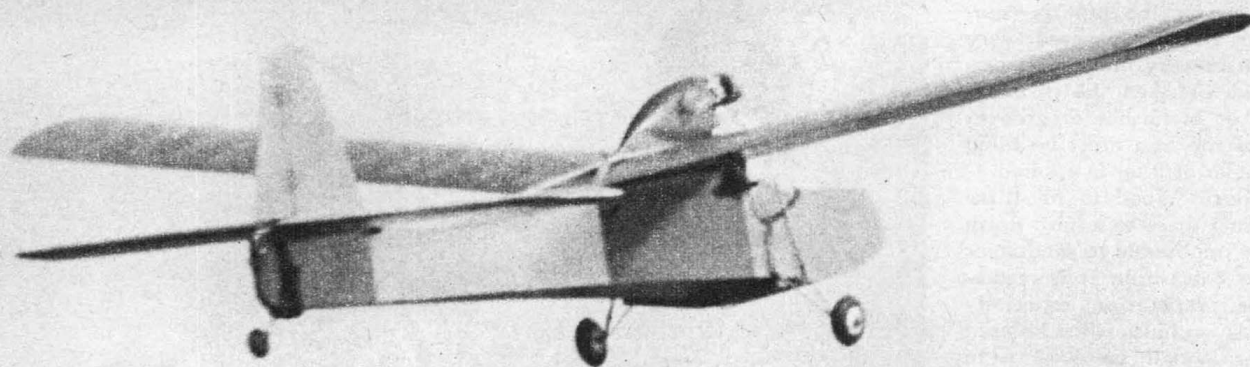


RADIO CONTROL SEMI-SCALE AMPHIBIAN:



Ken's Dreamboat

By KEN WILLARD



Author-designer Willard shows how you can fly his Dreamboat over land *without gear!*

Ample fuselage proportions will be applauded by radio modelers; a real tough character, it'll survive crashes

■ *Dreamboat* was designed with the idea of having a simply constructed, radio-controlled amphibious or straight flying boat. It is very easy to build, especially if you use Frank Zaic's 50" wing-stab kit, which fits the design perfectly. Whether you're new at radio control or an old hand, this model will answer your desire for something "different," yet it performs the contest pattern like a veteran. The water take-offs are really thrilling to watch, and if you should go to a .14 or .15 engine in place of the .09, be

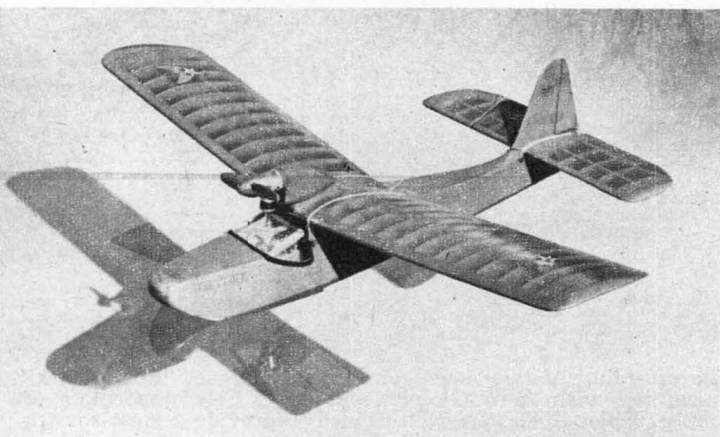
ready for some truly fast action in the air.

