THE CARDIFF SEISMOGRAPH.

By E. WALFORD, M.D.

The Seismograph presented to the Cardiff Corporation by the Naturalists' Society on 20th December, 1909, is of the Milne Horizontal Pendulum pattern. It is housed at the Meteorological Station, Penylan, Cardiff, 203 feet above mean sea level, in a detached brick building built specially for the purpose.

The Seismograph stands on a cement-concrete column eighteen inches square, three feet above the floor level. The circular base of the column, which is five feet in diameter, runs four feet into the ground, and is detached from the floor of the room.

The clock box and other recording parts of the instrument are fixed on a strong wooden table, the legs of which are securely fixed in the concrete floor.

The Seismograph consists of an iron stand and upright, carried by three levelling screws, which rest on a slate slab on top of the concrete column. A metal pivot projects from the lower part of the upright, against which a horizontal aluminium boom rests. The end of the boom resting against the pivot is cup-shaped in order that the boom may be kept in position.

The boom is held in a nearly horizontal position by means of a tie (fine wire), the last inch or so of which is of unspun silk, fastened to a screw at the top of the iron upright, and also to the boom a few inches from the projecting pivot. At this point a thread is attached to a small upright and to the boom, about nine inches from the outer end, to prevent the boom from sagging. On the boom, between the pivot and the wire attachment, rests a weighted cross-bar for the purpose of obtaining the "steady point." This cross-bar also serves the purpose of balancing the weight of the extreme end of the boom.

To the outer end of the boom is fastened a flat piece of blackened mica, in which there is a very narrow, short slit in the same direction as the boom. This swings freely over a slit (at right angles with the slit in the mica) in the fixed top of a box, inside of which is a drum, driven by clock-work, carrying a sheet of bromide paper.

The instrument is completely covered by a case of mahogany and glass.

Over the top of the box referred to is a cover, part of which is of glass. Light from a lamp placed on this cover is reflected downwards by a concave mirror. The light shines on the mica at the end of the boom, and so enters the otherwise dark box at one point. This point of light is obtained by the moving slit in the mica crossing the fixed slit in the box.

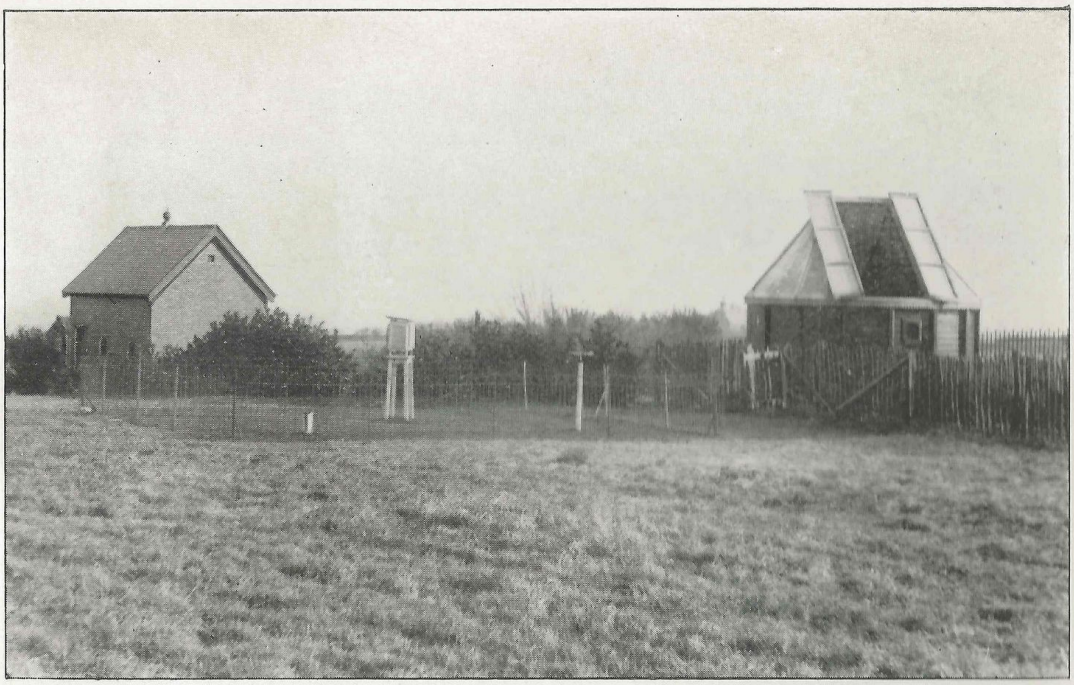
When the boom is steady the light causes a straight line to be made on the bromide paper passing beneath it. This line is shown, of course, after development. If the pendulum swings owing to an earthquake, the resulting photogram shows a zig-zag line, thus reproducing the to-and-fro motion of the boom relatively to the earth.

