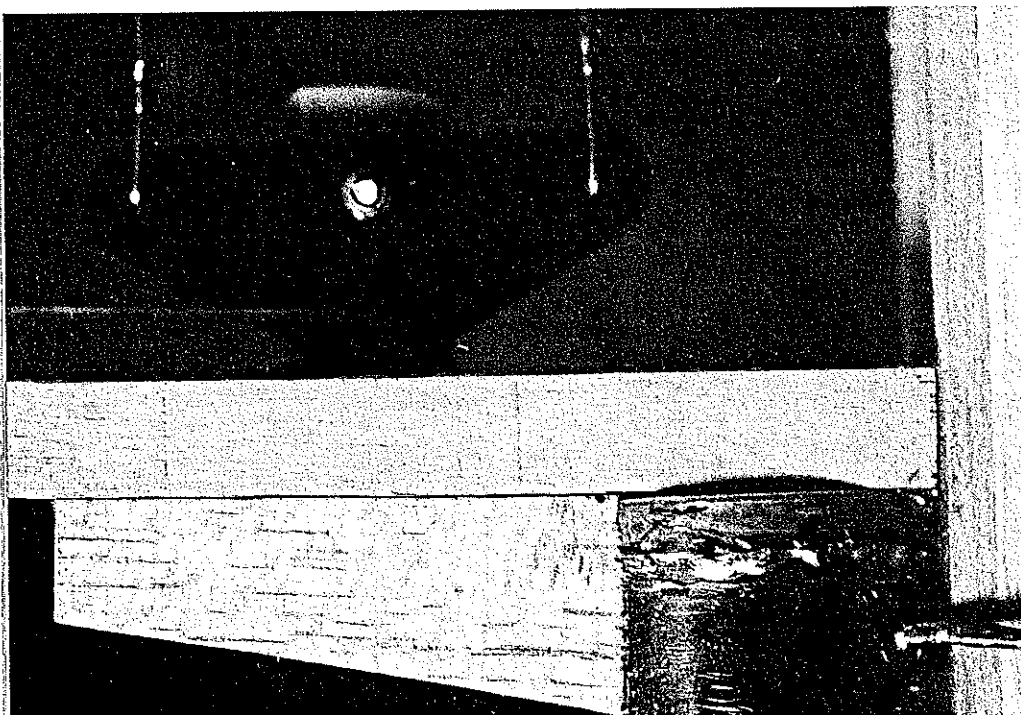


To American eyes the English-style FAI combat model looks strange. Instead of tail booms it generally uses a tapered wing which extends back to the tail. Shown here are all the structural parts for author's model. Another unusual feature is the flat rib tops and bottoms.

This FAI Combat model is one of the world's best—winning both the U.K. Nationals and the Dutch Open International in the same year. For .15 power.

JAGUAR

Robert J. Morgan



I FIRST STARTED flying FAI Combat eight years ago using a very slow and unmaneuverable model with a low aspect ratio. These were the "in" models of the middle to late 60's, and were difficult to fly successfully without a great amount of experience. In early 1968, I designed my first FAI model which was based on a Junior Satan with a slightly different wing section. This design was a great improvement and I had moderate success with it, the only weakness of the design being the twin tail booms. One year later, a new design emerged which had a higher aspect ratio of about 4:1. This model had a constant chord and the elevator was fixed two inches behind the trailing edge as an extension of the main wing. Altogether, I built over 40 of this design and had a great deal of success between 1969 and 1973.

In 1973, a great change came over model design with the general acceptance of two new ideas. The first major change in Great Britain was the widespread use of mylar-covered airframes (which have been in use in the USA for several years), making construction and repairing of models easier and faster. The second change came with the new idea of a tapered wing which greatly improved maneuverability. At the same time, the wing area of the model greatly increased until, today, one frequently sees models with a wing area of

Bellcrank mount is plywood attached to fuselage and anchored in place by dowel pin as well as glue. Original model was flown on an Oliver Tiger diesel—glow engine will need a larger tank. American models lean toward a pen-bladder pressure tank housed within rocket tube.

Close-up of tail section shows reinforcement pieces which extend over the stabilizer and the trailing edge. Wing area is 350 sq. in. The all-up weight should be 7-1/2 ozs. maximum.

