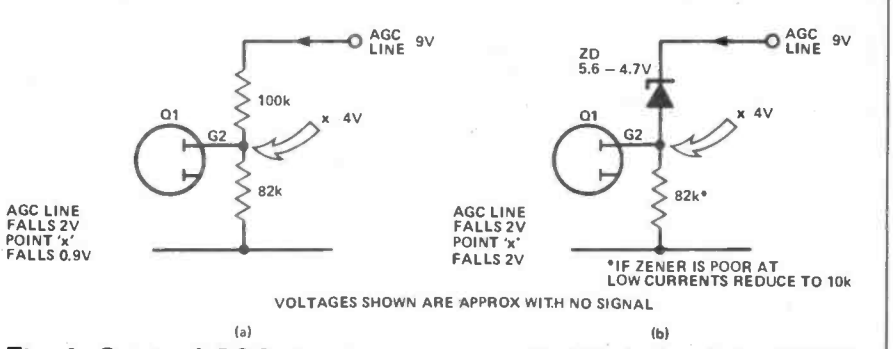

Fig. 1. Original AGC circuit **Modified circuit by VK3NS**

received. When a strong signal is tuned in the AGC line voltage falls reducing the gain of Q1. Note however, that slightly less than half the voltage change arrives at the gate of Q2 — ie. if the AGC line drops two volts the voltage on gate 2 of Q1 only falls 0.9 volts due to the potential divider action of the two resistors. Most of the AGC action of the FT101 occurs in the later IF stages and under strong signal conditions the AGC applied to the first stage is not always sufficient to prevent front end overload. The following modification, which is an adaption of an idea by VK3NS, will be found to vastly improve the AGC action.

I) Remove the aerial, switch to 20 metres, check and note reading on S-meter at 14.2 Megahertz calibration point.
2) De-tune pre-selector until S meter falls to S3 and leave pre-selector in this position.
3) Remove the RF board and locate R5 which is the 100k resistor feeding gate 2 of Q1, and remove same.
4) Fit 5.6 volt zener diode in place of the resistor — the end without the line on it going to the FET gate.
5) Refit RF board and check that after one minute or so that the S meter still reads about S3. If it has fallen below S2 replace zener diode first with 5.1 volt diode and try again, and if the reading is still below S2 replace with a 4.7 volt zener diode.
6) Tune pre-selector to maximum and note that due to improved AGC action the reading obtained in step 1 will have fallen by about three S units.
7) Reset S meter calibration control so that reading originally obtained in step 1 is once again shown. Note that the zener diodes must be of a very low current type, or it may be necessary to replace the resistor going from gate 2 to chassis with one of about 10k to get the modification to work correctly.

Use with a 2m transverter

Several two metre transverters and even repeater shift and FM units are available for those who wish to use their *FT101* as a prime mover for VHF operation. The only real problem is RF feedback into the microphone amplifier stages causing distortion or oscillation. Some ham operators have rejected perfectly good transverters as being faulty for no other reason than this. To make the *FT101* suitable for use with a VHF transverter locate the audio board (PB1081, 1189, or 1315) and remove it. Locate the microphone amplifier transistors Q2 and Q3 and solder de-coupling capacitors with ultra short leads directly between the base and emitter of these transistors mounting the capacitors on the solder side of the printed circuit board. The capacitors must be low inductance disc ceramic types and should have a value somewhere in the region of 200 to 1000pF. Note that the base and emitter connections of these transistors are the outer two pins, the centre pin being the collector.

Radio frequency speech processing and the *FT101*.

In the early 1970s several articles appeared in radio journals in praise of radio frequency speech processing. RF speech processing or clipping is carried out after the audio frequencies have been converted to a radio frequency, see **Fig. 2.** As with any clipping process harmonic distortion is produced, but in the case of RF speech clipping it is at multiples of the radio frequency used. If the clipping is done at IF frequency (3.18 Megahertz in the case of the *FT101*) the distortion products at two, three and four times the IF frequency are easily removed, leaving the signal clipped but free of harmonic distortion.

Inspired by these articles I decided to give the idea and try and was so impressed by the results that