ART. VIII.—*Our Early Settlements and their Physiographic Setting.* By THOMAS HAY.

Read at Salisbury, June 6th, 1939.

WHEN the Editor suggested an article on the subject described in this title, it afforded a reasonable opportunity for another visit to some of the haunts of our early forefathers.

The terrain is one of infinite variety. To this many items are contributory. The rapid change from hill-top to valley bottom is the chief of these. But hardly less important is the notable difference in the geologic character of the rocks from which the framework of our district has been formed. This is no place in which to give a long description of the geologic succession, but its last chapter—the glacial epoch—has introduced a third and very vital cause of the variety referred to.

Both ordinary sub-aerial erosion and also glacial erosion take much greater toll of that land where height gives greater precipitation of rain and snow and where steep slopes give greater speed to the moving agents. Now glacial erosion and sub-aerial weathering both have one outstanding function—namely to remove material from the more elevated parts and to deposit it again on the lower districts. But they differ widely in their methods of accomplishing this. The ordinary sub-aerial wastage takes place in situ and its removal is achieved by stream action but the glacial effects involve the removal of vast quantities of matter from the ground below and its passage in or underneath the ice to positions further from the source.

These deposits of glacial drift differ widely. The ground moraine which has travelled below the ice and been

exposed to a great pressure is a very dense, very hard boulder clay. In places like the Thirlmere and upper Ullswater valleys, where the pressure of ice has been exceedingly great, this deposit is almost like cement. It is for the most part quite impervious to water and consequently it does not provide a comfortable squatting place for early man.

Modern pressure of population and man's command over natural obstacles have brought about a position of affairs in which our builders can and do fly in the face of nature but in the olden time it was not so. If a man placed his dwelling in an unsuitable site he himself paid the penalty of his stupidity. Fortunately for our early settlers the ground moraine was not the only covering of the lower slopes and valley bottoms. As the ice sheet and finally the valley glaciers got smaller and retreated up the valleys they deposited at their edges and snouts the mounds and hillocks of the lateral and terminal moraines. These deposits had never been exposed to great pressure and consequently they were loose in texture and porous to water. Their character can be well seen in any of our upper valleys such as that below Red Tarn where the beck is cutting into steep slopes of such matter.

This morainic land formed a very good foundation for the early prospector. When covered with rough natural herbage it had a sufficient rotundity to throw the surface water off in all directions and it was itself of a permeable nature. A very good example of this kind of early site selection is the Bannerdale Settlement situated on the terminal moraine of the glacier that nestled at the head of that valley. The group of old foundations is bisected by the stream flowing down from Heck Crag so that the inhabitants were well provided with a good supply of water which was at the same time well under control in a bed sufficiently incised into the moraine.

But these early folks had to knock a living out of their

surroundings. They seem to have been very largely dependent on their animals. Now ever the toughest and densest of boulder clays will in the process of time weather downwards so that the top 18 inches form a browner looser covering which soon supports a vegetation of the coarser grasses. In more recent times when the valuable lower slopes of our valleys became enclosed and those dry stone walls were built which are such a feature of the district, it was noticeable that the highest wall on the fellside, running parallel to the valley, separated the lower drift-covered part of the slope from the rockier slope above, which was incapable of any sort of cultivation at all.

Another way in which the late glacial drift features have entered into human relationship is their imitation at times of artificially formed mounds such as motes and tumuli. This, of course, did not concern our fore-runners of the stone, bronze and iron ages but, as these notes have pointed out before, they have been a frequent trap for the unwary archaeologist. In suitable places over this north eastern part of the Lake District the early type of walling can be found in unsuspected abundance. This bronze age building is characterised by its great orthostatic stones, by its avoidance of right angles, and by its rambling curvilinear lines. Now this type of structure has been greatly facilitated in our area from the fact that these big boulders were provided ready to hand in the shape of erratics. These boulders from the igneous centre of our district are as sound to-day as when they were first rolled by the early settlers into the hollows that were prepared for them. But when one passes outwards from the Borrowdale area, the Skiddaw slate on the north and the Silurian rock on the south were not so considerate. Softer in texture and coming away in smaller fragments, they would not furnish such a liberal supply of big orthostats.

The drift and the erratics naturally conform largely to the rock over which the ice has passed before dumping its

burden. When one passes further still in an outwards or radial direction and reaches the limestone girdle which enclosed nearly threequarters of the area, then the supply of big igneous boulders diminishes in number and the settlements near Askham for example begin to show a certain number of limestone blocks among the framework of their walls. Some of these blocks have already crumbled away under the attack of the weather.

A little experience in hunting for these early settlements soon enables one to spot the likely places. They are generally somewhere near the 800 ft. contour and on some kind of a platform or shelf or hummocky mound. The impression that is given is that the settlers wanted a pitch that would give good natural drainage.

Now this situation, noticeably above the valley bottom has usually been explained as due to the fact that the lower parts of the valley would be a mere tangle of forest and swampy undergrowth. But there may be other reasons. For example, at the end of Fox's " Personality of Britain," it is suggested that the life history of a certain Flatworm, " Fasciola hepatica " may have been a cause. This parasite affects sheep and other animals. The eggs pass out of the animal's body and need water for their development. The higher and drier situation may have been thus forced on these bronze and iron age folk although they would not understand the reason.

A fresh settlement of this type lately found on the west side of Haweswater brings several of these points out. It lies just above the new fellside track and not many minutes walk from the north-west end of the new dam. It must lie about 850 feet above sea level. There are two good hut circles of a good size and a considerable part of the enclosing embankment. It is situated on a natural shelf and like many in the Ullswater valley it enjoys a magnificent view. The rim of ruined walling round each hut circle, by its amount and disposition, tallies as usual

with the idea of a hut formed by a wall of stone built up to a height perhaps of four or five feet and capped by a roof of perishable materials. This emphasises again the necessity of a site with good natural drainage.

But there is another element connected with the question of altitude. So far only material considerations have been mentioned but if the investigator visits any of the high-lying hill-top tumuli such as those which cap Great Mell Fell, or Little Mell Fell or Low Raise, he realises that it could only be a chieftain of some considerable repute that could aspire to such a mausoleum. The builders had to overcome the lack of efficient tools and the consequent difficulty of getting a heavy job done in in a high and exposed position. The view from such a vantage point stretches from the highest peaks of lakeland over the undulating foot-hills away to the many-tinted distances of the plain. The habit of burying their chieftains where they could look out over their old possessions and possibly still protect their descendants hints at beliefs beyond the mere material necessities of life.

In considering the sites of the settlements themselves, it has been a question in nearly all cases of a position well down the slopes and in the region covered more or less by the drift left by the glacial epoch. But it is a different matter when the refuge camps are visited. The rockier and more precipitous the situation, the better it was for defence and these retreats are perched on cliffs left bare and rugged by the erosion of the ice. Castle Crag in Mardale may be taken as an instance of these forts. Here the central retreat is cut off from the rest of the spur on which it lies by two great ditches. Professor Marr thought that these ditches had been glacial overflows before they were deepened and used as protection for the fort. There seems little proof of this. But once again here is another meeting point where antiquarian and geologist may hold conference together.