The time is recorded by means of the light being prevented from entering the case for a few seconds at each hour by a small shutter carried on the armature of a small electro-magnet. The circuit is made by the minute hand of a watch making contact with a platinum-tipped spring, thus causing the shutter to swing across the slit in the clock box.

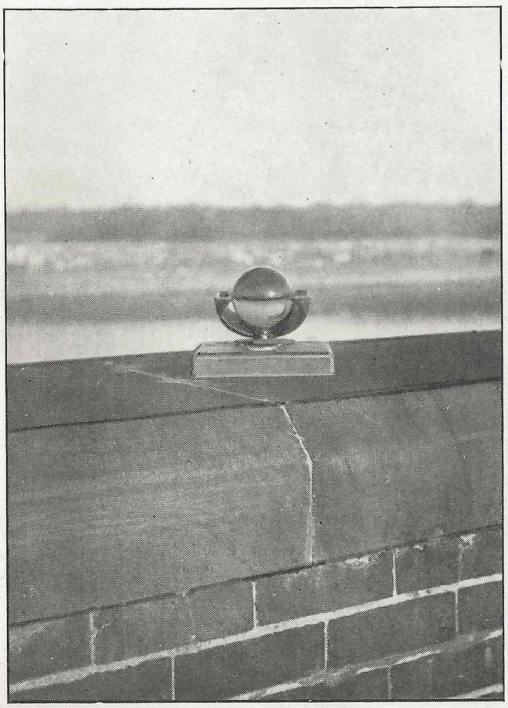
The seismograph is so placed that the boom points N.-S., and the pendulum is adjusted so that it has a certain sensibility.

One sheet of bromide paper runs for twenty-four hours, and is held on the drum by its ends being inserted in a slit, a metal wedge making it secure.

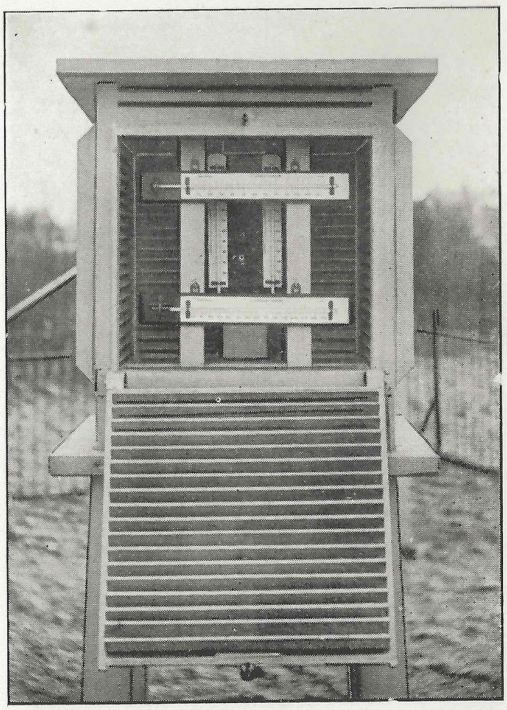
The information required from a seismogram is the date, the times of commencement of motion, the commencement of decided motion, and of maximum motion.



