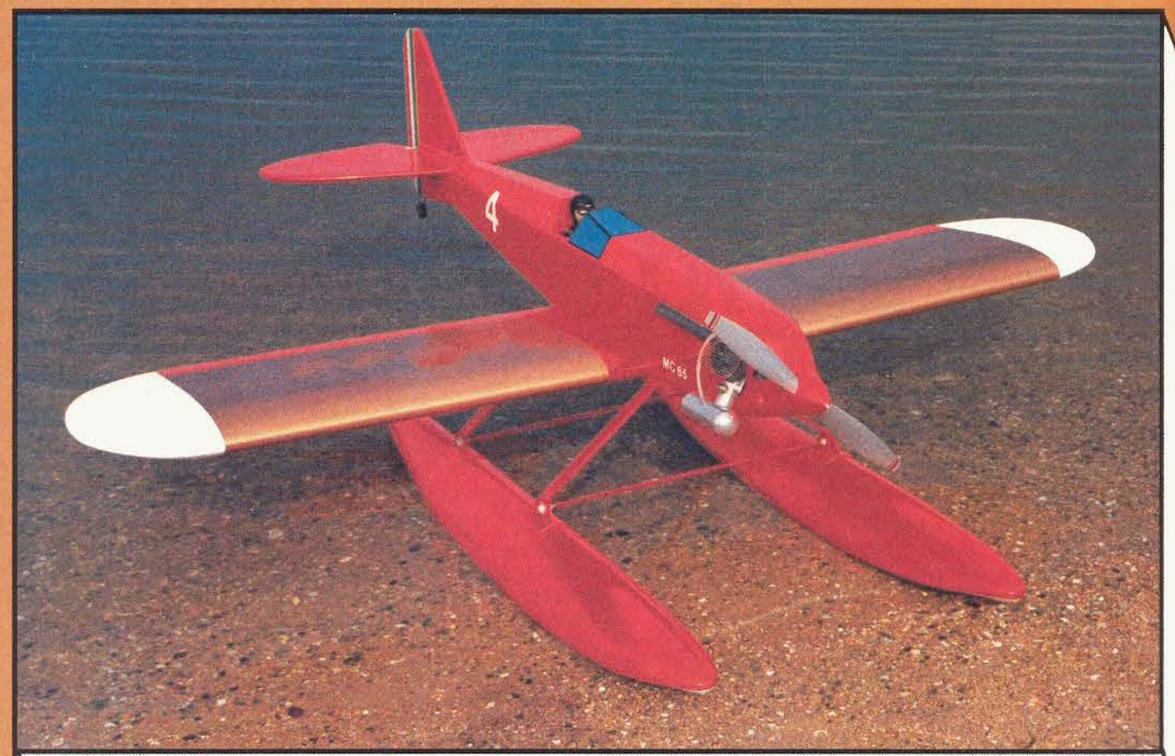


Schneider Sport 320

A super sportplane with a classic look, that's at home on land or water

By Tom Strom Sr.

SCHNEIDER SPORT 320
Designed By:
Tom Strom Sr.
TYPE AIRCRAFT
1/4 Size (generic)
Schneider Sport
WINGSPAN
84 Inches
WING CHORD
16.2 Inches
TOTAL WING AREA
1305 Sq. In.
WING LOCATION
Bottom of Fuselage
AIRFOIL
17% Full Symmetrical
WING PLANFORM
Constant Chord
DIHEDRAL EACH TIP
7/8 Inch

OVERALL FUSELAGE LENGTH
68¾ Inches
RADIO COMPARTMENT SIZE
Ample
STABILIZER SPAN
31 Inches
STABILIZER CHORD (incl. elev.)
8½ Inches (Avg.)
STABILIZER AREA
251 Sq. In.
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
15½ Inches (incl. ventral)
VERTICAL FIN WIDTH (incl. rud.)
10 Inches (Avg.)
REC. ENGINE SIZE
30-62cc

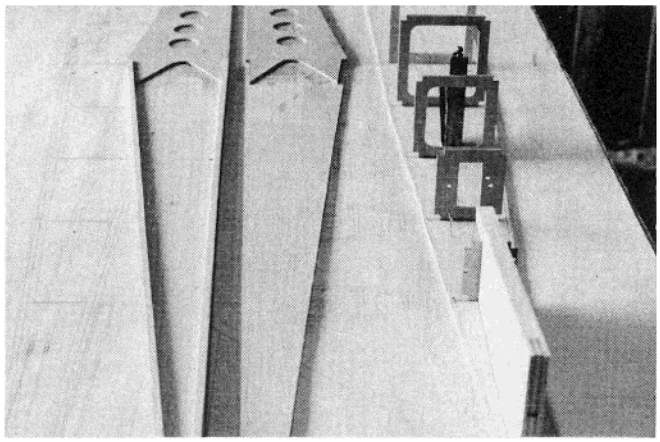
FUEL TANK SIZE
20 Oz.
LANDING GEAR
Convertible Sea/Land
FLOAT SIZE
54 Inches
REC. NO. OF CHANNELS
4
CONTROL FUNCTIONS
Rud., Elev., Ail., Throt.

BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa & Ply
Wing ..... Balsa, Ply & Spruce
Empennage ..... Balsa & Ply
Wt. Ready To Fly (Land) ..... 17 Lbs. 6 Oz.
Wing Loading ..... 30.7 Oz./Sq. Ft.
Wt. Ready To Fly (Sea) ..... 22 Lbs. 12 Oz.
Wing Loading ..... 40.6 Oz./Sq. Ft.

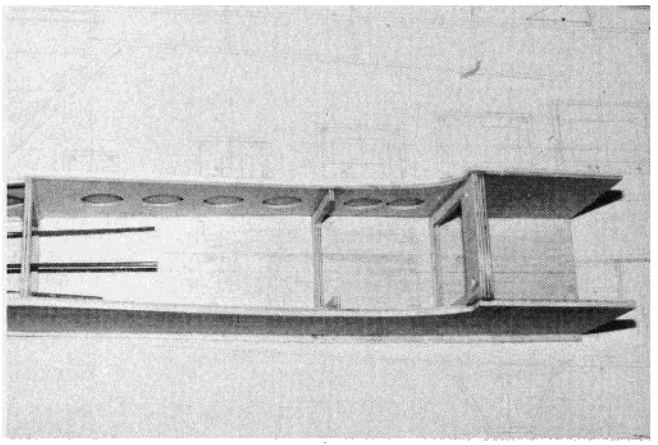
Recently in our hobby there has been a reawakening of interest in seaplanes, and a growing interest in the sleek, and beautiful Schneider Cup Racers. Modelers are always looking for new and exciting things to do in their hobby, and it seems that periodically, all forms of aircraft are given a "new" try. The Lake Havasu City Schneider Re-enactment event being promoted by Bob Martin, with the 1/3 scale models of the Schneider racers, is one of the more ambitious of these "new" interests.

