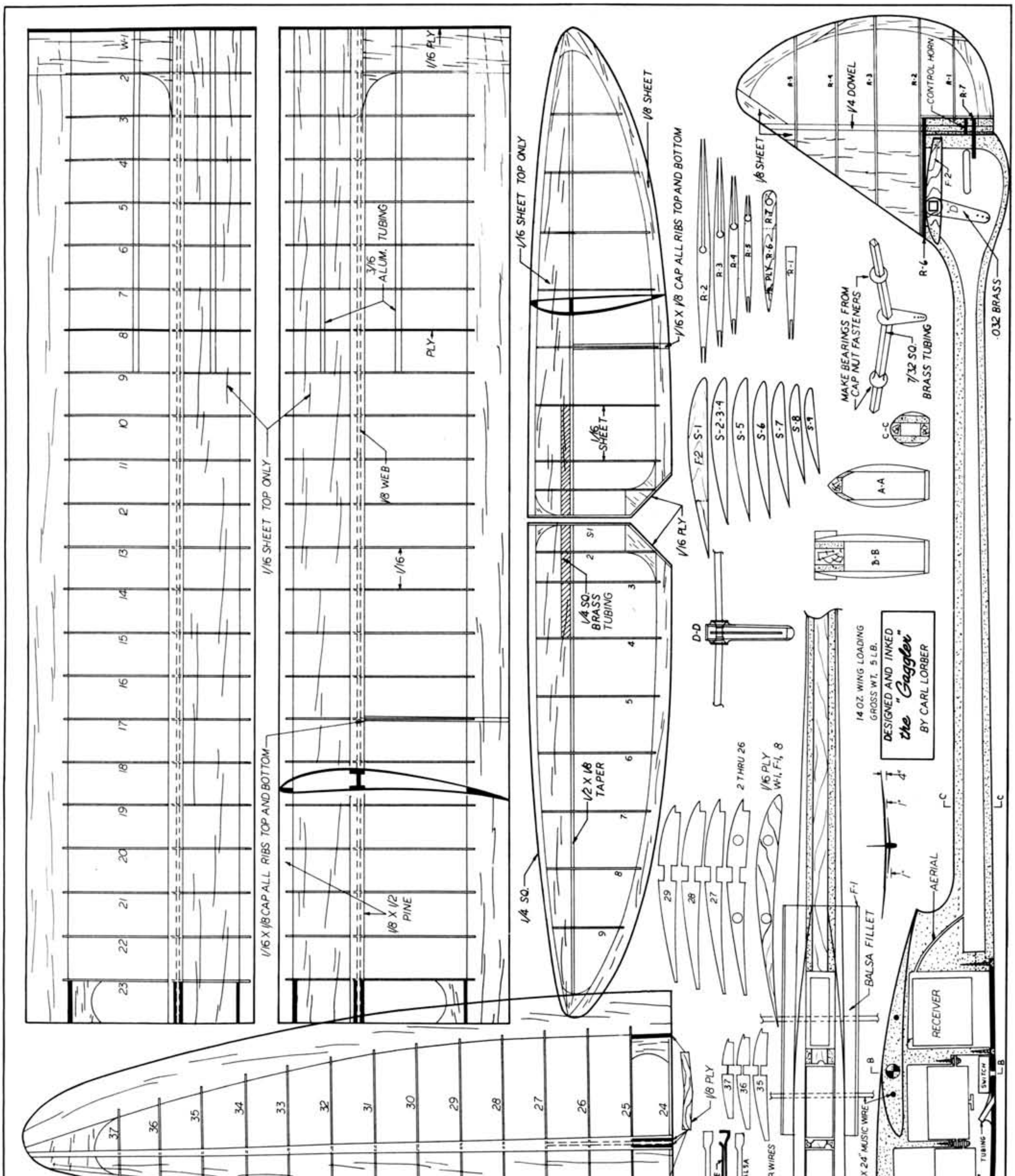
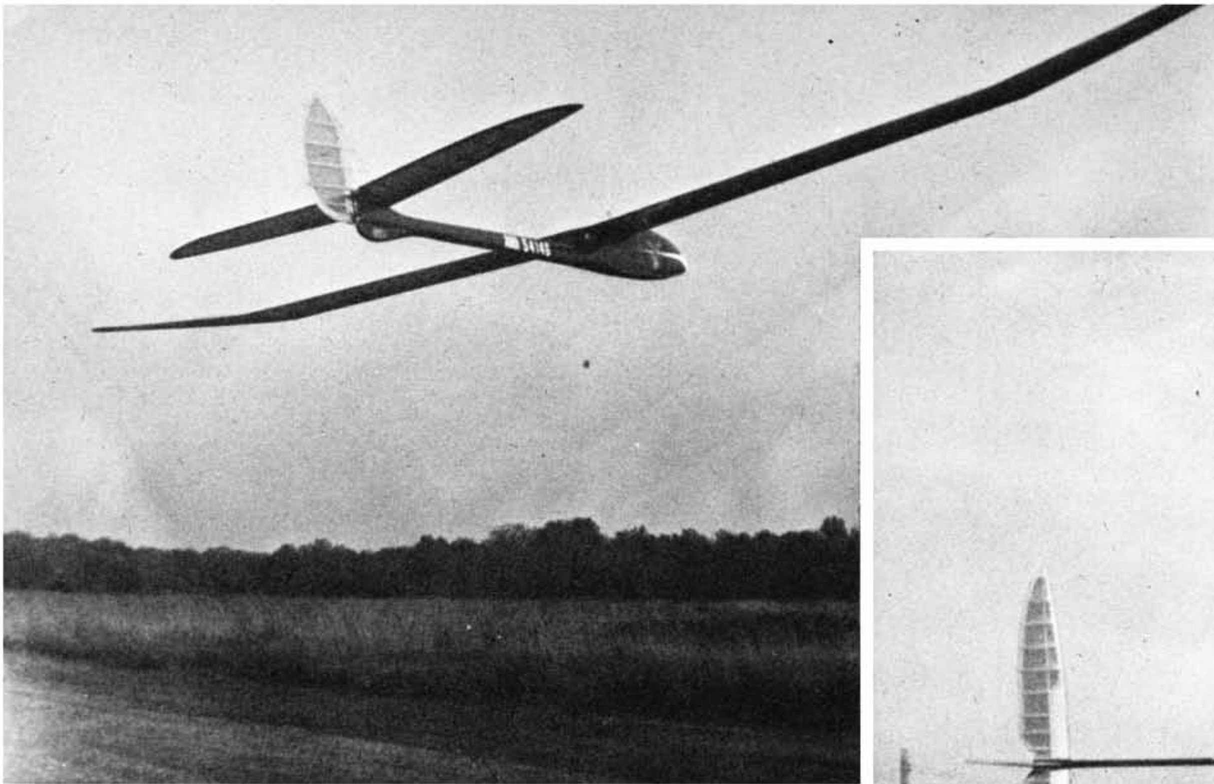
