

PHOTOGRAPHY: RAY JUSCHKUS

The Airtronics *Cumic Plus* comes from a double duty kit. The plane can also be built as the 100 inch span *Cumic*.

An FM Product Review:  
**Airtronics'**  
**Cumic Plus**

By Ray Juschkus

Steady as a rock, and with good penetration, this kit can be a competitor or a sport flying "buddy". Has a fiberglass fuselage.

**R**ight off, I have to tell you that this *Cumic Plus* kit was a labor of love. I'm kinda partial to Airtronics kits as are many other model sailplane pilots and had already decided to add this glider to my contest stable for the year.

Airtronics (11 Autry, Irvine, CA 92718; tel., 714-830-8769) has based the 117 inch span *Cumic Plus* on the smaller 100 inch

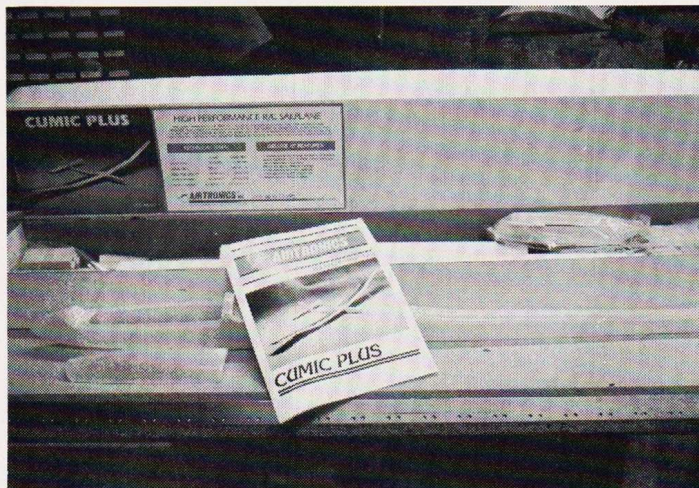
span *Cumic* and the plans show both versions. It's something to keep in mind while building because it could cause some confusion. This kit, by the way, can be built as the Open Class 117 inch span model or the smaller Standard Class 110 inch span *Cumic*

Besides having some very fine glider kits, Airtronics has also kept the loyalty of many glider pilots with their fine radio systems and

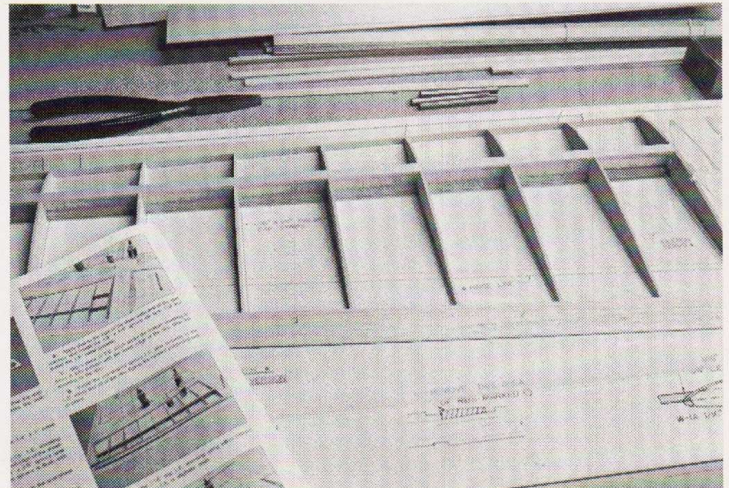
so I chose to use my Airtronics Module Series 7 SP with a four mini-servo set-up. The mini-servos I used were the new Airtronics 94831 model that's just been released and which is replacing the 94461 model. The comparison between these two servos is like night and day. The centering on the newer 94831 is the best I have ever seen and is it ever quiet. It's an answer to my prayers because the size is just great for sailplanes and the new servo fits right into the exact mounting holes of the older 94461. You can bet that I'm going to replace all of the older 461s with the new 831s as soon as I can.