A great deal has been published regarding the Schneider Cup events of the 1920's but not much has been revealed about why the Americans did not continue to be a major contender. The Americans seemed to have things going their way between 1923 and 1925, then the British and Italians took over. As everyone knows, the British eventually retired the trophy in 1930 with the Supermarine S-6B. What happened?

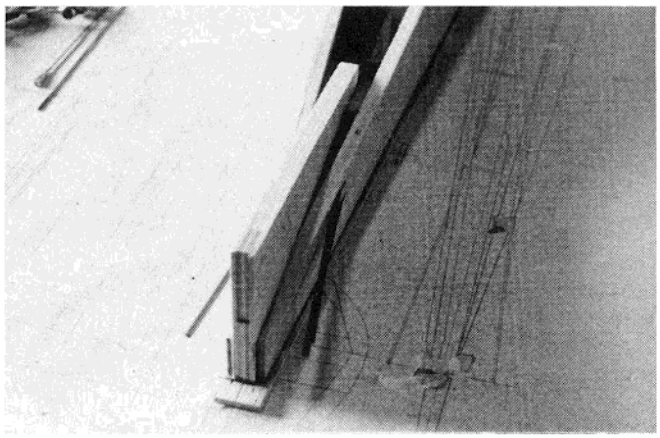
To review just a little, the first Schneider Cup event was held in 1913, and was won by a French Deperdussin Monoplane at 45.7 mph. The following year, 1914, it was won by a British Sopwith Tabloid Biplane at 86.5 mph. After WW I, the next race was held in 1920, and was won by an Italian Savoia S-12, a biplane flying boat, at 107.2 mph. At this point in the history of the Schneider races, people were thinking that



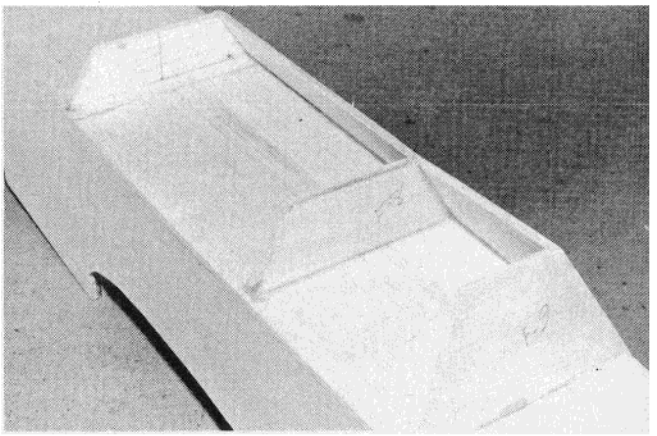
Fuselage box deck, sides, bulkheads, and ventral installation.



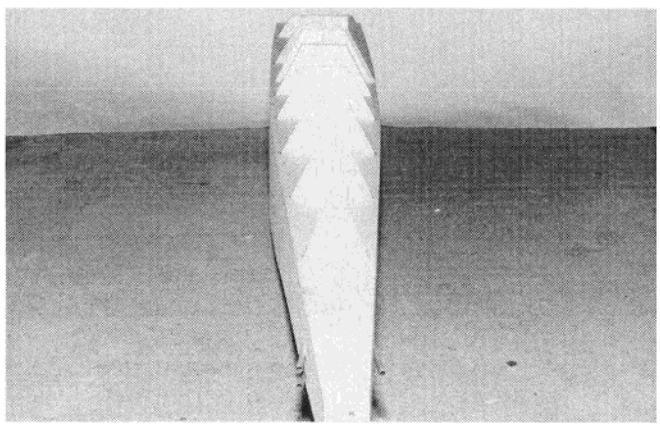
Inverted box showing wing saddle area.



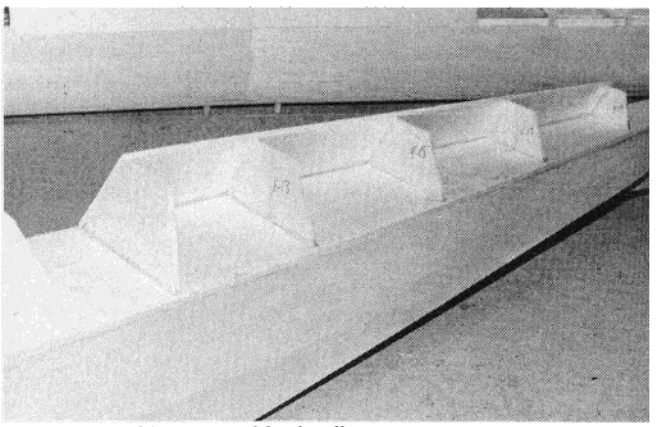
Inverted box showing ventral and pushrod tube installation.



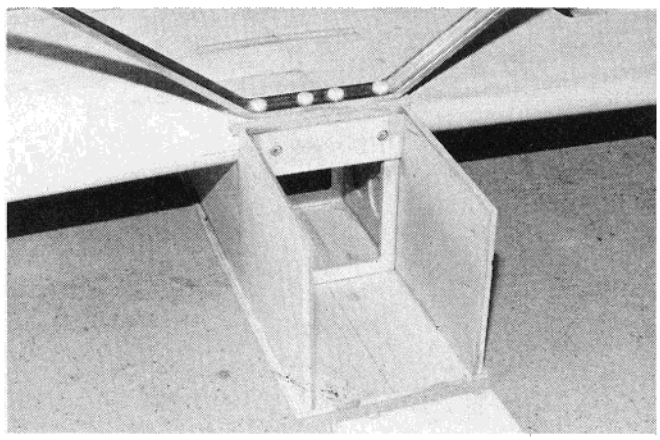
Cowl (hood) sides assembly detail.



