

The GENERAL RADIO EXPERIMENTER

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ELECTRICAL COMMUNICATIONS TECHNIQUE AND ITS APPLICATIONS IN ALLIED FIELDS

A NEW PRECISION WAVEMETER

FOR the rapid and convenient measurement of frequency with a minimum of equipment, the tuned-circuit absorption-type wavemeter has enjoyed a long and useful career. While for precise measurements it has long since been displaced by the more modern heterodyne instruments and the quartz-crystal standard of reference, its

usefulness remains unchallenged in that wide field of measurement where only a moderate accuracy is demanded and where simplicity is an important requirement.

The absorption-type wavemeter consists fundamentally of a condenser, one or more coils, and a resonance indicator. Improvements in the design of these components make possible considerably improved performance in the wavemeter.

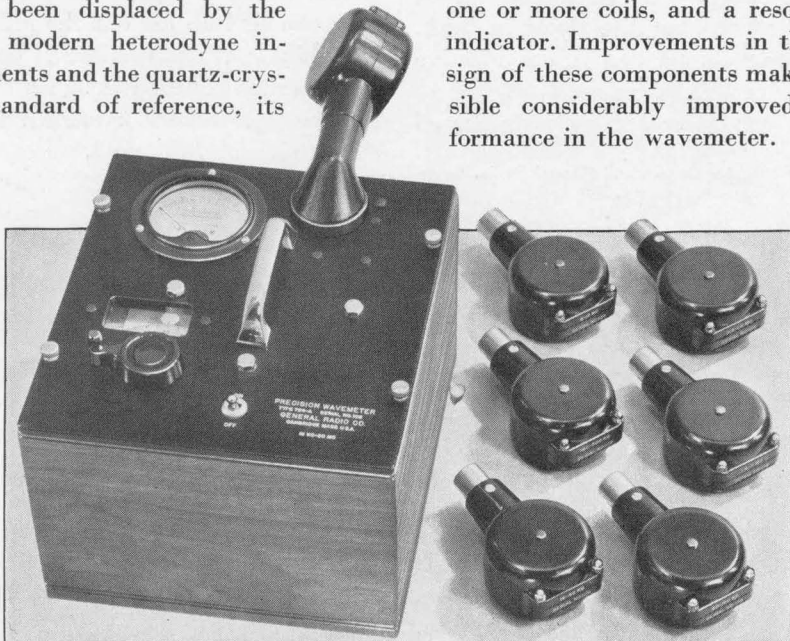


FIGURE 1. TYPE 724-A Precision Wavemeter



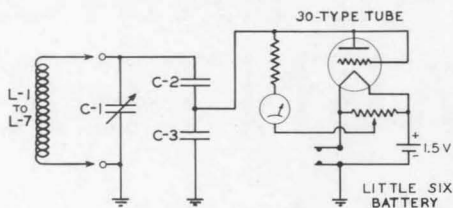


FIGURE 2. Circuit of TYPE 724-A Precision Wavemeter

The TYPE 724-A Wavemeter is a new instrument replacing the older TYPE 224. As a result of the re-design of coils, condensers, and resonance indicator, the new wavemeter has a wider frequency range and a greater sensitivity than its predecessor. The condenser is similar in constructional details to the TYPE 722 Precision Condenser recently described.* This condenser is built around an integrally cast frame of an aluminum alloy, with the rotor shaft, stator rods, and spacers of the same material. Ball bearings support the main shaft. The drive is of the worm-gear micrometer type with the worm cut directly on its shaft. In the wavemeter design, the effective angular rotation is about 270° .

The condenser setting is indicated

*"A New Precision Condenser," *General Radio Experimenter*, Vol. X, No. 3, January, 1936.

on the dial and drum and is controlled from the front of the panel. There are 7500 divisions for the entire effective angular rotation of the condenser rotor. The precision of condenser setting is better than one part in 25,000. The plates are shaped to give an approximately linear variation in frequency with scale setting. This makes it possible to use calibration charts in tabular form and to interpolate between points in the table.

Seven coils are used to cover a frequency range between 16 kilocycles and 50 megacycles. The coils are wound on isolantite forms to give low losses and a high degree of stability. Each coil is enclosed in a moulded bakelite case. The plug-in mounting allows the coil to be rotated to obtain different degrees of coupling.

The resonance indicator is a rectifier-type vacuum-tube voltmeter, a distinct advantage over the thermocouple formerly used, since the danger of overloads burning out the indicator is eliminated. The rectifier is coupled to the tuned circuit through a capacitive voltage divider as shown in the circuit diagram, Figure 2.

— ARTHUR G. BOUSQUET

SPECIFICATIONS

Frequency Range: 16 kc to 50 Mc.

Accuracy: 0.25%.

Condenser: Precision worm-drive type.

Coils: Wound on isolantite forms.

Indicator: Rectifier-type vacuum-tube voltmeter.

Net Weight: With carrying case, $35\frac{1}{4}$ pounds; without carrying case, $18\frac{3}{4}$ pounds.

Dimensions: Carrying case, $17\frac{7}{8} \times 13 \times 12\frac{1}{2}$ inches over-all.

Code Word: WOMAN.

Price: \$190.00.