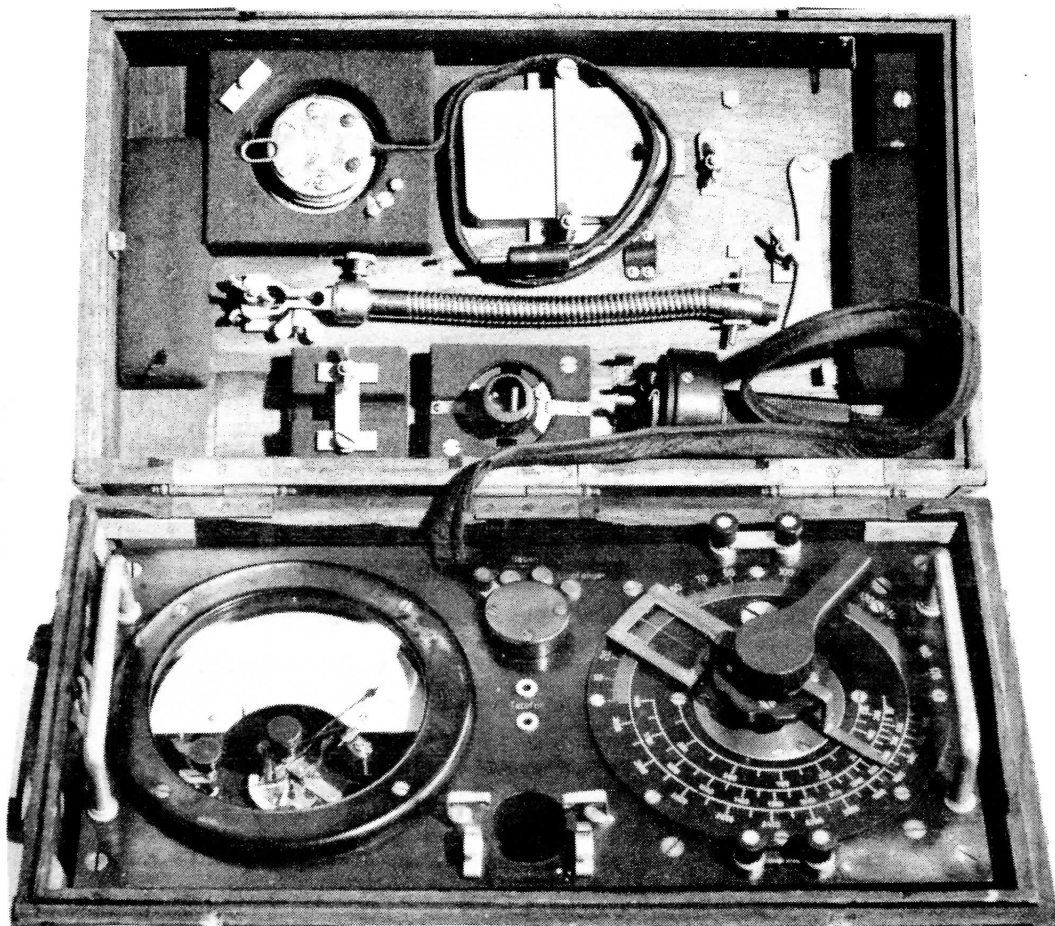


BULLETIN

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A RELIC OF THE DAYS OF SPARK

A Telefunken type EGW wavemeter (c.1913) as used at station VLA Awanui in the early days. Story on P.8.

AN EARLY WAVEMETER

by GEORGE NEWLANDS

The instrument shown on the cover of this issue is a type EGW wavemeter made by the Telefunken Company early this century for use in spark wireless stations. This particular one was used at the Awanui station about 1913. The device feature prominently in a number of photos of the station now held in the NZPO Museum and Archives Section and must have been an important piece of equipment. Possibly it was the official frequency standard, being used as a calibrated receiver and a signal source to check resonances of tuned circuits and antennae.