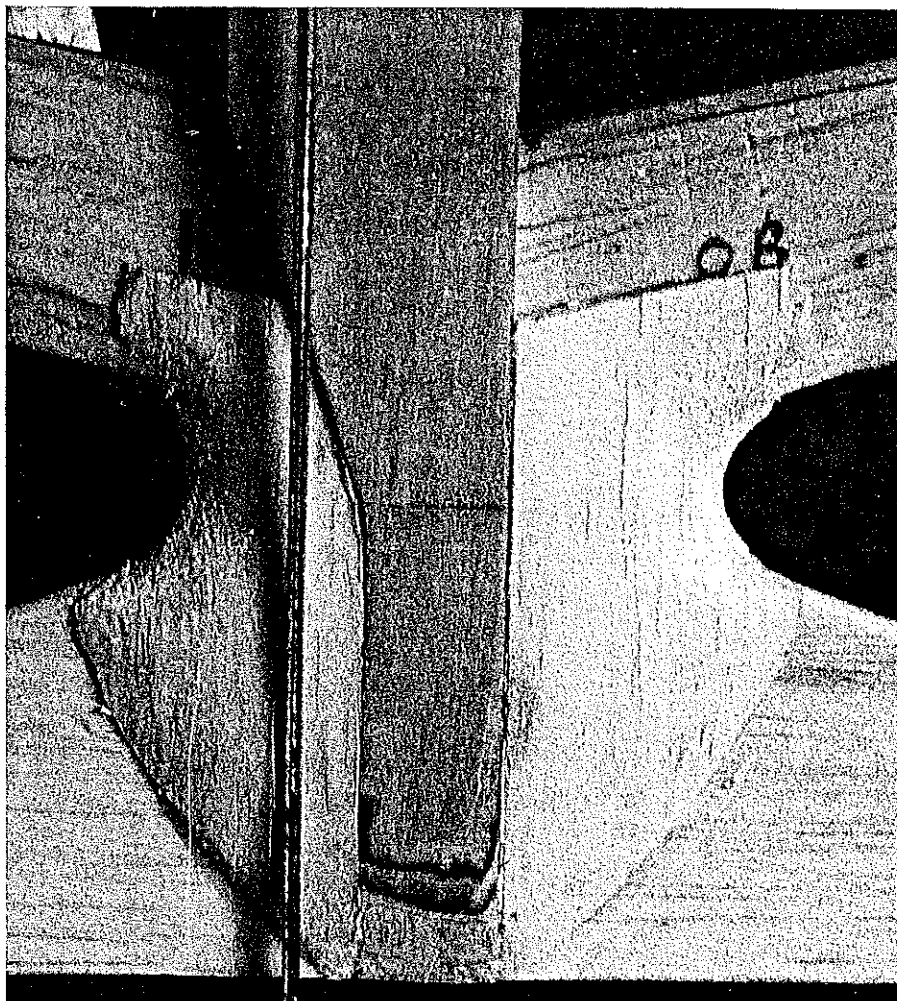
nearly 400 sq. in. (Jaguar is 350 sq. in.). These three things together made the model weaker than we were used to in the U.K. and hence to greater carnage during competition.

The Jaguar is designed to help to eliminate weak spots and you will notice the use of spruce and ply in strategic areas. Great importance must be given to keep the model as light as possible with an all up airframe weight not more than 7½ ounces. All the major pieces of wood (L.E., T.E., ribs, etc.) must be cut from straight grain wood with no twists and an even density. Building time for a straightforward model such as this is quite low but more can be saved by building several at a time, i.e. by making the ribs sandwich method. The glue used all the way through is a good wood-working adhesive, except when affixing the engine pod.

The first step is to cut out the ¼" sheet trailing edge and glue together making sure that it is kept flat; the spruce strengthener is added at this stage. While this is drying, the spruce spars are glued to the leading edge which is bought pre-shaped. If this type of leading edge is not available, then a piece of 1" sq. can be shaped to suit. The trailing edge must be shaped now as it becomes more difficult when the model is assembled. The ribs are cut to shape and their positions carefully marked on the L.E. and T.E. The center rib is cut from ½" sheet of medium weight and the bellcrank slot cut out at the correct position. The bellcrank mount should be glued and securely clamped until dry. The plywood capping strips are added to the center rib and the whole unit is left to dry.

When the center rib is dry, all ribs are glued in position on the L.E. and T.E. making sure that the model is kept perfectly straight with the aid of elastic bands around the model. While the frame is drying, there are several jobs which can be done. First is the inboard tip and the lead-out tubes which are slightly set into the wood and then held in place with thread and glue. Next job to be done is the tank which is a renovated mustard tin, a Combat standard in the U.K. for about 15 years. (American builders using glow may substitute a larger tank, perhaps a pen bladder inside a piece of rocket tubing—which is commonplace.) The tin is open at one end so easy access to all seams is available for soldering and sealing. The vent and flue pipes can be accurately positioned before closing the end. A commercially available tank of sufficient volume can be substituted if necessary.

