

WICKED WANDA



The best laid plans of mice and men...

We wanted a small aerobatic airplane that would also be gentle and easy to fly. It must also be strong, quick and easy to build, and have a fair degree of eye appeal. It would be powered with a .10 size engine and use a standard size 4 channel radio.

The above criteria seemed reasonable and should fill our desires for a small machine to make believe that we are a Don Lowe, or a Dave Brown, or a Tony Bonetti, on an economical scale. Well, it was no big thing to draw lines on paper, nor was it much of a project to build this number. Then came time to fly — wow! It was aerobatic, oh boy, was it aerobatic! Gentle and easy to fly, **no way**, it was fast, sudden, even vicious.

After a few flights by several talented fliers who had their hands full, this little bird was christened Wicked Wanda. It didn't take too much smarts to figure out what was happening, the wing was the culprit. The quick build approach had prompted a symmetrical airfoil, no leading edge sheeting, and a small radius leading edge. Back to the drawing board!

This time we did it correctly. A Clark Y type airfoil, a bit fat, with sheeted leading edges and a more reasonable LE radius. With a re-shaped wing saddle in the fuselage, we were ready to have another go at it. This time it performed the way we

A .10-.15 sport plane with aerobatic capabilities. Or, how we made a lady out of Wicked Wanda.

wanted it to in the first place. So we have to feed in a bit of down elevator for inverted flight, big deal, now it's gentle and predictable.

After passing Wicked Wanda around to several friends, we couldn't resist the urge to replace the Hobby Shack Fuji .099 engine with a Fox Schnuerle .15 BB. The engine change made the take-off and climb a bit quicker and made it pull through maneuvers faster while retaining its low speed characteristics. Some of the guys preferred the .15 and some of us were happy with the .10, it is sort of a personal taste thing as it flies beautifully with either size engine.

By Dick Tichenor

Then there was the time that Randy called and asked if he could put his engine in WW. He installed his Cox .15 Conquest and the results weren't exactly what we had in mind for WW.

For those who aren't familiar with the Conquest, it is a high performance engine developed by Cox a couple of years ago with Quarter Midget racing in mind. Now WW had a sky rocket climb and streaked around like greased lightning. Forget it, that isn't what we wanted but it did prove that WW would hold together under all the G's imposed upon her with that hot engine.

A Circus Hobbies JR Spectra Series 4 channel radio was used in this project. This was the lowest priced radio system in the Circus Hobbies line (when we started the project) with their standard size servos, receiver, and battery pack. We selected this radio to make sure that WW would perform properly with a sport model radio most often flown in larger aircraft. The radio has rendered excellent service over the months of use in WW and everyone involved in this project has been happy with the smooth gimbals and nice handling balance of the transmitter.

So much for the taming of the shrew, let's build one.

General:

We suggest that a complete set of parts be cut out for each major component before starting assembly as this makes the project go together much faster. We have become addicted

