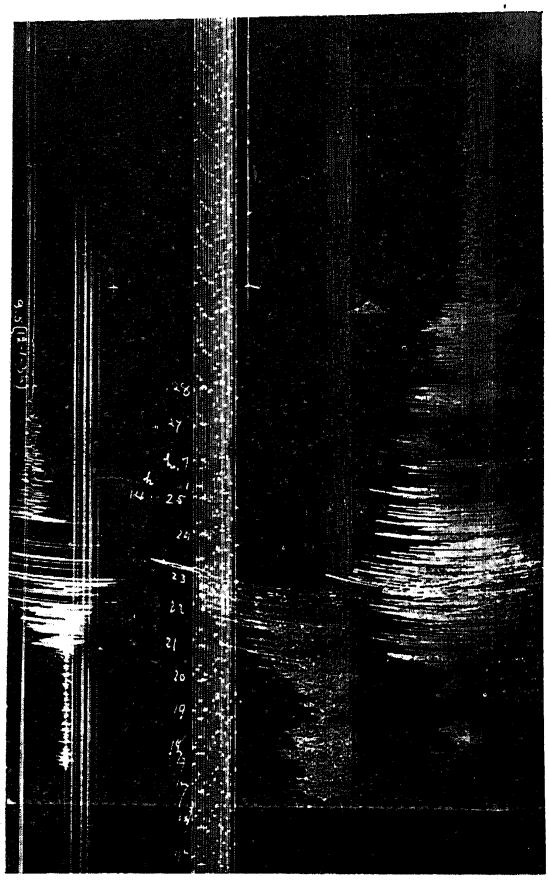
Seismcgraphic Record of the Recent Earthquake.

FROM a photograph of the Seismogram obtained in Mangalore on January 15th, 1934, it may be seen that the movement began at 14 hrs. 17 mins. It continued till



after 15 hrs. (S. T.). The first phase is well marked in the vertical component (extreme left), not so well marked in the two horizontal components. S — P = 3 mins. 20 secs. which according to Zeissig's Tables, gives an epicentral distance of 2,000 Km. (see Galiztin's *Vorlesungen uber Seismometric*, Leipzig, 1914, p. 108). *The Travel Times of Earthquake Waves* published by the Department of Geophysics, Saint Louis University (Nov. 1933) gives a distance of 1,935 Km. This would fix the epicentre within a circle of some 50 Km. radius from Khatmandu (Nepal). The epicentral determination, however, cannot usually be done from data obtained at a single station. In the present case the determination is all the more uncertain that the first tremors are not well marked by the horizontal components. The maximum amplitude marked by the E — W component is 10·4 cms., at about 14 hrs. 23 secs., when the needle broke. Double amplitude is measured, very remarkable is the amplitude of the vertical component. If the jumping of the ground was so pronounced at a distance of 2,000 Km., what must it have been near the epicentre? The St. Louis distances are applicable only to earthquakes whose focal depth is 10–15 Km. They form so numerous a class as to deserve to be called "normal earthquake". The agreement of the measured with the calculated epicentral distance makes me think that the hypocentre of the earthquake of January 15, would not have been much deeper than 10 or 15 Km. Of course, only a study *in situ* can settle the question.

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Organic Manures and Soil Structure.

THE beneficial effect of organic manures in improving the tilth and increasing the absorptive and water-holding capacities of soils has long been known. Their utility as sources of plant and microbial food has been recognised and, more recently, evidence has also been adduced to show that they supply a part of the carbon-dioxide assimilated by the plant.[1] No information is available, however, regarding the effect of their decomposition on the ultimate mechanical composition of soils: indeed, they are not supposed to have any effect at all.

In the course of an investigation on nitrogen transformations in swamp soils, it was observed that soils treated with organic manures tended to become increasingly heavy with the progress of the decomposition. This observation, combined with a few others, such as increased difficulty in 'dry' digesting such specimens for estimation of nitrogen, suggested that the treatments had brought about some permanent change in the physical texture of such soils.

With a view to obtaining some quantitative evidence regarding the nature and extent of such transformations, specimens (10 lbs.) of a local soil (red loam) were made up, in the usual way, in glazed earthenware pots and treated as follows:—(*a*) unmanured and

[1] *Nature*, **132**, 1001, 1933.