

## Horizontal Tremor Recorder.

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In the *Publications*, No. 18, I have described a form of horizontal tremor recorder designed to measure the small vibrations of the ground due to artificial causes. Since then several instruments of the same type, adapted to a continuous seismic registration, have been constructed, the two horizontal component vibrations being written on a smoked paper wrapped round a revolving cylinder in the usual way. These seismographs, with a magnification of about 100, set up in the Mount Tsukuba and Osaka Meteorological Observatories proved very useful in the observation of near earthquakes, or those, say, of the epicentral distance under 1000 km.

The upper picture on Pl. XLII represents a single component "tremor recorder," whose heavy bob is 32 kg in weight, and which magnifies the motion 200 times.

Although the observation of the teleseismic disturbance is very important, it must not be forgotten that the chief interest of the earthquake measurements is in connection with the study of local shocks. For an earthquake country it will be more to the purpose to provide the different stations with the "tremor recorders," or similar instruments, together with ordinary seismographs for the observation of the macro-seismic disturbance; the instruments for the study of the teleseismic motion being set up only at a few standard observatories.