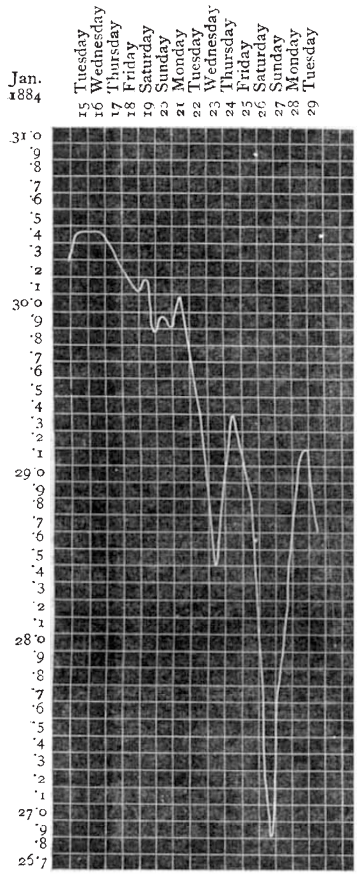
bright and clear and distinctly iridescent. Around the head of the figure was a beautiful halo of light, and from the figure itself shot rays of colour normal to the body. The sight startled me more than I can now tell. I threw up my hands in astonishment, and perhaps some little fear, and at this moment the spectre seemed to move towards me. In a few moments I got over my fright, and then, after the figure had faded away, I recognised the fact that I had enjoyed one of the most wonderful phenomena of nature. Since then we have seen it once or twice from Jeff Davis Peak, but it never created such an impression upon me as it did that evening when I was doing service as a heliotroper all alone on the top of Arc Dome."

The Storm of January 26

DURING this storm there was a remarkable depression of the barometer, it falling to 26·9, as shown in the accompanying chart. The lowest depression last year was 28·2 on Nov. 25. Lurgybrack lies in lat. 54° 56′ N., and long. 7° 42′ W. It is 225 feet above the Ordnance datum level. A nearly similar depression was observed at Letterkenny, 140 feet above the Ordnance datum level. The wind veered round from the north west by north and east to the south, and from the latter by west to north. The storm was succeeded by a fall of snow, which has now melted away.



G. HENRY KINAHAN

Lurgybrack, Letterkenny, Ireland, January 29

EARTHQUAKE DISTURBANCES OF THE TIDES ON THE COASTS OF INDIA

FOR some years past tidal stations have been established at various points on the coasts of India, from Kurrachee round *viâ* Cape Comorin and Adam's Straits to Calcutta, and on to Rangoon and Moulmein; also beyond these points, eastwards at Port Blair in the Andaman Islands, and westwards at Aden; but not anywhere in the Island of Ceylon, which happens—unfortunately for the interests of science—to be outside the administration of the Government of India. At each of the tidal stations an observatory has been established, containing a self-registering tide-gauge, and all requisite meteorological instruments, with a clerk in charge who tends the instruments, sets the driving clocks to true time—usually received telegraphically from Madras—and sends in daily reports to the supervising officer. That officer exercises a general superintendence over all the tidal stations, inspects them periodically, collates and analyses the observations, and deduces from them the values of the "tidal constants" for each port or point of observation; these constants enable future tides to be predicted, and tide tables to be prepared for the guidance of mariners; they are also otherwise valuable, in that they have thrown light on the question of the earth's rigidity, and on various other matters of scientific interest.

The operations have been carried on in connection with the Great Trigonometrical branch of the Survey of India. Major A. W. Baird, R.E., has been the supervising officer from their commencement in 1873 up to the present time, with the exception of an interval of a little more than a year, when he was on furlough in Europe, and Capt. J. Hill, R.E., first, and afterwards Major M. W. Rogers, R.E., officiated for him.

At certain of the Indian stations the registrations have twice indicated that the normal tides had been greatly disturbed by supertidal waves: first, on the occasion of the earthquake in the Bay of Bengal on December 31, 1881; and secondly, during the volcanic eruptions in the Island of Krakatoa, between Sumatra and Java, which occurred on August 27 and 28 last. The first disturbances do not appear as yet to have attracted much attention out of India; a full account of them is given in the General Report on the Operations of the Survey of India for 1881-82, and also in the *Proceedings of the Asiatic Society of Bengal* for March 1883. The second are now famous all the world over, not merely because of the havoc they are known to have produced on the spot and at the time, but also because of the effects they are believed to have produced on the condition of the atmosphere long afterwards and in far distant quarters of the globe. A report on the tidal disturbances at Indian stations which were caused by the eruptions at Krakatoa has been drawn up by Major Baird, and sent to me for communication to the Royal Society, and an abstract of it was read at the meeting of the Society on January 31.

I now propose to indicate certain points of similarity and others of dissimilarity between the recorded effects of the disturbing forces on the two occasions; for fuller details the reports themselves must be referred to.

The usual effect of an earthquake or volcanic eruption occurring at an island or under the bed of the sea is the transmission in all directions of an "earth-wave" and a "sea-wave"; the former travels with much greater rapidity than the latter, and may reach points which the latter does not reach; or it may die away and cease at points far short of those attained by the latter; which of the two will travel the greater distance depends generally on the structure and homogeneity of the strata through which the earth-wave is transmitted, and on the depth of water and configuration of the bottom over which the sea-wave passes.

On the occasion of the earthquake of December 31, 1881, the "centre of impulse" was situated under the bed of the ocean in the western portion of the Bay of Bengal; the shock of the earth-wave was very violent in the Andaman and Nicobar Islands, and along the entire length of the Madras coast up to Calcutta, and also far inland; it was followed by a succession of sea-waves which the tidal diagrams show to have arrived after the