WICKED WANDA

Designed By: Dick Tichenor

TYPE AIRCRAFT

.09-.15 Sport

WINGSPAN

44 Inches

WING CHORD

7 $\frac{1}{2}$ Inches

TOTAL WING AREA

335 Sq. In.

WING LOCATION

Low Wing

AIRFOIL

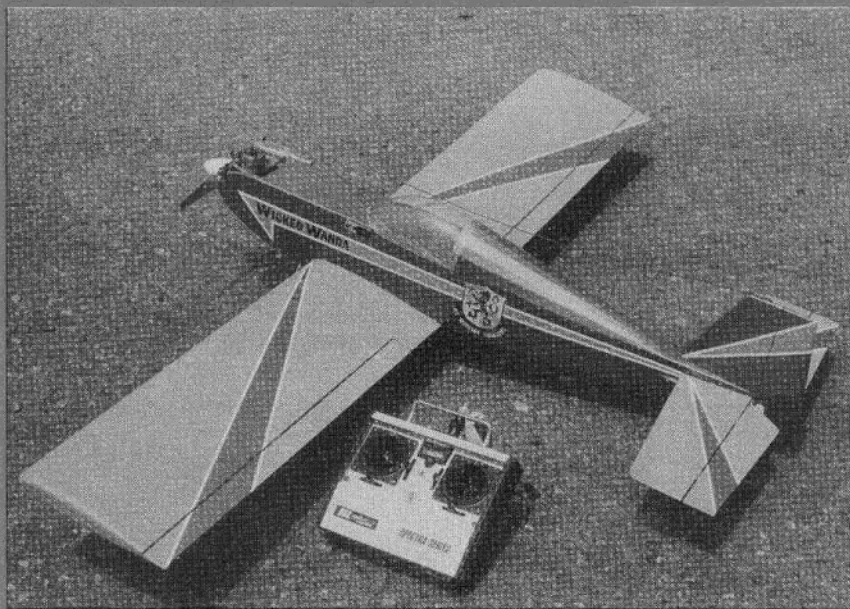
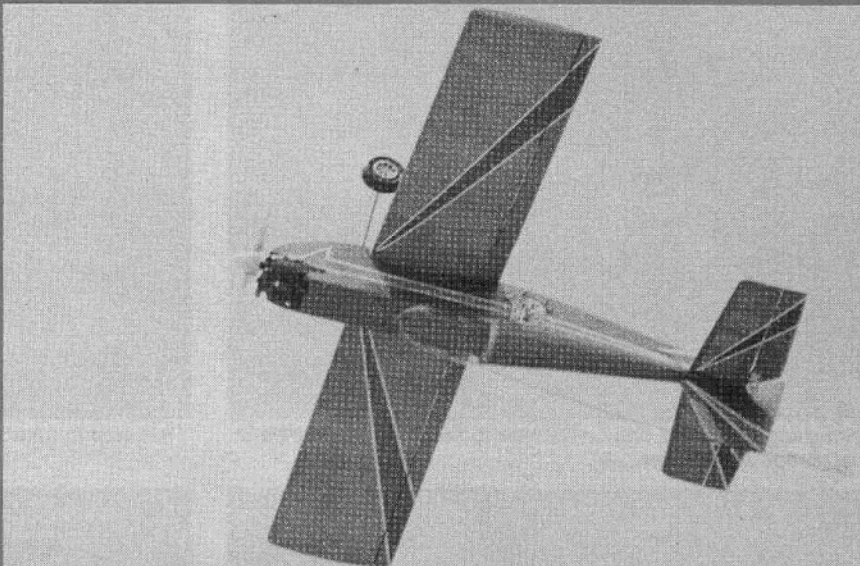
Clark Y Type

WING PLANFORM

Constant Chord

DIHEDRAL, EACH TIP

1 $\frac{1}{2}$ Inches



REC. ENGINE SIZE

.09-.15

FUEL TANK SIZE

2-4 Oz.

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

4

CONTROL FUNCTIONS

Rud., Elev., Throt., Ail.

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa & Ply

Wing Balsa & Ply

Empennage Balsa

Wt. Ready To Fly 46.5 Oz.

w/Cox Conquest eng. installed

Wing Loading 20 Oz./Sq. Ft.

O.A. FUSELAGE LENGTH

31 $\frac{1}{4}$ Inches

RADIO COMPARTMENT SIZE

(L)10 $\frac{1}{2}$ " x (W)2 $\frac{1}{4}$ " x (H)3"

STABILIZER SPAN

16 Inches

STABILIZER CHORD (incl. elev.)

4 $\frac{1}{2}$ " (Avg.)

