Ultra-Linear Williamson-Circuit Amplifier

[*See Front Cover*]

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RECENT ADVANCEMENTS in loudspeakers, phono pickups and in the art of recording providing extended bass and treble range have placed more stringent demands upon the amplifier. For this span of frequencies requires lower distortion, better transient response, and faster recovery time.

To meet these requirements, many types of amplifier systems have been developed. On the *cover* and in Fig. 1 appears the circuit of one such amplifier, an *ultra-linear* modification of the Williamson circuit[1], which it is said more than doubles the power output, with no increase in input power.

A basic power amplifier providing 20 watts from 30 to 20,000 cps, 12 watts are available from 15 to 50,000 cps.

Gain is said to be .4 volt input for 1 watt output average level in 16 ohms and 1.8 volts input for 20 watts output average level in 16 ohms.

Amplifier's hum and noise level is noted as being 80 db below 20 watts; feedback, 20 db.

The input impedance is 1 megohm, isolated for *dc*.

Designers of the amplifier state that a wide-frequency range and maximum stability is available regardless of the nature of the load into which the amplifier works. This is an important factor when amplifiers use large amounts of negative feedback, since loudspeakers are very complex reactive loads, and long connecting cables themselves are essentially transmission lines at high frequencies. Recovery time of the amplifier is said to be very short; the behavior of the amplifier immediately after a sudden burst of signal has been applied to it, which occurs frequently in reproduction of music. Fast recovery time has been found to contribute to clean reproduction of a sudden crescendo.

Two auxiliary 110-volt outlets are provided to permit simultaneous on-off control of the amplifier and auxiliary equipment. A power take-off socket supplies filtered plate voltage and filament power for use where required for preamps.

Fig. 1. Schematic of 20-watt amplifier, featuring *ultra-linear* modification of Williamson circuit.

[1]Brociner model UL-1.