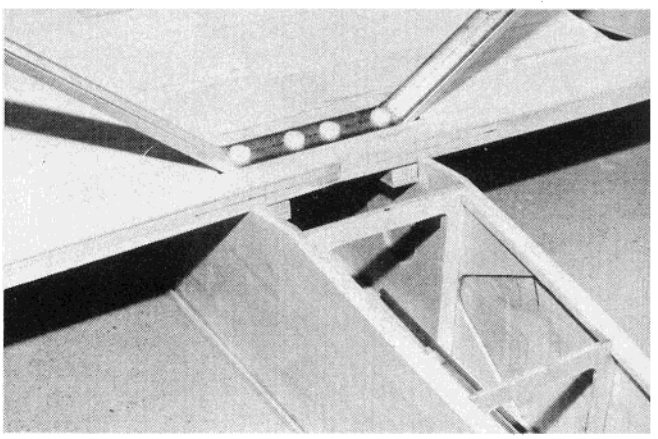
Fuselage upper bulkhead installation.



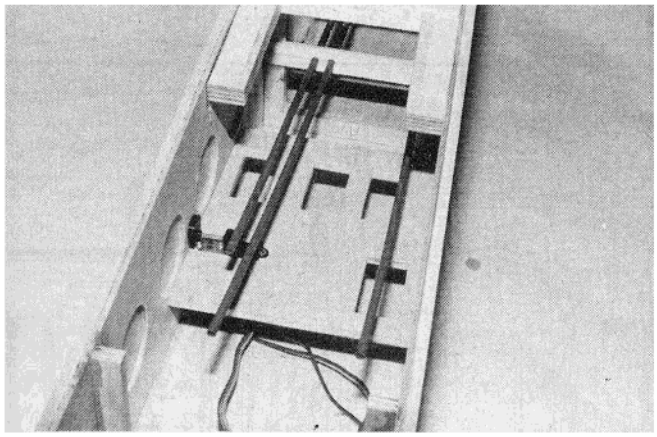
Turtle deck sides assembly detail.



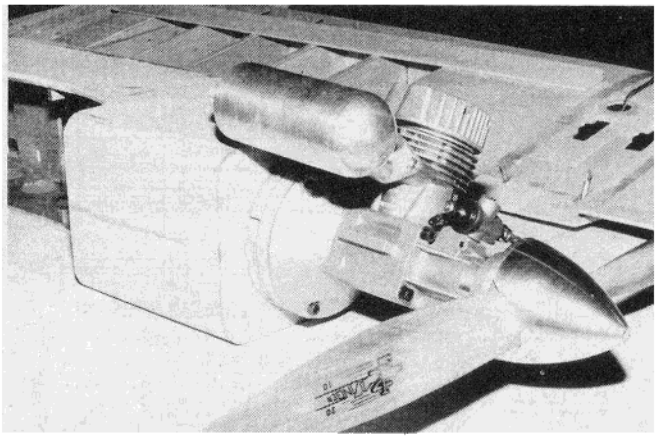
Wing dowel installation, F2 shown removed for drilling.



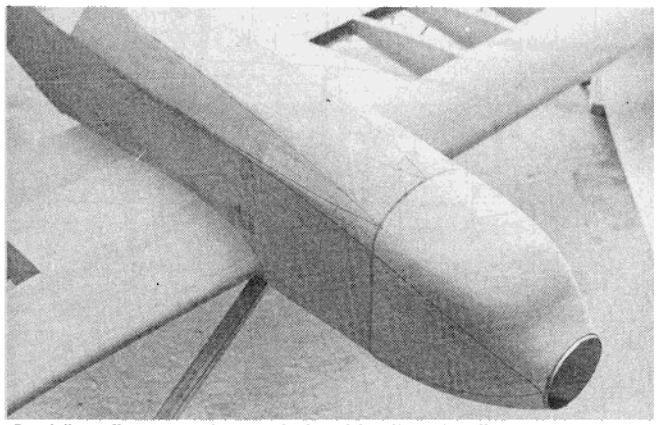
Rear wing hold-down bolts and rear strut installation.



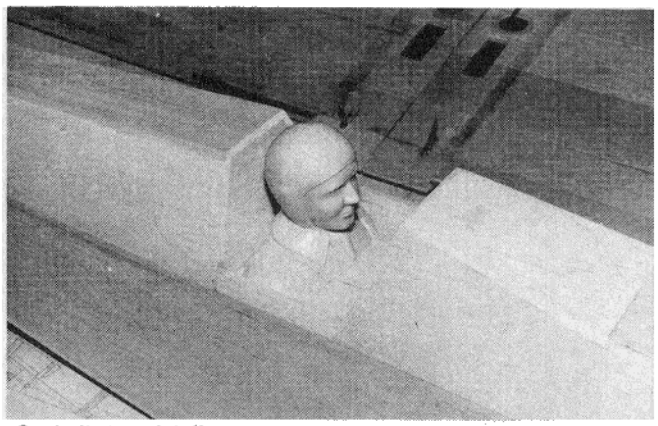
Box assembly details of wing blocks, servo tray, and pushrods.



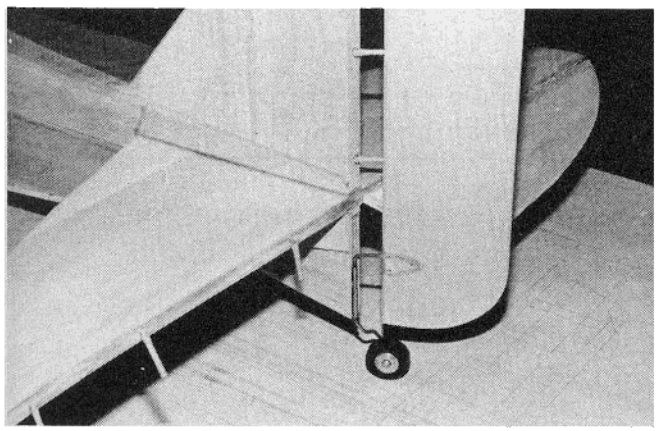
Engine mounting detail.



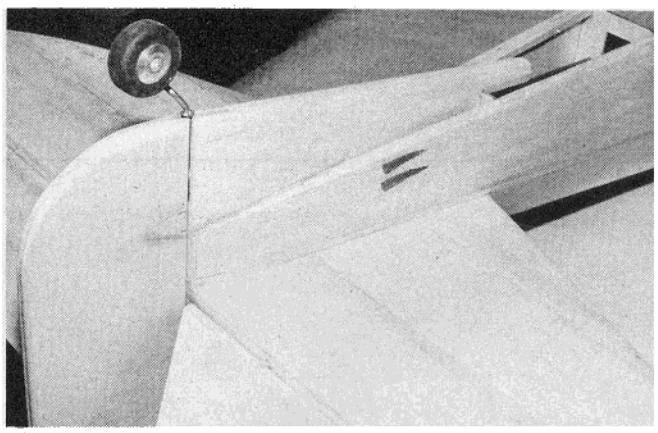
Cowl (hood) contouring and shoulder line details.



