

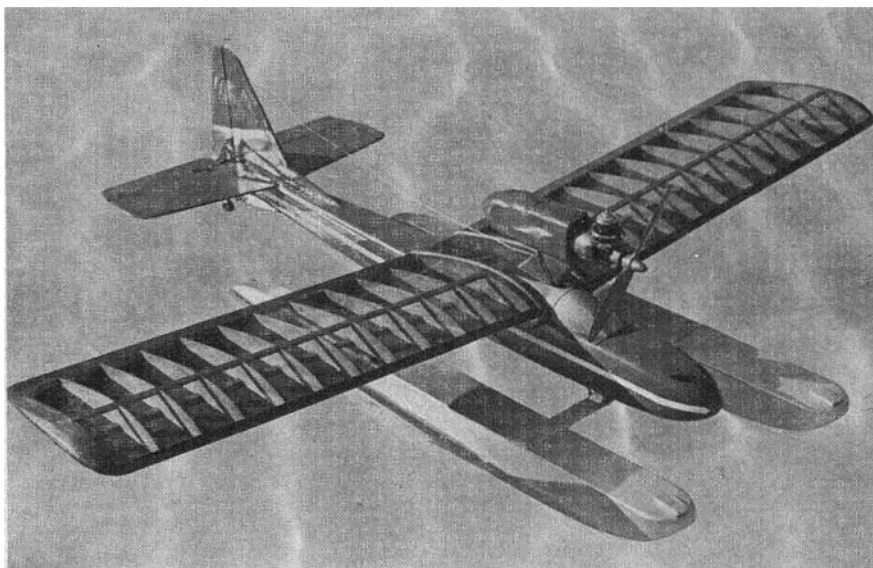
**F**ifteen years ago (January 1964 RCM) I published a design named the Virus. It was intended for the absolute beginner in building. All balsa, sheet wings, single surface, it was ultra simple to construct, and it also was a good flying model.

For several years, the original Virus flew as a landplane. Then I had an idea --- convert it to a seaplane. So, I built up a set of twin floats and tried it. No luck. It was underpowered. I increased the power from an .020 to an .049. Still it would not take-off from the water, but it was pretty wild in the air. I modified the float design a bit; originally they were straight sided from nose block to tail block. I tapered the back end to the shape which they now have. Still no take-off --- so at that point I figured there was something basically wrong and discarded the idea. But it kept haunting me through the years.

Meanwhile, with several flying boat designs working very well, I kept learning through trial and error what hull design worked best. Perhaps the most significant event was during the design phase of the Wavemaster. I had specified a step design, but the production manager for the ABS plastic version wanted to modify it to save production costs. We tried his version --- it was totally unsatisfactory. Although the model would take-off from the water, it was strictly by brute force. When we went back to the specified step design, the model would take-off at half throttle.

With that experience in hand, I knew what had to be done to the floats which were originally designed for the Virus. But many things had happened to radio control in the intervening years, so a new design was in order. And, thus, the Simple Sunday Seaplane was conceived. I would use the Virus floats, with the step modified to give the right depth and upsweep to the float bottoms.