STABILIZER AREA

72 Sq. In.

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

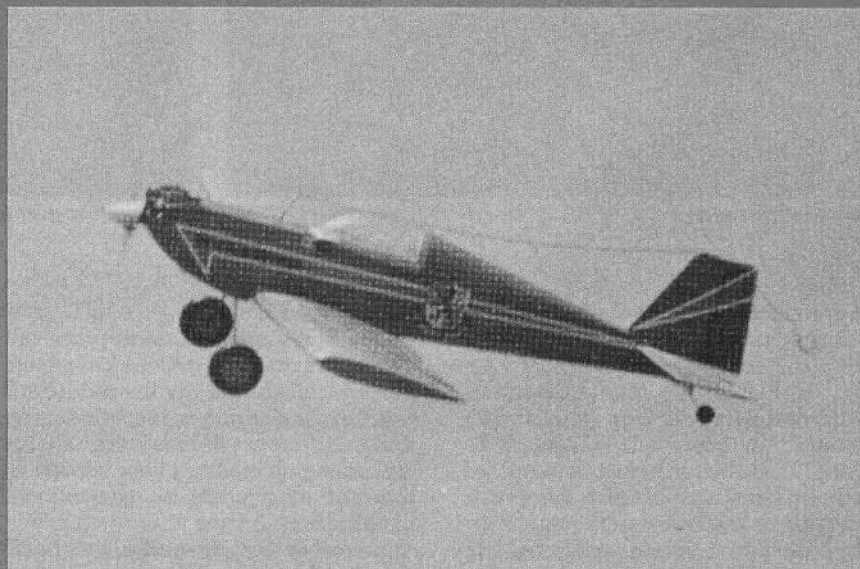
Mid-Fuselage

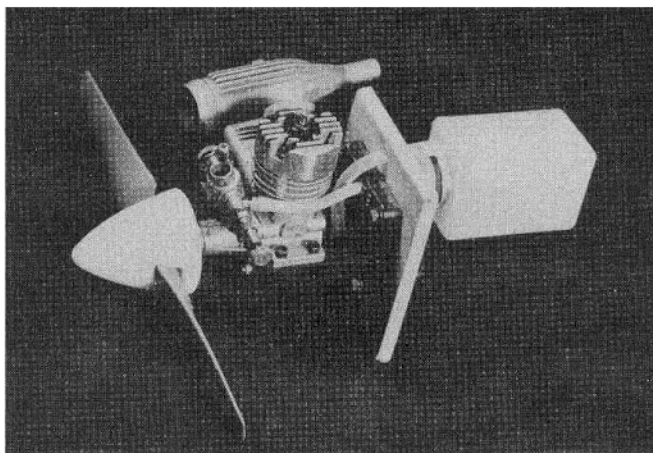
VERTICAL FIN HEIGHT

5 Inches

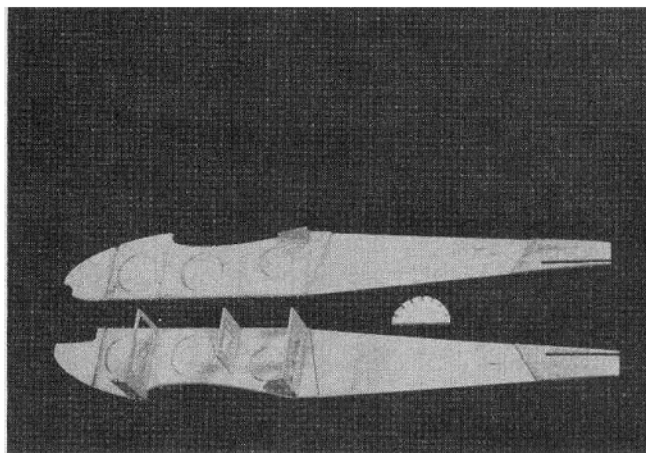
VERTICAL FIN WIDTH (incl. rudder)

4 $\frac{1}{2}$ " (Avg.)

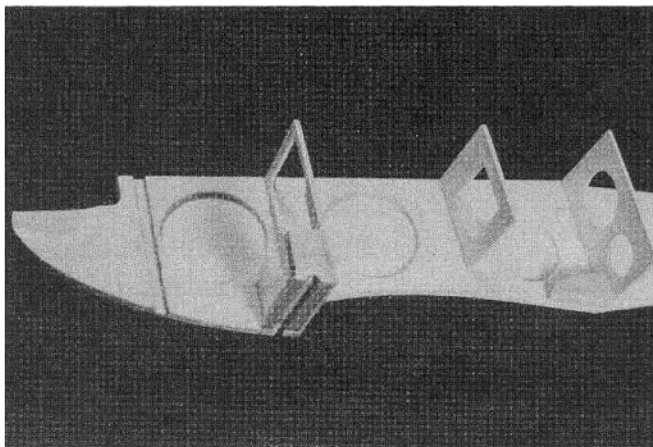




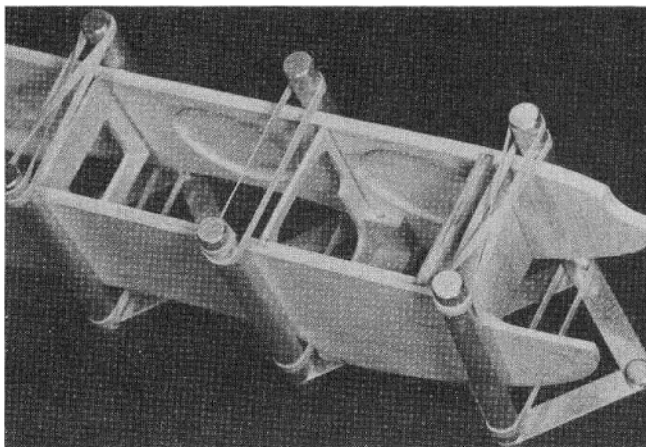
Fitting engine, mount, and fuel system to firewall is easier before installation in fuselage.



