



**52in. span
contest winning
stand-off scale
design from
the U.S.A.**

ART CHESTER

THE *Chester Special*, as it was first called, was raced from 1933 to 1938. It first appeared in green (with cream trim) wearing race number 15. In 1936, the little racer was completely overhauled, and was finished in overall cream, with green and black trim. It was renamed the *Jeep* after the *Popeye* comic-strip character. The fast little machine's race number was 3 in 1936, 2 in 1937 and 5 in 1938.

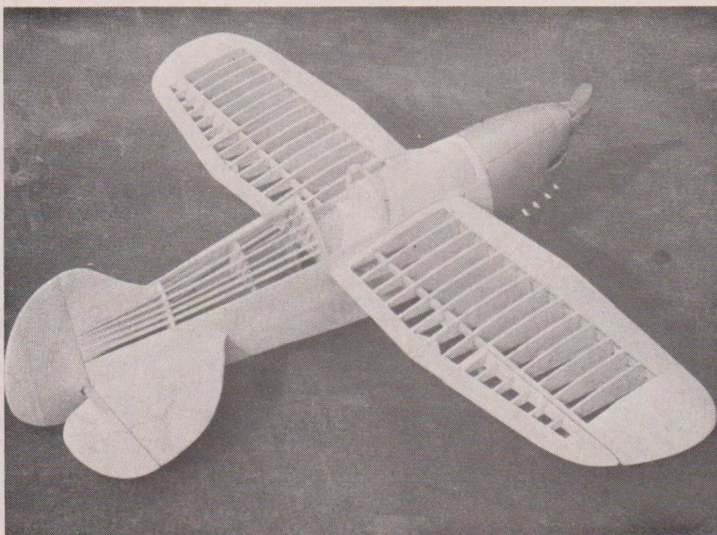
The racer was very small, having a 16ft. 8in. wingspan and a length of only 15ft. Its first win was recorded at 154m.p.h. and various changes improved its speed to 237.033, when it set a new world's lightplane record at the 1935 All American Air Races at Miami.

My model is finished as the *Jeep* appeared in 1937, when it won the St. Louis Memorial Day Race. That racing season, it attained its highest official speed — 253.5m.p.h. The cost of building the *Jeep* was \$5,000 and, by the end of the 1937 racing season, it had, in five years of racing, earned a total of nearly \$30,000 in prize money. This averaged out to about \$520 per hour of flight time. The *Jeep* was retired in 1938 and a new *Chester Special*, called the *Goon*, made its appearance. The *Jeep*, completely rebuilt and hardly recognisable as such, was flown to victory in the consolation race of the 1947 Goodyear Trophy Races as Bill Falck's 'Chester Special.'

As a young boy, I lived about a mile from the old Springfield Airport, where the Granville Brothers were building their famous *Gee Bee Racers*. I have always had a great love for racing planes. My first gas-powered model was a 25in. span, scale model of the *Jeep* with an old *Bulleit* motor. I drew my own plans from a three-view in an old magazine, and crashed the model less than a lap after its first takeoff. No-one had told me that this was not the way to start into powered modelling. I learned to fly CL, and then rebuilt the *Jeep* . . . I still have it after 25 years.

I always intended to scale up a larger model of it, but kept putting it off. I then became involved in RC flying and, after learning on some good trainer types (I still have my *Tauri*, which was my first multi), I built a full-

Below: simple construction of model is evident here. It almost seems a shame to cover all that lovely woodwork!



house scale model of the *Ryan ST* from some old magazine plans. The model has a 60in. span and weighs 7lbs., powered by a *K&B 19*! It flew fine, but it took a half a tank of gas to get it up high enough to do anything with it. I installed a larger engine, which required a completely new front end. This left me with a beautiful cowling into which I had put a considerable amount of work. Now I needed a new airplane behind my leftover cowling.

Art Chester's *Jeep* had the same *Menasco* engine installation as the *Ryan ST*, so the cowling is very similar. Here was my chance to use the cowling and at the same time, build a larger version of the *Jeep*. Doing some calculating I found that a *Jeep* scaled up to fit my unused cowl would give me an aircraft with approximately a 50in. wing. I reasoned that this would be small enough to fly on the 19, which was firmly embedded in the cowling. I felt that the *Jeep* would be a poor subject for RC flying, but I wanted to build it anyway. My doubts about its flying qualities were completely dispelled on its very first flight.

