

garding the absence of any allied magnetic disturbances during the appearance of a vigorous sun-spot from May 19 to June 26, 1901.

Herr Nippoldt questions the advisability of introducing statistical gradations of the magnetic disturbances, and contends that the magnetic effect at any one place or at a number of places in approximately the same latitude is, possibly, not a measure of the solar cause. That is to say, an instrument near the poles might register a "great" when the Potsdam or Stonyhurst recorders only registered a "small" disturbance. Consequently, he would urge that when the magnetograph trace shows any marked divergence from the normal one might consider that a disturbance had taken place, and he shows, by a reproduction of the "horizontal-intensity" curve obtained at Potsdam on May 30-31, 1901, that a disturbance *did* take place during the time that the spot which Father Cortie especially discussed was on the sun.

Finally, he confirms M. Deslandres's opinion that in the future the solar observations should be continuous, and thereby become more strictly comparable with the magnetic records.

THE THIRD BAND OF THE AIR SPECTRUM.—In No. 16 (1904) of the *Comptes rendus* MM. H. Deslandres and A. Kannappell publish the results of a study of the third air band, which occurs in the more refrangible part of the ultra-violet end of the spectrum (λ 3000 to λ 2000), under a large dispersion.

The apparatus used consisted of a capillary vacuum tube closed with a plate of quartz under a pressure of less than 1 mm. of mercury, and a spectrograph containing two calcite prisms of 60° and two quartz lenses of 1.3 metres focal length. The latter produced a dispersion which, in the neighbourhood of $N=42,189$ (λ 2370), gave a separation of 0.005 mm. for a difference of 0.06 N.

The wave-lengths of the lines were obtained by reference to a spectrum of iron, using Kayser's fundamental values for the wave-lengths of the latter, and the authors state that in the individual values obtained for N the first six figures are correct.

In the results it is seen that, although the lines of the band may be separated into four series of doublets according to Deslandres's law, so that the difference of wave-lengths in each series advances in arithmetical progression, yet the variations from the computed values are greater than may be accounted for by errors of measurement, and, what is more remarkable, the sign of these variations for series i. and ii. is opposite to that obtained for series iii. and iv.

PRE-GLACIAL TOPOGRAPHY.¹

THE beautifully illustrated memoir by Messrs. Wright and Muff, recently issued by the Royal Dublin Society, directs attention to an ancient rock-platform on which Glacial deposits were laid down in southern Ireland. The importance of such observations is clear when we consider the possibility of the preservation of a pre-Glacial, and perhaps Pliocene, fauna in favoured localities beneath the drift. At Courtmacsherry Bay, for example, south-west of Cork Harbour, a well marked rock-shelf occurs about 5 feet above high-water mark. On this rests a raised beach, with ferruginous sand and rows of pebbles, succeeded by the blown sand that accumulated when the

uplift first occurred. Blocks from the adjacent cliff slipped down over the sand, and the series was then preserved by the Boulder-clay of the Glacial epoch. The wide stretch of coast, from Carnsore Point in co. Wexford to Baltimore in the west of co. Cork, over which this raised platform has been traced, affords ample opportunities for comparing the modern with the ancient features. The authors show that the pre-Glacial sea worked against a cliff about 100 feet in height, and consequently advanced slowly, leaving a denuded surface remarkably free from stacks and irregularities. This surface commonly lies about 12 feet above the modern beach. Unfortunately, no trace of fossils has yet appeared in the old beach-deposits, and the authors believe that even pebbles of limestone have been removed by percolating water. The Boulder-clay above contains the usual molluscs, including northern species.

The pre-Glacial beach is traced into the estuaries of the rivers of southern Ireland; consequently these inlets are still older. Since they have arisen from the submergence of river-valleys, the river-system and the submergence are of pre-Glacial age. This simple but important observation seems effectually to negative the views of the late Prof. Carvill Lewis and Mr. James Porter (*Irish Naturalist*, 1902, p. 153), who argued that deposits of glacial drift might have turned the lower portions of these rivers into their present north-and-south direction. We are thrown back,

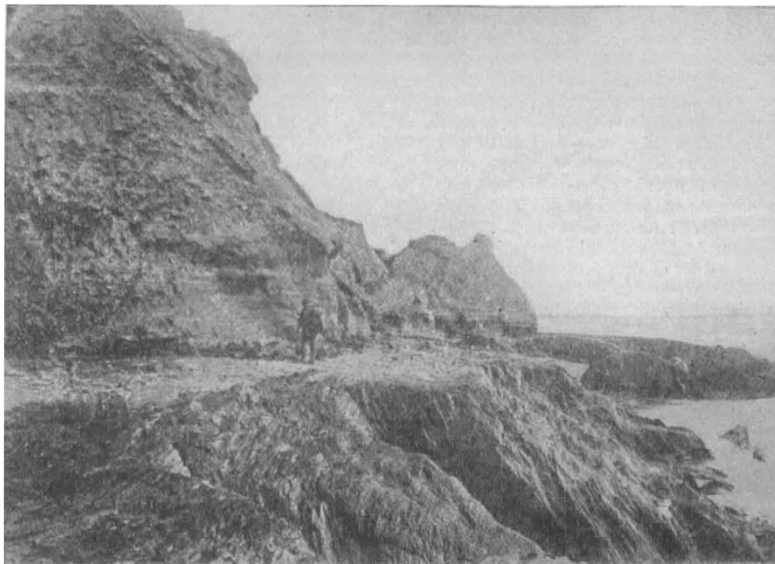


FIG. 1.—Section in Courtmacsherry Bay, co. Cork, showing beach-gravel and sand resting on shore-platform, and overlain by Boulder-clay.

then, upon the view of Jukes in accounting for the courses of the Blackwater and the Lee, and may see, as the drift is slowly washed away, further and further developments of the pre-Glacial topography of Ireland. We have been apt to assume that the western fjords and rias originated when the glaciers retreated from them and the land sank upon the Atlantic side. It now becomes possible that the tongues of ice spread into pre-existing inlets, banking out the sea, and again admitting it in warmer times. Messrs. Wright and Muff even conclude, from British as well as Irish indications, that "a considerable portion of the coast-line of Southern Britain is of pre-glacial age. The approximation over so wide an area of the sea-level in pre-glacial times to that of the present day renders it very probable that Ireland was already insulated before the Glacial Period."

This only increases the difficulty of assuming an extinction of the fauna and flora of Ireland during the maximum extension of the ice. Many points of cheerful controversy lurk behind this straightforward and descriptive paper.

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¹ "The Pre-Glacial Raised Beach of the South Coast of Ireland." By W. B. Wright and H. B. Muff. *Scientific Proceedings of the Royal Dublin Society*, vol. x. part ii. (Dublin: University Press, 1904.) Price 3s.