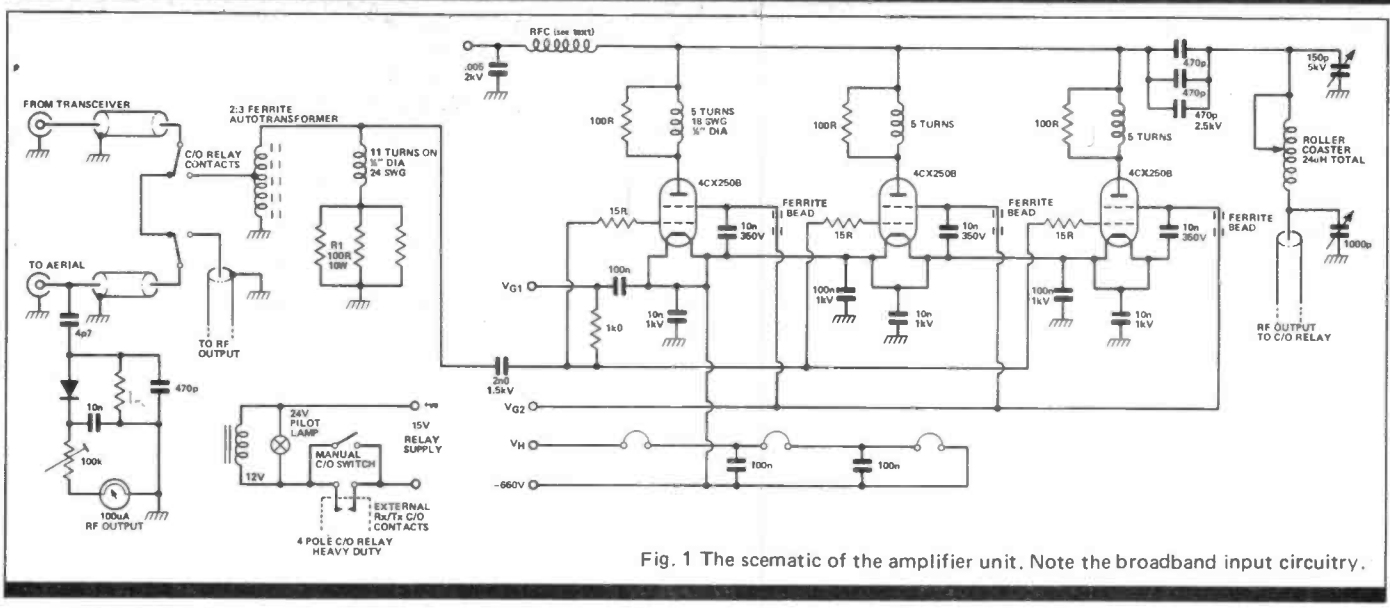

Fig. 1 The scematic of the amplifier unit. Note the broadband input circuitry.

around 80pF total. This equates to a reactive impedance in the order of 70 ohms on the 10m band.

A simple 100 ohm resistive load connected across the input transformer works fine up to about 20MHz. Above that, the input capacitance of the valves leads to an unacceptably high SWR on the input circuit. The input resistor assembly R1 therefore includes a series inductor made up of 11 turns, 24swg wire on a ¼ inch diameter high value resistor. This brings the input VSWR comfortably below 2:1 across the entire span of 1.8 to 30MHz without any other form of input tuning. This allows broadband input operation causing the amplifier to load fully with just 10W of drive at any frequency. Furthermore the amplifier is unconditionally stable.

And the output circuitry ...

This part of the design is absolutely conventional. The three bottles (or perhaps one should say cans) offer a combined load impedance of around 800 ohms at their anodes. The component values shown for the Pi-matching network are not necessarily optimum. They represent those which were available at the time of building. For instance, better matching, and hence power transfer could be obtained on 80m if the anode tuning capacitor had a larger swing. Ideally, the maximum capacity should be in the region of 300pF. The circuit Q is rather low on the lowest frequency bands. However 400W is available whatever the precise matching situation.