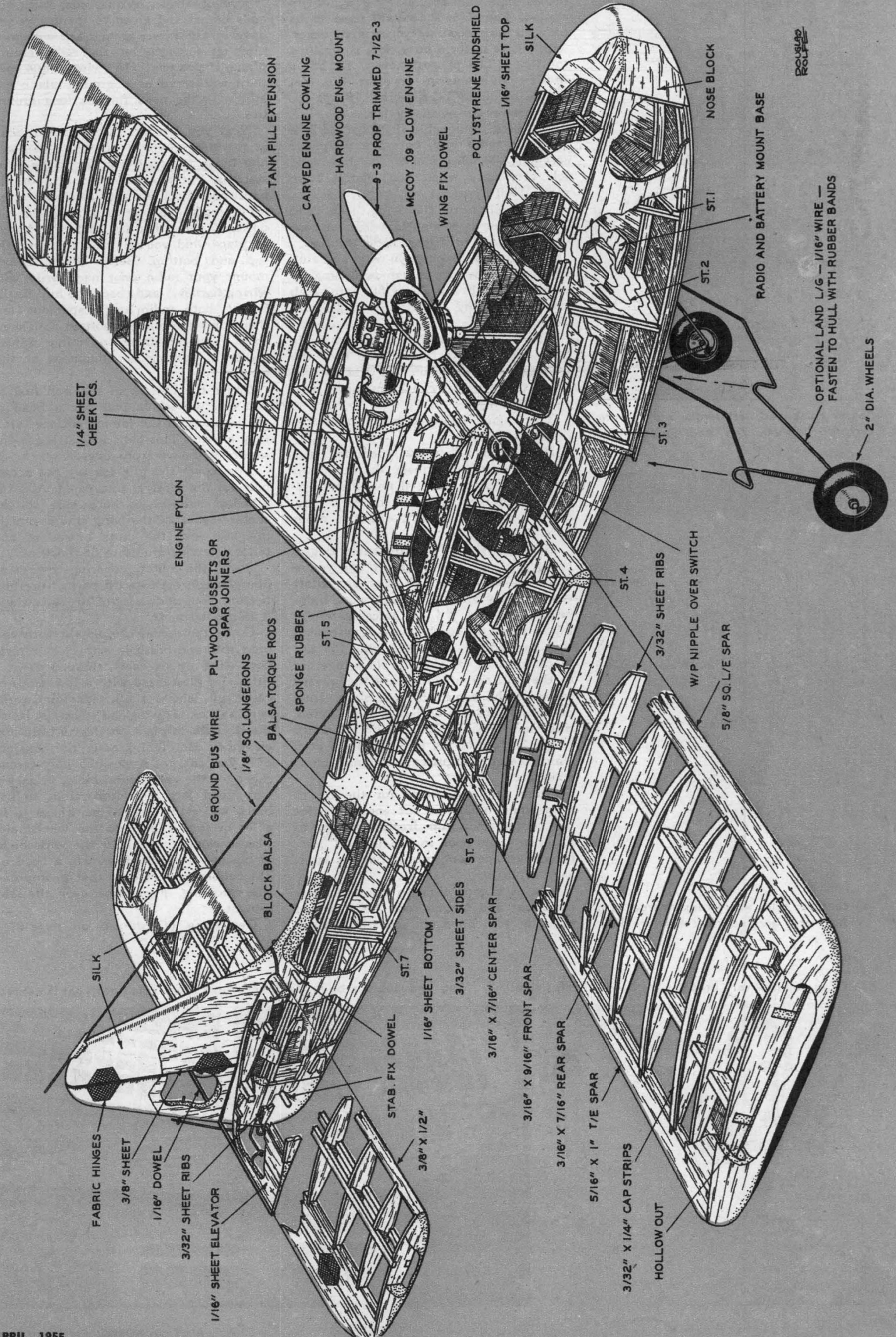
Aerobatics are quite in order for the experienced flyer. The up-elevator gimmick on the Bonner compound escapement works like a charm, and also makes the water landings really beautiful.

The model weighs three pounds with landing gear attached, which gives a wing loading of 16 ounces. This yields a flying speed right around 25 mph if you assume a 4 deg. angle of attack. It handles the wind very well, but don't try

In flight shot (top of page) tail wheel, temporary test unit, was found unneeded. Detachable gear in final form is illustrated here.

Dreamboat afloat is a study in shadows—one on the water, another on the bottom of the pool. Author works with Marquardt Aircraft.





DOUGLAS
ROULEP

1/4" SHEET
CHEEK PCS.

TANK FILL EXTENSION
CARVED ENGINE COWLING
HARDWOOD ENG. MOUNT
9-3 PROP TRIMMED 7-1/2-3
MCCOY .09 GLOW ENGINE
WING FIX DOWEL

WING FIX DOWEL

POLYSTYRENE WINDSHIELD
1/16" SHEET TOP
SILK

NOSE BLOCK

RADIO AND BATTERY MOUNT BASE

OPTIONAL LAND L/G - 1/16" WIRE -
FASTEN TO HULL WITH RUBBER BANDS

2" DIA. WHEELS

ENGINE PYLON

PLYWOOD GUSSETS OR
SPAR JOINERS

BALSA TORQUE RODS
SPONGE RUBBER

1/8" SQ. LONGERONS

GROUND BUS WIRE

1/8" SQ. LONGERONS

BALSA TORQUE RODS

SPONGE RUBBER

1/8" SQ. LONGERONS

GROUND BUS WIRE

BALSA TORQUE RODS

SPONGE RUBBER

1/8" SQ. LONGERONS

GROUND BUS WIRE

BALSA TORQUE RODS

FABRIC HINGES

3/8" SHEET

1/16" DOWEL

3/32" SHEET RIBS

1/16" SHEET ELEVATOR

3/8" X 1/2"