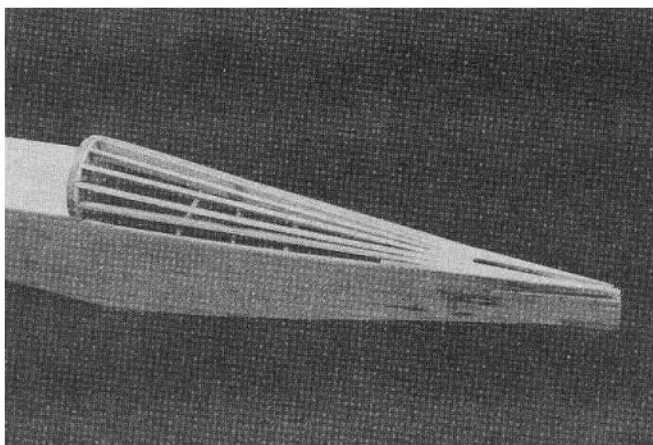
First step in fuselage assembly.



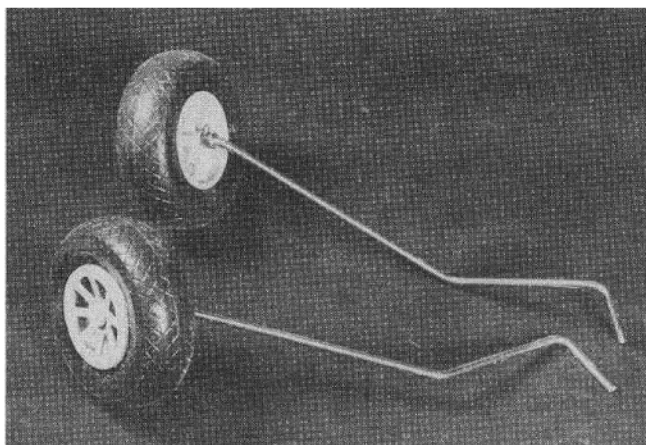
Close-up view of side panel assembly.



Fuselage was assembled in a Fourmost jig.



Turtledeck details.



The landing gear is about as simple as we can get it.

to cyanoacrylate instant glues, in fact this project was almost entirely built with the CA's and we used all the brands, Hot Stuff, Jet, Loctite, and Zap, both thick and thin. Our reference in this article will simply be CA. There is nothing unusual or tricky about the construction of WW, we tried to keep it as simple and easy as possible. Consequently, these instructions will only highlight the unique or more important steps.

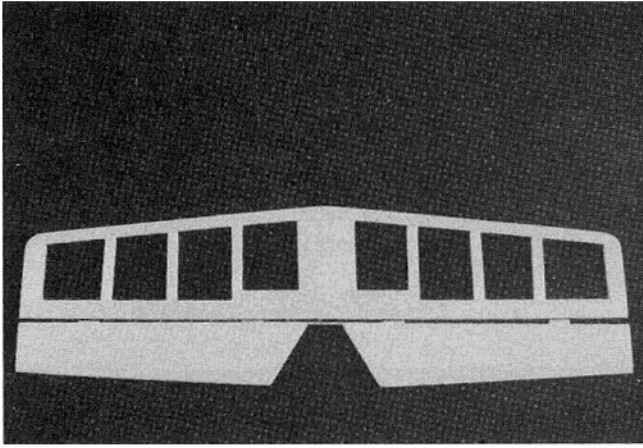
Fuselage:

Our first step after cutting out the detail parts was to make a sub assembly of the 1/4 ply firewall (F-1), engine mount with engine, blind nuts, and fuel line provisions to tank. The Hayes engine mount adds a surprising amount of rigidity to the engine installation.

