The R1155

By L. F. Sinfield

Some further suggestions for modifying this popular receiver

ALTERNATIVE methods of incorporating noise limiter and S meter circuits have been tried since the methods described in last month's issue, and these are explained herewith. These latter modifications may be preferred by the prospective R1155 operator.

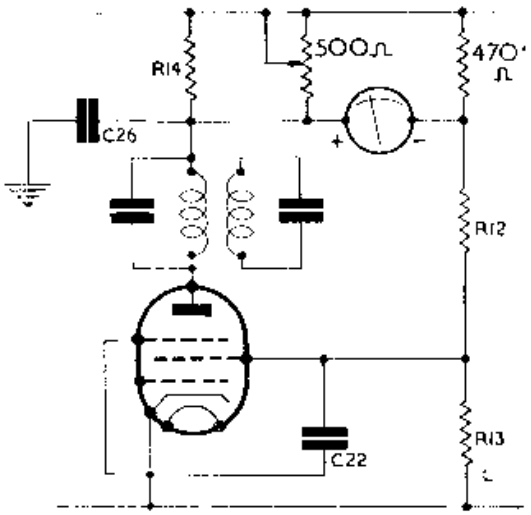

Fig. 1. Modifying the first IF stage to include an "S" meter.

First IF Stage.

The first IF stage was modified to incorporate a bridge-type S meter (see Fig. 1). Normally, the current through the screen network is approximately equal to the anode current. By adjusting the 500 Ω potentiometer (the S meter zero control), which is a pre-set and adjusted by a screwdriver slot, a balance is obtained and there is no meter deflection. This should be adjusted with the AVC on, BFO off and the aerial terminal shorted to chassis. With the receiver operating, the AVC causes a reduction in anode and screen current, though the screen network current change is small due to the normal bleeder current being high in comparison with that of the screen.

The reduction in anode current causes the voltage at the positive meter terminal to rise compared with the negative terminal point and a meter deflection results which is proportional to AVC and signal strength. The meter in the author's receiver is a 500 μA movement (actually a Government surplus one). The sensitivity of this bridge arrangement is high, but if found to be insufficiently high then by removing R14 and increasing the values of both the 500 Ω potentiometer and the 470 Ω resistor an adequate deflection will be obtained. If the deflection is normally too high, it may be reduced by either a resistor in series with the meter or a resistor in parallel.

It is advisable to have some form of switching arrangement so that the meter can be either shorted out or open circuited whilst manual RF gain is being used, and when the BFO is on. This can be carried out quite simply by a 3-pole 4-way rotary switch marked—

PHONE		CW	
AVC on.	AVC off.	AVC on.	AVC off.

and wired as shown in Fig. 2.

Switches are shown in PHONE/AVC off position. The switch can be mounted in place of the existing BFO toggle switch. To check the strength of a CW signal the switch should be in the PHONE/AVC on position.

V5 (Detector-AVC-1st LF).

Much of this is as previously described, the alteration being only concerned with the noise

Fig. 3a.

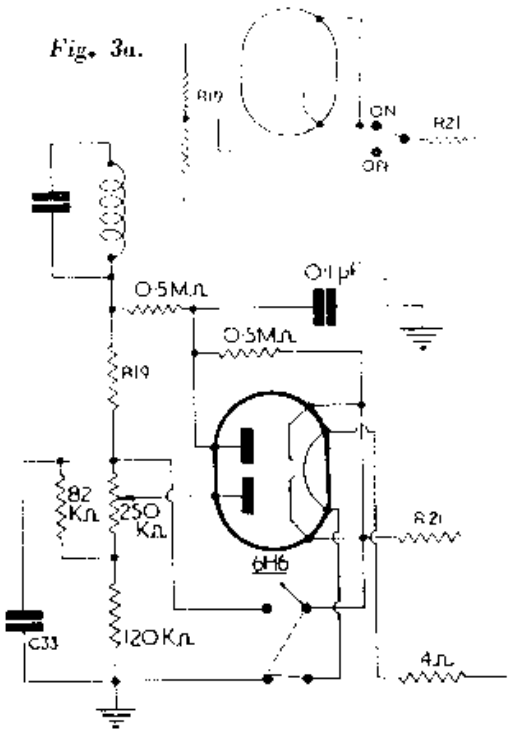

Fig. 3. The Dickert type noise limiter.