I enlisted the help of a test pilot for its first flight, as I felt a more experienced flier would be better at the controls. Sid Clements did the job for me, as he has on several of my other models. Even though the model was badly out of trim, he flew it for about 7-8 minutes, doing a variety of manoeuvres. The model had a bad left-turn tendency and was very nose heavy. A few turns of the clevises remedied this situation and, after a few flights, we had everything set correctly.

The sleek little racer is a beautiful thing to see in the sky. It is very easy to handle and the landings are unbelievable to watch. I have to hold just a little left rudder on the takeoff run to keep it straight, which is probably due to the engine offset. It flies so well that I haven't done any further experimenting with trim changes.

I flew the *Jeep* in the Eastern Championships at Johnsonville, PA in the fall of 1971. It was the first RC contest I had ever flown in and even though there were a set of very shaky fingers on the sticks the model won the fourth-place trophy. Since that time, the *Jeep* has been flown in many contests in both AMA and Standoff events and has won many trophies. It has been flown all over the northeast and is a real crowd pleaser. It has, on several occasions, scored the highest flight score of the day, attesting to its fine flying qualities. The *K&B 19* flies the model quite adequately but some of you may want to use a .29 or .35. With the .19, a loop requires a downhill entry. The model will snap roll and spin like crazy. It really gets wound up in a spin but recovery is instantaneous upon releasing the rudder. The model has unbelievable ground-handling characteristics. Even with the fixed skid it will manoeuvre all over the place on the hard top or grass. In four seasons of flying it has not once gone up on its nose except during the testing stages where the wheels were spreading out and grabbing the inside of the wheel covers. Takeoffs and landings on the grass are no problem, however, in a stiff wind it must take off directly into the wind. The *Jeep* slows up nicely on low throttle and has a very flat guide. I frequently take the *Jeep* out just for an afternoon of fun flying, and several other pilots have enjoyed flying the model.

Construction

The model is very easy to build, and there are only a few things that need mentioning. The wing is very easy to put together if you go about in order. Because of the strange shape of the wing, it is necessary to follow this sequence: the front and rear spars are cut out and all ribs are prepared before assembly is started. The inboard ribs must be slid onto the spars from the centre of the wing before the spars are joined in the centre. Start with rib 8, then 7, etc., then the spars can be joined. Next, the outboard ribs, starting with 9, may be slid onto the spars from the outboard end of

For .19cu.in.
to .40cu.in.
motors and
four function
control systems



JEEP

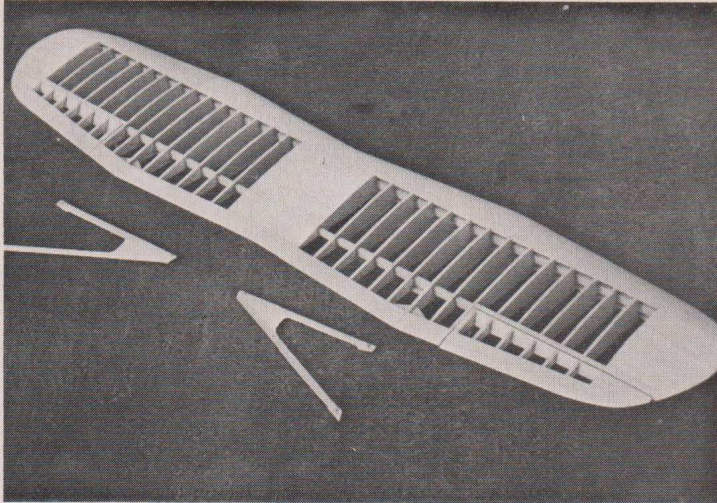
By
HENRY A. HAFFKE

the wing. Notice that the flat side of the spars is at the top. This will give the wing its proper shape. The spar cutouts in each rib are located so as to form the wing shape. The top of the finished wing should be perfectly flat, with no dihedral. The bottom of the wing has a gull shape, with the midpoint of each wing panel being the thickest section, and getting thinner as the wing joins the fuselage and outward to the tips. Don't let the shape of the wing scare you; it is one of the easiest wings I have ever built (I can't say the same for the job I had in plotting the ribs).