**Construction**

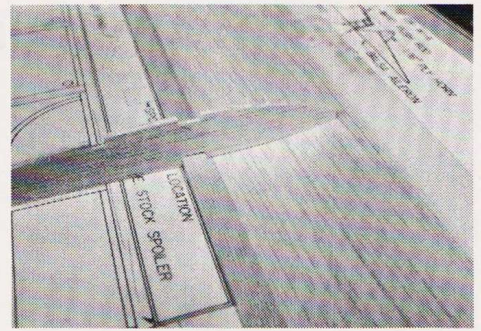
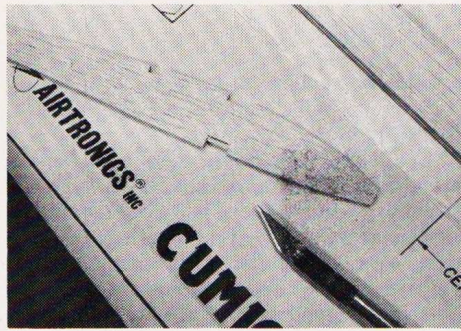
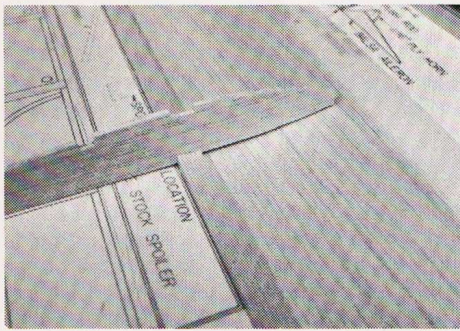
Let's get down to business and put the *Cumic Plus* together. Since I like to start with the wings I guess that's the first topic on the agenda. The outer panels follow a pretty standard construction method. The bottom leading edge sheeting and the bottom spar are laid down on the plans and the individual ribs glued to this sheeting and the rear 1/4 x 1 inch trailing edge stock. Be sure to identify the trailing edge, leading edge, and spar stock for these two panels. They are the shorter stock. The longer stock is for the two inboard panels. If you confuse them and cut the longer pieces to length for the out-



Fiberglass work on the *Cumic Plus* is good and the kit contents are pretty complete (above left). The plans are clear and the instruction booklet well



done. The outboard panels are the first chore for the *Cumic Plus* (above right). Ray found that the all the long stock was very straight, with no warps.



Though the wing ribs were beautifully sawn and sanded (above left), the spar notches were 1/8 inch too shallow and had to be cut out to properly fit the rib's spar notch. This picture (above center) shows the actual cutout being made in

the rib. This is an extremely important consideration because it's necessary that the bottom of the rib makes a good joint with the bottom forward wing sheeting (above right) for adequate strength.

board panels, you won't have long enough stock for the inboard panels.

One other thing to watch for while constructing the outboard panels is the number of shear webs used for each. The plans show only three webs per side. The construction book, however, shows the webs all the way out to the wing tip. In a purely absent-minded session, I used all the webs on one outboard panel, only to discover that I didn't have any left for the other outboard panel.

As I worked on the panels, though, I quickly found out that the all-important wood quality was really good. Another all-important quality was the absolute straightness of the trailing edge, leading edge, and spar stock.

The inboard panels are next and here you

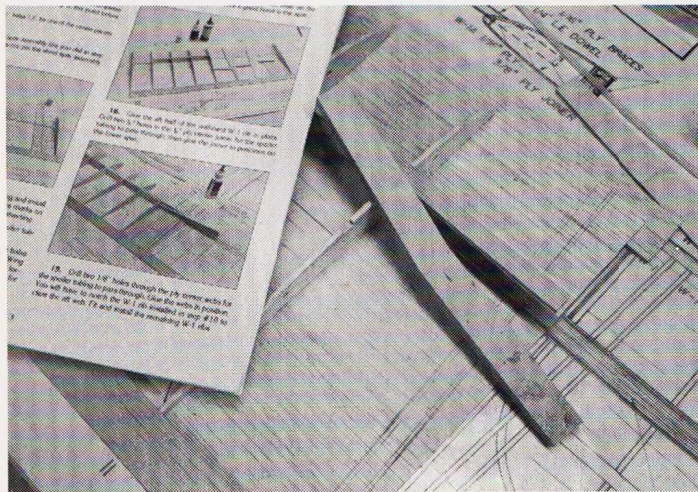
have to pay careful attention to the plans because it's these panels which determine whether you get the *Cumic* or *Cumic Plus*. The plans show one panel of each version. Heaven forbid you should make one long or one short. Without even trying, you'd have a built-in spiral turn. Read *everything* on the plans and in the book before you proceed.

