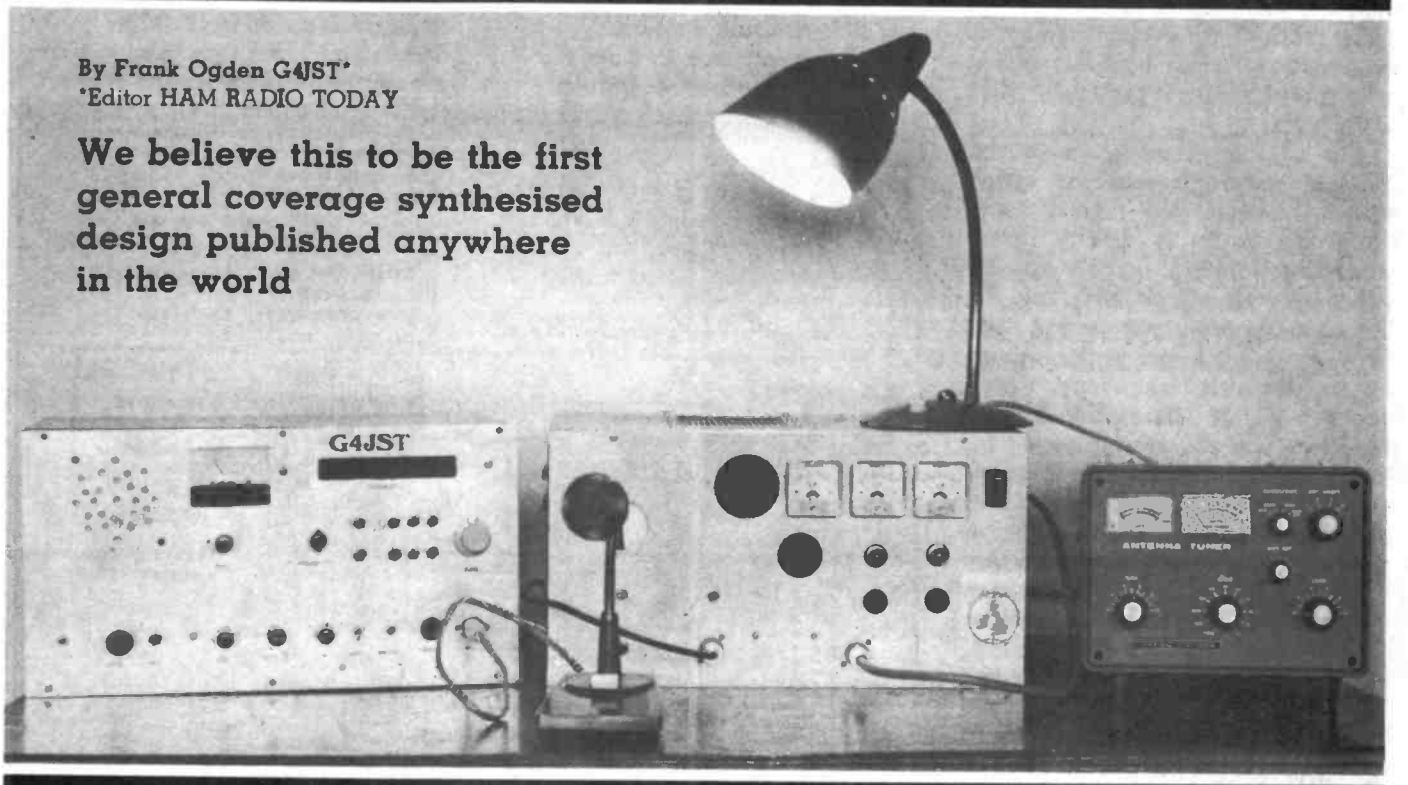
A general coverage synthesised HF transceiver

By Frank Ogden G4JST*
*Editor HAM RADIO TODAY

We believe this to be the first general coverage synthesised design published anywhere in the world



The author's station. The transceiver (left) is coupled to 500W PEP output linear amplifier, the subject of another constructional article in Ham Radio Today. The basic transceiver delivers about 20W PEP although the linear requires only 10W for full output. Taking a second look at the photo, things seem a lot tider than they usually are!

This transceiver, while of necessity not a simple project, is quite a lot simpler in design than just about all the available Far Eastern black boxes although little in the way of performance has been sacrificed. If anything, the techniques used in the manufacture represent a significant advance on orthodox thought by designing out critical components and adjustments. Although the unit will receive and transmit on any frequency between 1 and 35MHz (up to 90MHz on receive!) there are just five trimming adjustments: USB, LSB and CW IF crystal trimmers and two IF traps. That's it — the lot. Oh yes, there is an on board speech processor which has a preset pot but that hardly constitutes a critical adjustment . . .

You've guessed it. In reality, the transceiver is one big broadband circuit stretching from the RF pre-amp, a Plessey SL560 IC, to the pair of BLX39 output trasnsistors on the RF PA with a Schottky ring balanced mixer in between. Incidentally, those transistors in the output stage produce about 20 watts PEP or CW and are guaranteed unburstable in this circuit. One of the delights about designing and building your own is that you can put margins in. None of this prissy business about watching the SWR and keeping it below 2:1 otherwise the set shuts down. You run this home brew machine short circuit, open circuit or even into a proper 50 ohms + or — 0j. You don't need protection circuits when the transistors are so under-run. Incidentally there is a secondary payoff in the TX intermodulation performances as well. Big chips amplify linearly. However, if you really want to go for the QRO big league, I have also designed a matching 500 watt PEP output linear amplifier which can be used with this rig, or something like a TS120V. The amplifier project will appear in a coming issue.