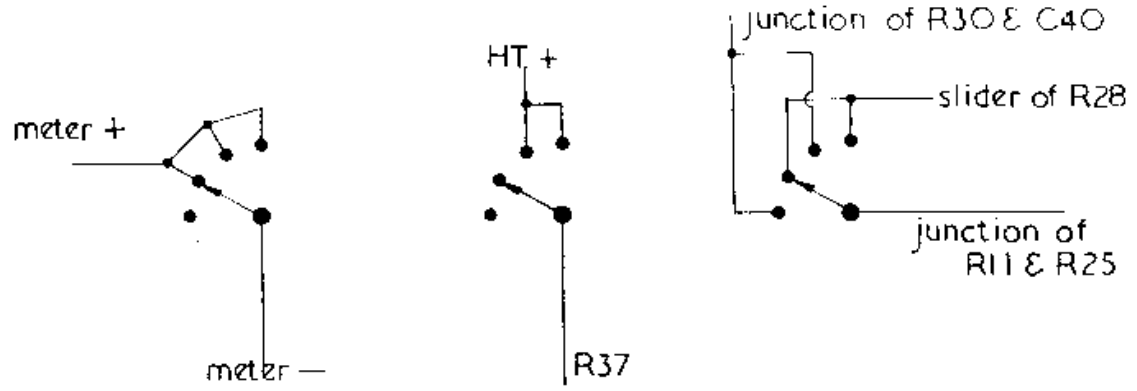

Fig. 2. Switching system for the "S" meter circuit.

limiter circuit. A Dickert type series noise limiter has been incorporated with a few deviations from standard practice (see Fig. 3). The 250,000 Ω potentiometer is the "modulation level" control. (With the slider at the R19 end, 30 per cent. modulation, and at the 120,000 Ω resistor end, 100 per cent. modulation). The control will be found to be approximately linear in calibration. The resistor network has been so arranged that only standard value components will be needed, thus the necessity for the shunt across the potentiometer. Contrary to normal practice (that of varying the diode bias in relation to the signal) this circuit varies signal relative to a fixed diode bias. The reason for this is to keep the gain as high as possible.

On heavy interference on a weak station, it is desirable to bring up the signal as the modulation level is reduced. The noise limiter action remains as normal. The network has been chosen to give best limiter results and yet to keep the diode load resistor high enough to reduce damping of the IF coil. The old BFO toggle switch (which has been replaced by a wafer type) is used to switch the limiter in and out of circuit. With the limiter "on," the 6H6 heater is switched on and at the same time the other switch section opens to remove the link from R19 to R21. If it is not desired to economise in heater current, the switch should be as in Fig. 3a, and the heater left on.

One point of importance is that the 0.1 μF capacitor must be of good quality, preferably of high working voltage and of tropical type with no leakage. Any leak via this capacitor completely upsets the biassing and prevents correct working of the circuit.

Do not expect too much from noise limiters working on the modulation percentage principle, as they are only effective on certain types of interference. The noise pulse must be of short duration compared with the time between pulses, in order that the mean bias level is not appreciably increased. Keep the wiring as short as possible in the noise limiter circuit in order to reduce pick-up and any signals which may tend to by-pass the diodes via coupling between the wiring. Screening helps also, regarding this point, but it is not necessary if the former can be accomplished.

It is hoped that these notes will be of assistance to those who are intending to modify their R1155's. The author will be pleased to answer any queries on matters raised in this article and they should be addressed to me, c/o *Radio Constructor*. Please enclose a SAE, otherwise replies cannot be undertaken.

Values of components referred to by the *Wireless World* circuit diagram and mentioned in the text of this article are: —

R11	100,000 Ω	R30	56,000 Ω
R12	27,000 Ω	C22	0.1 μF
R13	22,000 Ω	C26	0.1 μF
R14	2,200 Ω	C33	100 μμF
R19	56,000 Ω	C40	200 μμF
R21	22,000 Ω		
R25	150,000 Ω		
R28	50,000 Ω		

OUR NEXT ISSUE CONTAINS . . .

further instalments in our regular series of "Radio Simplified," "Thermionic Valves" and the ever-popular "Query Corner." The first article in an informative two-part discussion on "Short Wave Coils," by G3XT, will also appear. In addition, full constructional articles on a Six-Valve Radiogram Chassis and a Simple Receiver for Television Sound are scheduled for publication.