The bottom spar notch in the ribs must be cut out 1/8 of an inch so that the bottom of the rib will contact not only the spar but also the bottom leading edge sheeting. The outermost rib of each inboard panel is 1/8 thick ply and must be angled to set the proper dihedral for the outboard panels. The 1/16 ply dihedral braces can be used as a guide. Since I used spoilers and ACE R/C's Thermic Sniffler, two sets of holes had to be drilled. One set was for

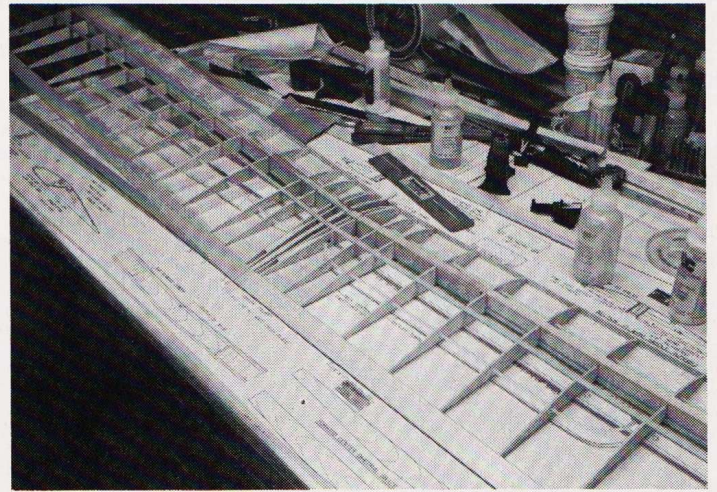
the spoiler pushrod cable and the other set for the Sniffler antenna. It's probably not a bad idea (get the hint?) to do this before assembling the wing panel.

There is one caution when joining the two inboard panels at the center section. The *Cumic Plus* uses a 3/8 ply joiner brace which doesn't jibe with the photos in the construction book. It's obvious (if you haven't already guessed) that the instructions are primarily for the smaller 100 inch span *Cumic*.

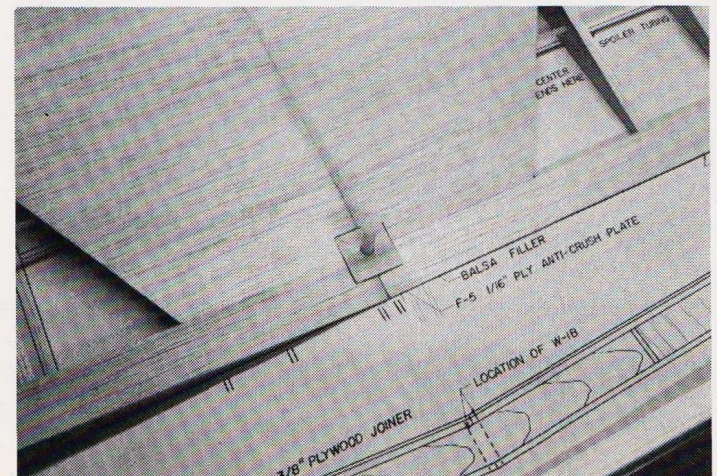
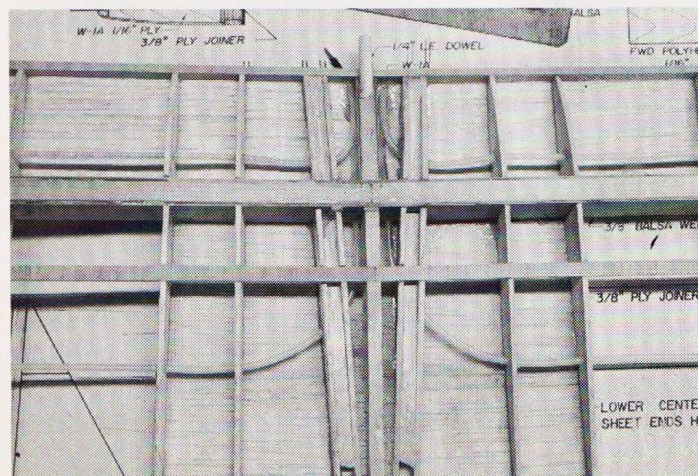
Just make sure you carefully align and join the two panels so you don't have trim problems later on. It would be a shame to waste the effort Airtronics put into selecting and incorporating such straight wood stock. Any other chores to complete the wing frame-up are pretty standard fare like the center sheet-