The tips are simply cut out of 3/16in. balsa, with tip braces at the front spar. The leading edge is a little unusual. I made it this way only because of stock that I had in my scrap box when I built the model, but it goes together so well and makes such a strong LE, that I saw no reason to change it. 1/4in. is glued into the lower notches in the ribs, and 1/2in. x 1/4in.

is glued on top, fitting into the top notches. A ply brace is used at the LE and TE at rib 9 to strengthen the joint. Trailing-edge stock is used, and the top and bottom spars may be added. The leading edge is sheeted. I used one length between the number 4 ribs and spliced outward from here to the tips on the top. The bottom sheeting must be spliced at rib 9. The entire tip is sheeted for scale effect. The centre section is sheeted between the number 3 ribs. The remaining ribs are cap stripped.

One note on the wing: the wing is very near scale in construction and the rib spacing is correct. However, I cheated and added two extra ribs to gain some area. The model has 16 ribs, where the real one has 14. If you want to build a real scale wing, you can omit rib 9 and one of rib 8, using the other rib 8 as the centre of each panel. You will lose about 60sq.in. of area with the scale wing. When the wing is finished, you can add the 1/8in. ply wing



Above: close-up of completed wing shows rib and aileron detail. Note strengtheners either side of rib at T.E. join. **Above right:** cabin formers and wing seat can be clearly seen in this shot. **Right:** general view from below, note slot cut out for elevator control pushrod and tail-skid detail. **Bottom left:** close-up view of under-carriage fairings and wheel spats. Note cooling air outlet in rear of cowling.

lock to the top of the centre section. This strengthens the centre joint and will lock the wing to the fuselage.

The fuselage is very easy to build. The 3/16in. sides are cut out and F-1 and F-2 are installed. When dry, the rear sides may be beveled and joined, and the remaining formers added. The fin is installed next, and the stringers complete the top. The bottom is sheeted with 1/8in. sheet. Engine mounts are epoxied to the engine-mount gussets and these are slid into the slots in the 1/8in. ply cowl back and epoxied. The 1/16" ply is added to the top of the engine-mount structure, making a solid foundation for the engine-mount plate.

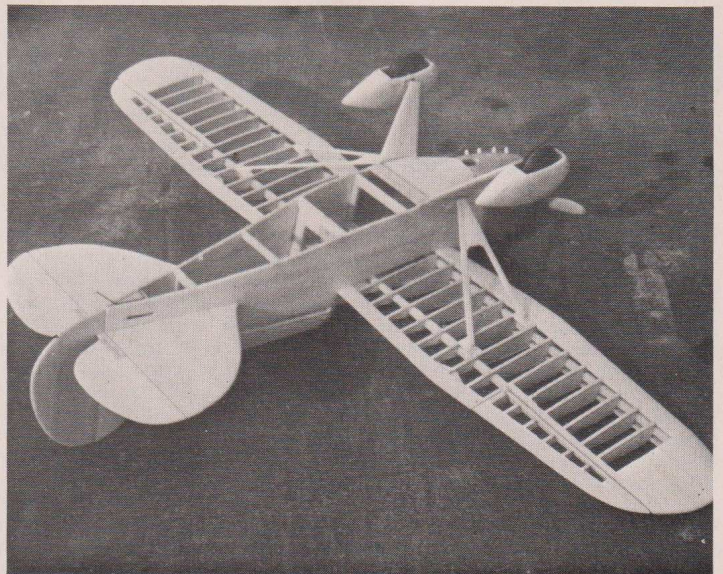
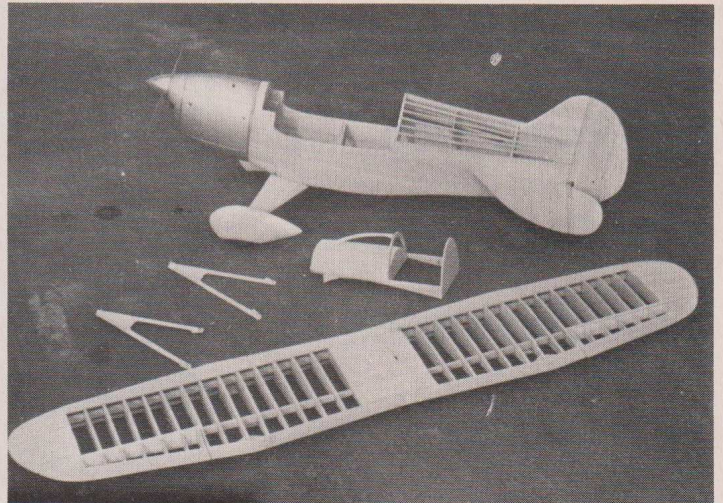
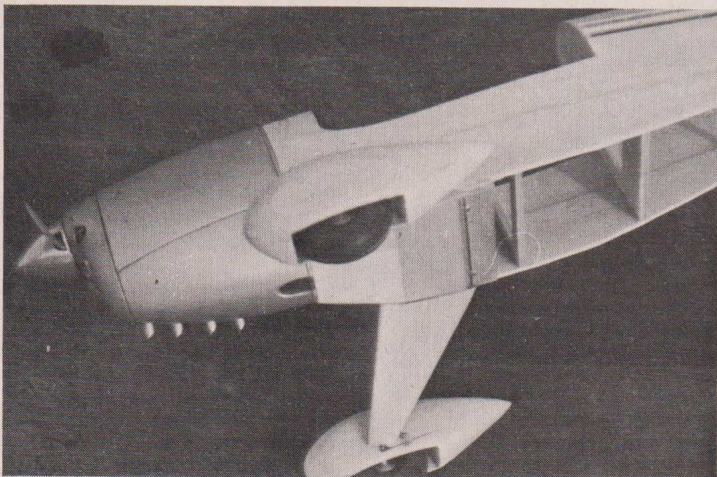
The tank is mounted between the engine-mount gussets. My cowl is built up of blocks and carved to shape, but you may prefer to mould one. The entire mount plugs into F-1, and may either be cemented permanently or may be held with screws into hard blocks cemented inside F-1 near the top and bottom.

