
# Tim–ber

## A really robust trainer for single channel

by Peter Holland

### Timber !

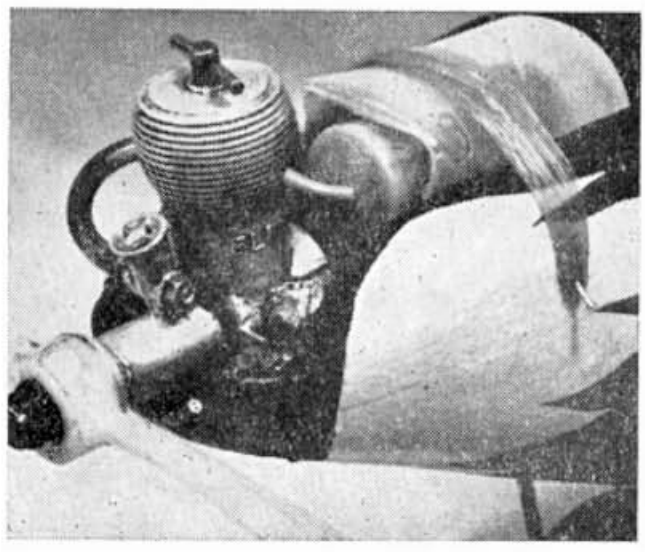
A CALL to be heard, sometimes in derision, but in this case what could be termed gay abandon, just prior to a model biting the dust . . . Yes, gay abandon; for the model presented here is *tough*, but if the worst does happen, it is more a case of cement, wait half an hour and up again. The woeful call for a brush and shovel or a box of matches seems a long, long way off in this case. Not, may we hasten to add for the lack of opportunity, for Timber has been slammed into the deck full bore some half dozen times to date, including one wing band failure from about 100 feet. In this case the motor bolts sheared and the nose section was displaced "more than somewhat" However, as intended in the stressing of the design, the break was clean and the model was soon ready for the air again.

Needless to say the radio gear was undamaged and working perfectly, thanks to the installation box system.

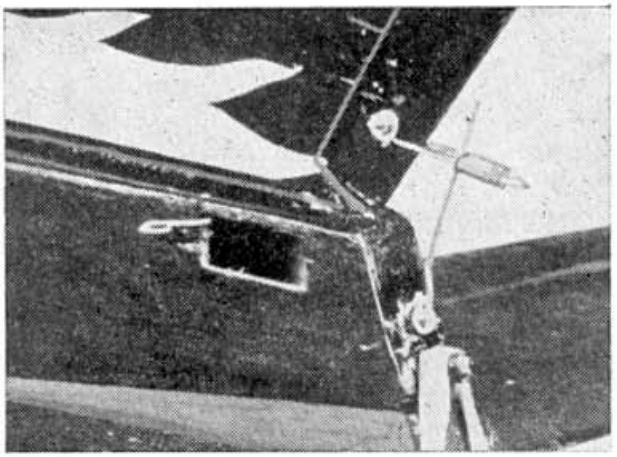
### Construct'on

Tim-Ber owes its name as much to the construction as to the ability to bounce: for a start the idea of employing a silk covered wing of traditional rib and spar construction seemed an unnecessarily long and tedious task for a small model. After all, this is a beginner's model and whilst we do not suppose all beginners in radio are either lazy builders or are incapable of producing a really warp free structure, one has the assurance that a fully sheeted wing is more likely to remain true, even if it is necessary to repair it.

Having calculated the relative weights of a traditional wing of even less than similar strength, compared with the stressed skin version, the latter was chosen for its ability to sustain local damage without failure, improved section, rigidity and speed of construction. Weight for weight there is so little difference that it seemed pointless to employ "ye olde" method.



**Sleek nose detail. No needle valve? . . . This picture was taken after a hearty "thump" . . . No other damage.**



We do not wish to give the impression that Timber's wing is the best approach for any small R/C model; lighter jobs can be built, possibly with improved stunt performance, but the object of this particular design is to create a model which with correctly installed equipment, will have a better chance of coming back for more when a button happy learner pilot tries to spread it out in a long thin layer.

