

Sponges. And this is precisely what we might expect in so ancient a form. For it is well known that the more ancient forms often blend the characteristics of types, or as Dana expresses it, they are "comprehensive types." In this way *Eozoön* may, to some extent, comprehend the characters of *Rhizopoda* and *Spongiadae*. Without committing myself, however, to all the generalizations, frequently extremely hazardous, of the celebrated American geologist, I may remark that all this is perfectly compatible with the doctrine of descent with modification, and that that hypothesis is the only one yet propounded which satisfactorily explains these alliances.

I find myself completely borne out in my views on the nature of *Eozoön* by the discovery by Principal Dawson of siliceous spicules in the cells of that organism. It is true, that able palæontologist attributes these spicules to a sponge which has filled the cells of *Eozoön* subsequently to the death of the latter. But I think, in view of the resemblance between the structure of *Eozoön* and that of the boring sponges, that the hypothesis of Dr. Dawson is wholly unnecessary, and that there is no difficulty in attributing the spicules to the *Eozoön* itself.—I am, Sir, your obedient servant,

R. LECHMERE GUPPY.

PORT-OF-SPAIN, TRINIDAD,
3rd June, 1867.

SHELLS ON THE GREAT ORMESHEAD.

To the Editor of the GEOLOGICAL MAGAZINE.

DEAR SIR,—In the paper on "*Glacial Action near Llandudno*," in the July number of the Magazine, Mr. Bonney (page 290) notices the occurrence, in the surface deposit at Gwydyf, on the Great Ormeshead, of quantities of shells. It is worthy of remark that there are none but those of eatable species,—*Patella vulgata*, *Littorina littorea*, *Mytilus edulis*, *Ostrea*, and *Tapes*. I obtained examples here in November, 1864, when their extreme profusion, and the way in which they occurred, convinced me that they had been brought there by the hand of man. I find from a section I made at the time, from the pier at Llandudno to the top of the Ormeshead, that the shell bed occurred at a height of 380 feet above the sea. The accumulations of the subaërial loam which covers it would seem to imply very great antiquity in relation to the human period; but it is evidently quite a different deposit to the Boulder-clay that occurs on the coast at the bottom of the valley, here limited to a range of about 170 feet above the sea (it terminates close to the lowest fence).

Similar clay with transported boulders forms a terrace of about the same height on the south side of the Head, and attains a somewhat greater elevation on the flanks of the Little Ormeshead.

Whilst suggesting that the Gwydyf shell-bed is of artificial origin, I do not wish to call in question the evidence Mr. Bonney brings forward in proof of Glacial action, as drift with transported and striated boulders is abundant in the neighbourhood, especially on the east side of Orme's Bay. There is also a good section con-

taining shells about midway between the Bay and Bryn Gosol, not far from the turnpike-road. Whilst referring to this district, Mr. Mackintosh's paper suggests my pointing out an example of a higher coast level, as indicated by Pholas-borings. A friend informs me that he has seen these markings high up on the mountain to the west of Conway, but I have no record of their exact altitude.

Referring to Mr. Green's letter, I would remark that the Llandudno district affords clear evidence of the superposition of Glacial drift on the white sands or clays resting on the Carboniferous Limestone; though, it must be admitted, this is not so obvious in Staffordshire. Regarding the source of materials, the broken chert beds that are near Llandudno associated with these deposits, seem to indicate a derivation from the Millstone Grit which, along the north coast of Wales, contains extensive beds of chert. The Bunter beds in North Wales are so invariably red that I scarcely think it probable they can have supplied any materials for the white beds underlying the Boulder-clay drift in that district.

GEORGE MAW.

BENTHALL HALL, BROSELEY,
July 2nd, 1867.

SOME REMARKS ON THE REPORT OF PROFESSOR OWEN'S PAPER
ON FISH REMAINS FOUND IN THE NORTHUMBERLAND
COAL-FIELD.¹

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—I beg to be allowed to make a few remarks on the Report which appeared in the July number of the GEOLOGICAL MAGAZINE of Professor Owen's paper, "On the Dental characters of Genera and species, chiefly of fishes, from the Low Main Seam and shales of coal, Northumberland," (read before the Odontological Society on the 3rd of June last).

I have been engaged for many years in collecting fish and other remains from the Northumberland Coal-field, and have obtained a vast number of specimens, both entire and fragmentary, from the shale in connection with the Low Main Seam at Newsham, West Cramlington, and other places. Mr. T. Craggs, who was cognizant of my operations, gathered, a short time ago, a few specimens of fish-remains, principally teeth, from the same localities; and sent prepared microscopical sections of some of them to Professor Owen, who has, from these materials, described twelve or thirteen new genera, several of which I believe to be founded upon remains previously described, while others are, apparently, the result of an examination of the varied sections of the same forms.

I believe there are no remains noticed in Professor Owen's list, so far as the concise account in the Report enables me to judge, of which there are not numerous specimens in my collection; and as I have had the advantage of examining these under varied conditions—not merely of sections—I am in a position to speak with some degree of

¹ See *GEOL. MAG.*, July, p. 323.