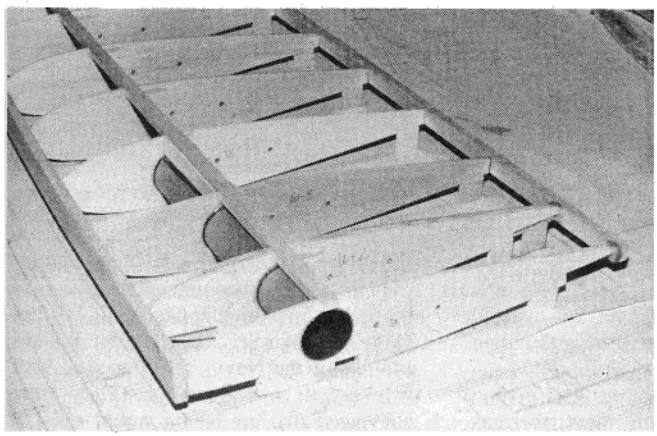
Cockpit area detail.



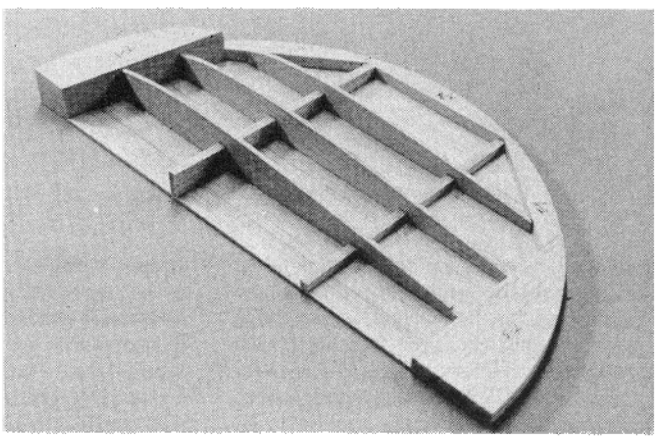
Rudder hinging detail.



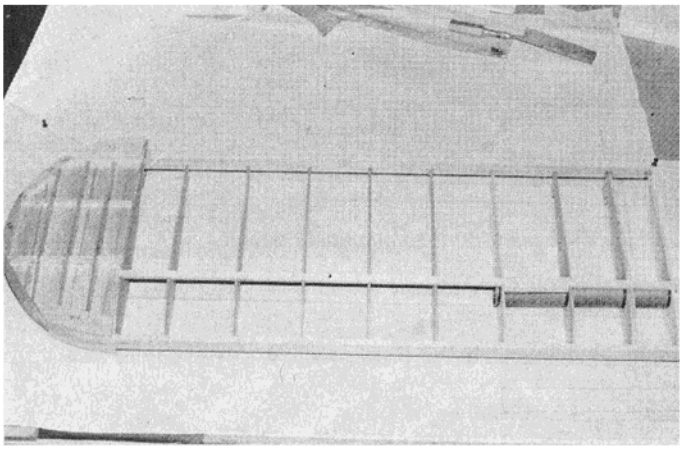
Empennage/pushrod tube alignment detail.



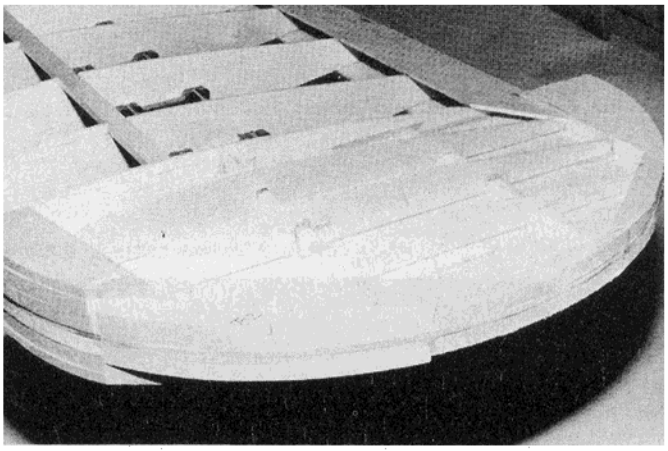
Wing assembly showing the phenolic tube installation.



Wing tip detail.



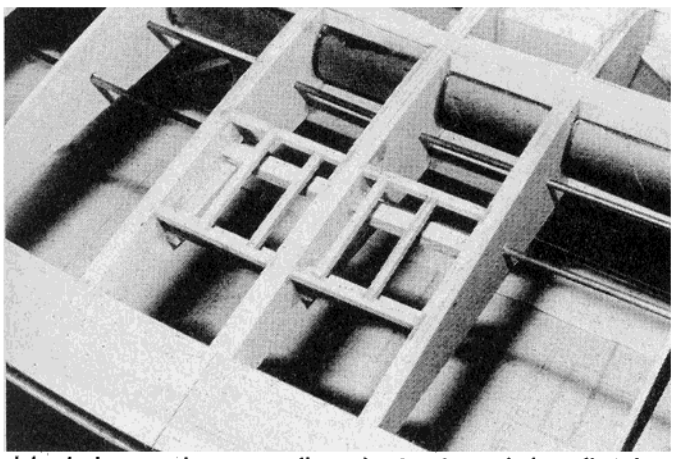
Wing and wing tip assembly detail.