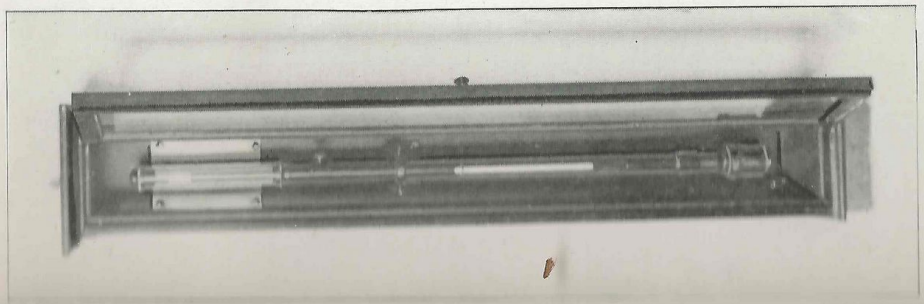
CARDIFF METEROLOGICAL STATION AND OBSERVATORY.
(Seismograph House on left and Telescope House on right of picture; Meteorological Screen, &c., in front.)



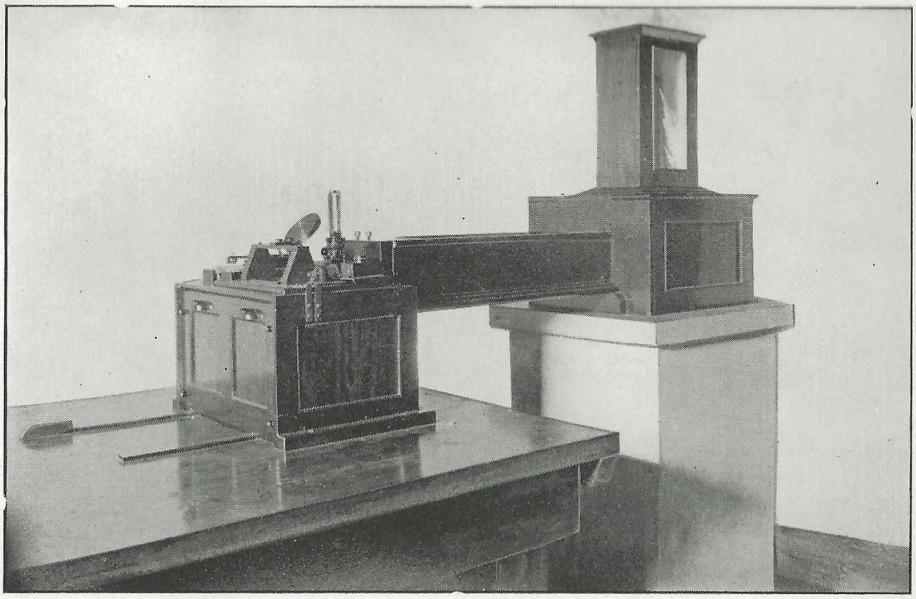
SUNSHINE RECORDER.



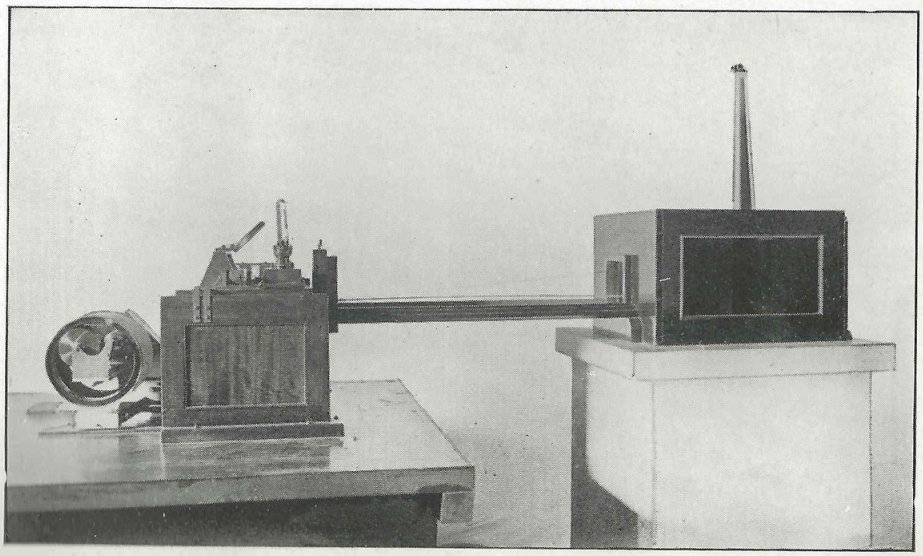
INTERIOR OF METEOROLOGICAL SCREEN.



