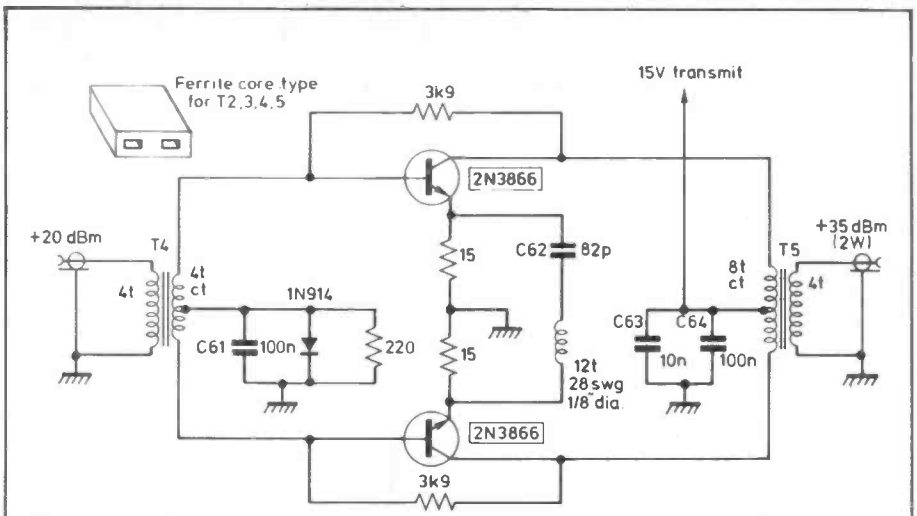

FIG. 14. Transmit driver

square type core wound with five turns of 28SWG on the primary and a single turn of 22SWG on the secondary. The middle of the secondary loop connects with the grounding and biasing components. The output transformer comprises of a pair of balun cores, each core appearing to have the physical and magnetic properties of a pair of stacked T68-2 cores. The original was wound with four turns (CT) of 18SWG wire while the secondary comprised a single winding of six turns. A further one turn winding on the output transformer core provides an output for the meter circuit: measurement must be right at the collector circuitry to know whether the output transistors are clipping. It is no use trying to look at output swing after the signal has passed through a filter. Thus the extra winding.

Ground loops

Construction of the output stage was virtually 'bird-nested'. Because it was a bit of a lash-up (that has worked perfectly ever since) I always promised myself that I would lay the circuit neatly out on a PCB . . . one day. That day has yet to come. When producing your own version just keep an eye on where the current loops are for a nice, stable outcome. The major one runs through C69 from the centre tap of the output transformer primary, splits, and passes to the emitters of the transistors. Passing through the transistors, the split loop joins once more at the primary centre tap. Let no part of the input circuit current loops traverse the same piece of conductor forming part of the output loop. There should be just one point, centrally positioned between the emitters for an RF null, used as the common return for C69 and C67. Every other design consideration is secondary to this. Next on the list is to keep connection inductances low and symmetrical. None of this business of neatly squaring off PCB conductors, etc. The shortest, thickest equidistance between two points must be the rule.

I doubt whether BLX39 transistors are readily available. However almost any 20W+ rating RF transistor will do though. The only thing that you must watch out for is the supply voltage. The prototype was designed to run from a 24V supply although conversion to 12V would present few difficulties. However a 24V rail rules out quite a few of the popular 12V FM transistors such as the 2N6083/4. 12V AM transistors would be entirely suitable though, as are the 587BLY surplus transistors which are occasionally advertised in *RadCom*.

As a general point when assembling the transceiver as a whole, look out for the posibility of RF getting into places it shouldn't. For instance, microphone inputs, key inputs — even headphone outputs — should be carefully decoupled at their point of entry or exit to the cabinet in respect of RF. 10nF disc caps, ferrite beads, more 10nF caps will almost certainly be necessary, especially when using linear amplifiers and particularly on 10 metres. I am assuming that the synthesiser and IF modules have already been self contained and screened from the RF strip.

One of the things that I haven't shown is an output filter arrangement for the PA stage. Ideally, there should be a separate filter for each band to keep harmonic radiation to a minimum. However, providing the PA strip is not overdriven, harmonic production is pretty low and a typical six pole 30MHz lowpass filter on the output will suffice, especially as the basic rig is not particularly QRO and it is nearly always used with some sort of ATU. I haven't bothered with separate band filters and have yet to receive a flying visit from Buzby. ●

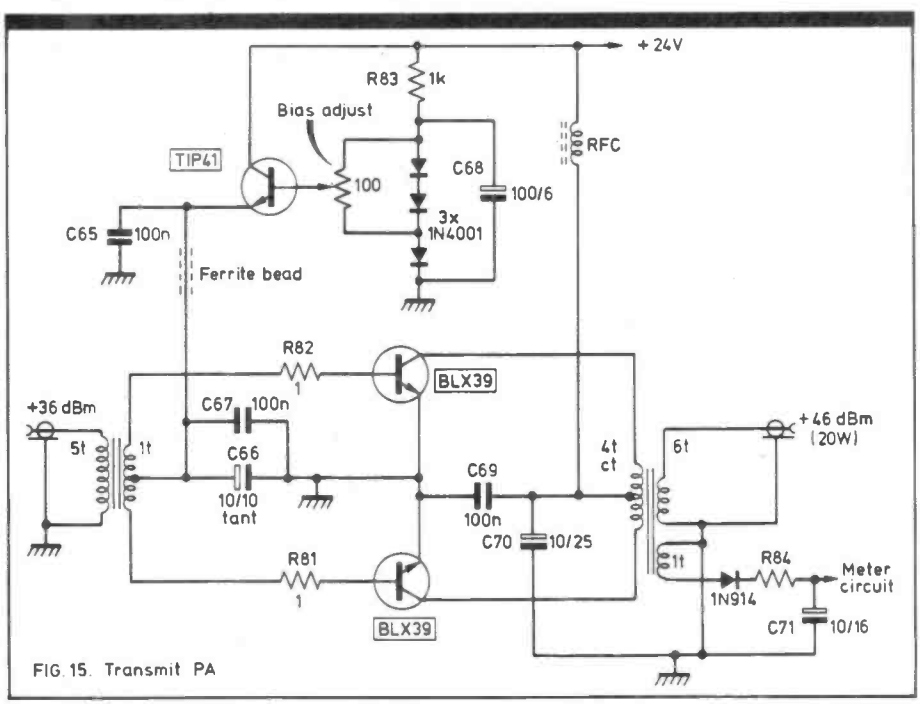

FIG. 15. Transmit PA