3. Insert and solder RV2, 3 and 4, with one leg of each soldered to the top foil where shown.
4. Insert and solder all capacitors keeping the leads as short as possible. Observe polarity of electrolytics.
5. Insert and solder D1 and D2 observing polarity.
6. Insert and solder L1 (cut off the square protruding lugs first), and RFC1, 2, 3 and 5. These latter each require 18cm of wire for winding.
7. Taking care that the orientation agrees with the diagram (one edge of the case is chamfered) insert and solder TR2, 3 and 4. These devices are static sensitive — push the leads through a small piece of kitchen foil or wrap wire round them to short the leads before handling them. The top of each tab needs to be 25mm above the PCB top surface. Solder the source lead of each to the top foil first, before soldering the other leads.
8. Insert and solder TR1 with a small ferrite bead on the G1 lead. The device should be pushed as close as possible to the PCB. Earth the source lead to the top foil.

TRANSFORMERS

Wind and insert the transformers as follows:

T1. Note that one turn on these balun cores is defined as the wire passing down one hole and back through the other. Take 13cm 0.25mm wire and wind six turns through the core. Strip one end to near the core. Take another length 5cm long, strip one end, twist to the other stripped end already on the core, and solder. Wind a further two turns on the core, leaving the last bit of wire put through longer than the other so you know which end is which. Strip the ends, with the longer end being the earthy end.

T2. Wound exactly as T1 but the longer wire is the C2 end.

T3. Bifilar transmission line transformer. Take two lengths of 0.4mm dia wire 30cm long. Twist each end loosely together. Then clamp one end in a vice, and the other in a hand twist drill. Now twist the winding until you have about eight to ten turns per inch. Remove from the clamps and wind 12 turns round the core, taking great care not to strip any insulation off. Reduce the lead lengths to 15mm, untwist the free ends, and strip about 5mm of insulation off each wire. Establish with a multimeter which lead is which (and that they don't have a DC short between them), and connect the beginning of one winding with the end of the other. The pair then becomes the earthed lead, and the other two go the PCB either way round.

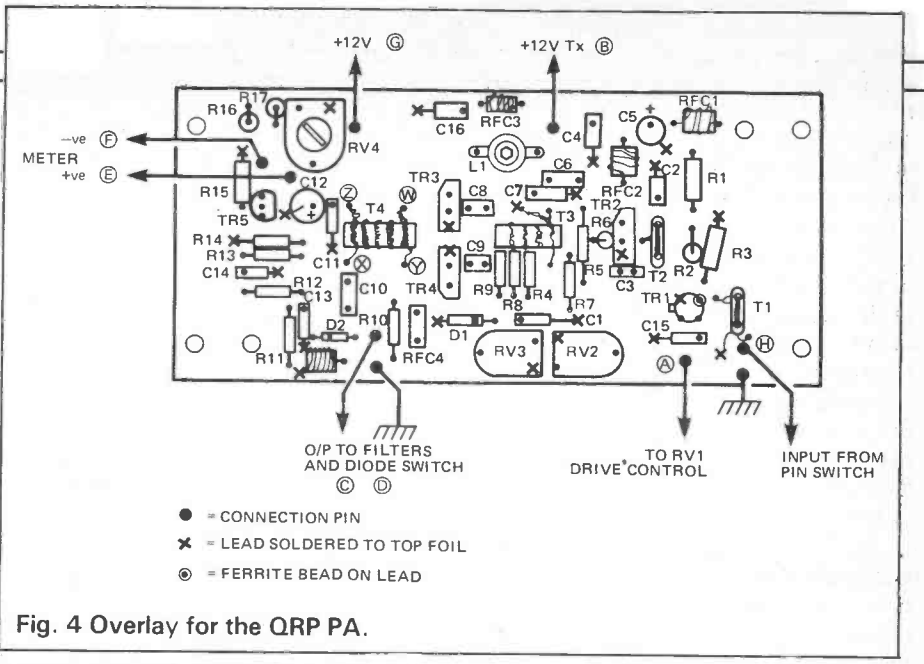

Fig. 4 Overlay for the QRP PA.

T4. This is a Trifilar winding which is fairly easy to get right if you follow these instructions. One of the authors makes no apologies for getting it wrong at least twice *(and it wasn't me—G4JST No Frank, you only got the drawing wrong!—G3UPO)* It helps if you can get hold of three different coloured wires, but this is not easy.

Take three lengths of 0.4mm dia enamelled copper wire, each 30cm long. Repeat the winding exercise already gone through with T3, checking for interwinding shorts and wind 12 turns onto the core — the direction of winding is vital to agree with the drawings — start by holding the core in your left hand and thread one free end of the wire triplet through from the front, so that about 30mm protrudes from the back. Then continue the 12 turns so that the winding is moving to the right of you.

Reduce the free ends to 25mm in length, unravel them and strip about 7mm of insulation off each. Now, again establish which ends of the windings are which, and arrange them as in **Fig. A** (1, 3 and 5 are beginnings and 2, 4 and 6 are ends). Then connect the appropriate ends loosely as shown, **Fig. B.** Check that you have DC continuity between lead 2 and 5.

Rearrange the leads so that they are as in **Fig. C.** Then carefully push the leads through the appropriate holes in the PCB (the wires may look at bit tangled underneath but don't worry). You will probably need to strip a bit more insulation off underneath the board before soldering into place. If you think you have gone wrong at some point, then start again.

You should now have all components in place, and the heatsinks may be constructed. Note that that for the output transistor pair is not earthed — the PCB top surface is cleared around the flange, whereas the driver heatsink is earthed. Both require insulating washers between the transistor tabs and the sinks.

The sinks are made from 20swg aluminium sheet as shown in the drawings. The mounting holes are marked through onto the flanges after bending to get the correct positioning. When mounting the sinks, it is essen-

The completed (but naked!) QRP PA board.