When the airframe is dry, both tips can be added, making sure that they fit snugly



The author with the completed model, which boasts a stellar list of wins. When American and British experts have flown together the results have been a toss-up. British tactics are always hard to follow, due tight maneuvers close to the ground.

to R.4. The tailplane should be cut from medium sheet and glued in position accurately making sure that the elevator will be parallel to the L.E. and that it is not higher on one side than the other. The tailplane packing pieces on either side of the center

rib should be added when dry. The tank can be added and epoxied in place making sure that it is level, otherwise you will get different engine settings in loops or bunts.

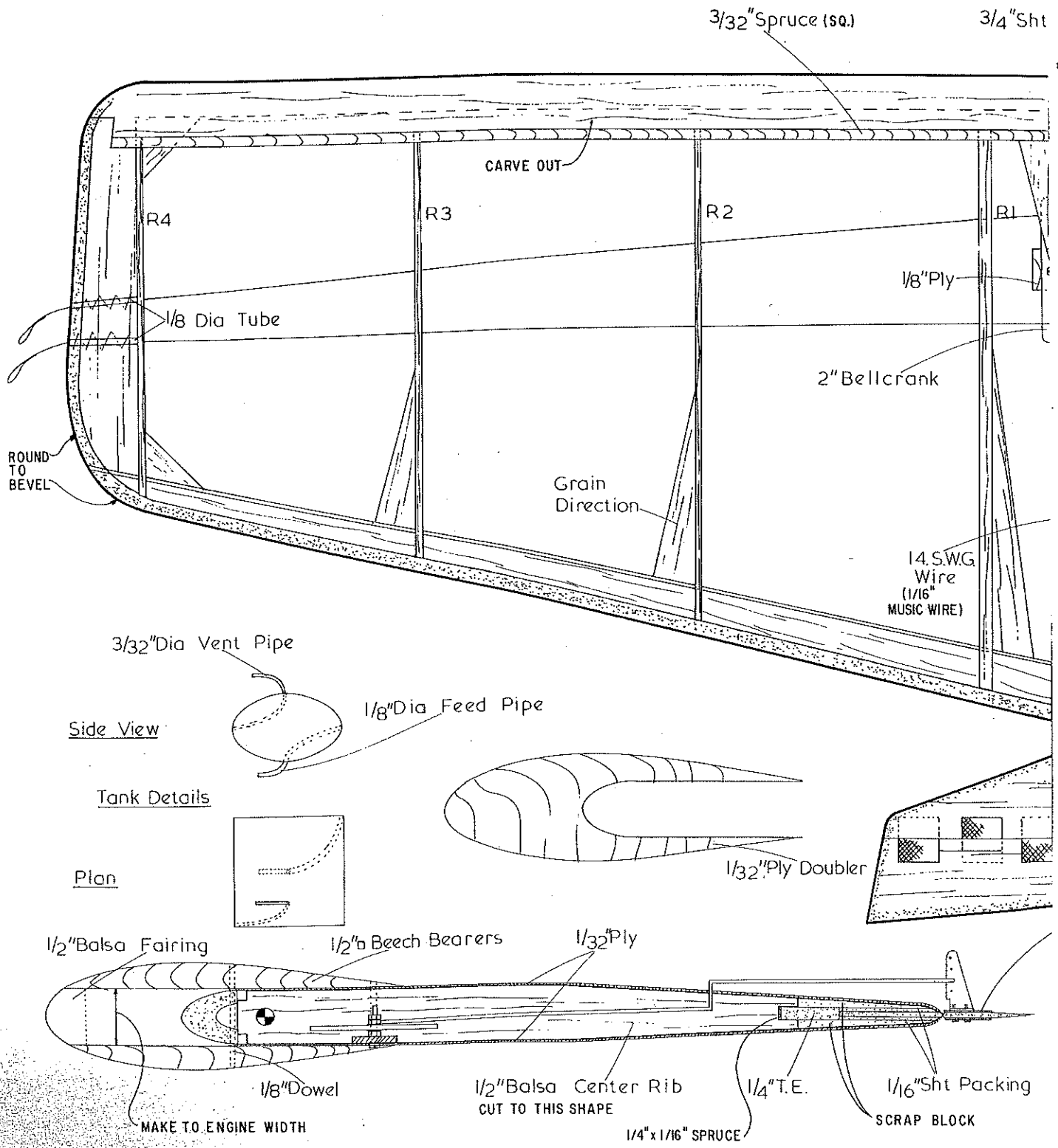
The bellcrank assembly is a little awkward as it has to be assembled in the model

due to the plywood pushrod hole; however, if the leadout wires are soldered to the bellcrank before this operation, then it is straightforward. All gussets now may be added making a note of the grain direction.

