You may see from **Fig 1** that the block diagram is very straightforward. There are only three frequencies of interest: signal, local oscillator and IF regardless of the set being in transmit, receive, SSB or CW. It really is that simple. The transceiver is a single conversion superhet with an IF of 9MHz. No bells, whistles, tunable passbands or even interference limiters. Even the pre-selector filter (that part of the circuitry which gets rid of the image response; in this set the LO always runs 9MHz above signal frequency) is essentially low pass rather than a bandpass (conventional) and scarcely needs adjustment from one particular MHz to the next.

In all it represents a splendid general coverage receiver which operates without any kind of band changing with a pretty good transmitter thrown in. To operate you simply plug in an aerial into the 50 ohm input/output socket and press the front panel buttons to go up or down in frequency. Once you've got to the part of the spectrum that you are interested in, just peak the signals on the pre-selector knob. In conventional terms, the bandwidth of the latter is plus or minus a MHz or completely flat below 5MHz. To transmit, press the PTT or front panel switch in the CW mode, wind up the transmit gain until the peak reading RF voltmeter (which doubles as S meter on receive) indicates saturation and wind it back a little. Switch back to SSB or whatever and talk. You will automatically be spot on the receive frequency. Just compare that with the average black box.

I have to admit that my desire to keep it simple has led to the transceiver being somewhat spartan in its specification. For instance, there is no RIT control, no interference suppressor, no VOX circuits, no continuously variable IF bandwidth arrangements and no transmit ALC circuitry as such. However operating the basic rig for the 19 months or so that I have done teaches you that most of the gadgets which are taken fo granted are really unneccessary anyway. Perhaps an RIT control would be a good idea for some CW stations but the facility is just a pain for the SSB. If only everyone transmitted bang on their receive frequency and didn't move about once they were there. Well, this set is as stable as the quartz rock which controls it but if you really wanted the full range of bells and whistles, they could be tacked on at a later stage. Which brings me to the heart of the set, the synthesised local oscillator.

Terry Giles G4CDY, an immensely clever man, is responsible for the design of the two big LSI CMOS chips which make this wide ranging single loop synthesiser possible. Manufactured by Philips, the HEF4750 and HEF4751 chip set contains everything required to make a high quality systhesiser system running up to about 20MHz directly. This transceiver calls for an LO frequency ranging from 10MHz to 99MHz (this concurs with a signal frequency from 1 to 91MHz plus a 9MHz shift for the IF). A single dual modulus prescaler chip, a Plessey SP8690, provides the extra division ratio necessary for this circuit. Interface of the extra divider is easy: the main chip set is capable of controlling up to two dual modulus prescalers although this circuit calls for just one.

There are a great many standard texts on synthesiser design and I don't propose to write yet another treatise on the subject.

FIG. 1

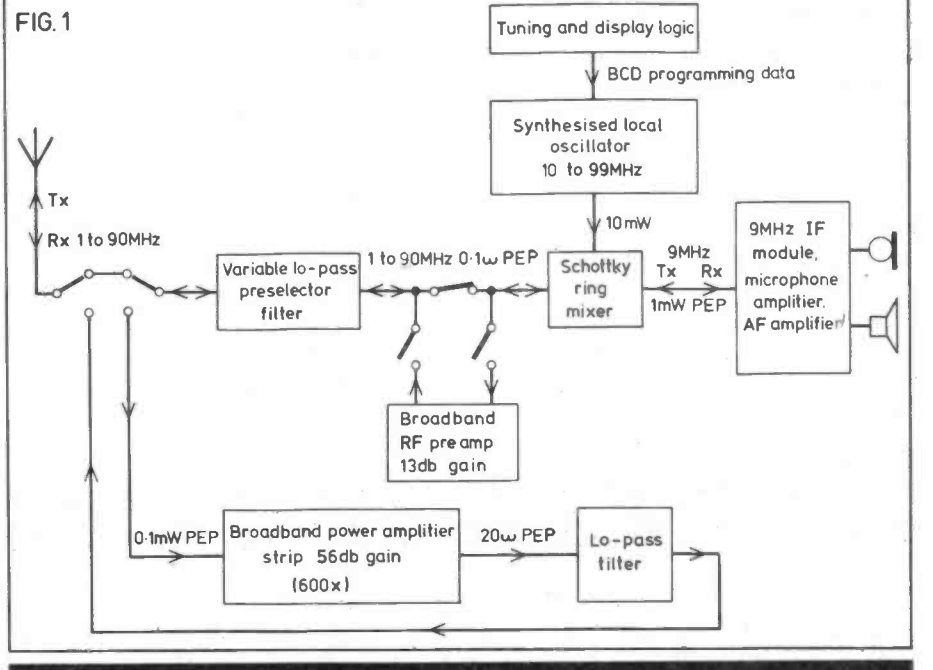

FIG. 2

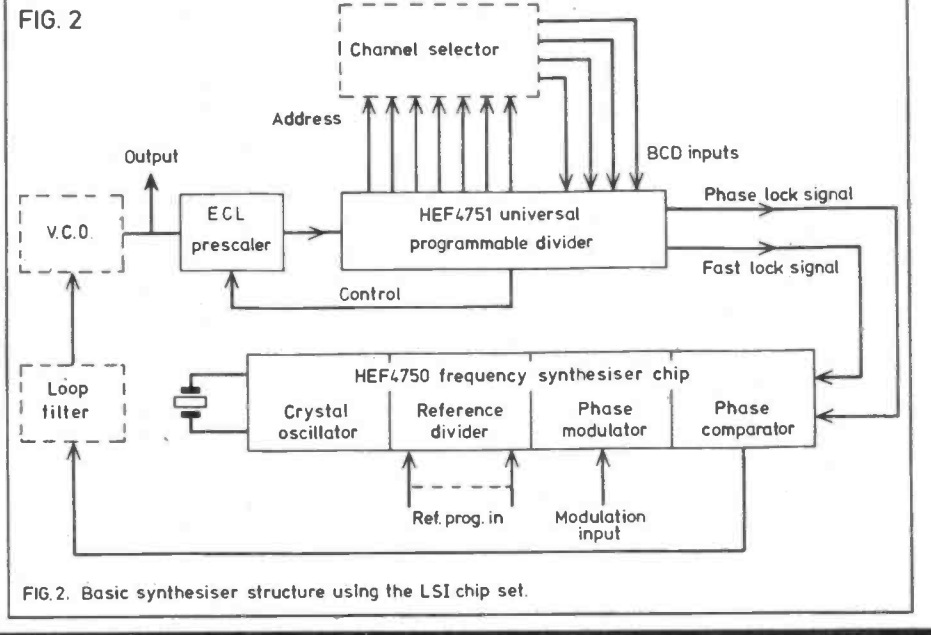

FIG. 2. Basic synthesiser structure using the LSI chip set.