

too generally, as the effect of cataclysms and catastrophes only. Some of the most important of these breaks have been taken, and properly so, as the divisional marks of the rock-masses in the precise, but arbitrary arrangement and classification into which it is always necessary to bring the objects of every science.

It was amongst these so-called Azoic, or Hypozoic rocks, that clay-slate, mica-schist, hornblende-schist, gneiss, primary limestone, various rocks included in the unmeaning term *Grauwacke*, and numerous metamorphosed rocks were, by early geologists, and indeed only a few years since, jumbled confusedly together. Many of them have since been proved to be merely altered deposits of Silurian, or even much more recent age.

We have now, however, already began to sort and to arrange, to study and to teach that which when complete, will be the grandest and most interesting of all the lessons of Geology.

This great accumulation of rocks, then, with which we have to deal in this chapter, those between the Silurian formation and the crystalline and unstratified fundamental granites and gneiss, has already been divided by the American geologists, as by our own, into two groups; the one containing no organic remains, as far as our present researches show, the other containing traces of primitive forms of organized beings.

*(To be continued.)*

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## ON THE OCCURRENCE OF THE BOULDER CLAY, OR NORTHERN CLAY DRIFT, AT BRICKET WOOD, NEAR WATFORD.

By JOSEPH PRESTWICH, Esq., F.R.S.

THE Boulder Clay is so seldom exposed in the neighbourhood of London, that I think it may be desirable to point out a new locality where I have met with it and where it may yet be seen, especially as I have just found some points, connected with its position at this place, which are of rare occurrence: The new line of railway from Watford to St. Albans passes chiefly through gravel and chalk. At one place, however, called Bricket Wood, about midway between those towns, there is a cutting of some length, and twenty to thirty feet deep, entirely through the Boulder Clay. The superposition of this clay, with regard to the

gravels of the London district, is seldom to be determined ; the cutting itself throws no light on this subject, or, at least, nothing very definite. But a ballast pit has recently been opened at the Watford end of the Bricket Wood cutting, and immediately south of the line, which exposes a section of much interest. The Boulder Clay has there almost thinned out, leaving but a seam one to two feet thick, whilst both above and below it is a thick bed of gravel. The lower sandy gravel, which consists chiefly of sub-angular flints and flint pebbles, with some quartz, sandstone, and old-rock pebbles, with subordinate seams of whitish sand, has a clean, washed appearance. The upper gravel consists of very similar sub-angular materials, but is less sandy and darker in colour, arising apparently from the admixture of clay derived from the wearing down of the Boulder Clay. The upper gravel seems to be of limited extent, but the lower gravel I believe to pass under the Boulder Clay, for there is an old pit of the same gravel near the brook on the north side of Bricket Wood, towards the Watford end. There is no Boulder Clay in this other pit, but the gravel presents the peculiarity of being concreted in places into large brecciated and sandy masses by a calcareous cement. In this pit I found no organic remains ; but in the ballast pit I was fortunate enough to discover, in the lower gravel, a few pieces (but not sufficient to determine the species) of the tooth and tusk of an elephant. A workman, whom I afterwards spoke to on the common, told me he had found several bones in the lower part of the gravel, but none of them had been preserved. The lower gravel reposes upon an irregular surface of chalk, which is exposed at places at the bottom of the pit, which is now no longer worked and may, I understand, possibly soon be levelled. It is well worth a visit, and a longer search than I have been able to give. There is a station at Bricket Wood, but it is at the St. Alban's end of the wood, at a considerable distance from this cutting.

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