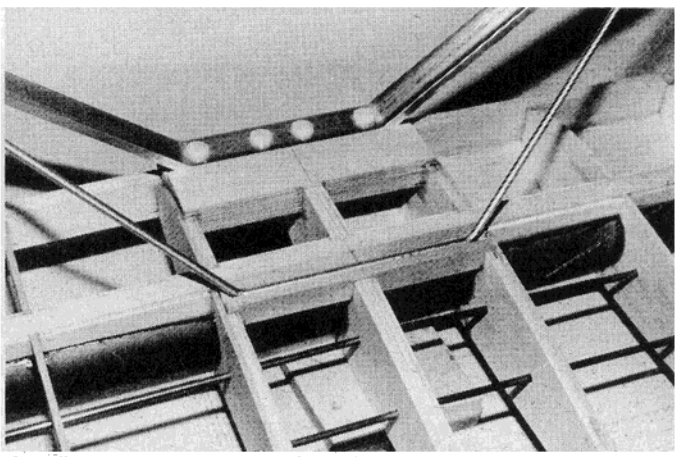
Wing tip with installation of trailing edge sheeting.

the flying boat was the best solution to the many problems surrounding seaplane racing, and for the next two years flying boats did seem to be the answer. In 1921 the winner was the Italian Macchi M-7 at 117.9 mph, and in 1922 the winner was the British Sea Lion III at 145.7 mph. Then in 1923, the sleek little Curtiss CR-3 biplane on floats, won at a speed of 177.4 mph. In 1925 Jimmy Doolittle in the Curtiss R3C-2 pushed the winning speed up to 232.6 mph. This was the end of the game, however, for the Americans, and the British and Italians went on from there.

The American race scene was given a boost in 1920 by a wealthy newspaperman, Ralph Pulitzer, who established a strictly American series of closed circuit air races. These races attracted the interest of the foremost military commanding officers of the period, in particular Gen. Billy Mitchell of the Army Air Service, and Adm. William Moffett of the Navy Air Wing who were interested in air racing. They were convinced that air racing would assist in developing combat planes with high speed and maneuverability. They were successful



Joined wing panels, servo rails and cut-outs, and phenolic tube shear web installation.



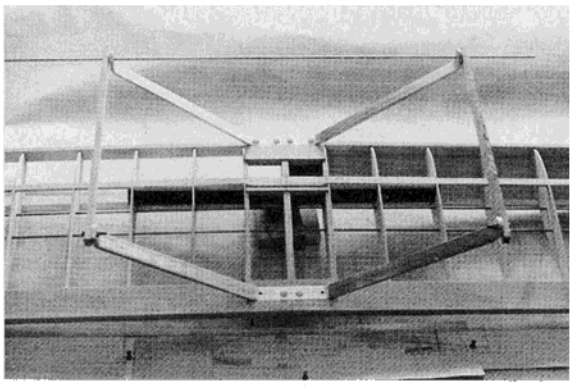
Landing gear strut system installation.

in obtaining limited budget support, but still had to trade funds and loan airplanes to keep the momentum going. In the six years, 1920 through 1925, the winning average speed rose from 156.5 mph to 248.9 mph. Of particular interest was that, during this period, the horsepower of these craft remained around 600-650 hp. The improvements came through streamlining and drag reduction.

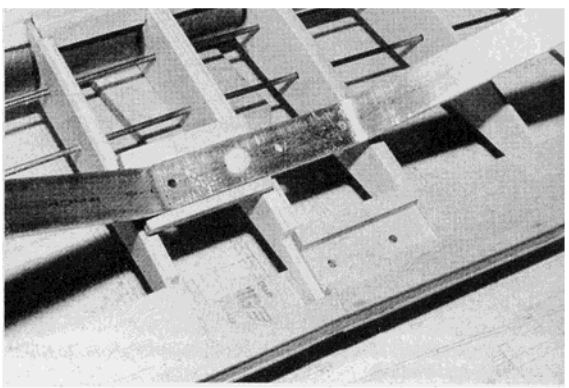
It was the technology developed in the Pulitzer races that put the Americans out in front at the 1923 and 1925 Schneider Cup races. Taking the extremely clean Curtiss land plane racer, the wheel gear was removed, twin floats were added, and presto! a Schneider Cup racer with technology far in advance of anything else competing at that time. The technology learned from the Pulitzer races included: (a) The Curtiss D-12 engine, a wet sleeve liquid cooled, monobloc V-12 with four valves per cylinder, (b) the Curtiss-Reed metal propeller, (c) wing skin radiators, (d) aerodynamic refinements including fillets, and elimination of other drag producing components and, (e) the

development of wood structures with plywood surfaces, and the resulting monocoque technique.

The story takes a familiar turn at this point. The Pulitzer races seemed to show the American military and its leaders that the small compact biplane with its low wing loading, low landing speed, and ease of carrier handling and storage, was just what we needed, and funding to develop other more "exotic" forms of aircraft such as monoplanes, was just not available. The Americans were, as a result, still using biplanes well into the late 30's. The British and the Italians, however, found that the Pulitzer technology development was the information and direction they were looking for, and in a much more favorable funding environment and more important, high national pride, went on to develop engines and airframes which left the Americans



Float strut mounting alignment jig.



Rear float strut mount fit up.

Schneider Sport model is not a racer, as such, it is a true all around sport model with well behaved flight characteristics, at all speeds, and with excellent acrobatic capability.

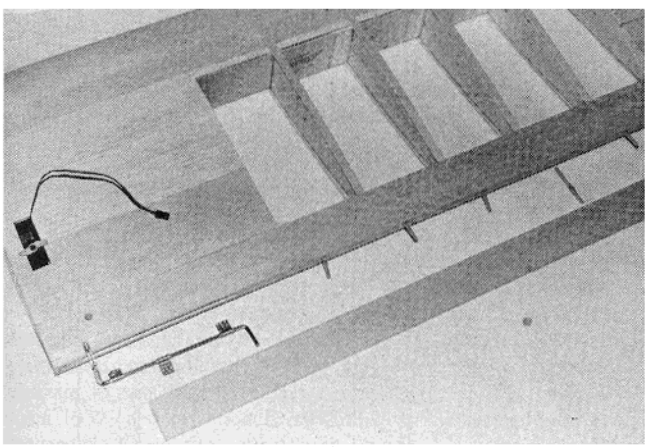
After seeing the original Schneider Sport model being developed (by Jim Feldmann) as a modification to a Sweet & Low Stik (RCM December 1989), I knew the concept could be a winner. The performance of the model on and off the water was very satisfying.

Good floats which could enhance the design further just were not available, so the models (three 45 size and two 120 size were built) used a variety of (ARF) floats. All performed adequately, and one very important feature learned — this low wing model did not require water rudders!