The prototype weighs slightly less than 1¾ lbs. and climbs without loss of penetration to about 500 feet in a couple of minutes. To prove the point and for a spot of fun it was launched minus prop and main U/C at an R/C slope soaring event, gaining height like any sailplane.

## Design

The plan overleaf will show that the layout is quite orthodox: shoulder wing with low dihedral for reduction of normally excess pendulum stability, simplest of fuselages; just a box with plenty of ½ in. sheet around the bearers which are sloped inwards to transmit the load to the sides rather than to a single former. Sheet tail surfaces reinforced to resist warps, the long fin strake ensures smoothing in the yaw. Tricycle U/C for stick on landings and easy take-offs has the provision for reversing the main legs to bring their wheels nearer the C.G., a useful feature for quick take-offs on calm days.

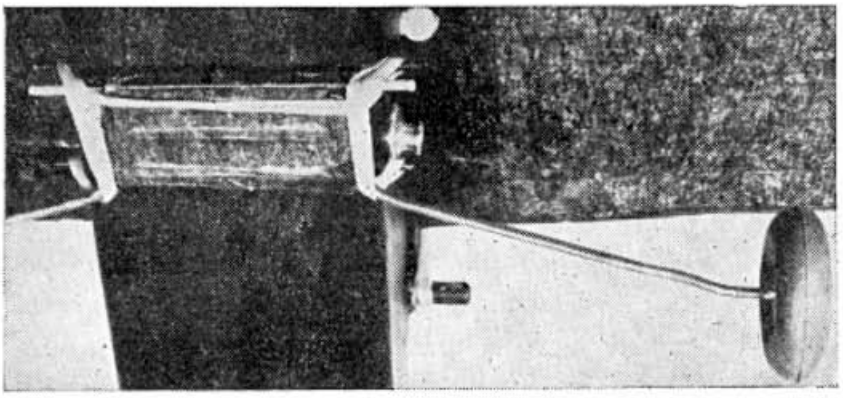
## Trimming

The incidence of wing and tail may appear to give negative longitudinal dihedral, however the wing section already has positive incidence when the bottom surface is level. A quick check may be made to ascertain the correct tail incidence by resting a strip of balsa on the lower surface of the tailplane and checking its distance from the T.E. of the wing. It is advisable to make register marks on the wing and fuselage to ensure accurate alignment.

## Installation

Timber was designed to carry the installation box described in September 1961 *R.C.M. & E.* and readers would be strongly advised to construct such a box. This gives both the equipment and the model protection in the event of a heavy prang. It may not be realised that the wedging action upon the sides of the fuselage created by the batteries, receiver, etc., trying to move from line astern to line abreast when shaken forward will inevitably tend to force the sides apart. This, combined with the already imposed bending stresses in the fuselage as the tail tries to catch up with the nose, contribute to the destruction of an otherwise salvageable model.

An installation box confines the equipment, reduces the side loads on the fuselage and transfers all the braking (not breaking) force to the main bulkhead, this component will usually "take it" but exceptionally heavy crashes will cause this bulkhead to burst and allow the installation box to move into the next bay, having absorbed about half the shock. When the box



**Above: Easy access to the rubber winding hook. Notice the sleeve on the rudder yoke to retain the torque rod. This is slipped off to disengage the other end from the escapement. Right: The two position main U/C in the long run position.**

