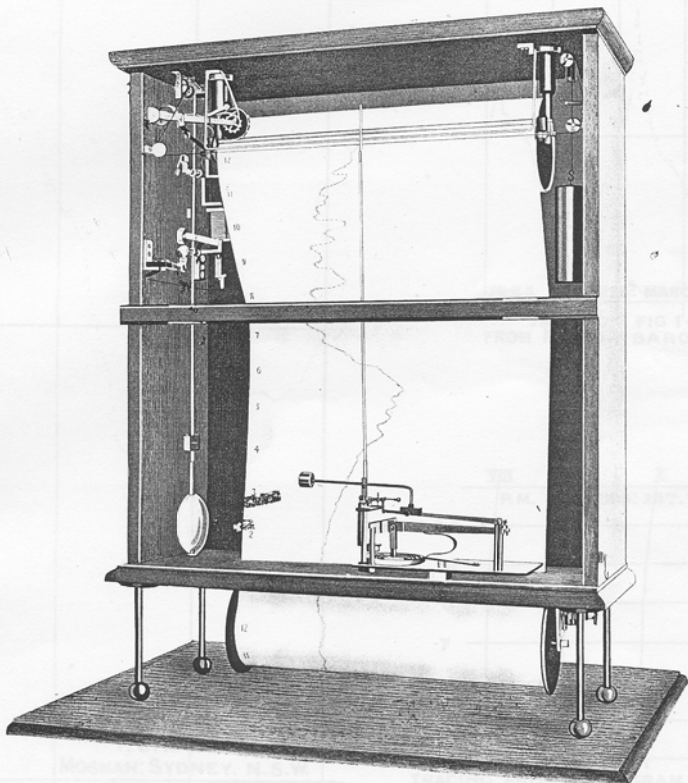


1902

A NEW METEOROLOGICAL INSTRUMENT

MURDAY'S THREAD RECORDING ELECTRICAL

MICRO-BAROMETER



MANUFACTURED BY
PROUDS Ltd., Electric Clock & Scientific Instrument Makers
:: 336 KENT STREET, SYDNEY, N.S.W. ::

THE NEW RECORDING MICRO-BAROMETER

(MURDAY'S PATENTS)

AS an aid to the study of meteorological phenomena, this instrument is practically indispensable to the student; while it is of even greater value to the officials of meteorological observatories, and reporting stations, inasmuch as its indications are, when rightly understood, of very material advantage in the preparation of forecasts.

The working of this instrument reveals hitherto unknown and unexpected movements in the atmosphere, and the existence of closely adjacent areas having great differences in density, corresponding with the "pockets" and vertical currents encountered by aviators.

The tracing clearly indicates when the atmosphere is homogeneous or the reverse, and the indications may be taken as a forecast of the conditions likely to obtain for some hours in advance. The apparatus should, therefore, prove also of very great use to aviation schools, and aviators generally.

To medical men, the tracings which show such rapid oscillations of pressure during thunderstorms may assist in explaining just why certain people are so affected by these disturbances. It may well be that the rapid (although minute) pulsations in pressure act directly on the vascular system, and so disturb the nervous balance. In this way the phenomena of nervous tension may be explained as having a physical rather than a psychological origin.

During the passage of thunder squalls and "troughs," the recording boom frequently travels several inches across the chart in a few minutes. Every minute tremor is reproduced, and almost every passing cloud leaves traces of its transit. The fluctuations of pressure are recorded in their proper relative magnitude and sequence; and the instrument is quite free from the lag consequent on the use of a pen.

The difference between the tracing from a high-class barograph and the micro-barograph is well shown in figs. 1 and 2, which represent the tracings during a heavy thunderstorm that passed over Sydney on March 28th, 1912.