The instrument is very basic, as wavemeters generally are. As can be seen from Fig.1, it is a basic tuned circuit with three forms of detector, a hot-wire ammeter, crystal and gas-discharge tube. A trembler-type buzzer, now missing from this instrument, could be used to excite the tuned circuit to make it act as a signal generator. The whole device fits into a substantial and well made metal-bound wooded box measuring 450mm long by 250mm square and weighs 25kg.

The crystal detector, a basic section of which is shown in Fig 2, is a molybdenite type which seems to have been a Telefunken preference at the time. In the cover photo it can be seen in the stowed position at the centre bottom edge of the lid. It use it mounts in the uppermost pair of clips on the lower edge of the front panel. Below it, in the other pair of clips, mounts the helium discharge tube.

The safety spark gap, shown as 'S' in the circuit, can be seen just below the tuning dial. It is a simple adjustable two-point device designed to protect the tuning capacitor. A simple 4-stud function switch, 'K' in the circuit, can be seen at the top centre of the panel.

The earphone is a variable sensitivity type of 1000 ohms resistance. The basic configuration is conventional except that the diaphragm is attached to the earcap. Turning the earcap on its thread therefore moves the diaphragm in relation to the pole pieces and thereby varies the sensitivity. A knurled ring behind the earcap and on the same thread serves to lock the earcap in the desired position.

The tuning coils are of the pancake type, 180mm in diameter and are ebonite encased. There were originally six of these, but one is now missing. The five remaining coils cover the wavelength range of 110 to 3300 metres on overlapping ranges. These mount on an ebonite handle with three contact blades corresponding to contacts in the coil centres. The handle is inserted at the coil centre and a slight clockwise twist locks it in position. The coil can then be hand held or mounted on a flexible stand provided. The wires to the handle, and also to the earphone, are leather covered. This forms a flexible cable resembling a leather strap and seems to have been a standard of the day.

Fig.1 shows the circuit of the instrument. As can be seen, it is a basic single tuned circuit consisting of a capacitor C and inductor L with three forms of detector across it. Shown as A is the hot-wire ammeter, H is the helium tube and the crystal detector D can demodulate signals for the earphone G.

The 4-position switch K functions as follows: In position 1 the helium tube and ammeter are the detectors for the instrument when in 'receive' mode. Position 2 has a short stud with which the switch arm cannot contact until a downward pressure is applied. This allows the switch to be used as a simple morse key, operating the buzzer, B, so that the unit becomes a signal generator or low powered transmitter. Position 3 is permanent and

the buzzer then operates continuously. In position 4 the crystal and earphone are connected across the tuned circuit and the whole device then becomes a basic crystal receiving set.

In use the required inductor is held near or adjacent to the circuit being tested and power is transferred to or from the instrument by induction.

References; NZPO Museum R.681

Textbook on Wireless Telegraphy. Stanley 1917, p.312.

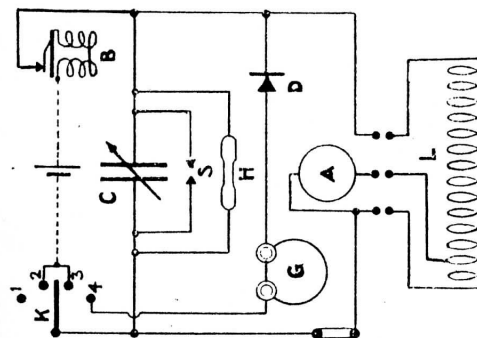


Fig.1
Circuit of Telefunken
wavemeter type EGW

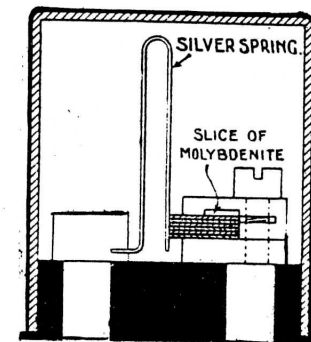


Fig.2
Sectional view of
molybdenite detector



"I belong to the radio of the month club."