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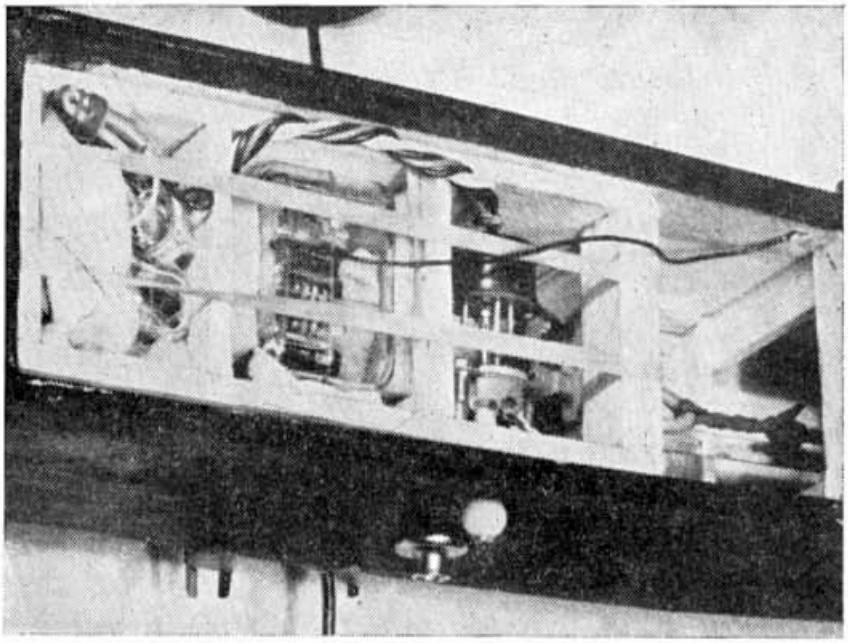

**"Tim–ber" with the installation box described in the September issue fitted in place. The round knob is the plug/switch and the rubber bands passing over the box normally retain the sponge rubber top covering.**

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finally comes to rest there is less of a jolt and the equipment is protected. The foregoing is not just theory, but based on the experience of dozens of what would otherwise be write-offs. Timber itself has been saved much side splitting by the use of the box.

If one still wishes to pursue the traditional method of installation using the fuselage itself as the box, it would be advisable to secure the receiver to the floor with a block of sponge rubber. Relayless Rx.s may be fairly rigidly mounted, those with relays should have a block of soft sponge rubber about ½ in. cube at each corner, these being stuck to a larger flat piece of sponge on the floor. This arrangement allows the initially soft suspension required to obviate vibration trouble on the relay and still provides a shock stop for heavy landings. Other pieces of sponge rubber should be placed at the remaining four sides and top, but not touching the Rx Batteries should be taped to avoid shorts and to retain the wires, wrapped in sponge rubber and wedged against the main bulkhead. All wiring should be secured to the sides with Evo-Stik. The switch should be on the bottom of the fuselage *inside* and operated by a wire pushrod from outside via a small hole in the side. This prevents fuel and dirt entering the switch, a common failing with slide and some toggle switches when the model becomes smothered in fuel. A really foolproof switch system is that employed in the installation box (see page 427 September issue); a B7G plug is pushed in and out of its socket by a wire pushrod through the fuselage side.

When using the installation box the end of the rudder torque rod should be fitted with a quickly detachable coupling similar to that employed on the Elmic Conquest. This enables one to remove the box without unscrewing any bolts or having to reset the *neutral* position on re-assembly Whatever the installation decided upon it is advisable to make a "mock up" of the equipment to find its C.G. so that when installed, both the airframe and payload C.G.s coincide.

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**LIST OF PARTS FOR CONVERTOR/MODULATOR**

[Continued from page 595]

**1 piece of copper laminate size. 4" x 2"**
**1 piece of copper laminate size. 2" x 1¾"**
**1 Driver transformer. Centre tapped secondary.**
(The above from MacGregor Industries).
**1 Output transformer. Centre tapped primary.**
**4 Germanium or silicon rectifiers. 135 to 150 volt rating.**
(Radiospares Rec. 50. Note obtainable through local radio dealer).
**1 2 mfd. 150 volt electrolytic capacitor.**
**1 8/10 mfd. 25 volt electrolytic.**
**1 .05 or .1 mfd. miniature capacitor.**
**4 10K. ¼ watt. resistors.**
**1 4.7K. watt. resistors.**
**1 680 ohm watt. resistors.**
**1 30 ohm resistor.**
**2 Audio transistors. OC 71, etc.**
**1 Driver transistor. OC 72, etc.**
**2 Output transistors. OC 76, 84, GET114 (S1) Brush Crystal OC 308, etc. with heat sink if possible.**

**Additional parts if new transmitter.**

**1 .02 miniature capacitor.**
**1 4.7 to 15K. resistor ¼ watt. Value not critical.**