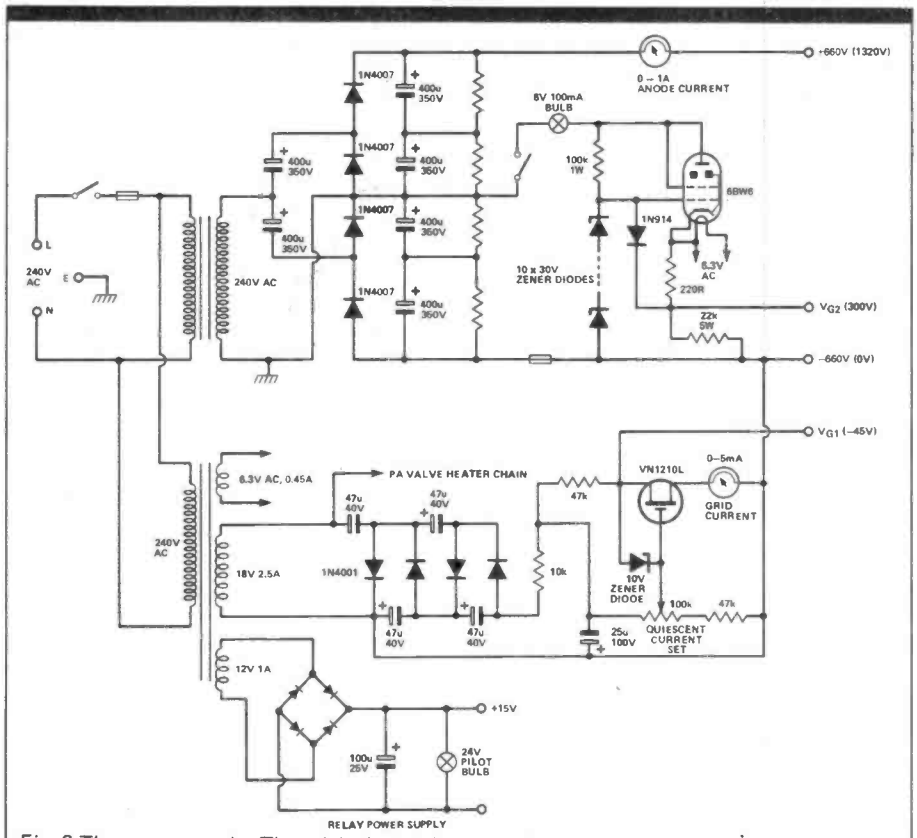

Fig. 2 The power supply. The original used direct rectification of the mains, via a quadrupler to provide the 1300V of HT as two 650V rails above and below chassis.

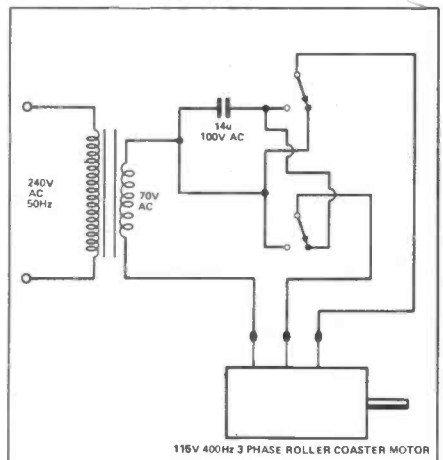

Fig. 3 400Hz 115V AC rollercoaster motors can be made to function of 70V 50Hz AC although at one eighth speed!

The anode choke used in the prototype presents another area for improvement. That, and the rollercoaster tuning assembly were pulled out of an HF aircraft transmitter covering up to 18MHz. Unfortuantely the choke has an unpleasant little resonance around 28 to 29MHz which reduces efficiency while producing a smell of burning varnish. The original component has now almost completely carbonised.