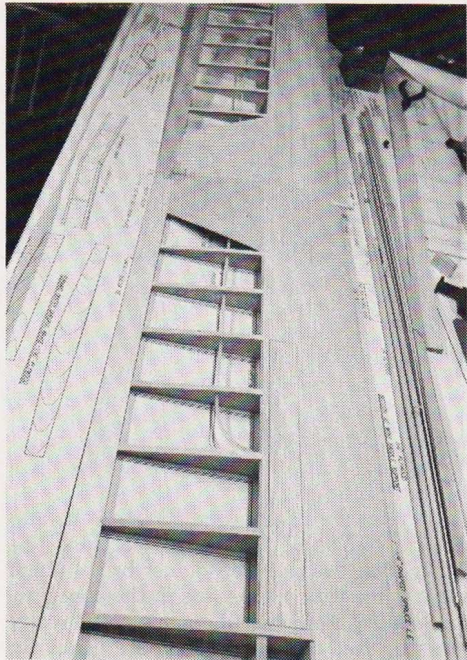
The instruction booklet was printed for the smaller wing *Cumic* and wasn't revised to reflect the changes in the *Cumic Plus* so it's necessary to check the plans as in the case of the dihedral brace (above left) for the actual part dimensions. Here (above right) the two inboard wing panels have been framed and



joined. In this center section detail, you can see the two tubes in the forward section of the wing which house the Thermal Navigator antenna (below left). The 1/16 ply reinforcement plate (below right) for the wing hold down screw in the trailing edge should be epoxied well to the wood below.



# Airtronics' Cumic Plus



Once the spoilers and their mechanisms have been added, the two inboard sections can then be sheeted. Note the spoiler cable tubes running through the ribs.

ing and the spoiler set-up.

## Fuselage

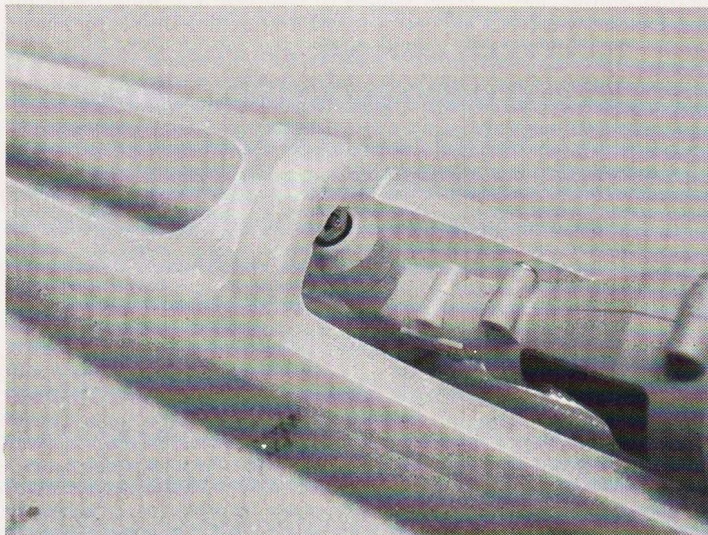
The fuselage on the *Cumic/Cumic Plus* is fiberglass and appears to have come from the Airtronics *Andante* kit. The glass quality is very good but there is a problem when it comes to seating the wing. The fuselage has a semi-symmetrical saddle molded in to accept the semi-symmetrical airfoil of the *Andante*. However, both *Cumics* use a flat bottomed E-205 airfoil which means that the wing saddle needs to be shimmed to seat the wing properly. During a telephone conversation with Tim Renaud of Airtronics, he told me that "all future *Cumic/Cumic Plus* kits will have a new fuselage with a flat wing saddle as it should be." He also said that they "... are beefing it (fuselage) up behind the wing which seems to be a weak spot."

Attaching the wing in place on the *Cumic Plus* departs the standard sailplane plug-in wing method. It relies on our power-plane brothers' standard dowel and screw method. A dowel in the wing's leading edge plugs into a hole and former in the fuselage while a single nylon screw in the trailing edge screws into a holddown block at the rear of the wing. It certainly makes fastening the wing at the field simpler.