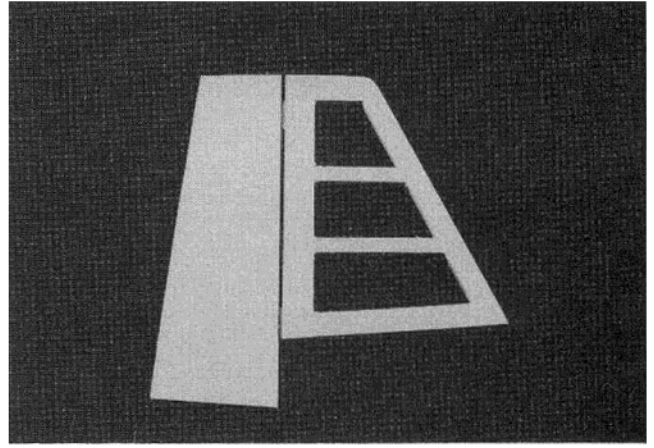
Assemble a right and a left hand side fuselage panel as shown in the photos. Then the two side panels are

assembled. We used the Fourmost fuselage jig but since the sides of the forward half of the fuselage are parallel, it is easy enough to assemble on your bench top.

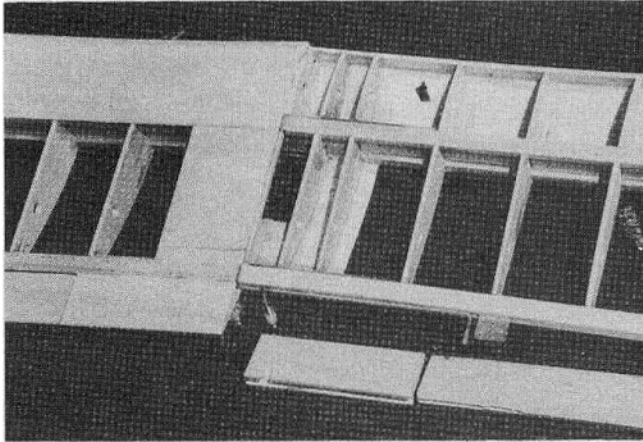
The rear fuselage has no unusual feature as can be noted in the photo. Some of us prefer to make our preliminary radio installation at this point, however, it is a builder's choice. The landing gear struts can be bent with a couple of heavy pliers, or in a



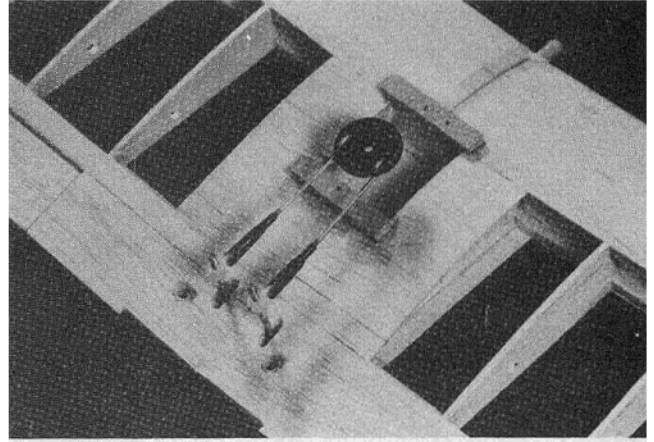
Conventional structure of horizontal stab.



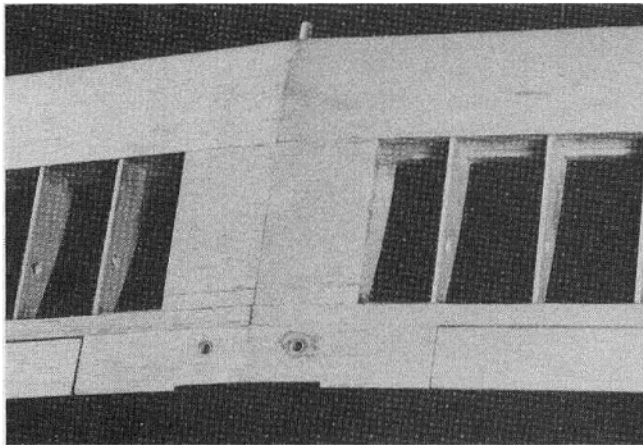
Fin and rudder are quick to build.



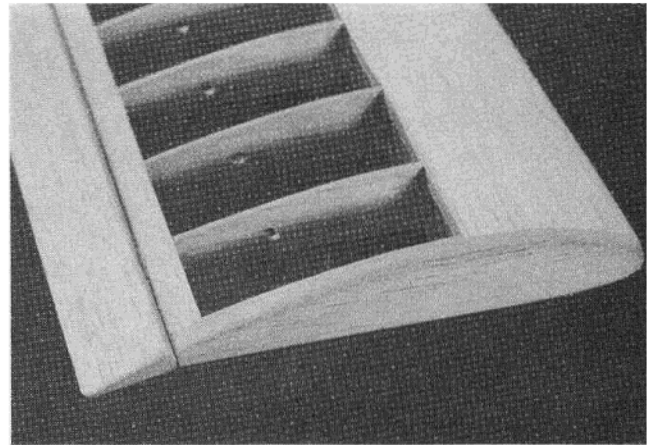
This photo shows several steps of wing assembly.