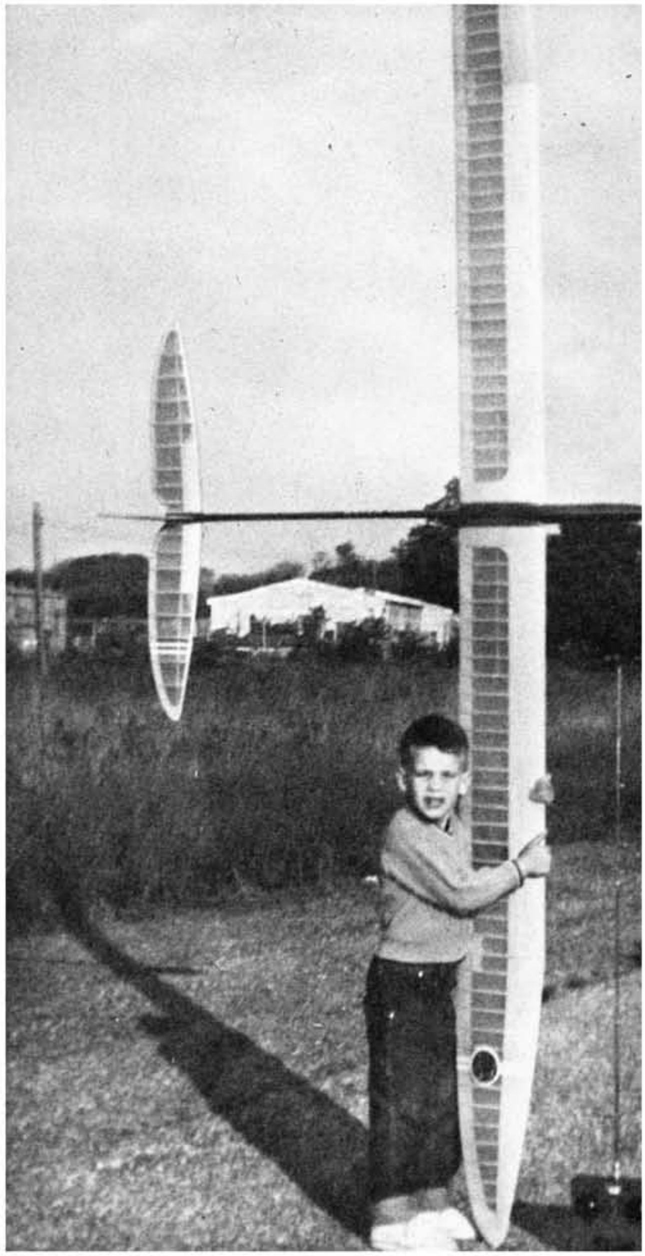

