

silicon u.h.f. and i.f. types for television receivers) this region is made extra large. It should be noted that this form of gain control is not practicable at low frequencies.

Why should forward a.g.c. be better than reverse a.g.c.? The answer is that the signal handling properties of a stage using forward a.g.c. are much larger than those for the corresponding reverse a.g.c. In other words larger signals can go through the stage without serious cross-modulation occurring, than with reverse a.g.c. (always provided that these larger signals can be passed through all the remaining stages without cross-modulation).

A problem with either form of a.g.c. is the relatively large variations in input and output admittances that occur when the operating point of a bipolar transistor is changed.

A technique we have noticed being used in commercially-developed communications receivers is the connection of an additional gain-control transistor in series with the emitter circuit of the main amplifying transistor (collector of control transistor to emitter of main transistor, emitter to chassis) with the gain control line taken to the base of the control transistor.

FETs in the Eddystone 640

Interest continues at a high level in FETs and IGFETs and an idea which must have occurred to many amateurs is the possibility of putting these devices into older communications receivers. Interestingly enough it looks as though this can be done without great difficulty.

Mike Barlow (ex-G3CVO) in Montreal reports that after buying some 2N3819 junction-FETs intending to build the G3HBW converter, he succumbed to the temptation to try them in the front-end of his old Eddystone 640. The FETs are mounted in the wiring of the underside of the coil box, and he says that the fascinating thing is that all the existing components can be used unchanged, and that even the oscillator trimmers did not require adjustment!

Fig. 7 shows the outline of his conversion. Originally he used a grounded-source r.f. stage, but because of neutralization problems and bandswitching, this was changed to a grounded gate circuit, using the existing 400-ohm aerial coil as the source driving circuit, letting the normal "grid" coil float. The 12 volts of h.t. are obtained from the cathode of the 6V6 audio valve. Next, he tackled the mixer, again simply replacing the hexode portion of the 6K8 (ECH35) by an FET, and obtaining injection by removing the cathode bypass capacitor so that it becomes a common cathode-coupled oscillator-mixer hybrid. The valve oscillator went next, and as already noted, came up dead on frequency. Some experimenting with bias values followed, and the

decoupling resistors were reduced in value because of the low h.t. (up to 25 volts is permissible). It was not found necessary to increase the decoupling capacitors. The a.g.c. and r.f. gain lines have been disconnected from the FETs pending some re-organization of the i.f. and audio end; this improved stability on s.s.b. signals considerably.

Efforts to replace the i.f. stages by 2N3819s however came unstuck because of the difficulty of neutralizing the stages without tapping the existing i.f. coils. It is possible that someone with a deft hand could tame the system, but Mike Barlow says he found that the crystal phasing capacitor always seemed to act as a regeneration control. Using two FETs in a cascode arrangement did not help, and he thinks that the answer is probably to rebuild the i.f. coils or put in a new miniaturized i.f. strip.

With the b.f.o. also replaced, and its neon stabiliser, there is now room under the chassis for several v.h.f. converters. He says that as far as performance is concerned, his test equipment is not accurate enough to be able to say more than that the front-end noise is less, and the sensitivity seems unchanged.

This report could well encourage others to look at older receivers to see if they can be FET-ized or IGFET-ized!

Here and There

Eric Sabin, G8AKR would like to see more attention paid to developing modern forms of super-regen circuits (a sentiment that has been echoed several times in *TT* in the past) and we hope to refer to some of his ideas in forthcoming *TT* (always assuming that it remains legal to build them!).

A new type of flat, low profile audio cable, developed for music distribution systems, is adhesive backed and can be readily fixed to many types of walls and other surfaces without nails or staples. It might well have applications where "shacks" share with other domestic uses. But note that this is not designed for mains voltages and that r.f. characteristics are not known. This is the 3M "Scotchflex" brand flat cable system.

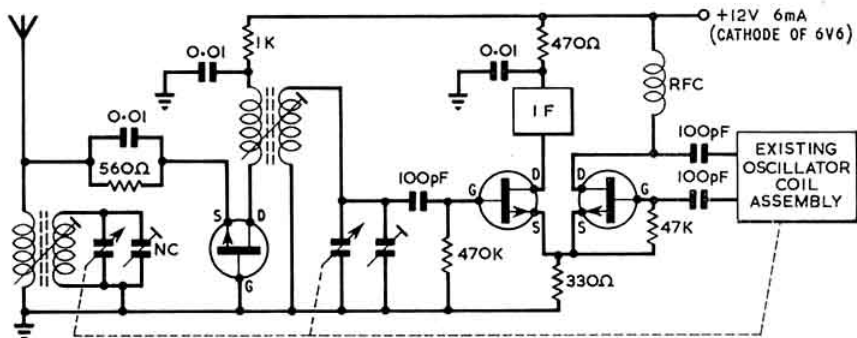


Fig. 7. Simplified circuit of the Eddystone type 640 receiver after the valves have been replaced with 2N3819 FETs. The coil pack and trimmers can remain untouched.

Radio Fraternity Lodge

RSGB Past President Leslie Cooper, G5LC, was recently installed as the Second Master of Radio Fraternity Lodge of Freemasons. The Secretary of the Lodge is Mr A. V. Tillin, G3MES, 1 Frogmore Gardens, North Cheam, Surrey. Mr Cooper is President of the Thames Valley Amateur Radio Transmitters' Society and Mr Tillin a prominent member of the Sutton and Cheam Radio Society.

RSGB Amateur Call Book 1967

The following are corrections to the 1967 edition of the *RSGB Amateur Radio Call Book*:

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