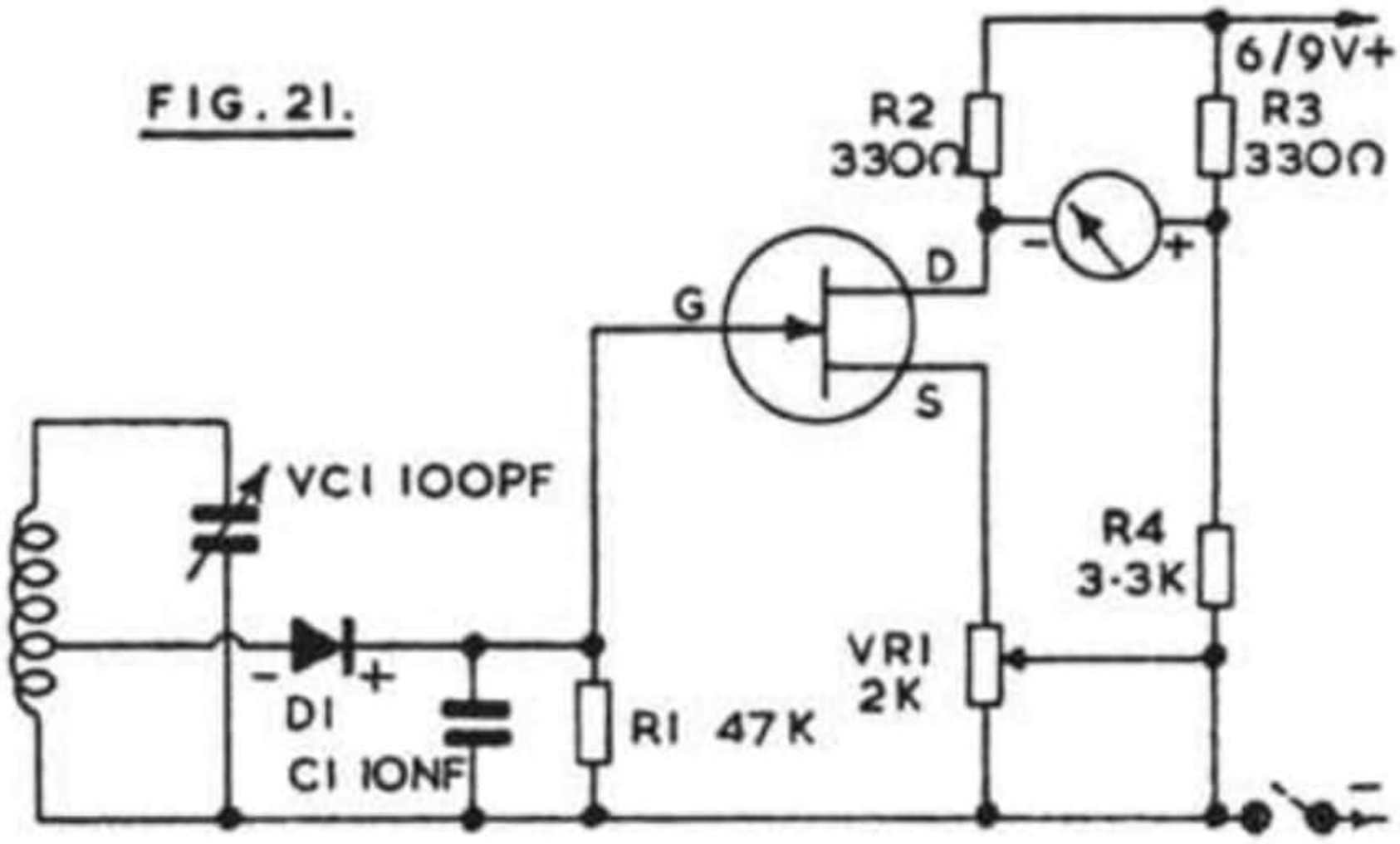
Amplified Absorption Wavemeter

A wavemeter is likely to be of use to the amateur who adjusts home built or commercial equipment operating on short wave ranges. The circuit in Figure 21 is for operation over 1.8MHz to 50MHz.

The use of the FET amplifier avoids the need for a very sensitive indicating meter, as a 1mA instrument is suitable. In opera-

FIG. 21.



tion, VC1 tunes the inductor to resonance so that D1 produces a positive voltage across R1, for the FET gate. The meter itself is in a bridge circuit, VR1, the FET and R2 being one side, and R3/R4 the other side. Balance, or zero current through the meter, is obtained by setting VR1. Balance is then upset when the gate moves positive, and the indication can be half scale or more, so that good sensitivity is obtained.

With a 100pF capacitor at VC1, four coils will cover the range mentioned. These may all be wound on 1 in diameter paxolin tube, using 24swg enamelled wire. In an instrument of this type, plug-in coils are favoured. These will require four octal of similar bases, which may be from old useless valves, with a holder to suit. With some bases, the two smaller coils can be wound directly on the base itself, as there is sufficient length available.

The smallest coil has two turns, tapped at about one turn for the diode, and its range is approximately 50-20MHz. The next coil has seven turns, tapped at two turns from the grounded end, and covers 26-10MHz. The next larger coil needs twenty-two turns, tapped at seven turns, and tunes 16-5MHz. The largest coil tunes 5.5-1.8MHz, and has seventy turns, tapped at twenty turns.

Construction of this type of instrument usually places the coil projecting from one end of a narrow box, with VC1 adjacent on

the top, which also carries the meter and VR1. It is then easy to hold the device in one hand, with the coil near the source of RF to be checked, while tuning with the other hand. Four scales can be marked and placed under the control knob fitted to VC1. With no RF present, set VR1 so that the meter reading is just beginninig to rise from zero. Any general purpose FET will operate in this circuit.