BAROMETER.



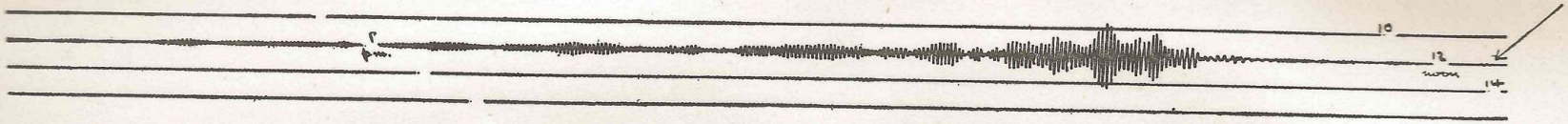
THE SEISMOGRAPH.



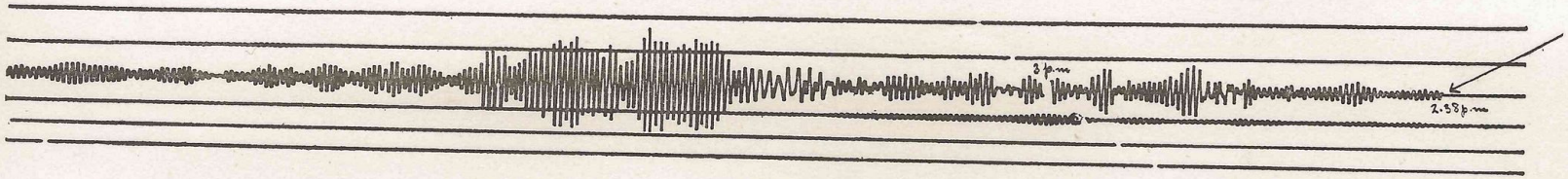
THE SEISMOGRAPH
(with parts of covering case removed).

(Photo. E. G. C. Down.)

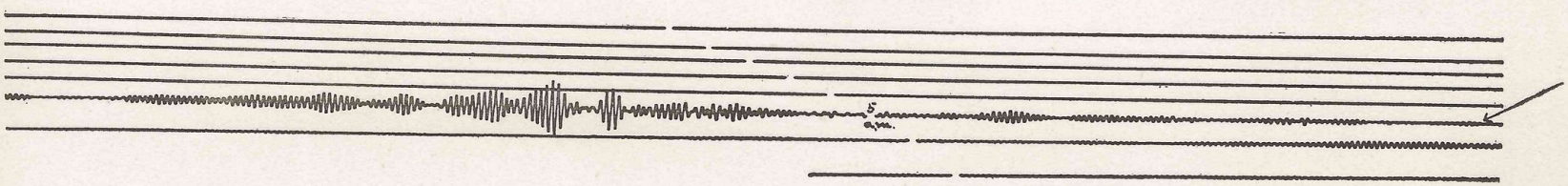
ZANZIBAR. 13TH DECEMBER, 1910.



OSHIMA, SOUTH OF JAPAN. 15TH JUNE, 1911.