DESIGNED AND INKED
the "Gaggler"
BY CARL LORBER
14 OZ. WING LOADING
GROSS WT. 5 LB.
1/16 SHEET TOP ONLY
1/16 X 1/8 CAP ALL RIBS TOP AND BOTTOM
3/16 ALUM. TUBING
1/8 WEB
1/8 X 1/2 PINE
1/16 PLY
PLY
1/8 SHEET
1/16 SHEET
1/4 DOWEL
CONTROL HORN
.032 BRASS
MAKE BEARINGS FROM CAP NUT FASTENERS
7/32 SQ. BRASS TUBING
1/4 SQ. BRASS TUBING
1/2 X 1/8 TAPER
1/4 SQ.
2 THRU 26
1/16 PLY W-1, F-1, 8
1/8 PLY
BALSA FILLET
AERIAL
RECEIVER
SWITCH
TUBING
BATTERY
LEAD
METAL PLATE
5/32 X 24" MUSIC WIRE
CHANNEL FOR WIRES
PINE
BALSA
DRAG CLOTH
TOW HOOK
TOW LINE-1000'



Committed to the landing, the "Gaggler" floats across the field.



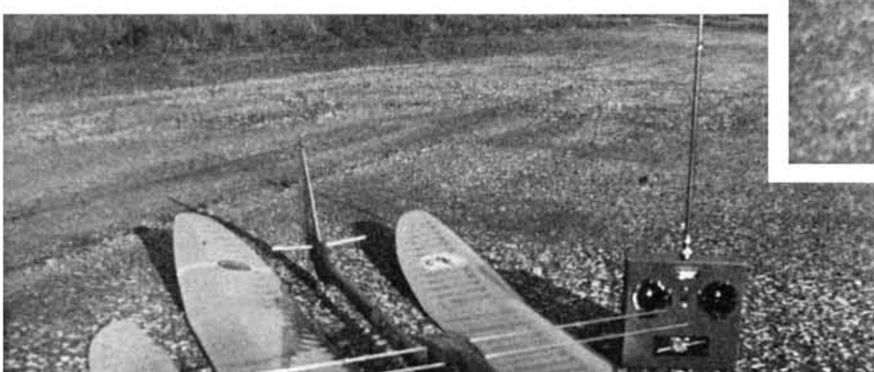
David's "Gaggler." Possession is 9/10ths of the law.

Carl Lorber's

"GAGGLER"

An Eppler E-385 to taste the currents.
A "thin-line" design for fine penetration.
A big and beautiful soaring machine.

FULL SIZE PLANS AVAILABLE THROUGH "MODEL PLAN SERVICE."



Take it to the field in five chunks, handy-dandy size.

◆ As new materials are introduced into this sport, the see-through construction of the past is becoming very scarce. Even gliders are being covered with sheeting or made from foam, fibreglass or plastic. Many of us have fond memories of model aircraft designs of the 1950's, with the elliptical flying surfaces, pod and boom fuselages and dyed Silkspan with clear dope covering. With the development of transparent Super Monokote, I could not resist the temptation to design a glider with this type of planform and construction. In the air

"GAGGLER"

. . . continued . . .

A tranparent "oldie" look, thermal hungry.

