

## THE TERTIARY FLORA OF AUSTRALIA.

SIR,—In the interesting paper on the above subject which appeared in the April Number of this MAGAZINE, p. 153, Prof. von Ettingshausen describes the flora of the Travertin near Hobart Town, and refers to previous investigations on this deposit, specially those of Mr. Johnson. He appears to have overlooked, or at least does not allude to, two short notices on this limestone published about 40 years since, which however are referred to by Mr. Johnson (Roy. Soc. Tasm., 1879, p. 81).

The first notice is by Mr. C. Darwin, who states :—

“ Behind Hobart Town is a quarry of hard travertin, the lower strata of which abound with distinct impressions of plants. Mr. Robert Brown looked at my specimens, and he informed me that there were four or five kinds, none of which he recognizes as belonging to existing species. The most remarkable leaf is palmate, like that of a fan-palm, and no plant having leaves of this structure has hitherto been discovered in Van Diemen's Land. The other leaves do not resemble the most usual forms of Eucalyptus (of which tribe the existing forests are chiefly composed), nor do they resemble that class of exceptions to the common form of the leaves of Eucalyptus, which occur in this island. The travertin containing this remnant of a *lost* vegetation is of a pale yellow colour, hard, and in parts even crystalline; but not compact, and is everywhere penetrated by minute, tortuous, cylindrical pores.” [Volcanic Islands, 1844, p. 140, also Journal of Researches, p. 448.]

The second notice is in Strezelecki's New South Wales. Having been requested by Count Strezelecki to examine his collection of fossil plants and invertebrata, with the exception of the Corals and Bryozoa described by Mr. W. Lonsdale, I found among them a few specimens of plants and shells which were thus referred to under the Pliocene Flora :—

“ The two specimens of leaves and another peculiar form represented on Table vii. figs. 5—7, are from the yellowish compact limestone near Hobart Town which has been described by Mr. C. Darwin. These impressions have been submitted to Mr. R. Brown, who is unable to refer them to any species known to him, although one specimen has somewhat the aspect of a Proteaceous leaf. This fact is interesting because associated in the same limestone are two species of land testacea, a *Helix* and a *Bulimus*, which Mr. G. B. Sowerby cannot at present identify with any existing analogue.

“ These observations, taken in conjunction with the discovery by Mr. Darwin of a palm-like leaf in the same deposit (of which no similar leafy structure has been hitherto found in Van Diemen's Land), may lead us to infer that the species imbedded in the travertin probably represents the fauna and flora of a period slightly anterior to the present.” [Physical Description of New South Wales, 1845, p. 254.]

The two species of shells, *H. Tasmaniensis*, and *B. Gunnii*, G. B. Sow., have been also described by Mr. Johnson, who has added three more species from the yellow limestone of Geilston, near Hobart Town.

The above notices may perhaps be of interest as supplementary to Baron C. von Ettingshausen's paper.

J. MORRIS.

April 11th, 1883.

## THE PEBBLES OF THE BUNTER SANDSTONE.

SIR,—The papers on the subject of the origin and composition of the pebbles in the Bunter Sandstone which have recently been contributed to the GEOLOGICAL MAGAZINE give me an opportunity of briefly explaining my present views on this interesting problem.

Having been answerable for the theory which attributes the origin of these pebbles (I mean the quartzite pebbles chiefly) to the Old Red Sandstone of Scotland—to which they bear a remarkable resemblance—I wish now to state that I have abandoned the view of their North British origin altogether in favour of that proposed by Mr. J. W. Harrison, who considers them to have been derived from the concealed ridge of older Palæozoic rocks, which we now believe to underlie the Mesozoic strata of the Centre and East of England. At the time I suggested the Scottish source, I was freshly and vividly impressed with the resemblance of the reddish or “liver-coloured” quartzite pebbles to those of the Old Red Conglomerate of the Lesmahago and other districts. But I all along felt the difficulty (on which Mr. Harrison lays just stress) that the number and size of the Bunter pebbles decreases from the Central District of England towards the North-west, which ought not to be the case if they had had the origin I attributed to them. Further reflection leads me to think that the objection is fatal to the view either of myself or of Professor Bonney, notwithstanding the microscopic resemblance which he points out to the quartzites of the Highland rocks. Indeed, it is difficult to picture to one’s self how the pebbles could have “got round” the promontory and barrier formed by the Silurian rocks of the S. of Scotland without having been very thickly strewn over the submerged tract of the N.E. of Ireland and of N. Lancashire; but such pebbles are almost entirely absent from the Bunter Sandstone of Antrim and Downshire.<sup>1</sup>

A reference to Plate IX. of my Palæo-physiographical maps will assist in making this tolerably clear. The ridge of old rocks which occupies the Eastern Counties and ranges as far North as a line drawn from the Wash to the mouth of the Avon, shown on the map, very probably contains beds of quartzite, porphyry, and hornstone, etc., such as are found in the Bunter of Staffordshire; and the supposition of such a source seems to be attended with less difficulty than that of any other yet proposed.

5, RAGLAN ROAD, DUBLIN,  
5th May, 1883.

EDWARD HULL.

#### ON THE SO-CALLED PLANT-FOSSILS FROM CENTRAL WALES.

SIR,—In his recent communication on this matter (GEOLOGICAL MAGAZINE, April, 1883, p. 192) Mr. W. Keeping expresses the opinion that *Nematolites Edwardsii* “is a Coralline Alga.” That object has formerly been described as “solid bodies of pale-chocolate colour and earthy constituency.” Now, it seems difficult to understand why a Coralline Alga should be more easily converted into earthy matter of pale-chocolate colour than branched burrows and tunnels of annelids should be filled up by such a sediment, and I consequently fail to see any evidence whatever why the opinion which has been expressed in my former communication should be altered. As to *Nematolites dendroideum*, I have not hitherto said anything on it, and

<sup>1</sup> It may be objected, truly, that the stage of the “Pebble Beds” is but sparingly represented in N.E. Ireland.