Some modelers look at the Simple Sunday Seaplane and say, "Hey, isn't

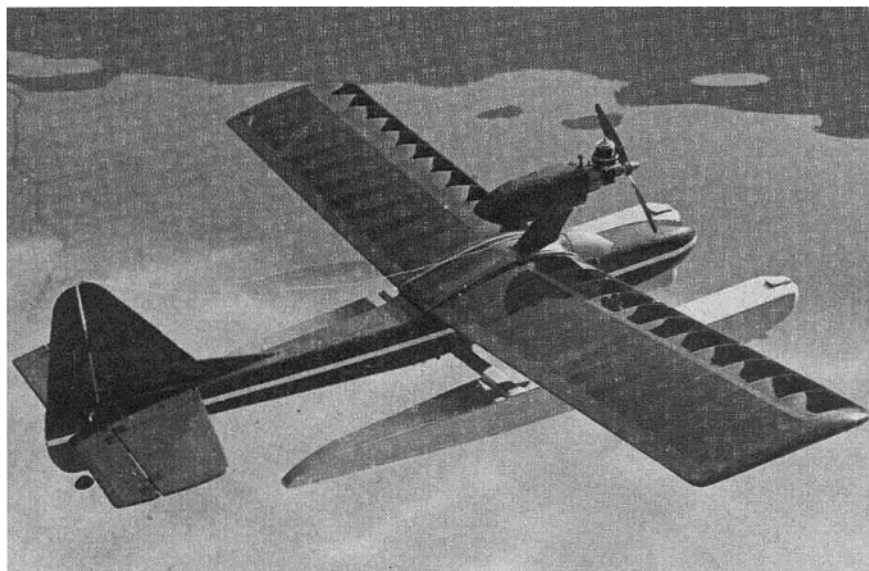


*The Simple Sunday Seaplane at its best -- on the water.*

**By Ken Willard**

# SIMPLE SUNDAY SEAPLANE

**The name says it all on Ken's latest.  
The beginning took place 15 years ago,  
with the final results presented now.**



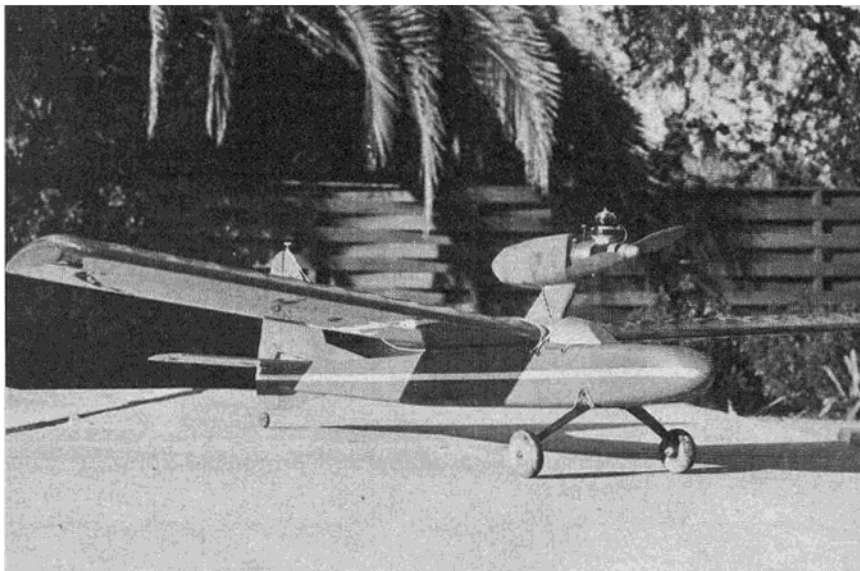
that a bit of overkill on the float size?"

"Nope. Y'gotta keep in mind what this design is intended for." I always keep a straight face when saying that.

"So what is it for?" He took the bait.

"Ever been in the South Seas?" It doesn't matter how he replies --- yes or no. "Well, there's a lot of inter-island transport, and it's a mix between cargo and passengers --- who don't like to be mixed. So, this design solves the problem. With a U-shaped dock, you berth the seaplane in the slip between. Hatches on the tops of the floats allow loading access for the cargo, which is distributed equally between them. The cross braces serve as walkways for the passengers to enter the fuselage. No

**Three quarter rear view of SSS on water. Note tail wheel in water acting as water rudder.**



Landplane conversion of the SSS.

cargo mess in the passenger cabin, simultaneous loading and unloading and, best of all, since the load is distributed between the fuselage and the floats, there is no exceptionally heavy load on the crossbraces, like there is on a conventional float design. Very strong, and very stable in high seas."

"Uh-huh. Sounds logical."

"Another plus is that the prop is way up there above the fuselage, and doesn't pose a danger threat to the passengers."

"Yeah, that's right."