Construction details of wing center section.



Bottom view of wing center section.



Wing tip details.

vise, or with a wire bender if you have one. Any of the lightweight wheels will be fine, we used Robert's just because we liked the spoked hub covers.

Tail Surfaces:

There is nothing unusual with the tail surfaces, just keep them flat and straight.

Wing:

There are only a couple of precautions to be taken in building the

wing. The wing panels are assembled flat on the plans using 1/16 scrap to block up the lower spars to provide for the LE sheeting. The center section ribs are glued in place in the initial assembly and then the clearance is cut for the dihedral splice plates after the top sheeting is installed.

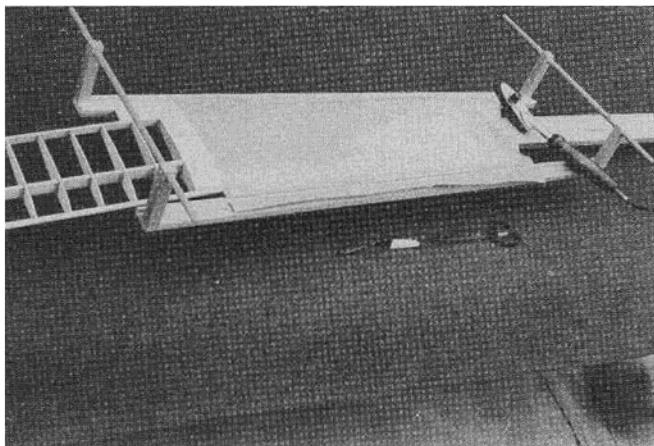
A strip of Goldberg 3" wide fiberglass was wrapped around the center section joint and adhered with CA. We spread the CA with a

forefinger and managed not to stick said finger to wing. We won't mention sticking fingers together.

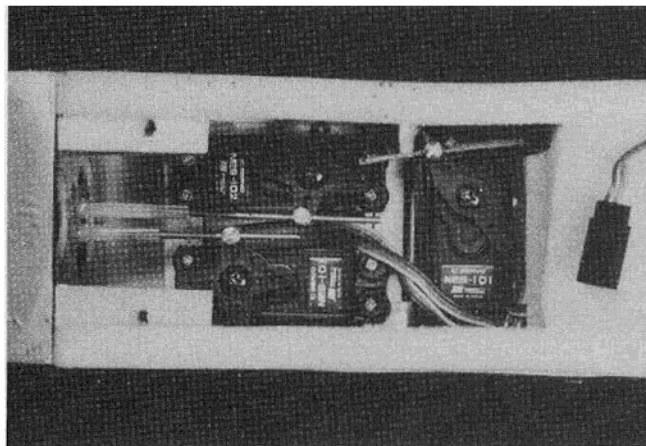
Covering:

Sig's iron-on Polykote was used for covering WW. Polykote is a medium weight, adhesive coated, heat shrinkable plastic film and is applied with fairly low heat. We were quite pleased with its application for both covering and trim.