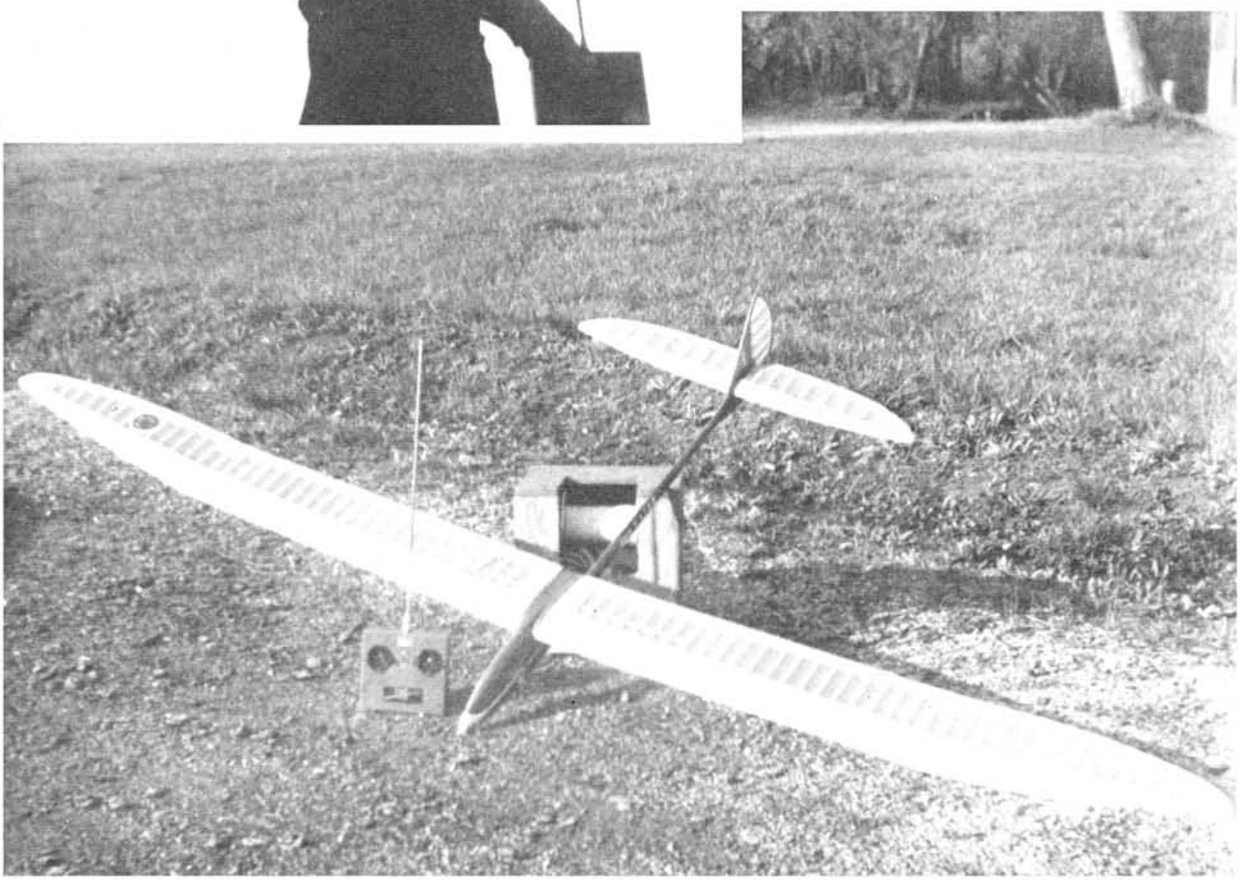
the "Gaggler" gives the appearance of an old timer design that stepped out of the pages of a Flying Models magazine that dates back to the dark ages.

The "Gaggler" was designed for thermal soaring duration contests. It offers an excellent combination of stability and efficiency. Its performance is of a caliber that will allow you to fly in any weather that is conducive to thermal production.

In the stability department I have combined the dihedraled wing tips, a short nose moment, a long tail moment and a high wing platform. The tip panels have been warped to produce a 4 degree wash-in. This combination will allow you to fly hands off for a minute or two. The "Gaggler" will climb the tow line, drop the hook and glide off without any correction from the transmitter controls.

As for performance, an Eppler airfoil is the magic work, E-385 to be exact. This super stable, thermal soaring airfoil safely allows the use of a stabilizer that is 16% of the wing area. With a 14 oz. per sq. foot wing loading, and a 17:1 aspect ratio the airfoil will fly very slow with a little up trim at

(Continued on Page 38)



Happiness is a beautiful new sailplane for the boiling thermals, a good proportional R/C system and an electric winch.

Sort of a modern-day fishing pole.