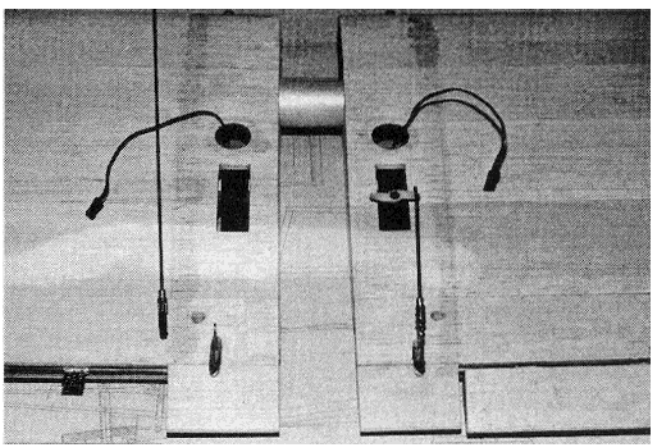
With Jim Feldmann's concurrence, I went on to design a Schneider Sport 60 from the "ground" up, incorporating all of the lessons learned from the "Stiks," and to design a matching set of floats which could further enhance the Schneider look, and be in fact, an aerodynamic part of the aircraft rather than just something to go float flying with. And, like the Curtiss racers, the new Schneider Sport model was to be "convertible," with the basic configuration a land plane on wheels, and to have a "Thompson, Bendix, Cleveland" 1930's racer look. This was to be done also with no significant change in the C.G. The result being an even greater looking and performing model that was usable at the field or on the lake.

One question kept coming up every time the "60's" were flown. Hey! When are you going to design one for us "Big Bird" guys? What became even more significant was that this question was being asked no matter whether the model was being flown on floats or on its "Golden Age" wheels.

On wheels, the Schneider Sport when



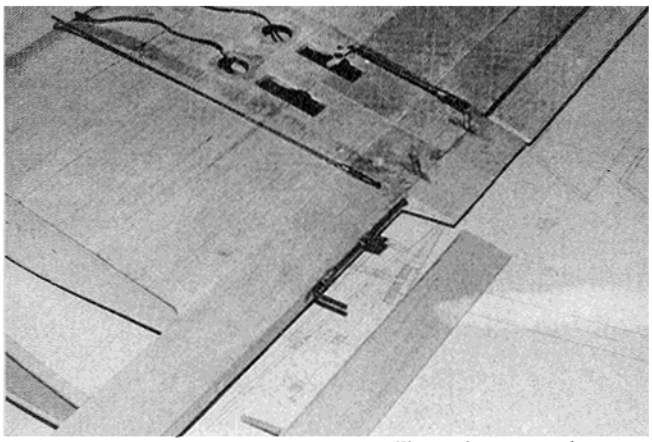
Aileron torque rod hardware installation.



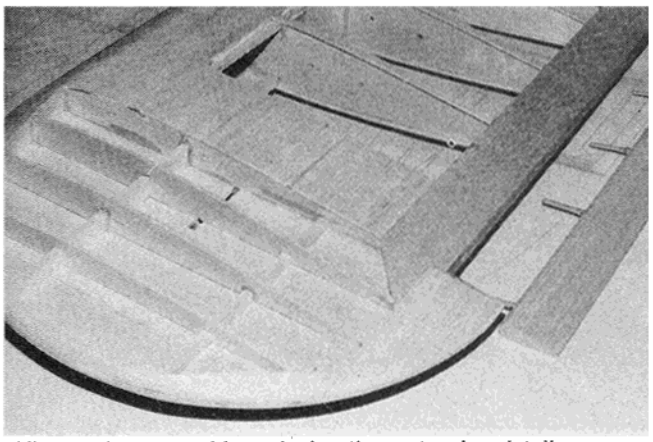
Wing assembly, carry-thru tube, and aileron servo installation.

many years behind. As we all know, these aircraft were the ancestors of the superb fighters developed by both nations, and the British Supermarine and the Italian Macchi MC.205V carried the "competition" with each other into battle during WW II.

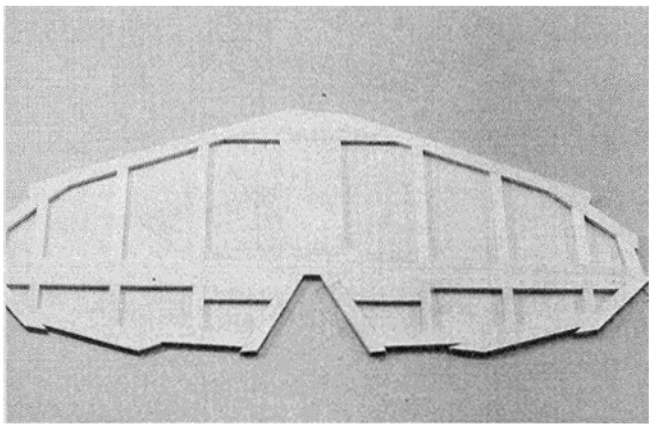
The Schneider Sport model is one of those rare combinations of appealing style, and with truly excellent flight performance. Although the Schneider Sport model is really a "generic" look-alike Schneider Cup Racer, it is recognized as a Schneider instantly by even individuals outside the circle of aviation and hobby buffs. The appropriately painted in the 1930's Sport aircraft color schemes, does suddenly become a "Cleveland Sport" and its inherent "chameleon" attribute is fully demonstrated. This model can take on the appearance of a typical vintage 1930's airplane by just changing the colors,



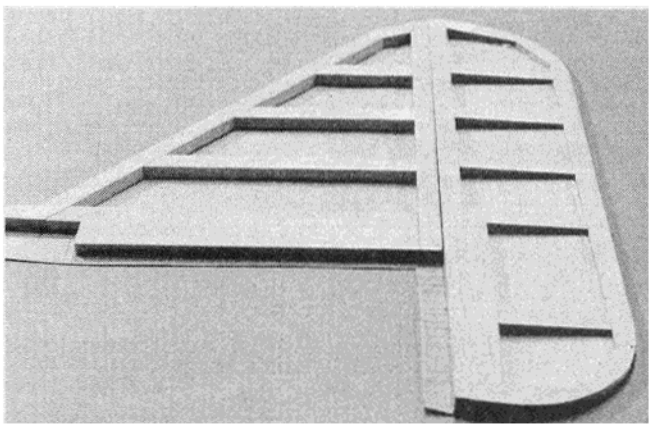
Aileron installation and wing center trailing edge extension.



