

## DISCOVERY OF PREHISTORIC REMAINS IN INDIA.

(Extract of letter from R. BRUCE FOOTE, Esq., F.G.S., of the Geological Survey of India.)

"You will be interested to hear of a prehistoric discovery lately made by a friend of mine (a Mr. Fraser, a civil engineer in Government employ) near Bellary, namely, of large numbers of celts, rubbing-stones, and pounders, under such circumstances as to leave no doubt that the hills in which they occur were occupied by the manufacturers, who have left numerous very considerable kitchen-middens behind them, resting on rude terraces constructed among the immense tors and blocks of granite gneiss of which the hills consist.

Their surface-inspection yielded large numbers of the implements and flakes innumerable; the middens themselves ought therefore to be extremely good hunting-ground when they come to be carefully excavated, as I trust they will before very long.

The celts are in all stages, from the rudest and most palæolithic chipped implement to the completely polished type. The majority are, I think, only polished in part, at the edge. Nearly all are made of Greenstone, which does not occur within several miles of one locality discovered by Mr. Fraser, but a large dyke of which traverses the other.

Of the rubbing-stones most are made of granitic rock, many of a variety totally different from that forming the hill-range.

The found pounding-stones are mostly made of Greenstone.

I had the good luck to discover a third settlement a few days after Mr. Fraser had shown me the two localities he had found. Mine is some 15 or 16 miles west of Bellary. It is a large conical mound, consisting chiefly of soft yellowish slag, in layers, interstratified with the midden-stuff, as shown by many little rain-sections. By-the-by it has been described somewhere already as a volcanic ash-cone!

Being on the march, and the place a very long way from my next stage, I could only devote a very brief space of time to it, but, in a few minutes, I had obtained a polished celt, some pounders, and rubbing-stones, not to mention flakes. One pounder is made of very hard rich red hæmatite. The celt is of Greenstone; it has been burnt. The settlement was very likely burned down at several intervals—an occurrence not rare at the present day in poor villages, where the huts are very largely built of the coarse stiff straw of the *Holcus Sorghum*."

We hope to hear further particulars of this very interesting discovery from Mr. Bruce Foote.—EDIT. GEOL. MAG.

## THE CYCLAS CLAY OF WEST LANCASHIRE.

SIR,—In your last Number, Mr. T. M. Reade denies the existence of a fresh-water clay underlying the peat of the West Lancashire lowland plain, and seems to be under the impression that I never recognized the existence of a Lower Scrobicularia Clay, occupying a similar position, until the appearance of his papers, and appears to suggest that I should adopt his names of "Washed-Drift Sand" and

“Formby and Leasowe Marine-beds” for the deposits below the peat, which it is impossible for me to do—firstly, because he includes the Middle Glacial Sand and Shingle with the *Post-glacial* Shirdley Hill Marine Sand, which I found to rest on thin seams of peat; secondly, because I consider his Marine-beds to be estuarine and lacustrine; and thirdly, because the names I proposed in 1869 for these beds have the priority of age, his paper appearing in 1872.

In my paper on the *Post-glacial Deposits of Western Lancashire and Cheshire* (Quart. Journ. Geol. Soc., 1870), in the *Explanation of the Geological Survey Map 90 S.E.*, in 1870, in that of 90 N.E., 1872, and in the *Explanation of the Geological Survey Horizontal Section, Sheet 63*, I have described the following sequence of Drifts :

<i>Post-Tertiary.</i>	Recent	Blowing Sand, Blown Sand (Land-surface).	Alluvium.	[rine.
		Upper “Cyclas” Clay. Sand and Loam.		
	Pre-historic	Upper “Scrobicularia Clay”—Tidal Alluvial Estua- Upper Peat, often 20 to 30 ft. in thickness (Land- Lower Cyclas Clay (Lacustrine). } (surface).		
		Lower “Scrobicularia Clay” (Tidal). Shirdley Hill Sand, Presall Shingle (Marine).		
<i>Newer Pliocene.</i>	Glacial	Lower Peat (Land Surface). Upper Boulder Clay (Marine). Middle Sand and Shingle (Marine). Lower Boulder Clay (Marine). Till (Land-surface).		