By now, he's convinced that a lot of thought went into the design, so there's no sense in telling him that it came about because a fifteen year old design didn't work. We'll just keep that a secret between you and me. All 120,000 of us.

For a while, it looked like I still had a problem. During the initial testing, I flew the SSS as a landplane, strapping the Hallco gear to the bottom of the fuselage with double stick tape, and with the wheels properly located just under the leading edge of the wing. Flew very well, and handled well on the ground, using the Ace throttle for low speed taxiing.

So, up to the lake for water tests. Taxied fine; the tail wheel serves double duty as a water rudder, and the model steered well, so I applied power. It came up on the step, scooted over the water, and took off. Great. After a few banks and turns, I tried a loop. Right at the top, without any help from me, it snap rolled! When it came out, with a bit of down elevator, and was headed down for the water, I applied up elevator; another snap roll! And that process repeated itself until the model snap rolled into the

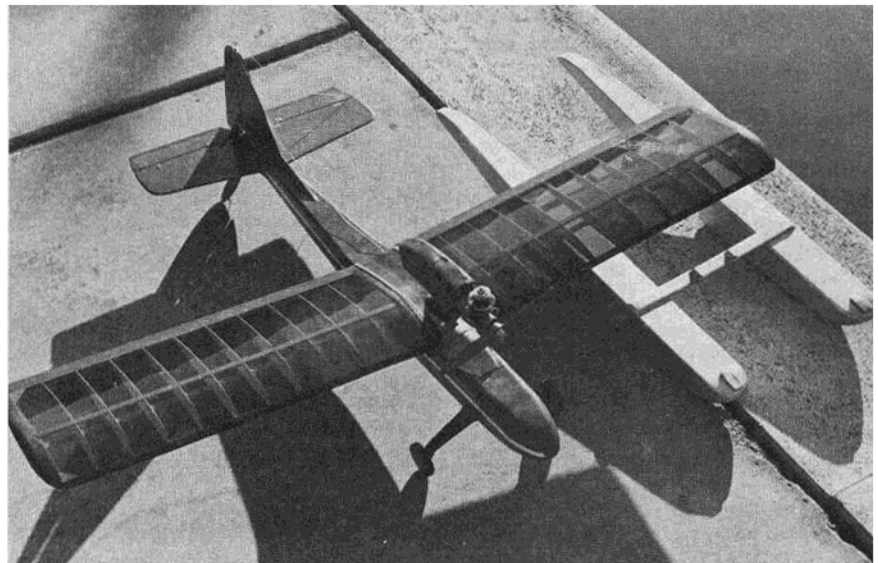
**Simple Sunday Seaplane with Hallco gear installed. Floats are alongside.**

water.

It was only about seventy feet out so, with my trusty spinning rod, I cast a one ounce weight out and beyond the model, the line dropped on the model and, as I slowly retrieved the weight, it hung on the model and I brought it in.

While the SSS was drying out (one of the best things about crashing in the water is that damage is either slight or there isn't any), I analyzed the problem. It was two-fold; the vertical tail area was insufficient for the big side area of the floats, and the Center of Gravity was too far back. This wouldn't show up in the landplane version.

I had a couple of stick-on weights with me and I attached them to the front of the floats. You can still see them there in the photos. When the radio dried out about a half hour later (this was fresh water, of course) I fired up and tried again. No luck. Wouldn't take-off. Although I moved the C.G. forward, I couldn't make



## SIMPLE SUNDAY SEAPLANE

Designed By : Ken Willard

### TYPE AIRCRAFT

1/2A Sport Seaplane

### WINGSPAN

37 1/2 Inches

### WING CHORD

7 Inches

### TOTAL WING AREA

262 1/2 Square Inches

### WING LOCATION

Top of Fuselage

### AIRFOIL

Flat Bottom

### WING PLANFORM

Constant Chord

### DIHEDRAL, EACH TIP

1 1/2 Inches

### O.A. FUSELAGE LENGTH

29 Inches

### RADIO COMPARTMENT AREA

(L) 8" X (W) 1 1/4" X (H) 1 1/4"

### STABILIZER SPAN

13 3/8 Inches

### STABILIZER CHORD (incl. elev.)

4 1/2" (Avg.)