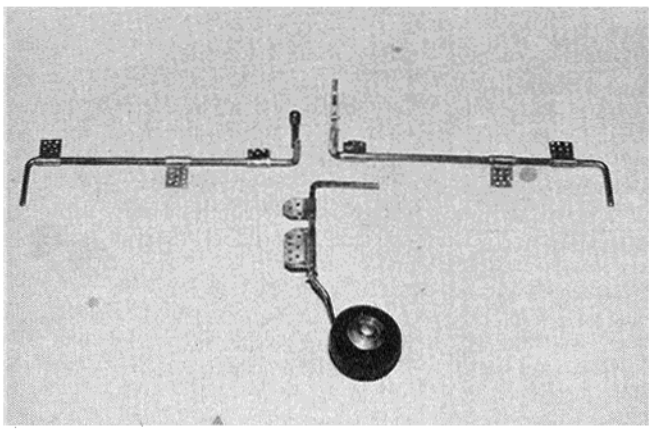
Aileron/wing assembly and wing tip contouring detail.



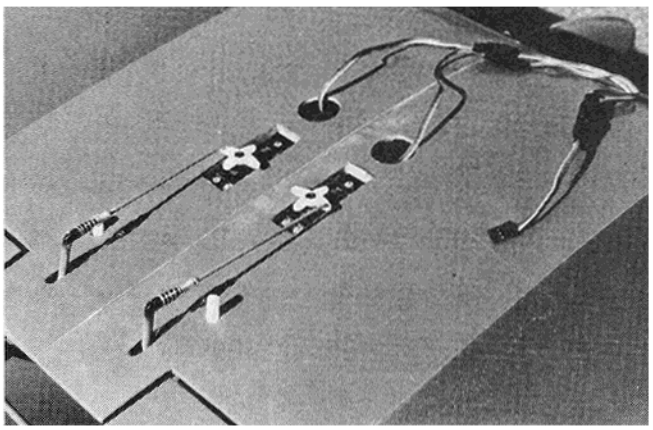
Stabilizer and elevator frame structure.



Vertical fin and rudder frame structure.



Hardware details, ailerons, and tailwheel.



Final installation, aileron servos.

including many military fighters of the period.

Since I have always been a "Big Bird" modeler, the challenge to develop a 1/4 scale version of the Schneider Sport was too tempting to pass up. I have been a modeler since 1932, and my models were always bigger than I was. One of my high school manual training class projects which covered a span of 3 years, was to build a 1/2 scale Grumman F3F2 biplane! (Then came WW II.) Along with my friend Ted Enticknap, I was flying 9 foot plus wingspan "GOOL" free flight models in the late 40's and early 50's, and was building scale models no smaller than 2 inch to the foot. My first R/C model was a 7 foot span Helioplane using a ground base WAG two-tone two-pulse transmitter, and the hand held single stick box. I guess you could say I was one of the original "big is better" modelers.

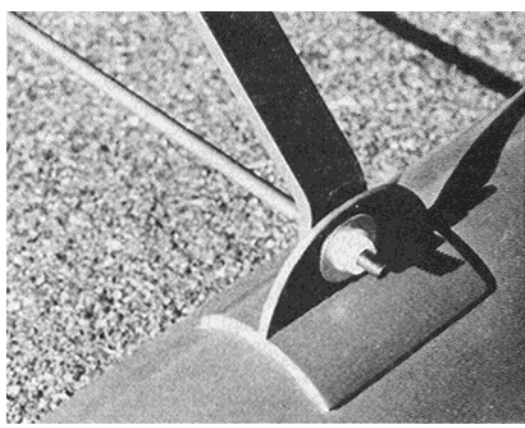
The 1/4 scale Schneider Sport was, as all airplane designs are, a compromise of the many factors surrounding the mission or goal for the model. Some of those factors are as follows:

1. To be a "1/4 scale-generic Schneider."

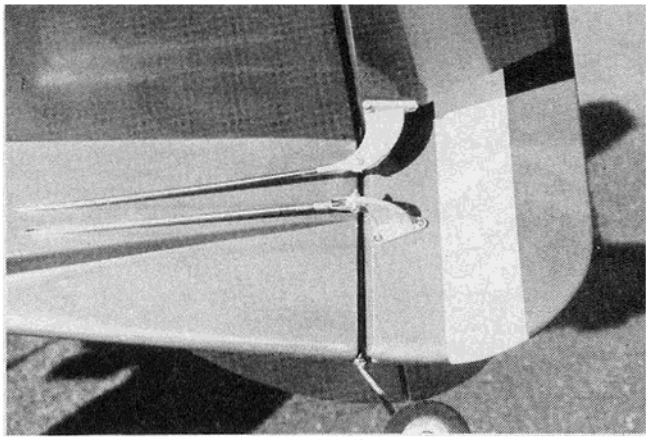
2. To be convertible landplane or seaplane.

3. To retain the look of the successful "60."

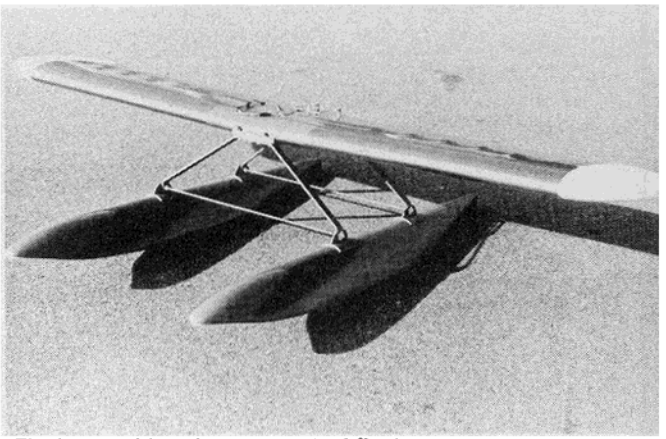
4. To retain the acrobatic and low speed



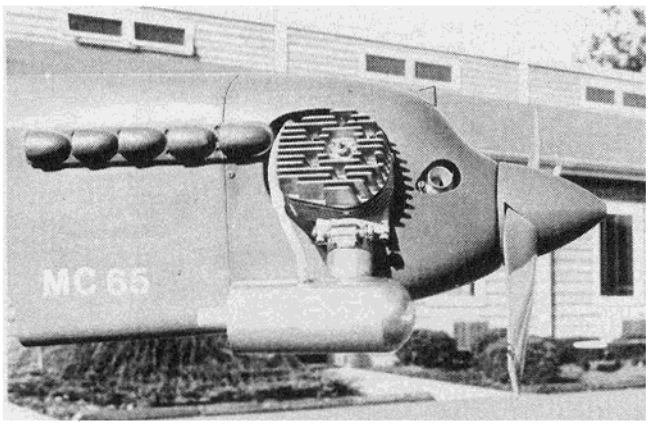
Float, float strut, and spreader rod assembly detail.