The instrument may be briefly described, with reference to the illustration, as follows :

A specially-made aneroid movement with one large vacuum chamber, mainly weight-balanced, is situated at the lower part of the case. This gives motion to a light aluminium "boom," which is pivoted on needle points resting in sapphire cups: the upper end of this boom is flattened, and swings before and at some little distance away from the surface of the paper. An endless inked thread is carried on pulleys across the case, and about one-eighth of an inch from the paper—between it and the flattened end of the boom. A bar is arranged so as to fall once per minute against the boom, forcing it against the inked thread, and so against the paper—making a dot, representing the position of the boom at that particular instant. The record is, therefore, a succession of dots made at intervals of one minute.

The mechanism for operating this striking bar and moving the roll of paper is driven by an electric pendulum, which obtains its energy from a dry battery situated in the lower part of the case, behind the paper band. The supply of paper is in the form of a tightly-wound roll, 15 inches wide by $4\frac{1}{2}$ inches diameter, on a spool which can be placed in position in a few seconds. The speed of the paper is at the rate of one inch per hour, and one roll lasts six months. A large dia. spool, attached to the bottom of the case, rewinds the paper as it passes downwards: a weight by means of a pulley and cord giving sufficient torsion to effect this re-winding. The recorded part of the paper may be removed daily or weekly, or just when required, without disturbing the recording part of the instrument in any way.

An automatic stamping device, operated by a cam on the clockwork, prints the hours near the margin of the paper as it passes over the recording drum; and, as the electric pendulum and movement keep much steadier time than the usual balance wheel clock attached to barographs, the accuracy of the instrument is well within a minute or two per week.

The apparatus is contained in a well made-case, measuring approximately 26 inches square by 10 inches deep, with front glass doors hinged to the centre crossbar. For the purpose of photography, the doors were removed.

As will be seen from the illustration, the last 24 hours record is always in full view.

Re-inking is only necessary at long intervals, and is accomplished by putting a few drops of ink on one of the wheels carrying the thread, which is covered with an absorbent substance. The roller inking the type wheel also requires a little ink occasionally.