### STABILIZER AREA

57 1/2 Square Inches

### STAB AIRFOIL SECTION

Flat

### STABILIZER LOCATION

Top of Fuselage

### VERTICAL FIN HEIGHT

5 3/8 Inches

### VERTICAL FIN WIDTH (incl. rud.)

4 1/2" (Avg.)

### REC. ENGINE SIZE

.049-.051 Cu. In.

### REC. FUEL TANK SIZE

Tank Mount

### LANDING GEAR

Twin Floats (opt. wheels)

### REC. NO. OF CHANNELS

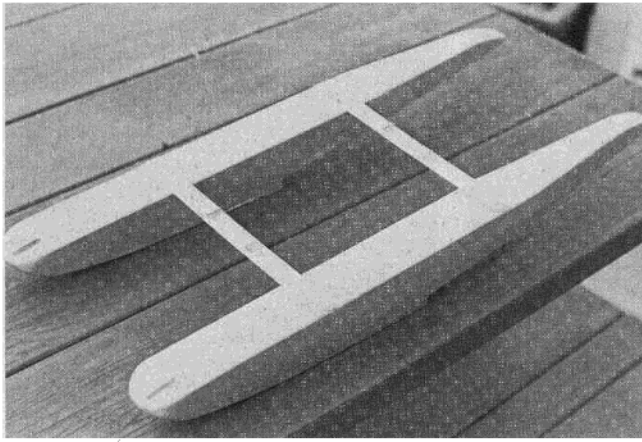
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### CONTROL FUNCTIONS

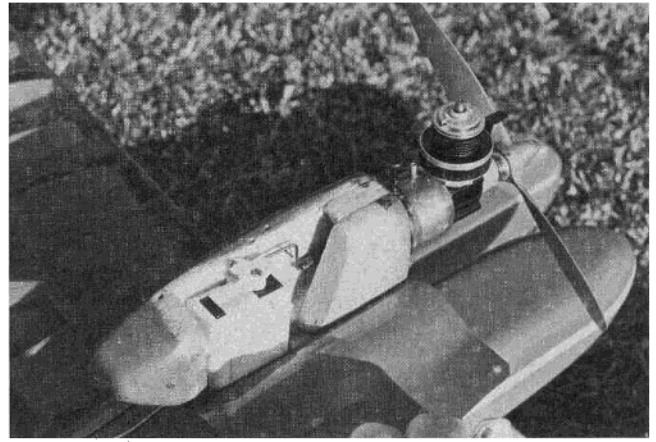
Rud., Elev., & Throt.

### BASIC MATERIALS USED IN CONSTRUCTION

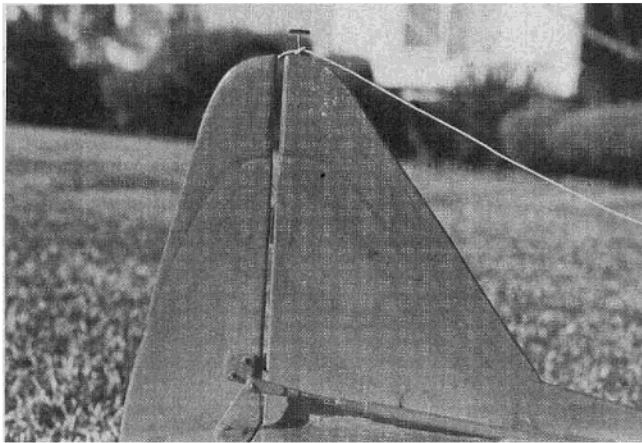
Fuselage	Balsa & Ply
Wing	Balsa & Ply
Empennage	Balsa
Weight Ready-To-Fly	18 Ounces
Wing Loading	9.89 Oz./Sq. Ft.