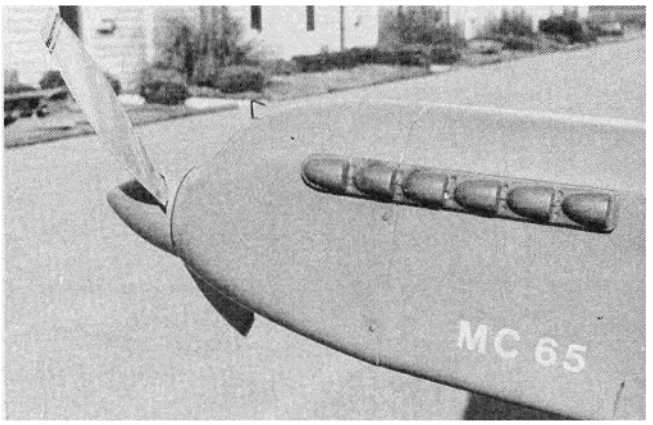
Elevator and rudder pushrod details.



Final assembly, wing, struts, and floats.



Cowl and exhaust stack installation, R. hand side.



Cowl and exhaust stack installation, L. hand side.

capability of the "60."

5. To retain the excellent water handling of the "60."

6. To allow for a variety of power plants.

7. To incorporate a two-piece wing, for transportability.

8. To provide for bench top or jig construction.

9. To have assembly and disassembly convenience.

10. To use off the shelf materials where possible.

You could ask —— well if you're going to build a Schneider model of that size, why not go to the 1/3 scale size of a Macchi, Supermarine, etc.? (My personal favorite is the Gloster VI.) To answer that question is to sort of state what sport models are all about. The majority of us modelers want to fly every chance we get, and we want to enjoy it at the same time. That means the model must **look** right and **fly** right (we modelers enjoy looking at airplanes), to be relatively simple to build, to be of **moderate** cost, and to not raise your anxiety level excessively while flying it. The name of the game is **fun**!

The Schneider Sport 320 then was designed to be, and is, an incredibly well behaved seaplane/tail dragger, nearly as large as the 1/3 scalers, and which could also be used as a trainer for the budding 1/3 scaler.

The 320 was designed to fall mid-way between the smaller Gloster VI aircraft which had a span of 26 ft. and the larger Supermarine 6B with a span of 30 ft. This resulted in a wingspan of 84" for the model. The model was given a 17% thick airfoil to guarantee superb handling characteristics at low speed during take-off and landings, as well as a moderate sensitivity to C.G. location. The model tracks straight and true both as a landplane and seaplane, and is a real joy to shoot touch and go's with. The acrobatic capabilities of the 320 are excellent, and the airfoil does a good job of limiting the vertical dive speed. The penalty for airfoil thickness is of course "drag" and this shows up primarily in a reduced flat-out level speed, dependent on the size of the engine selected. **This does not mean the model is slow!**

At this time, there is not a racing class for model seaplanes other than the Lake Havasu Schneider Cup re-enactment event. The Schneider Sport models have been used to put on some fantastic "simulated" Schneider races, however, and have generated a lot of interest in the possibility of developing a "one design" contest of this type.

CONSTRUCTION

The complete step by step construction article comes with the full size plans (see RCM order page for ordering information).

Flying:

Check your model thoroughly before going to the flying site!

Check all bolts, nuts, and screws. The final assembly of all hardware should have been done with blue Loctite or an equivalent.

Check all clevises, servo screws, servo wheel screws, control horns, and other operating connections, for proper assembly and security.

Check the C.G. again!

Check all controls. **Please — no slop, no binds, and no glitches!**

Place your batteries and receiver in a plastic baggy or rubber balloon and seal tight around the cables with rubber bands.

Check your battery charge.

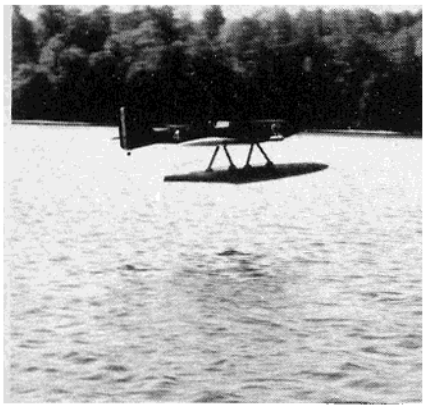
Run your engine and check the throttle settings.

Pre-flight your model before every flight and **check** your model after every flight.

Check your transmitter for accidental switch and trim changes!

You have heard it before, and it's true! If you have set up the model straight and true it will fly straight and true!

Take-offs with wheel landing gear are the same as any tail dragger and may require a little right rudder until sufficient air speed is attained. Landings are also smooth and stable; be aware, however, that the "Big Birds" slow down faster than the small ones. **Do not chop the throttle and try to land!** I recommend that landings be made using full scale piloting technique which requires that the approach be made using the



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elevator to set the attitude and **speed** of the model, and use the throttle to control **climb** and **descent**, i.e., on final, ease in up elevator to raise the nose and increase the drag, thereby slowing the model. Apply throttle to maintain altitude or extend the approach glide slope, or reduce throttle to steepen the approach slope. As you approach the runway, ease in additional up elevator to achieve a three point attitude at touchdown, and with a little practice, a good no bounce landing will result. Once on the ground, hold up elevator to prevent any inadvertent bounce, and taxi back to the pits.

Take-offs with floats are very smooth and the model will normally fly right off the water. Normal **Schneider Cup aircraft** did not waste any time getting clear of the water, and we recommend that once off the water, get up and go!

Landings are very smooth and stable. See landing suggestions for land plane, the technique for setting up your approach is the same. Set up a landing attitude that positions the float aft bottom surface level, or at a slight angle of attack, and touch down with the stern of the float touching the water first. For touch and go's, let the model settle slightly down on the step (for directional stability) and then smoothly apply power to take off again. The 54'' floats used on the prototype model were obtained from Stream Inc. (815 Blue Crab Rd., Suite C, Newport News, Virginia 23606, [804] 873-6604) as well as the cowl, exhaust stacks, and strut hardware. The aluminum tube/phenolic sleeve unit was obtained from Gator R/C Products, 3713 Pompano Dr., Pensacola, Florida 32514, (904) 476-8639. □