The basic airframe now must be sanded

JAGUAR

F.A.I. Combat Model 36 1/2" Span
Designed By Bob Morgan



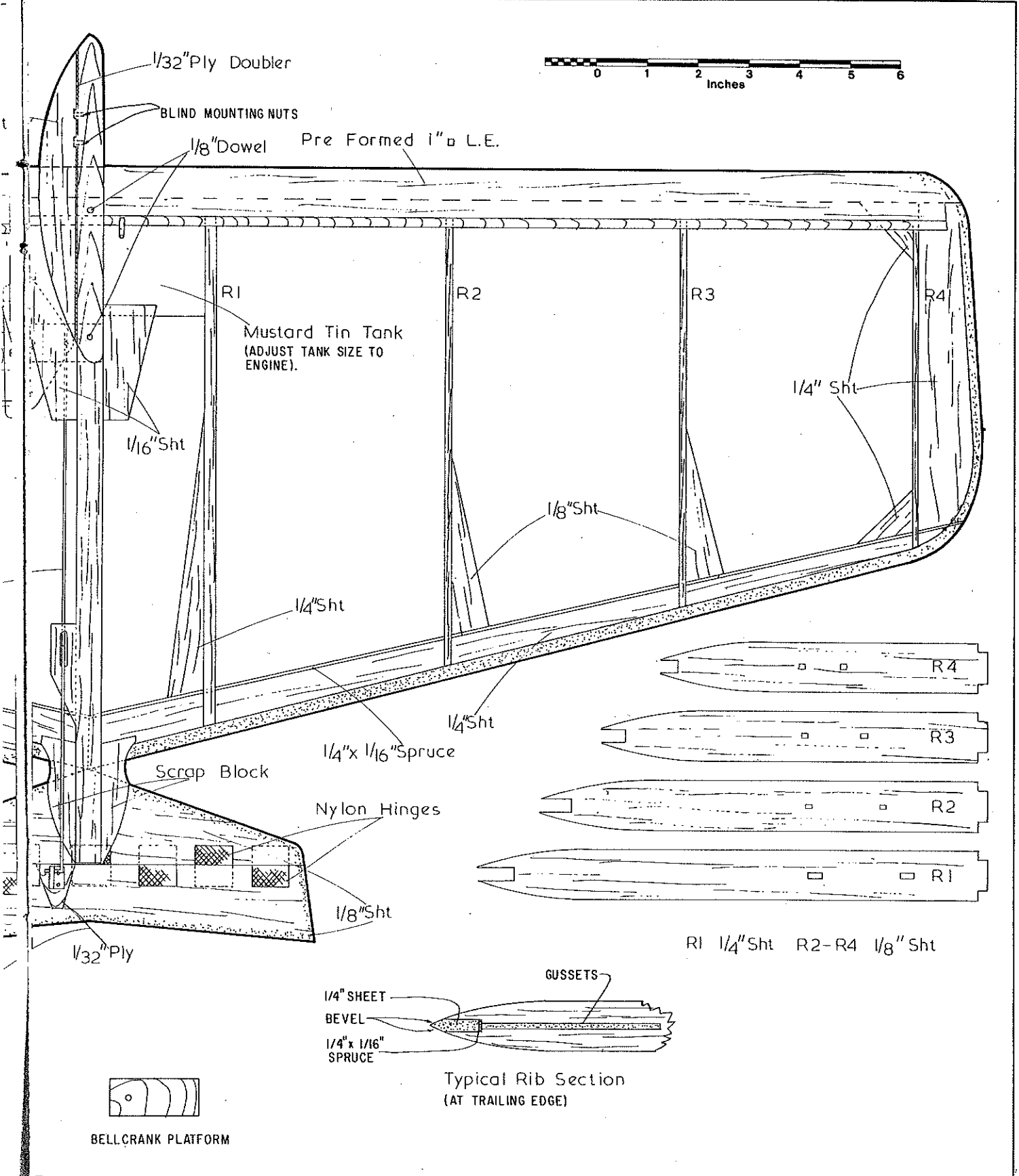
down to slope, taking particular care with the tailplane area. The first step in covering is to cut to shape lightweight tissue for the tailplane which should be given four coats of medium strength dope. The elevator now can be cut to shape and sanded to a

very sharp section and the plywood elevator horn plates added top and bottom. This is then added to the tailplane using the nylon hinges as shown on the plan. The elevator is also covered in lightweight tissue and given four coats of medium dope.

