Long Period Horizontal Pendulum

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Long Period Horizontal Pendulum.

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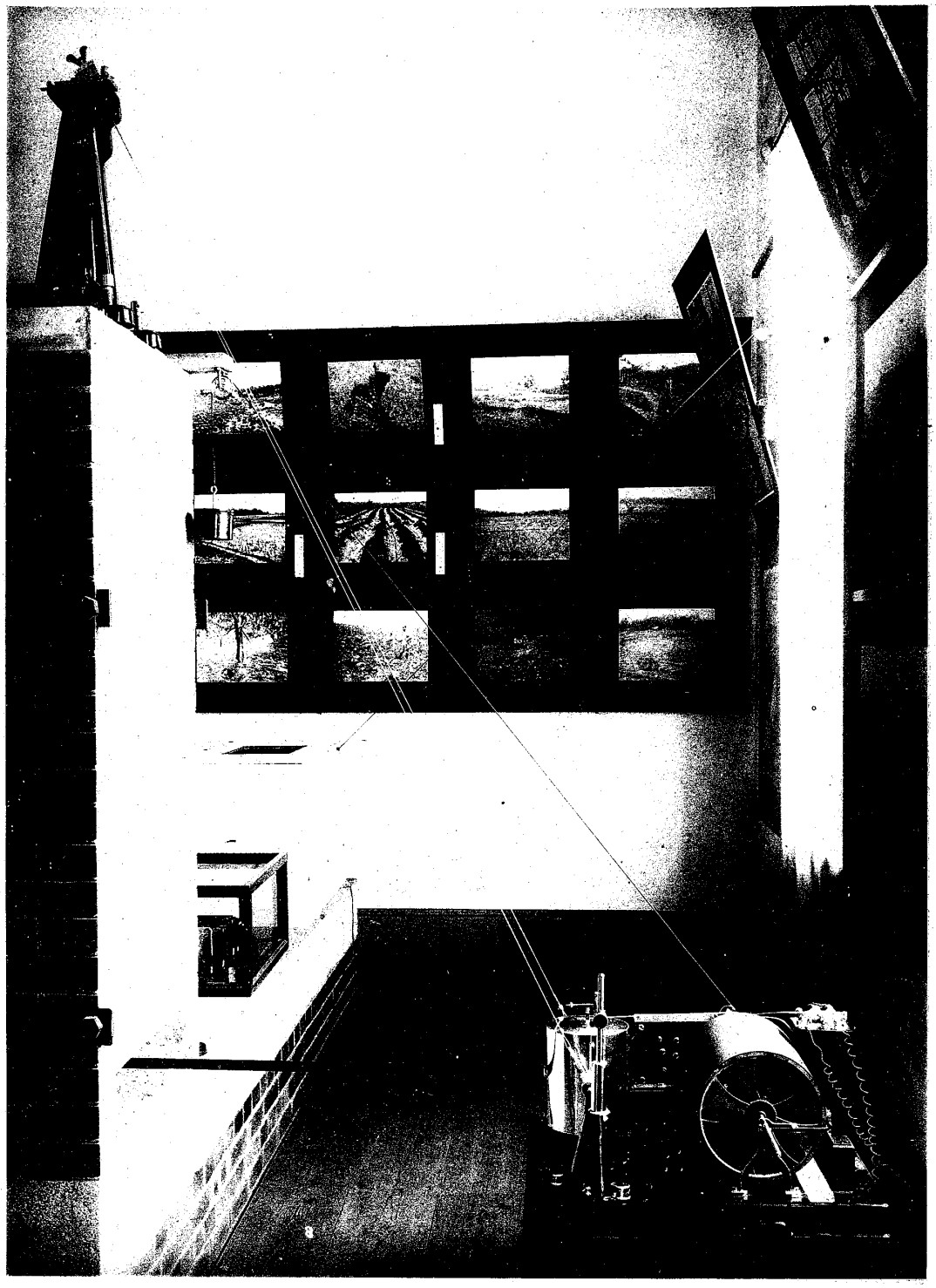
For the observation of slow vibrations occurring in the teleseismic motion it is necessary to bring the "steady mass" of a seismograph sufficiently near to the state of neutral equilibrium, so as to make the natural oscillation period of the instrument much longer than that of the earthquake movements. In the case of a horizontal pendulum, this amounts to minimizing the angle, φ, formed between the vertical and the axis of the pendulum, or the line joining the points of support and of suspension of the latter. Now, as the tendency of the pendulum to become unstable depends on the smallness of the horizontal distance between the points of support and of suspension, we can, by increasing the vertical distance between these two points, lessen the angle φ and thereby increase the oscillation period, without throwing the pendulum out of the stable condition. If the length of the horizontal strut be about 1 metre, and the vertical height of the pendulum be $2\frac{1}{2}$ to 3 metres, the oscillation period can be raised to about 3 min.*; the mass of the heavy bob employed being about 50 kg.

Pl. XLIII represents a horizontal pendulum, temporarily set up in the Seismological Laboratory; the instrumental constants being as follows :—

* See also the *Publications*, No. 4.

A Long-period Horizontal Pendulum.



Weight of the bob=50 kg.
Length of the horizontal strut=1 metre.
Vertical height of the pendulum=2 metres.
Pointer multiplication=30.

The pendulum can be adjusted without difficulty to an oscillation period of about 2^m 15^s.

The recording apparatus has received a notable improvement in the hand of H. I. H. Prince Yamashina, who takes a keen interest in meteorological and seismological observations. The mechanism is so arranged that the cylinder can be quietly rolled away horizontally and normally o its axis, enabling us to take off or put in the position the record-receiver without affecting the writing pointer.