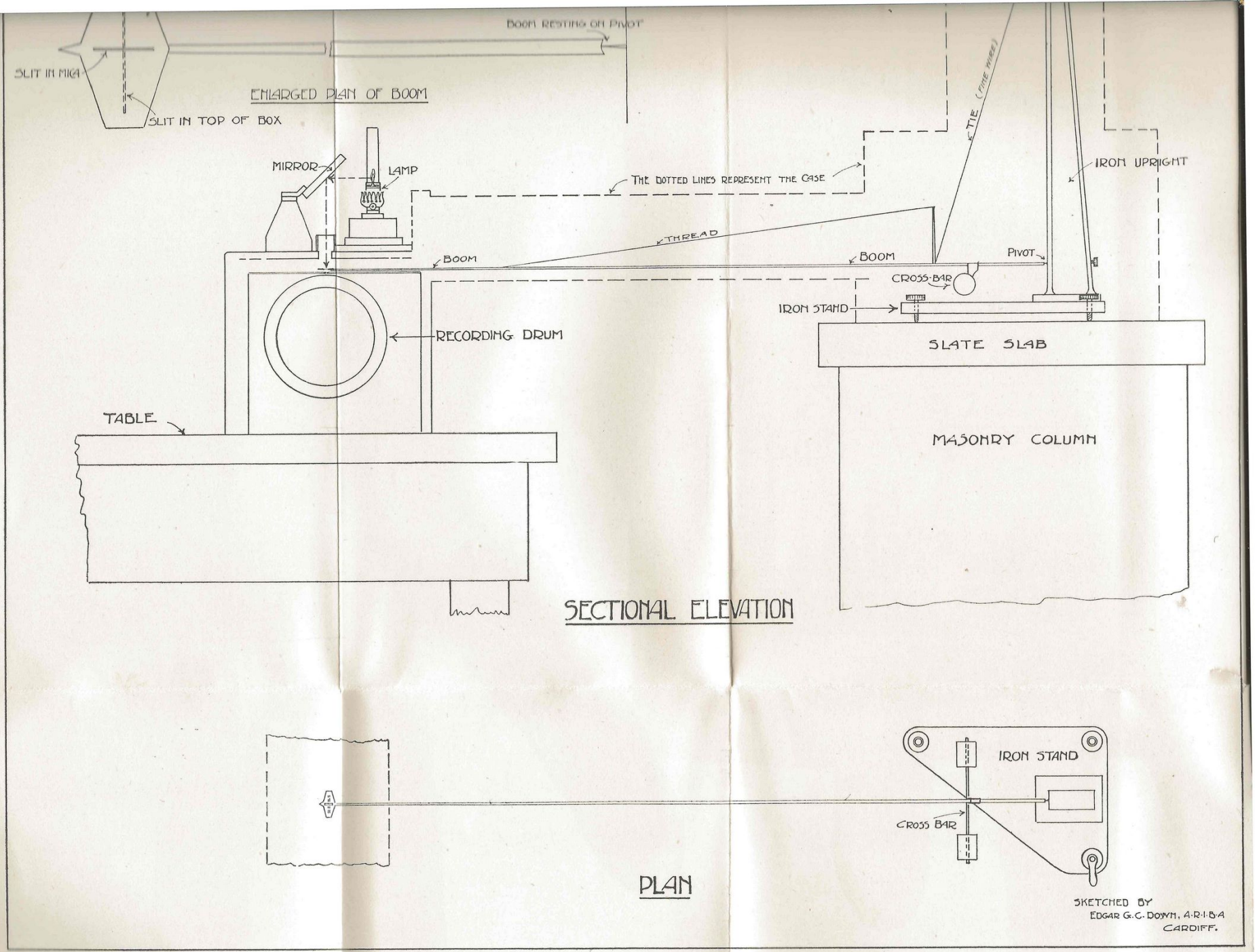


12TH JULY, 1911.



CARDIFF RECORDS OF THREE EARTHQUAKES.

(The commencement of each Earthquake Record is shown by an arrow, the hours are indicated by short breaks in the Records, and the parallel lines are the ordinary records before and after the Earthquake movements).



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