The final operation before covering is the addition of the 1/16" sheet around the pod area.

Everybody has their own way of covering a model with mylar film, which is

continued on page 82



BELLCRANK PLATFORM

RC Sport (continued)

some of you a bit but if you have ever gone through what I have been going through for the past couple of weeks, you'll understand.

In the process of building a Gator Flea I found it necessary to sheet foam wing cores. In my blissful ignorance I sheeted them without aid from a more experienced modeler. The result was a rather high degree of wash-out in the right wing panel, and the start of the insanity I have unfortunately been party to.

In the beginning I tried removing the warp by just soaking the offending panel with water and blocking it up with reverse twist and letting it dry. This was tried several times with a dismal lack of success. My next attempt to eliminate the @#&*! warp came in the form of a sneak attack. Once again I soaked the wing panel and blocked it. The really neat change (HAH) was to soak it with clear dope instead of water. I figured the stupid wing wouldn't know the difference. It didn't. Several times it didn't. Dumb wing.

Finally, through the logic and deductive process of a cool, clear, rational mind and sheer desperation I decided to try fiberglass resin. I brushed on a coat of resin on the panel with the blankety-blank warp, wrapped the panel in waxed paper. (The resin I used cured with waxed paper in

contact with, but some resins and epoxies might not, test it first.) Then I replaced the panel in the blocks it was cut from and weighted this down with books. I used encyclopedias because all that recorded knowledge seemed to impress the wing favorably. A small amount of opposite twist might be necessary, however. Go easy with this as it doesn't take too much. The severity of the warp will be the deciding factor in this. I hope this spares someone from having to wear one of those funny jackets. . . .

(My address is: 12 Connie Dr., Shalimar, Fla. 32579.)

Jaguar/Morgan

continued from page 43

known under several trade names. The most important factor is to get a nice clean finish around all the edges. When covered, the pod can be constructed accurately making sure that it is a snug fit. The covering material must be cut away where the pod fits so as to give the epoxy something to grip on. The 1/8" dowels are added, being careful that the rear one goes through the bellcrank mount and the front misses the spruce spars. When fixed and sanded to shape, the pod should be covered in tissue and given four coats of dope and then

painted in the desired color scheme, finally given two coats of good fuel-proofer as is the elevator and tailplane at this stage.

Depending upon the type of motor used, the center of gravity will change, but it is desirable to have it as near as possible to the indicated spot. Flying an FAI Combat model is an art in itself as many of you will know, with quick reactions and a good model/motor combination essential for success. The art in the U.K. is to follow your opponent at all times, even if he is faster than you. This may sound difficult but with a lot of practice and skillful anticipation, it will become second nature. A great tip is to do as many small maneuvers near the ground as possible and wait for the opponent to hit the ground. In FAI Combat the art is to get several small cuts which needs great patience and skill. The "kill" method does not apply and is to be avoided at all costs. Have you ever tried to stay out of the way of an opponent for over three-quarters of a bout—not an easy task.

The Jaguar is a very competitive model and in the right hands is a world beater. During the last two years, I have flown the design and beaten the previous six U.K. champions with it including Messrs. Evans, Tieman, Hunt and most of the top European fliers. This year is the first time that anyone has won the U.K. Nationals and the Dutch Open International in the same year. Its pedigree is proved.

TWENTY-SECOND ANNUAL TOLEDO RADIO CONTROL EXPOSITION

**TOLEDO SPORTS ARENA
ONE MAIN STREET
TOLEDO OHIO**

APRIL 2,3 & 4, 1976

FRIDAY 9 AM TO 6 PM

SATURDAY 9 AM TO 6 PM

SUNDAY 9 AM TO 3:30 PM

**OPEN TO PUBLIC
ALL THREE DAYS**

**UNQUESTIONABLY, THE WORLD'S
GREATEST RADIO CONTROL SHOW.**

**PRESENTED BY WEAK SIGNALS R/C CLUB
PO BOX 5772 TOLEDO, OHIO 43613**