3/16" X 9/16" REAR SPAR

3/16" X 7/16" REAR SPAR

5/16" X 1" T/E SPAR

3/32" X 1/4" CAP STRIPS

HOLLOW OUT

SILK

BLOCK BALSA

3/8" X 1/2"

1/16" SHEET BOTTOM

3/32" SHEET SIDES

3/16" X 7/16" CENTER SPAR

3/16" X 9/16" REAR SPAR

5/16" X 1" T/E SPAR

3/32" X 1/4" CAP STRIPS

HOLLOW OUT

3/32" SHEET RIBS

W/P NIPPLE OVER SWITCH

5/8" SQ. L/E SPAR

3/32" SHEET RIBS

W/P NIPPLE OVER SWITCH

5/8" SQ. L/E SPAR

3/32" SHEET RIBS

W/P NIPPLE OVER SWITCH

5/8" SQ. L/E SPAR

3/32" SHEET RIBS

W/P NIPPLE OVER SWITCH

5/8" SQ. L/E SPAR

3/32" SHEET RIBS

W/P NIPPLE OVER SWITCH

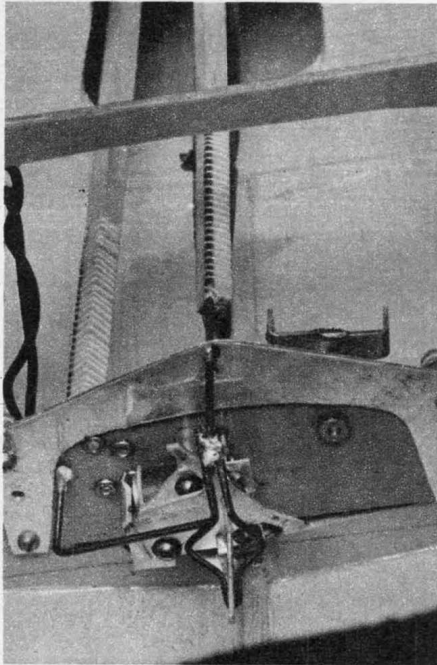
5/8" SQ. L/E SPAR

3/32" SHEET RIBS

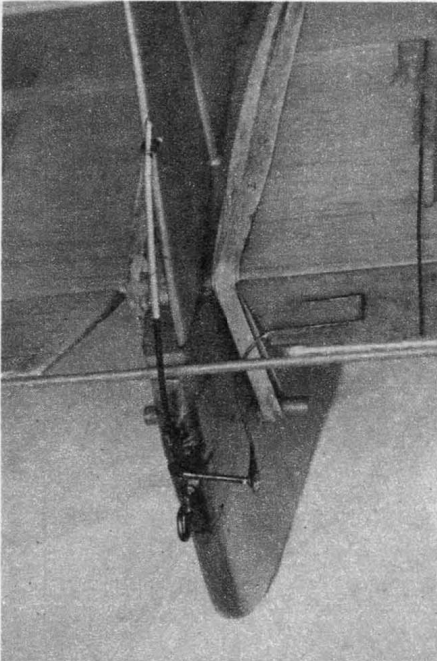
W/P NIPPLE OVER SWITCH

5/8" SQ. L/E SPAR

KEN'S DREAMBOAT



Bonnier compound; left torque rod operates elevator between 2nd and 3rd position.



Tail controls: holes where rods emerge from the hull are greased for waterproofing.

water take-offs if the waves get over two inches high unless you have a .14 installed. The K & B .15 will have to be plugged way down if you use it, otherwise you're in for a busy time controlling the loops. The photos show a .15, but a McCoy .09 replaced it after the first couple of flights because the .15 has too much power for normal flying.

A quick removable package of the Babcock radio and batteries simplifies servicing. It also makes the balancing job very easy when you change from sea to land flying.

Construction of the wing, stab, and engine pylon is straightforward and conventional, and will give little trouble.

You can build your own wing and stab from the plans or you can save time by using one of Frank Zaic's 50" wing-stab kits (put out by Model Aircraft Control Co.).

