

Waveney and Little Ouse, first as one valley, then as two valleys, then as two valleys inosculating. But the upper part of every so-called river valley on earth is always purely a "rain valley or dry valley" *sine flumine vallis*, as in myriads of cases *entire* valleys are, especially in porous-strata like Chalk. And in nature, at the dividing ridge, each opposite dry valley or water-flow may be seen to stretch its fingers up each opposite water-slope to join hands across the intervening water-parting. Hence the low parts of a dividing ridge alternating with high parts, for which we have the modern northern terms, gap, saddle, col, &c. Hence the southern sierra or serra (saw), and the Latin "*juga montium*," from the saw-like, or yoke-like ups and downs of dividing ridges. The very name of jugum (hill or yoke) originates here. But these opposite dry valleys, which run up to these low parts of the dividing ridge, these beginnings of valleys are not caused by rivers. They are caused by the cause of rivers—rain.

GEORGE GREENWOOD, Colonel.

BROOKWOOD PARK, ALRESFORD, December 7, 1868.

THE MAMMALIA OF THE CRAG.

SIR,—I observe that the Rev. O. Fisher, at page 547 of your last number, states, on the authority of the Rev. J. Gunn, that *Elephas meridionalis* occurs in the Red Crag. He also speaks of the "Crag period" in such a way as to make it clear that he regards the terrestrial Mammalian fauna of the Suffolk Bone-bed as identical with that of the Mammalian Norfolk Crag. It has always been to me a matter for much regret that the able students of the Norfolk Crags will not give due attention to the facts known as to the Suffolk Crag, for by their assistance the students of the latter might hope to unravel the mysterious history of that strange deposit, the Red Crag. What grounds have the Rev. John Gunn and the Rev. O. Fisher for stating that *E. meridionalis* is found in the Red Crag? The only elephant tooth supposed to come from the Red Crag—known to the late Dr. Falconer—is referred by him to *E. antiquus* (Palæont. Mem. vol. ii. p. 181), and there is no real reason for believing it to be a Red Crag specimen at all. It is true that *Mastodon Arvernensis* is common to the Norfolk and Suffolk deposits; but have you in Norfolk *Rhinoceros Schleiermacheri*, *Hyaena antiqua*, *Hipparion (Ursus arvernensis* is, I think, found there)? Though the character of the lowest beds of the Suffolk and Norfolk deposits is similar, there seems to me, at present, reason to regard the terrestrial Mammalian fauna of the Suffolk Bone-bed as older than that of the Norfolk Crag generally. It is most important to remember that they are *older than the Coralline Crag*.

E. RAY LANKESTER.

ON THE OCCURRENCE OF TITANIUM, ETC., IN MAYO.

SIR,—I have lately discovered a new locality for the mineral Titanium, viz., on Cushcamcurragh, a mountain in the townland of Treel, near Newport, Mayo. It occurs in the form of fine crystals of Rutile, imbedded in quartz and schist, in the neighbourhood of a landslip of considerable extent which took place last year at the head

of the Glenthomas valley. The greater part of the specimens I obtained were from its surface, and associated with a small variety of schorl; it also occurs under similar circumstances on the east side of the ridge above the landslip, on the surface of some smaller slips. Magnetic iron likewise appears on the weathered surface of some neighbouring rocks, of which I procured some fine specimens, and near the west summit of the mountain I found a peculiar form of Andalusite. Few crystals of Titanium are to be obtained, except amongst the debris of the above localities, scarcely any being observable amongst the numerous outcrops of the adjoining strata.

The crystals of Rutile are in colour red or dark metallic brown, frequently geniculated, and occasionally of considerable size. A specimen which I presented to the Museum of the Royal Dublin Society was nearly 4 inches in length and in width about $\frac{3}{4}$ inch. I have also given specimens to the Museums of Trinity College, and of the Geological Survey of Ireland.

Titanium is probably widely disseminated in minute quantities through the mountains north of Clew Bay, though rarely occurring as a distinct mineral. Traces of iron may frequently be observed, and minute crystals of schorl as well as a specimen resembling rutile I noticed near Birreencorragh, but nowhere in the district have I found these minerals in such development as on Cusheamcurragh.

S. G. PERCEVAL.

HENBURY, Nov. 25th, 1868.

SUPPOSED PHOLAS-HOLES ON CONWAY MOUNTAINS.

STR.—In a letter, printed on p. 377, Vol. IV., GEOL. MAG., Mr. Maw cites the information of a friend who had seen Pholas-borings high up on the mountain to the west of Conway. In answer to an application, the observer has kindly mentioned his locality to me, describing the holes as “of two species; very numerous, the rock being one mass of holes, large and small, . . . honeycombed in every direction, like a sponge.” The place is a small quarry, on the north side of the very ridge of Conway mountain, and may be best reached by climbing the hill straight up from the Bangor Road, at the west side of a gravel quarry, at the foot of a huge round-headed rock westward of the Railway Bridge there.

As the observation seems to have been too hasty, I will beg you, in order that it may not lead to misapprehension, to insert this note.

The so-called Pholas-holes are not the work of any animal. They occur throughout the rock, and not on the surface only. The rock is a vesicular felspathic trap, with many larger or smaller oval cells, most of which are lined with a laminar deposit of crystalline matter. Some portions of it are honeycombed, others full of communicating holes, so as to look not very unlike coarse sponge. The larger holes in exposed places, with thin laminar lining, have weathered, so as to present a considerable likeness to Pholas-holes with shells in, but inspection will at once prove their purely mineralogical character.

R. D. DARBISHIRE.

26, GEORGE ST., MANCHESTER, 4th Dec., 1868.