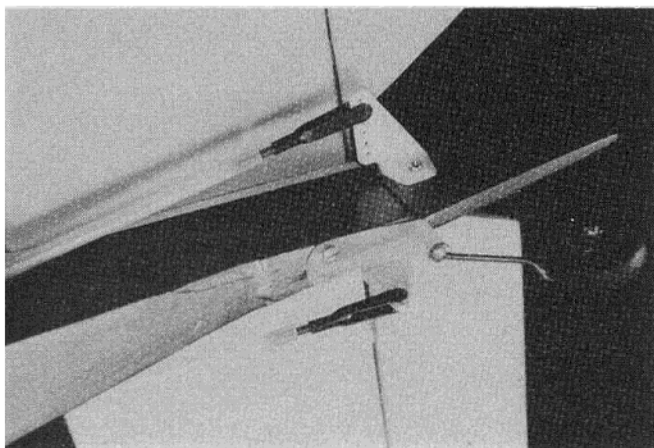
As an assist in covering we used the



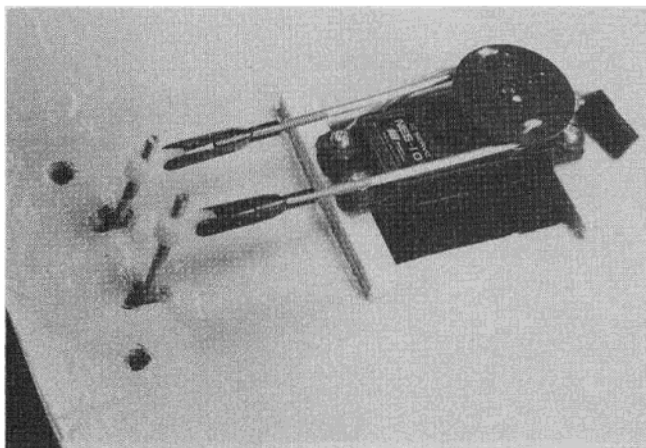
The Eldon J. Lind's Extra Hands covering tool was most helpful with the covering chores.



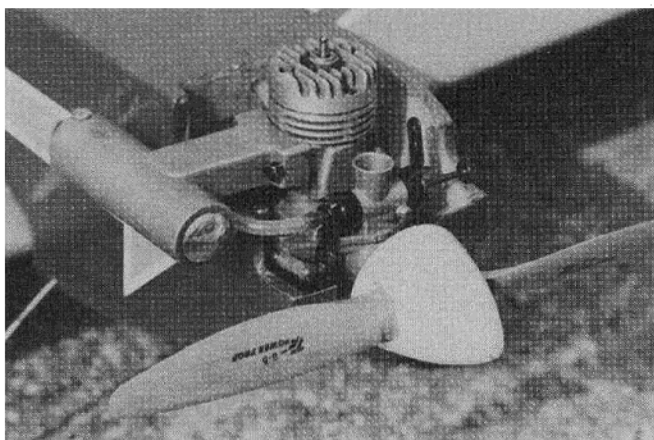
The JR servos make a nice installation. Pushrod connectors are great for small models.



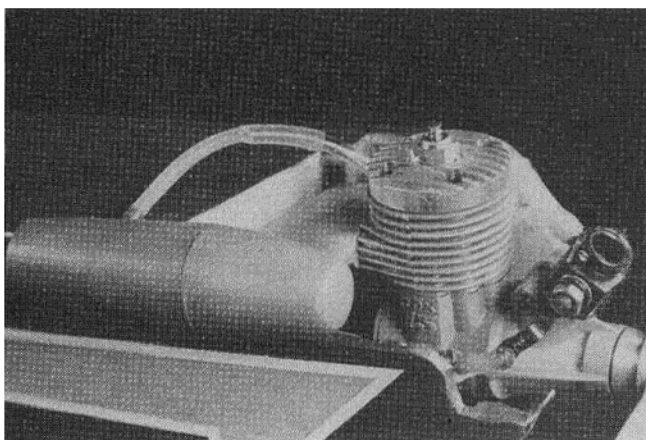
Tail control arrangement.



Aileron control linkage. Note off-center holes used for differential throw.



Fox .15 Schnuerle makes Wicked Wanda a lively lass.



Cox Conquest .15 provided more than ample power.

Eldon J. Lind Company Extra Hands covering tool which gave us a suprise. Teaching an old dog new tricks ain't easy and we have our old techniques so the reaction was mainly, who needs another gadget. This tool does an excellent job of holding the film snugly in place so that the edges can be tacked down without accumulating a bunch of wrinkles and it also eliminates a lot of fumbling.

The canopy was cut from a Sig

CS-012 12" butyrate canopy. There is nothing sacred about the canopy shape, use whatever strikes your fancy. Someone might even elect to omit the turtle deck and stick on a bubble canopy or maybe just go with a plain flat top, your choice.

Finis:

After many hours of flying and many control throw adjustments (none of which were critical), the final set-up when WW was returned by

friend Randy Wisley, with his Cox Conquest installed, is: ailerons 5/16" up and 3/16" down, elevators 1/2" up and 1/2" down, and rudder 3/4" left and right. This works fine for us but some others might like to reduce the travel a bit, do what feels the best for you.

Wicked Wanda has been a real joy for both us and our friends. Don't let the name scare you, she's as gentle as a lamb. □