The fin, rudder, and elevators are made from medium-soft balsa. Note how the trailing edge stock on the stab is cut off so the elevators can be mounted with the cloth hinges.

The engine pylon is made from medium hard balsa.

If 5" x 3/32" x 36" medium balsa sheets are available, make the hull sides out of one piece each; if not, then butt-glue two pieces together for each side, one 3" x 3/32" x 36", and the other 2" x 3/32" x 36".

Glue the 1/8" x 1/8" hard balsa longerons and uprights to the sides, and you're ready to start the hull assembly. Start the assembly by gluing the plywood bulkheads, #2 and #4, in place, carefully lining them up so they are square with the longitudinal axis. Next glue the tail block in place, pulling the sides together at the tail, and making sure the inward curve is the same on both sides. Incidentally, since the hull sides are slanted, this curve results in a slight concavity to the bottom of the hull aft of the step which seems to improve the planing characteristics.

Carve the base block for the fin to shape, and hollow it out enough to let the torque rods run freely through to the rear. You can make the tail plug for the escapement rubber now or later, as you please.

Now is a good time to install the escapement and torque rods, because you have the hull lined up, and still can get

inside easily to mount the equipment. If you use balsa torque rods, with wire ends bound and glued to them, you will have to use a long ground bus wire, running up forward, for the radio ground plane. If you use 1/16" wire torque rods, they will serve as a ground plane and eliminate the need for the long ground bus.

Next you can put in the cross-bracing at the step, glue the noseblock in place, and finish the cross-bracing at the other stations. Put the keel stock in, add the hardwood block for the retaining screw on the radio base to screw into, glue the dowels for the wing, tail, and cabin braces in place, and you're ready to cover the top and bottom. Before that, though, mount your radio (not necessarily with wiring harness) and check the hull finally for fit, both radio and escapement, and then cover the top and bottom with sheet balsa. You can make any minor adjustments in spacing or alignment at this time.

Cover the bottom of the hull first so you can get inside and run a bead of glue around all the joining surfaces after they are dry. This both adds strength and improves the waterproofing.

Now cover the top, leaving the access hole for the receiver uncovered. Add the dihedral runners to each side so the center section of the wing cradles snugly in place, put the cross braces in and tailor the wing cradle to fit the wing.

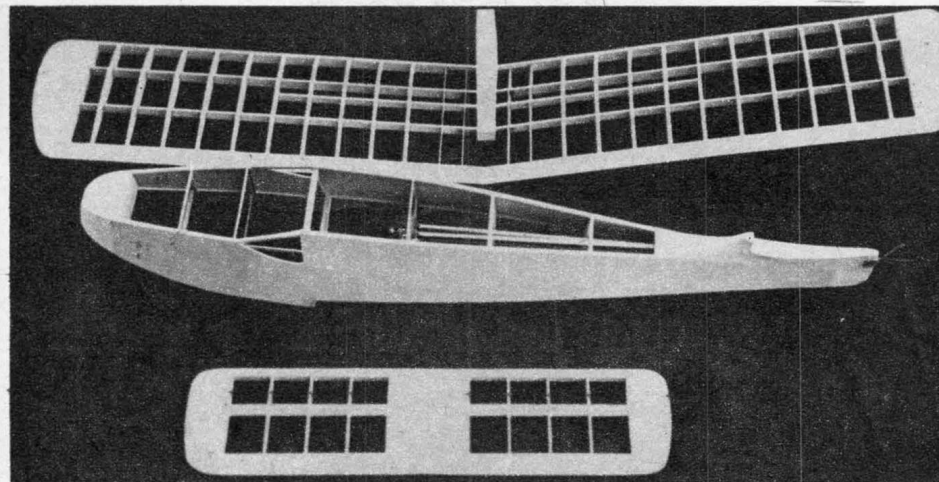
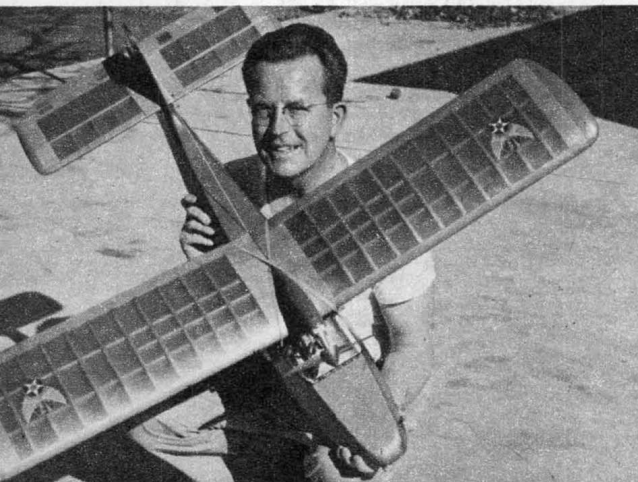
Start the outer covering by using fiberglass on the forward part of the hull bottom. This adds a lot of strength where it is needed most.