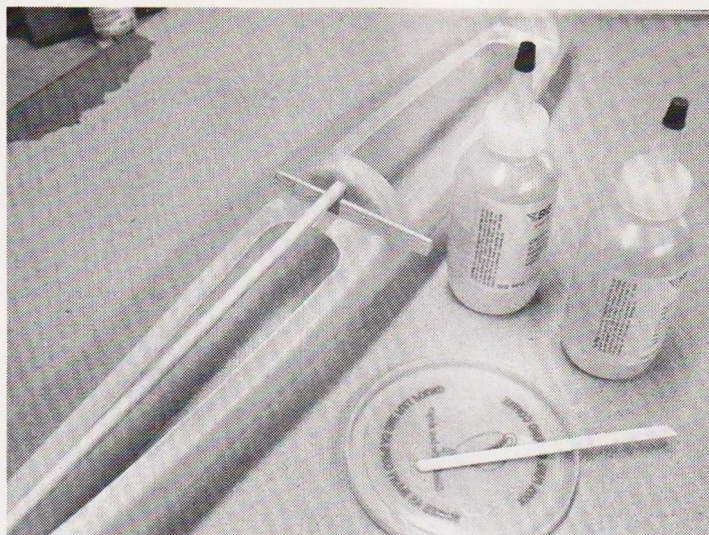
There's a ply former, F-3, that has the hole for the wing dowel. It's glued behind the wing leading edge partition of the fuselage. My particular fuselage had a lot of flashing up in there that inhibited a good fit for F-3. How to remove the excess material took a little bit of thinking because of the right angle formed by the partition and the top of the fuselage. Then a stroke of genius! A Robart Right Angle attachment for a Dremel tool fit right in there perfectly and I was able to grind away all the excess for a perfect fit for F-3.

The bottom half of the vertical fin is molded into the fuselage and the top half is 1/2 inch balsa sheet epoxied on top of the fin stub. It's not a bad idea to use some light glass cloth over the balsa top and the joint. It helps hide it and also strengthens it. The rudder and horizontal stab don't need much discussion since they're fairly simple built-up structures. Even though there is some sanding and shaping to be done, it doesn't take long.

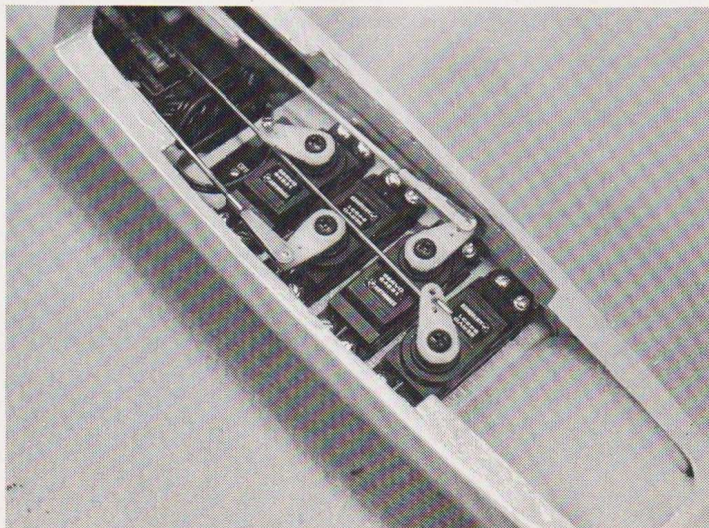
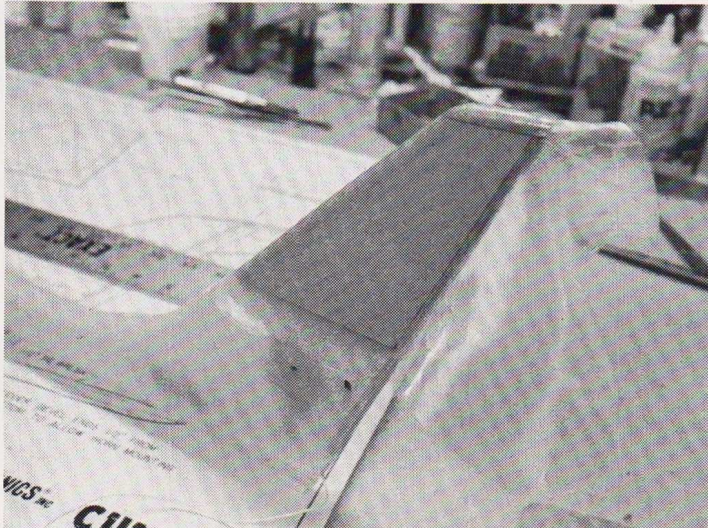
Among the last of the chores was spoiler installation. It really is simple and the return springs provided for the spoilers are just the right tension to keep the spoilers in place when they're not depolyed. Just follow the instructions to the letter and they'll be in in no