The landing gear needs little explanation, as it is quite conventional. The wheel fairings are held on in a very effective manner. I built a 1/8in. ply insert into the inside lamination of the wheel covers and, when the fairings have been shaped, the wire from the rear leg is used to secure the covers in place. I used a nylon plate, with two small sheet-metal screws clamping the wire to the ply insert. This has proven to be the best way I have seen to hold wheel covers on.

The fairings can also be easily removed with this arrangement. Only one flight has been made without the fairings, as they have been no trouble at all. Takeoffs were a problem, until I discovered that the original wheels I used were flexing out and binding in the fairings as the model rolled for takeoff. One flight without the fairings, proved this to be the trouble, so a more narrow wheel was used, and no further difficulties have appeared.

The hatch is a little unusual, so I will explain how it works. The hatch is built on the fuselage, starting with the hatch fairings pinned in place. H-2, H-3 and H-4 are cemented in place. H-1 can be lightly tacked to F-1 and the forward section of the hatch is planked with 3/16in. balsa. The ply cabin formers may now be added after the hatch is sanded to shape. The hatch is now removed from the fuselage and a pine block is fitted inside between H-1 and H-2.

A cutout is made in the top of the hatch, just behind H-1. Drill through the block into the motor mounts with the hatch in place. Now thread the mounts to take a standard, nylon, wing hold-down bolt. Two bolts are used — one through each mount. Now a balsa plug can be made to fit over the mounting bolts, and this is held in place with a screw. H-4A is fitted and epoxied to F-3. The cabin is easily made with flat celluloid windshield



material. Two pieces form the windshield and one piece is formed around H-3 and H-4 completing the cabin.

To assemble the model, the wing is installed with the lock engaging H-4A. The hatch is placed on top and the nylon bolts installed. The balsa plug hides the bolt installation. It is a little different than the usual, but it works very well. I needed no hold down on the rear of the hatch but one can be added if you feel it is necessary. The wing struts are attached with small sheet-metal screws. I laminated 1/16in. ply tips to the struts. A ply tab is epoxied into the fuselage to which is fastened the lower end of the struts.

Finishing and R/C installation

Radio installation is left to the individual builder. There is enough room in the model for about three airborne units. I wanted to keep the model as light as possible, so I took it easy on the finish. The entire wood structure had two coats of clear dope applied and was covered with tissue. Two further coats of clear were used on the tissue, and then two coats of filler (talc and dope). Three coats of colour were added and, finally, the trim. The model is very close to being 1/4-size of the real craft. Anyone desiring information and pictures of the *Jeep* will find them in the 'Art Chester Story' by John W. Caler with John Underwood. This book has excellent photos of the *Jeep* and the other Chester racers: *Sweet Pea* and *Goon*, as well as good three-views of each of the aircraft.

The *Jeep* has attracted a lot of attention wherever it has been seen. It is a real eye-catcher and you will find it an unbelievably stable flyer. Here's hoping that you will enjoy flying your *Jeep* as much as I have mine.