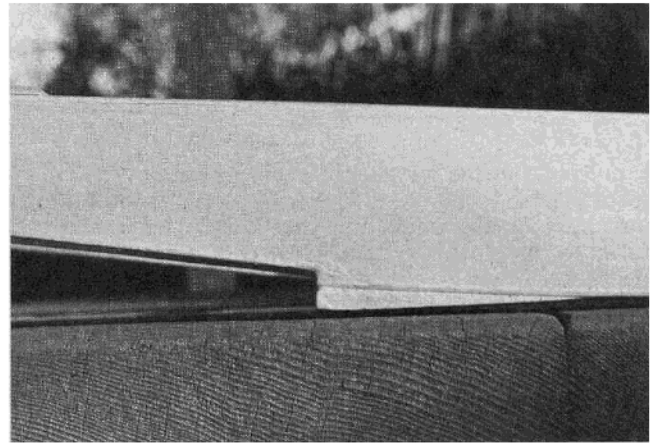
**Float structure of the SSS. Note aligning blocks, and balance weights on nose.**



**Pylon structure of the SSS prototype. Shows engine control.**



**View of vertical tail surface after additional area added. Indentation line shows original size which caused snaprolls.**



**View of step modification of float needed to make take-offs.**

a field modification and move the floats, and so the step was too far back, which made the model "plow" through the water.

When I got home, I did what was required, enlarging the vertical tail area and rearranging the float attachment so the step would be properly located as now shown on the plans.

The next day I went back to the lake for more water tests. To say that I was pleased is an understatement. The performance far exceeded my expectations; the Simple Sunday Seaplane performs better than any other twin float seaplane I've ever designed. Note that I refer to the twin float designs only, since I still find that a single float, or hull, with centerline drag, is usually the most reliable on water.

Then I had another surprise. After several flights off the water, I replaced the floats with the landing gear. At first I had planned to mount the gear in the conventional location, slightly forward of the C.G. about under the leading edge of the wing. As most of you know, when the gear is too far forward, it tends to cause ground looping. However, since the dowels were there for the floats, I thought that just for an experiment I'd attach the landing gear to the front cross

brace dowel attachments. I was both fascinated and surprised to find that the SSS takes-off with the gear that far forward and doesn't appear to have any ground looping tendencies at all. Of course, a good part of that is due to the light weight of the model and the relatively high power for its weight. But since it simplified the design, that's where I show it on the plans.

The Golden Bee engine, with the Ace throttle installed, and using Magnum fuel with 25% nitro, gives plenty of power for water take-offs. The throttling, once you get it properly mixed at the needle valve, lets you taxi around on the water and even do touch-and-goes. You have to set the SSS down easy so water doesn't splash up into the prop and kill the engine --- usually just out of reach so you have to go after it with a boat. On one occasion I didn't, and tried to cast over it with my one ounce retrieval weight. I was right on target; the lead weight went through the wing instead of past it.

You'll find the Simple Sunday Seaplane easy to build, easy to fly, and a real attention getter, either at the lake or the flying field. Here are some brief building hints.

#### **CONSTRUCTION**

**Wing And Pylon:** The conventional

wing structure needs little or no explanation; the plans show all the necessary details. Dihedral angle is established by use of the dihedral braces. The center ribs are cut out so the dihedral braces can be full depth; also the center ribs are fitted together to form a solid 1/8" surface to which the 1/16" plywood sides of the engine pylon can be glued. Then the 1/8" balsa filler between the plywood sides can be fitted to the top of the center ribs. This gives a very strong pylon mount for the engine.

The pylon engine mount is built up with the two pieces of hardwood --- either basswood or pine --- glued to the sides of the plywood, and then the 1/2" balsa block is attached on the left side of the plywood mount immediately behind the hardwood engine mounting block. With that side installed, you then temporarily mount the engine, with the Ace throttle backing installed, and tailor the servo and throttle linkage as shown. Note the guide pin in front of the servo; it is required to keep the linkage from buckling as you push the needle in for idling.