"Gaggler" Soarer

(Continued from Page 18)

the transmitter. With neutral control settings it will fly at 15-20 m.p.h. maintaining an excellent sink ratio. At 25 m.p.h. the sink rate is noticeably greater. So if you are flying in a 25 m.p.h. wind keep the glider close when flying down wind. In 15 m.p.h. winds you can follow a thermal until the model is hardly visible and she will return with altitude to spare. On a slope things change. The lifting winds coming up the slope improve the sink rate to a point where the "Gaggler" will fly 25-30 m.p.h. with down trim and maintain a zero sink rate, thus you can fly in 25 mph winds when slope soaring with this design.

The fuselage is overlooked on many glider designs as a means of reducing drag. However, a study of real sailplanes will reveal that the fuselage can be a creation of sculptured beauty and considerable attention is given to super smooth finishes, contouring, and removal of all obstacles that might interfere with the laminar flow of air over the fuselage. In an effort to apply some of these practices to model gliders, I have installed my radio equipment in single file, giving a very thin cross-section (Would you believe that the fuselage is so thin that it only has one side). I am using the landing skid as an equipment hatch, the tow hook falls free when the tow line tension is reduced and the battery switch is countersunk, leaving the fuselage completely free of parisitical drag (junk). Its clean, unbroken lines give little evidence that a two surface radio guidance system hides inside.

Normally the rudder and elevator control surfaces are in a reflected position during most of the flight as a thermal soarer is circling. These reflected surfaces, as well as the gaping hole at the hinge line, are a source of considerable drag. The turbulance created by these two factors make the use of an oversize tail area necessary. To reduce these problems the "Gaggler" has a completely flying tail (the entire rudder and stabilizer move to transmitter commands). The poly-dihedral wing and a thin rear section of the fuselage allow the use of a rudder area that is 8% of the wing area. The rudder is very effective on the tow, and during a near stall flairout while landing. The "Gaggler" will lock itself in a tight circle while thermaling with no tendency to spiral in. The stablizer control stick gives the feeling of a throttle control as the ship accelerates quickly with a little down control. With the entire rudder and stabilizer moving, the rate of control is faster then most thermal soaring gliders with such a high aspect ratio, giving the feeling of a slippery, high performance slope soarer.

If you are new at this soaring sport you may be unaware that a gathering of gliders and glider pilots are referred to as a "Gaggle", and from this term came the name for this design.

Wing Construction: Cover the leading edge (top only) with 1/16" balsa sheet. 1/16" x 1/8" capstrips are installed on all ribs top and bottom. This is to lift the surface covering above the spars, trailing edge, and leading edge stock so that a smooth, unbroken slip stream is accomplished. This smooth airflow is necessary to support the 14 oz. wing loading. (4 to 8 oz. wing loadings can use turbulator airfoils such as the "Mollymawk," see F. M., Oct. 1968). A 1/8" sheet web is placed between all ribs in the two center wing panels. The wing is very strong as I have actually bent the music wire wing supports in a panic dive pullout associated with student pilots. The music wire wing supports allow the wings to flex like a bird in the air, flexing at the tips 4 to 6 inches on tow. Little dihedral is necessary at the center of the wing as it will flex during flight. The aluminum tubing (piano wire receivers) are epoxied in the wings and give considerable strength at the point of maximum load. Careful alignment of the tubing is accomplished by first installing the wire in the fuselage with epoxy, making sure that they are parallel and level. The holes in the first nine wing ribs are drilled over sized and the wing is built and ready for covering. Before covering, install the aluminum tubing using just a little epoxy to hold it in place. Install the wings on the fuselage, block up the wings so that they are straight, level and raise the tail to get the approximate incidence as shown on the plans and let the epoxy set overnight. Use a thin coat of vaseline on the piano wires before installing the wings to prevent the epoxy from cementing the wings on permanently if some should accidently get in the wrong place. After this is set, remove the wings and epoxy the tubing to each rib. Wash-in of the tip panels is accomplished by reheating the MonoKote after recovering is completed and holding a little twist, in the outer panels only, until the MonoKote has cooled, i.e. leading edge down 1/8" and trailing edge up 1/8" at rib number 37.

Rudder Construction: The 1/4-inch dowel running through the rudder is the axle, or point of rotation. R-6 and R-7 are the bearings and must be put on before covering. Make the bearings fit with enough tolerance to allow for high humidity swelling of the wood parts. A little rattle will not hurt a thing, but binding will. It is a good idea to always mass-balance wings, rudder and stabilizer on any aircraft at 25 to 35% from the leading edge to avoid flutter. And it is particularly important on a flying tail. The construction on the plans is such that balance is easily accomplished at the pivot point which must also be at the 25 to 35% point. Little attention is needed on the part of the builder if the plans are followed.