Cover the model completely with colored silk, and finish it with clear nitrate dope—five or six coats, thinned down a little and plasticized with a few drops of castor oil. The wet silk technique works very well on the wing and stab; just brush the dry silk in place on the hull, fin and elevators. Hot fuel proofer finishes job.

If you can get some .015 polystyrene sheet for the cabin windshield, it does a very good job. It is impervious to hot fuels, and with the engine where it is, a lot of fuel drips onto the windshield. Plastic cement will hold the windshield in place; when this dries, run a bead of 3M rubber cement over that to improve waterproofing. Fuel-proof over the 3M cement.

Get some

Ken shows you how very broad is the beam of this flying hull. Wing and stab can be made directly from Frank Zaic's parts set if desired.



Babcock

SUPER-COMPOUND ESCAPEMENT

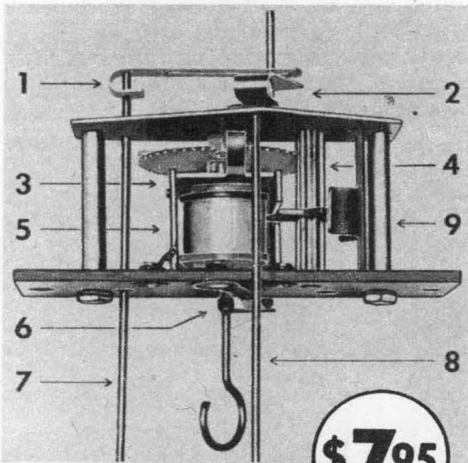
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- Cuts escapement battery weight in half, doubles battery life. Uses one pen cell.
- Elevator and rudder control linkage furnished with unit—no extra cost.
- Simplest to install. Torque rod bearings in frame insure automatic alignment.
- Rust-proof, corrosion-proof parts—particularly important on boats.
- Finest precision custom-quality, designed and made with typical Babcock skill!



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Ken's Dreamboat

sponge-rubber weather stripping from the hardware store, cut it to fit the wing cradle, and glue it in place with 3M weatherstrip cement. This serves a double purpose; when the wing is snubbed down to the hull with rubber bands, the sponge rubber is compressed and very effectively keeps water from entering the access hatch area; the sponge rubber, even though compressed, still acts as a vibration dampener between the engine pylon and the hull.

You now have a flying boat, ready to take the radio.

The radio and batteries are mounted on a 1/16" plywood base; the Babcock unit sits on a 1/4" sponge rubber pad to which it is fixed by 3M cement; the batteries are grouped together into a pack, using masking tape, and then held onto the plywood base with rubber bands. No battery box is used—the soldered connections have to be remade when you change batteries, it's true—but you don't have any skipping. You also save weight.

The battery complement consists of: 3 22 1/2 V. hearing aid "B"; 1 15 V. hearing aid "C"; 4 pen cells in parallel for the "A"; 2 pen cells in series for escapement.

If you decide to use a more powerful engine than the McCoy .09, the Dreamboat could carry the recommended battery complement which weighs about 5 ounces more than the above.

The plans show how the forward end of the plywood radio and battery base slides into retaining notches in the bulkhead at station #2. Then, with a single wood screw inserted through the base and into the hardwood block just aft of the step, the whole assembly is anchored in place, yet is quickly removable for service. In making up the harness, make the leads to the switch, escapement and ground as long enough to allow easy removal of the radio without disconnecting these wires.

Installation of the switch is a good gimmick. A 1/32" plywood skin doubler is glued to the hull side, and the mounting hole drilled through. The toggle switch juts out, of course, and has to be waterproof. Use a "blind" baby bottle nipple, and cut off the base enough so that the remaining top of the nipple covers the toggle switch handle, then attach it to the hull with 3M weatherstrip cement. The switch can be operated by pushing against the rubber nipple without letting any water get in.

The Babcock radio unit is recommended because of several reasons—simplicity for a radio beginner to understand it; easy mounting on sponge rubber; a sealed relay which won't be affected by moisture (very important around water); and the whole unit can be doused with water without hurting it.