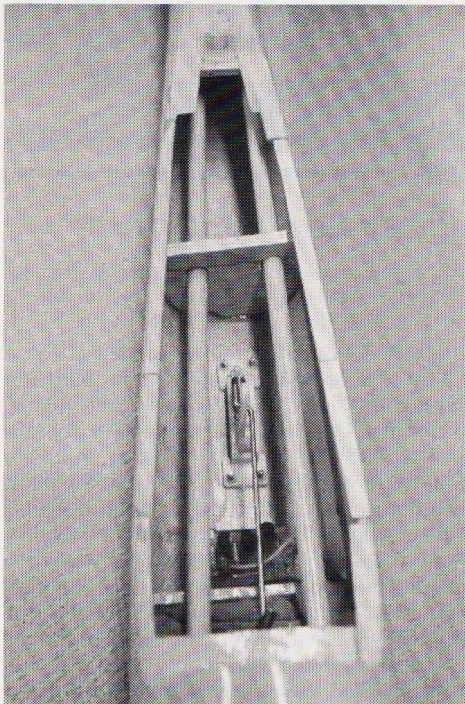


Here's where Ray's new Robart Right Angle Drive (above left) really paid for itself when he had to remove the excess flashing inside the fuselage for a good fit for Former F-3. To hold F-3 in place while the epoxy set, Ray used a dowel (above right). A piece of wood stock kept the dowel from drooping. Once the



vertical fin is epoxied to the fin base on the fuselage, glass cloth and resin (below left) are applied to reinforce it and hide the joint seam. The new Airtronics 94831 mini-servos fit perfectly (below right) for a neat installation. They have plenty of torque and excellent resolution.





The releasable tow hook nests between the two dowel pushrods. To prevent pushrod bowing, Ray added the simple balsa brace former shown above the tow hook.

time. Then all you have to do is add the nose and the tail skids.

### Radio installation

Because the Airtronics 94831 servos were so small it was not a difficult task to fit four of them into the plane instead of the three standard size servos shown on the plans. Besides the elementary rudder and elevator

functions, I used the other two servos for the spoilers and for a releasable tow hook. This system has become my favorite and I've settled on it in my last few sailplanes. It's a pleasure to have every function independent instead of relying on mixing functions like the releasable hook with the spoiler operation. In this case, I put the tow hook on the retract switch which means just flip the switch and off the line you come.

Once the radio was in and the pushrods hooked up, I found that the dowels I used had a tendency to buckle in the open area immediately below the wing. So I fashioned a balsa former and used it as a pushrod guide and that solved the problem.

Most of the contests I fly in are all ESL and AMA sanctioned and are held on weekends, but each as a separate contest. That's one of the reasons I chose an S&R 900 mAh pack. It really is worth the extra flying time it affords and it only weighs an ounce more than a 500 mAh pack which is only a fraction more than half the 900's capacity. Besides you've probably already heard the arguments about useful instead of dead weight for ballast.