In 1868, after reading Mr. Morton’s description of the thick peat beds resting on *Scrobicularia* Clays, exposed on the coast of Wirral, near Leasowe, I visited that district, and correlated his *Scrobicularia* Clay with a like clay occurring at Eccles Place, near Crossens, in the estuary of the Ribble, the overlying thick peat being nearly continuous between the two points. Finding another clay with *Scrobicularia* in the alluvium of the Alt, of later date than the peat, I described it in the “*Explanation of the Geological Survey Map 90 S.E.*,” as the “Upper *Scrobicularia* Clay,” in contradistinction to the *Lower Scrobicularia* Clay of Wirral and Crossens, which latter deposit, though recognized to the north and south of the area comprised in that Map, I failed to find in that area, after a most careful examination of all the grey clays thrown out, in cutting the long dykes and sluices so characteristic of that country. Here and there, at isolated points, as immediately east of Freshfield and Ainsdale, in the experimental brick pit made near the “Isle of Wight,” Birkdale, I found shells of *Cyclas cornea*, fragments of horns of red deer, and thin seams of peat.

I therefore am convinced that the *larger portion* of these clays in Lancashire, but *not* in Cheshire, or in North Wales, are of fresh-water origin. But at the same time, from their gradual thinning out eastward upon marine Shirdley Hill Sand,<sup>1</sup> from the intercalation of the “*Tellina Balthica* Sand,” in the main peat of Crossens and Leasowe, and from the similar intercalation of peat in the grey clays

<sup>1</sup> As shown in Hor. Sec. of the Geol. Sar., Sheet 63, and described in its *Explanation*, and in the *Exp. of Geol. Sur. Map 90 S.E.*, 1870.—C. E. DE R.

(which I observed in December last, in the excavation for gas-works) at Blowick, near Southport, one would expect varying and alternating conditions, and contemporaneous "Lower Scrobicularia Clay" to alternate, or even entirely take the place of the Lower Cyclas Clay, in any local area.

The following remarks occur in my paper on the "Post-Glacial Deposits," etc. (describing the Leasowe Clays):—"Whilst this deposition went on, freshwater forms might have lived in pools of fresh water in hollows of the Boulder-clay, simultaneously with marine in other pools, filled by high tides a few feet distant;—fluvial and marine forms of life preponderating horizontally and vertically in the silts, according to whether freshets or spring tides happened to be in the ascendent. This state of things is going on at the present time, in the marshes of the Ribble, between Preston and Southport, where, after heavy rains or floods, freshwater shells may be found, during neap tides, in the hollows of the (recent) Scrobicularia mud, and where crabs may be found living in all the ditches for one or two miles inland."

At the close of the Glacial epoch, several alternations of level appear to have taken place; the surface of the Upper Boulder-clay, beneath the Shirdley Hill Sand, is coated with a thin seam of peat, at a little above the present high-water level, formed after much denudation of Boulder-clays in the lowlands had taken place. Over this denuded plain of Boulder-clay the Sands were deposited, and blown from its edges into a line of ancient dunes, equivalents in time of the Presall shingle-beds (Quart. Journ. Geol. Soc., 1870, p. 461), and the Rampside beds described by Miss Hodgson of Ulverstone.

This sea-bottom becoming land, gradually increasing in extent, streams cut channels in the sands, and carried their débris westwards, into the hollows, and swamp basins, in the Boulder-clay, and deposited the Cyclas Clay, which graduates westwards, along a line not exactly corresponding to the present sea-coast, into the Lower Scrobicularia Clay.

Elevation continuing with obstruction of drainage, peat was formed, under continental conditions, which conditions are now being succeeded by a subsidence still in progress.

In the Blowick Clay, a skull and several antlers of Red Deer have been recently discovered at a depth of 16 feet from the surface. One of the latter, procured by my friend the Rev. John Bone, of Southport, has been presented by him to the Museum of Practical Geology, Jermyn Street.

I am glad to see that my suggestion to Mr. Reade, of examining the Grey Clays for *Diatomacea*, has been productive of good results.

GEOLOGICAL SURVEY OFFICE,  
JERMYN STREET, S.W.

C. E. DE RANCE.

#### HUNSTANTON "RED CHALK."

SIR,—Allow me to call your attention to the subjoined extracts from the Survey Catalogue of Rock Specimens apropos of the paragraph on Hunstanton Red Limestone, by W. S. M., at p. 114 of the