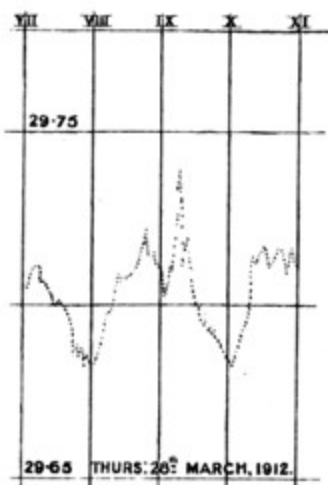
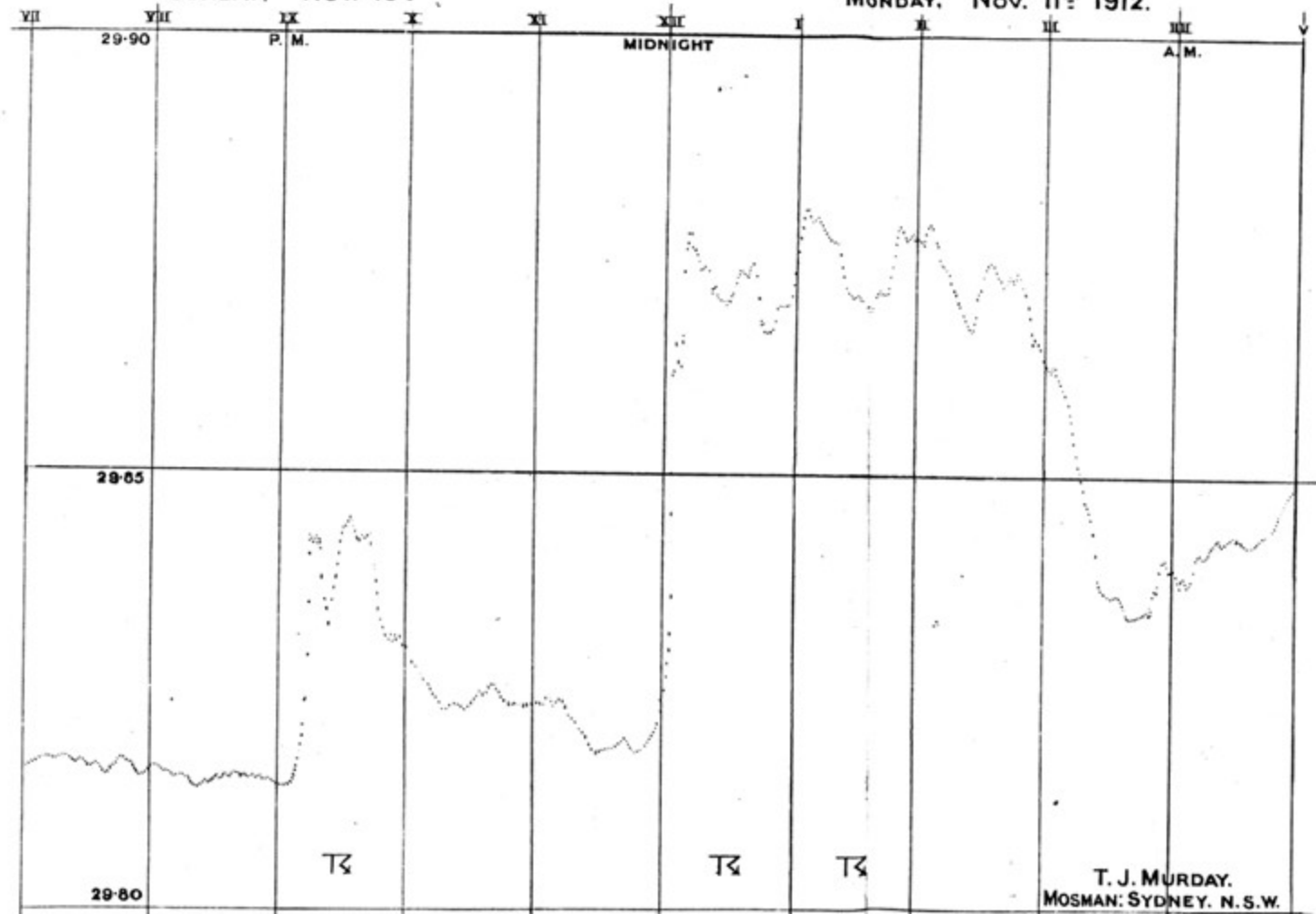
A thumb-screw passes through the bottom of the case from the aneroid movement, so as to enable the boom to be reset to the middle or any part of the diagram whenever it approaches too near the margin of the paper. The range can be extended or diminished, but the most convenient scale is about three inches of paper to one-tenth inch of mercury barometer. This gives a range of five-tenths of an inch across the full width of the paper. The tracing herewith attached was recorded with a magnification of seven inches to the tenth.

The price of the micro-barograph, as described, with two rolls of paper (one year's supply), is	£35 0 0
Extra rolls of diagram paper - - - - each	3 6

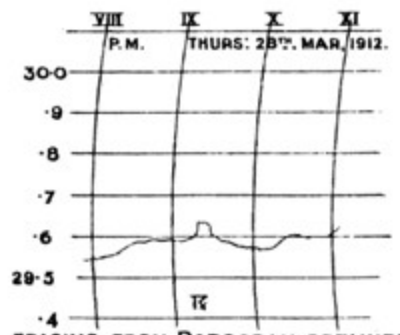
Recording thermometers, hygrometers, and other meteorological instruments can be supplied constructed on these principles; also seismographs, with the advantage of the tracing being in ink, and consequently open to inspection at any time. Prices and particulars on application.

SUNDAY, Nov. 10th

MONDAY, Nov. 11th 1912.



TRACING FIG 1 - FROM MICRO - BAROGRAM.



TRACING FROM BAROGRAM OBTAINED AT THE WEATHER BUREAU, SYDNEY, N.S.W. FIG 2.

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Copy of Micro-barograph tracing showing variations in Atmospheric pressure during the passage of Thunderstorm disturbances: - 7 inches on diagram equals $\frac{1}{8}$ in. of Mercury barometer.