### Skiing to the field

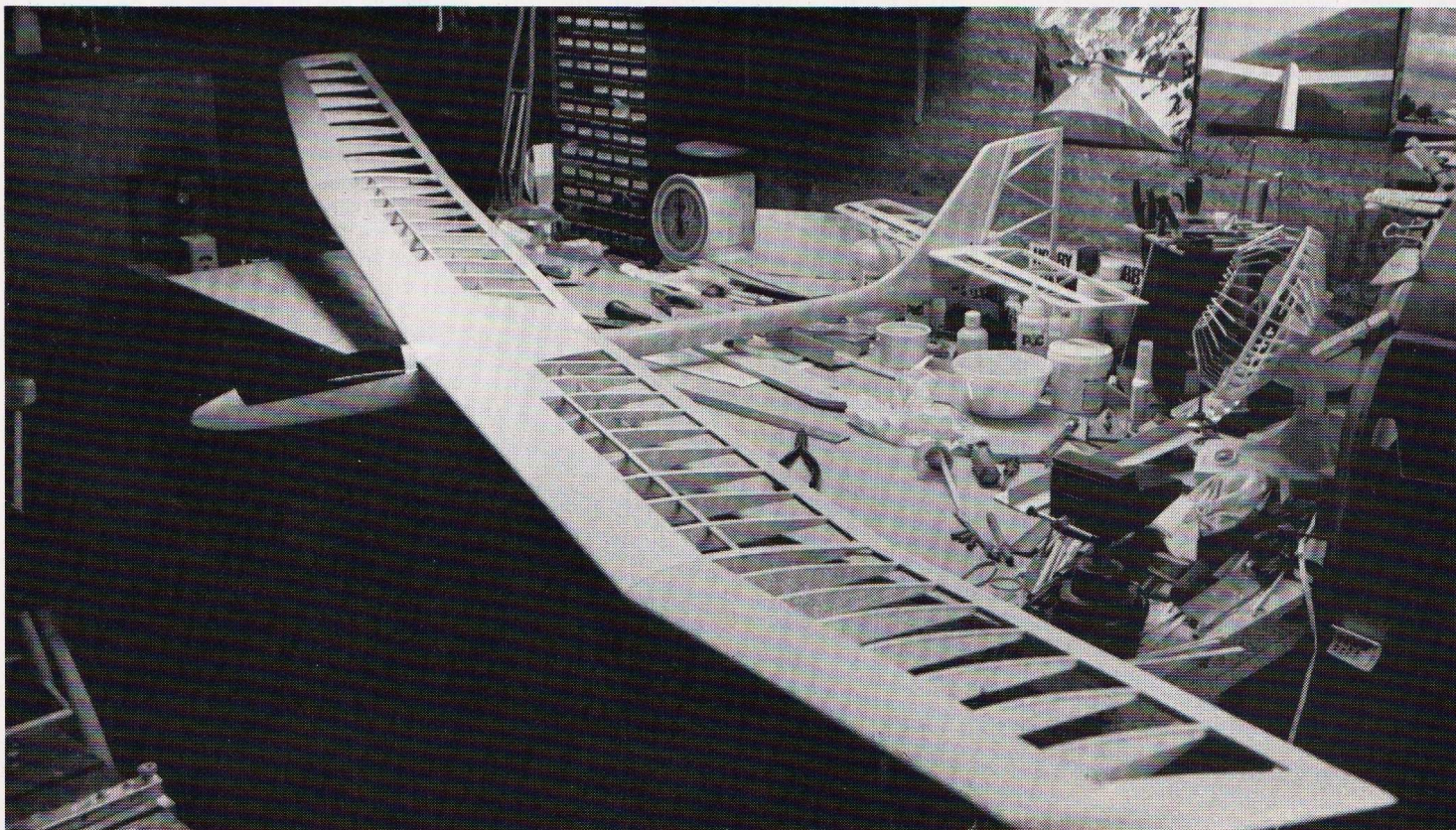
Since this was a winter project, I had to wait out the weatherman because he and Mother Nature conspired to dump a lot of snow on our area this year which made it impossible to enter the field without a 4-wheel drive vehicle. But I finally got there and found out quickly that the *Cumic Plus* flies very well. It is very steady on tow and the turns are very smooth.

One thing that stands out about the *Cumic Plus* is the way it lands - steady as a rock. Just get her over the landing spot and pull open the spoilers and she comes right in. The



To complement the new 94831 servos, Ray used an Airtronics SP7 Module system along with the ACE R/C Thermic Sniffer. The latter is tucked under the fuselage canopy/hatch.

205 airfoil has very good penetration in the wind and getting back down from a down wind thermal is no problem. She takes mild zoom launches very well and recovers nicely. The extra size of the *Cumic Plus* helps when it is at thermal height. The C.G. seems to be right on the money so trimming was not any problem. If yours flies like mine, you're gonna find that you'll be very pleased. ☺



With that 117 inch wing, the *Cumic Plus* can be hard to handle in a small workshop so exercise a little care and avoid premature hangar rash.