/32

covering and set aside.

Wing Struts:

The wing struts are made from 1/4" x 1/2" x 12" spruce. The end attachment fittings are constructed similar to a control pushrod; with a "Z" bend at one end and a threaded nylon clevis for adjustment on the other. Do not omit these wing struts as they are functional.

Tail Surfaces:

The tail surfaces are constructed directly over the plan, which is self explanatory. When dry, remove the respective surfaces and sand smooth and round off all exposed edges and movable surfaces as shown on the plan, and cut the hinge slots and fit the hinges in place, but do not glue, as it is much easier to permanently install the hinges — after the surfaces have been covered. Finish sand the tail surfaces in preparation for covering and set them aside.

Fuselage:

The two main fuselage sides are constructed directly over the plan, using the shaded segment of the plan side view. The top 3/16" square stringer runs the entire length of the fuselage. The sides are made entirely from 3/16"

square and sheet stock. After you have built the two sides, glue the 1/16" plywood fuselage doublers and 3/32" sheet pieces in aft end of the fuselage sides. The 3/32" pieces should be flush to the outside of each fuselage side. Be sure that you don't inadvertently build two left or right sides! Cut out all the fuselage formers. Drill the engine mount, fuel line and 1/16" landing gear mounting holes in F1. Install blind nuts on back side of F1 to accept the engine mount. Glue formers F1 and F2 in place, making sure that the sides and formers are square. Cut the 3/16" square fuselage cross pieces to size and glue them in place, using the fuselage top plan view (shaded portion) as a guide, to insure that the fuselage is symmetrical. Bevel the aft ends of the fuselage sides as shown, and draw them together and glue. Install formers FT1, FT2, FT3, FT4, FT5 and the 1/8" x 1/4" top cross piece (in front of stabilizer). The landing gear should now be bent to shape as indicated, using the designated music wire sizes. Wrap and solder the axle joints. Mount the landing gear onto the 1/4" plywood landing gear plate with heavy weight fishing line or wrapping wire, and epoxy. Fit the landing gear assembly into the fuselage as shown. It will be necessary to notch the fuselage sides for the main landing gear legs, in order for the plywood plate to fit flush with the fuselage sides on the bottom. Glue the landing gear in place. Wrap and epoxy the 1/16" music wire front braces to F1 as shown. Glue the 3/16" x 1/4" hardwood (bottom hatch and rear landing gear brace) supports in place. Drill the holes in these supports to accept the rear landing gear braces and epoxy the braces in place. The fuselage wing support strut unit is now assembled, using the detail view on the plan as a guide. The 1/4" plywood wing saddle plate should be vee channeled slightly to accommodate the dihedral angle of the wing. Place this plate on the bottom of the wing and drill two #7 holes through the plywood plate and into the hardwood blocks which were built into the wing. Be careful not to drill through the top of the wing! Tap the holes in the wing with a 1/4-20 tap. Drill out the holes in the plywood plate to accept the 1/4-20 nylon bolts. Drill the holes for the arrow shaft uprights in the 1/4" plywood plate and the fuselage hardwood blocks, at the proper angles. Strive for a good tight fit. It is preferable to waste a couple of pieces of block material in order to get the drill angle correct, rather than reaming the holes to large and filling the excess with epoxy. Glue the strut assembly into the fuselage, make certain that the strut assembly is aligned correctly so that the wing, when attached, is at 0 degrees incidence and square to the fuselage. A little extra time spent on this step is time well spent.

SUPER PARASOL

from page 145/32

Install the 1/2" and 1/4" fuselage top sheeting. Glue the 3/16" sheet cockpit floor in place. Install the 1/32" plywood cockpit sheeting. Glue the 1/4" plywood hatch hold-down and strut strap block in place, in the rear of the radio compartment. Mount the aluminum wing strut straps. Glue the 1/8" sheet fuselage bottom sheeting in place cross grained. Make the access hatch from 1/8" hard sheet and fit it in place. Drill the hatch hold-down hole through the hatch and plywood plate. The hole in the plywood plate should be bored out to accept a 4-40 blind nut. Glue the 1/8" square fuselage stringers in place. Install your engine and engine mount on former F1. Be sure the engine's exhaust, carb, and fuel nipple are covered to keep dirt and dust out. Glue the cowl blocks in place around the engine. When dry, shape the cowl and fuselage to the proper contour and sand smooth. Install the elevator and rudder pushrods, and the throttle control rod or cable. Fine sand the fuselage in preparation for covering.

Radio Installation:

Westport International's Variant radio equipment is shown on the plans and was used in my Super Parasol. However, the radio compartment is sufficient in size to accommodate almost all sizes of radio equipment including many of the older large size systems. The best radio installation advise to be given is to simply follow the manufacturer's instructions for your radio system. After all, who knows your radio system better?

Finish:

The Super Parasol shown in this article, being built for sport flying, was finished with silkspun Coverite and K & B Super Poxy with a final coat of K & B Super Poxy satin finish being applied. If you are building your Parasol for sport flying, then the heat shrinkable films are a good finishing media to consider. If Stand-Off Scale or a model with more detail is your goal, then you will undoubtedly want to go the fabric and paint route. The Super Parasol is one Scale type that can "live" with the extra weight associated with a realistic painted finish, because of its generous wing area.

Flying:

The Super Parasol, when balanced within the indicated C.G. limits, is an easy to fly, stable aircraft; very much like a trainer. With its large wing area, it will tend to "float" on landing, so allow for this with a longer or shallower landing approach. I sincerely hope that you will enjoy not only flying your Parasol, but building it as well. □