

A letter was read from Dr. TRAILL referring to some specimens of fossil fishes from the Caithness schist of the Island of Pomona (Orkneys), and from Clashbennie, which were exhibited to the Meeting.

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*A Classification of the old Slate Rocks of the North of Devonshire, and on the true position of the Culm Deposits in the central portion of that County. By Professor SEDGWICK and Mr. MURCHISON.*

The authors began by observing, that this was a mere outline of a more detailed memoir on the physical structure of Devonshire, which they were about to lay before the Geological Society of London. In the published geological maps of that county the whole system of the older slate rocks was represented under one colour, without any attempt at subdivision; and one colour also represented different limestones, without any discrimination. The object of the authors was to remedy these defects, to ascertain and represent the true position of the successive deposits and their natural subdivisions, so as to compare them with corresponding deposits in other places. They also wished to determine the exact place of the remarkable carbonaceous deposits of central Devon, which had been previously regarded as belonging to one of the lowest portions of the grauwacke formation.

A section was exhibited of part of that county, from the north coast to one of the granite peaks of Dartmoor immediately south-west of Oakhampton.

In the ascending order this section exhibits—

1. A system of slaty rocks, containing a vast abundance of organic remains, generally in the form of casts. These rocks sometimes pass into a fine glossy clay slate, with a transverse cleavage; sometimes into a hard quartzose flagstone, not unusually of a reddish tinge; sometimes into a reddish sandstone, subordinate to which are beds of incoherent shale. In North Devon they are very rarely so calcareous as to be burnt for lime, but in South Devon rocks of the same age appear to be much more calcareous.

2. A series of rocks characterized by masses of hard, thick-bedded red sandstone, and red, micaceous flagstone, subordinate to which are bands of red, purple, and variegated shales. The red colour occasionally disappears, and the formation puts on the ordinary appearance of a coarse, silicious grauwacke, subordinate to which are some bands of imperfect roofing slate. In this series are very few organic remains. It is several feet in thickness, occupying the whole coast from the west end of the Valley of Rocks to Combe Martin.

3. The calcareous slates of Combe Martin and Ilfracombe, of very great aggregate thickness, abounding in organic remains, and containing in a part of their range at least nine distinct ribs of limestone burnt for use. This limestone is prolonged into Somersetshire, and appears to be the equivalent of that on *the flanks* of the Quantock Hills.

4. A formation of greenish and lead-coloured roofing slate of great thickness, and occupying a well-defined zone in North Devon, its upper beds alternating with and gradually passing into a great deposit of sand-

stones of various colours and micaceous flagstones. These silicious rocks alternate with incoherent slates, and are in some places surmounted by great masses of red unctuous shale, which, when in a more solid form, generally exhibit cleavage oblique to the stratification.

5. The lower part of the Silurian system rests conformably on the preceding, and on the north-western coast, near Barnstaple, containing subordinate beds of limestone. In its range towards the eastern part of the county it gradually thins off, but its characters are well preserved, and it contains some characteristic organic remains.

6. The carbonaceous system of Devonshire ranges in a direction east and west across the county, in its southern boundary so close to Dartmoor, that its lower beds have been tilted up and altered by the granite. It occupies a trough, the northern border of which rests partly in a conformable position upon the Silurian, and partly upon older rocks, probably of the division No. 4. Its southern border also rests on the slate rocks of South Devon\*. It everywhere exhibits a succession of violent contortions. In some places it is overlaid by patches of the Green Sand formation, and west of Bideford by conglomerates of the New Red Sandstone. The lowest portion of this vast deposit is generally thin-bedded, sometimes composed of sandstone and shale, with impressions of plants, sometimes of indurated compact slate, containing *wavellite*. These beds are surmounted by alternations of shale and dark-coloured limestone with a few fossils. Subordinate to these, on the western side of the county, are thin veins and flakes of culm or anthracite; but this is wanting on the eastern side, and the calcareous beds are more expanded. The higher beds of this deposit are well exhibited on the coast west of Bideford. These often contain impressions of vegetables.

Though in a state of greater induration than the ordinary coal-measures of England, and even in many places destitute of coal, these beds do not differ from the great productive coal or culm field of Pembrokeshire. The authors consequently concluded, that from the order of superposition,—from mineral structure—from absence of slaty cleavage peculiar to the older rocks on which it rests—and from the specific character of its organic remains—this deposit may without hesitation be referred to the regular carboniferous series.

In the course of the details a remarkable elevated beach was alluded to, occupying two miles of coast, on the north side of Barnstaple Bay, a more special account of which has since been prepared for the Geological Society.

*On the Site of the Ancient City of Memphis.* By the MARQUESS SPINETO.

The author read a paper, entitled, "A Report of the Attempts made to ascertain the Latitude of the Ancient City of Memphis:" he considers the site of this city as having been in the present bed of the Nile, in latitude  $29^{\circ} 46'$  north, and longitude  $31^{\circ} 30'$  east from Greenwich.

\* The authors have since read a Memoir before the Geological Society, on the general structure of Devonshire, in which the age of the strata of South Devon is pointed out.