Stabilizer Construction: Balsa sheeting and capstrips are used in the same manner as the wing construction. The square brass tubing is installed by placing both stabilizers on a flat surface in position as the plans show. Place the 1/4-inch sq. tubing in each stabilizer half and lightly epoxy in place. Insert a piece of 7/32" sq. tubing through one and into the other 1/4-inch tubing and this will align the tubing in the two stabilizer halves accurately while the epoxy sets. Remove stabilizer from plans and epoxy the tubing to each rib and the spar, then cover the stabilizer.

Fuselage Construction: Cut a piece of pine, spruce or hard balsa to conform to the outline shown on the side view of the fuselage (area with dots). If your equipment is larger, make the nose higher or longer. The area above the equipment is for excess wires. Leave at least the amount of room shown on the plans for lead balance. (The original used two pounds of lead in the nose.) The two pieces of sheet balsa on the sides of the center core can be adjusted to the width your equipment requires. Then cover the equipment area with another sheet on each side. Shape with a pen knife, rasp file and sandpaper. The metal skid plate equipment hatch is held on with wood screws. If little additional balance weight is needed use aluminum and if more balance weight is needed use something heavier for the skid. Epoxy the tubing that receives the tow hook into the position shown. Cut a small channel for all wires between radio components so they will not get crushed. The original fuselage was covered with metallic glue MonoKote, the fillets were covered separately, and then put in place after covering. Note that in some pictures the stabilizer does not have any dihedral. It is not needed for successful flying, however the stabilizer hits the grass on rough fields during landings and some dihedral is needed to overcome this problem, so bend the square tubing in the center where the stabilizer control horn is soldered. Install F-2 in place, and once dry, cut a hole to fit the cap nut bearings accurately. Some play is allowable, but binding will cause the aircraft to fly like a reed controlled system and not a proportional. The cap nut fasteners that are used for bearings can be purchased in any hardware store, in the nuts and bolts section, they are used to cap axles, such as baby carriages and come in many sizes. Drill a hole in the cap nut and file square for a tight fit on the 7/32-inch sq. tubing. Set the stabilizer control horn in place inside the fuselage and slide the 7/32-inch sq. tubing through the stabilizer control horn and solder. Place the cap nut bearings on and epoxy to the sq. tubing. As the stabilizer control horn is pushed and pulled the cap nut bearings and the 7/32-inch sq. tubing should move freely with it. A removable window is cut in the side of the fuselage for stabilizer linkage access. The rudder pushrod exits out the other side of the fuselage. Make sure that the stabilizer control horn does not interfere with the rudder linkage. Nyrod was used on the original very successfully.

Radio Installation: Keep the receiver in the rear compartment. Any excess wires must be kept above the servos and never around the receiver. The switch must not be placed in the receiver compartment. The aerial must be kept at least one full inch away from the metal skid plate. I installed my aerial in the fuselage during construction, with a plug in the receiver compartment, so that the aerial will not have to be removed, and the excess antenna can hang out the back. Never cut it off. There is a considerable amount of metal in this aircraft and can cause serious range problems if the above procedure is not followed. Installed as indicated on the plans, the radio will give maximum range and conforms with all of the manufacturers recommendations.

Test Flying: That first hand launch is rough as you do not know where the stabilizer incidence is set, so have another person run with the model while you are at the transmitter controls. Adjust trim until the model feels like it is flying, then let it glide making any corrections via transmitter if needed. Set the linkage to produce the LONGEST glide possible from a hand launch with all controls in a neutral position. This is not a floater, it wants to glide fast so let it. My "Gaggler" set up as indicated on the plans flew right off the construction bench into a thermal at 300 feet and departed its earthly binds as if it didn't even know me. A PCS being master of the situation called the "Gaggler" back home after an exciting climb. I cannot guarantee this performance on your first flight as there are too many variables to consider. However, they are not critical and after one or two hand launches you will have the stabilizer set correctly. The model should speed up with down trim control and slow up with up trim control. It should not stall or dive. Two things I cannot over stress however, that is to balance where the plans indicate, and trim for a fast glide as that is where the minimum sink rate is on a glider of this wing loading.

The next trip to the hobby shop, think thermals—only finks think sink, put lift in your life. Build a "Gaggler" and you will log so much time that your club members will learn to hate the sight of your ship. ●