Another reason, because it simplifies waterproofing, is the audio tuning feature of the Babcock. Leave the phone jack off the assembly, and to tune the radio, which can be easily done through the access hatch, attach alligator clips on leads to the phone jack, which is mounted on a piece of plywood; then clip one lead to the radio chassis, and the other to the proper wire, which is sticking out towards the access hatch, held in place by a piece of masking tape. This saves flying weight as well.

The usual advantages of the Bonner compound escapement are obvious, but the use of the third position for up elevator is a new twist. The drawing shows how it works; you'll have to tailor yours to fit your own installation. Just be sure
(Continued on page 69)

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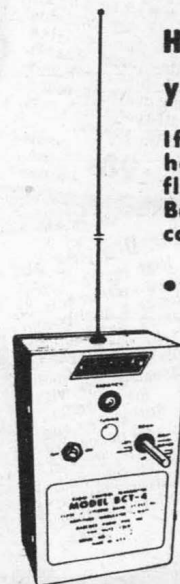
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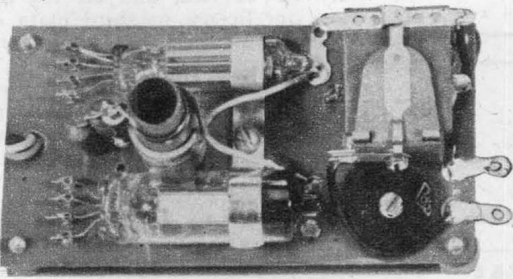
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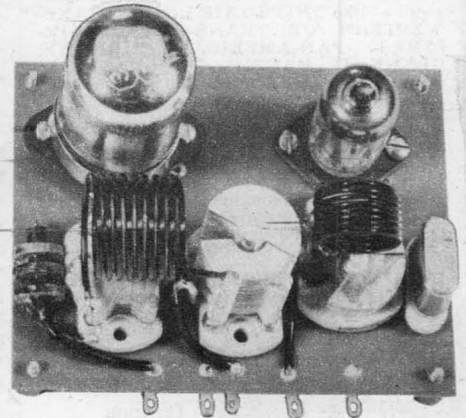
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that when the elevators are in neutral, the arm which is actuated by the escapement crank arm sits at the proper angle so the crank arm engages it when the escapement goes from second to third position. Also be sure the crank arm slips off the end of the elevator control arm when the escapement goes from third position to neutral. Lastly, either by limiting the elevator down travel, or the elevator control arm, make sure the elevator control arm doesn't spring back beyond its neutral position, as this could result in no elevator action, or worse yet, the escapement crank arm might dead end on the elevator control arm, which would leave the escapement locked in left rudder.

Incidentally, you will notice that the slot on the rudder torque rod arm, in which the escapement crank arm slides, opens up in a sort of diamond fashion from the top to the bottom. This prevents the rudder from having overtravel when you go from right to left rudder, and from left rudder to neutral. You don't have to use the diamond opening, but it's a good idea if you want to go to the slight additional trouble of making one.

Back in the tail of the hull, the torque rods for the elevator and rudder run through holes in a metal plate which is glued to the tail block. Although these holes can't be absolutely water proof, a drop of heavy oil will help shed the water. As for the tail plug for the escapement rubber, coat it with grease to keep water from seeping through. These areas are normally out of the water and spray path anyway.

For those of you who want to fly from land, a quick removable gear can easily be installed as shown. It is held on by

rubber bands running up over the forward part of the windshield. If you do this, be sure and check your hull for nicks before you go back on the water.

Dreamboat weighs two and three quarters pounds without landing gear; if you use pigmented dope, or Nylon covering, you may get up to three pounds. This is not serious, but the lighter weight gives better water characteristics. You will probably have to go to a .14 or .15 if your weight goes over three pounds.

Flying *Dreamboat* is pretty much like flying other R/C jobs; follow the advice of experts, though, and never launch *Dreamboat*, even in a hand glide, unless the radio is on, because you might want the control.

On the water, the rudder is not effective until *Dreamboat* is on the step; then she steers quite well. If a wing should dip, it'll plow for a bit, but will pick up by itself. The only thing is that it pulls the model into a circle and sometimes heads right back at you just as the wing breaks from the water. Then you're real busy steering the model back into the wind. After the photos were taken, some quick detachable tip floats were added which are really more in the nature of hydro-skis. They reduce the circling problem, but are not essential.