With the throttle servo and linkage installed, the plastic sheet housing from the right side of the pylon then can be cut

to fit. Note that the design calls for only one axis of curvature, so a flat sheet can be fit over the front and back blocks, then held in place with small wood screws. No, it's not waterproof, but unless you really screw up your landing, water doesn't get in there.

**Fuselage:** The fuselage is the old familiar slab-sided, with a nose block up front and tailpost at the rear, with 1/8" longerons running the full length. Top, bottom, and side sheeting is all 1/16" balsa, and formers are made from 1/8" balsa sheet. The wing cradle structure, using trailing edge stock front and rear, and 3/16" x 1/4" sides, gives a strong base to hold the wing on, using wing seating tape and rubber bands to pull the wing down tight.

The radio installation shows a Cannon Super-Mini Block, and the mounting rails are tailored to fit. Access is provided without having to remove the wing by means of the hatch, which is held in place by a small rubber band. When flying off water, rub some Vaseline around the edges of the hatch to repel water which sprays up from the floats on take-off.

The canopy is strictly cosmetic. It is cut from a commercial 8" plastic canopy, and painted on the inside, either black or silver, whichever suits your taste. The float mounting dowels rest on top of the bottom longerons, and the wing mounting dowels are inserted just below the top longerons.

**Tail Surfaces:** All tail surfaces are cut from 1/8" sheet balsa, grain running as shown. Round off the edges, install hinges, and then control horns. The tail wheel wire is simply epoxied to the side of the rudder, and the tail wheel serves double duty as a water rudder, and works very well for that purpose. When you run the flexrods out to the control surfaces, fill the holes where they come out of the fuselage with epoxy.

**Floats:** The floats are a simple box structure with 1/16" sheet sides, top and bottom, and rectangular 1/8" formers. The nose block and tail block inserts are rounded to shape and the floats are finished.

The crossbraces of 1/8" x 3/4" plywood are glued right to the top of the floats, and the edges rounded to give a streamlined appearance. Note the little alignment blocks which are glued to the crossbraces so the fuselage is cradled between them and stays in place.

**Optional Landing Gear:** The small Halco landing gear can be strapped on to the forward mounting dowels for the floats, replacing the floats for landplane flying. Surprisingly, the model tracks very well with the landing gear that far forward.

**Finishing:** In covering and finishing the model, the choice is yours. Personally, I used transparent MonoKote on the wing, then spray

painted the fuselage and floats with Aero-Gloss. To me, that was the easy way to do it. Just be sure that no bare balsa is exposed to the water. It's a good idea to coat the inside of the fuselage with clear dope, too. You're bound to dunk it at one time or another, and that will keep the balsa from soaking up water and swelling.

**Flying:** The Simple Sunday Seaplane is as easy to fly as it is to build --- easier, in fact. Set up the linkages to the control surfaces so they travel about 1/4" in either direction, be sure the C.G. is properly located, fire up the engine and adjust for a good full throttle two cycle run. Run it down to idle, set the SSS in the water, take a deep breath, taxi it out, head into the wind, push full throttle, hold neutral elevator, and then, when the model is on the step and gathering speed, gently feed in a slight amount of up elevator. Let it fly itself off the water; don't try to "horse" it off, or it will probably break loose on one float, spin around on the other, and stop. If you're lucky, and the engine is still running (usually water sprays up when this happens and kills the engine) you can reduce throttle, get lined up, and start over.

No flying in salt water, please! Unless you want to chance losing your receiver and servos. Corrosion sets in immediately if they get wet. Fresh water will sort things out, but it has been my experience that if you retrieve the model after a fresh water dunking and blow it as dry as you can, then let the radio dry in the sun, no harm is done, and you can fly again in a half hour or so.

The Simple Sunday Seaplane is one of the best flying 1/2A models I've flown, either as a landplane or a seaplane.

Build one, and tell me if you agree. I think you will. □