

and returned to Whitby by the 6.7 train, arriving at 6.35, and so the excursion ended, which, if marked by nothing else, was notable for the splendid weather, which was uniformly fine but for the two thunderstorms mentioned, and neither of these interfered with the outdoor work.

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EXCURSION TO THE RAYLEIGH HILLS, ESSEX
 (HADLEIGH, THUNDERSLEY, AND DAWES
 HEATH).

SATURDAY, SEPTEMBER 15TH, 1906.

Director: A. E. SALTER, D.Sc., F.G.S.

Excursion Secretary: T. W. READER.

Report by THE DIRECTOR.

THE party, which numbered about thirty and included several members of the Essex Field Club, left Fenchurch Street at 2.6 p.m., and on arriving at Leigh-on-Sea ascended the steep slope

which leads to Leigh Church, and after some difficulty obtained conveyances to Thundersley.

The first section visited was situated a little east of the Reservoirs, where 5 ft. or 6 ft. of gravel resting on sand was exposed at about 250 ft. O.D.

The Director pointed out that the Rayleigh Hills, upon one of the highest parts of which they were then standing, were formed of London Clay, which was overlaid by Bagshot Sands. Above these, patches of gravel similar to that now before them occurred, and these by preserving the subjacent strata from the action of denuding agencies had preserved them, while all around had been denuded away. The Director then drew attention to the composition of the gravel, which in addition to débris from Tertiary strata, *e.g.*, sarsens, flint pebbles, etc., contained a considerable amount of Lower Greensand Chert from the Wealden Area to the south of the Thames. Some of the gravel had been consolidated into a hard ferruginous conglomerate. If the hypothesis that these outlying patches of gravel were formed by former streams from the Wealden Area were correct, it showed that since the gravels were deposited the lower part of the Thames Valley, as we know it, had been initiated.

In comparing this deposit with that seen at Beggar Hill earlier in the year* it was pointed out that the Bunter débris and Igneous rocks present at the latter were absent in the former. Also nothing derived from Jurassic strata or Basalt was observed at either of them.

The Director also remarked that Eoliths were likely to occur here, and that he had obtained one which had satisfied Mr. A. S. Kennard, F.G.S., who also expressed the opinion that the gravel was a likely one for their occurrence.

The remarkably fine view from this point was greatly admired, the Laindon Hills standing out well to the east.

A few days before the excursion some Essex papers stated that discoveries of flint implements had been made at Thundersley, and also that a band of marine shells had been found there. Some members investigated these reports, and found that a few well-worked neolithic flakes had been found by Mr. Mabey in his garden, and the Director was able subsequently to examine the "marine shells," which proved to be ferruginous concretions from the Bagshot strata.

Proceeding to Dawes Heath the party were shown a section in what is known as the Bramble Hill Pit, which from the Director had recently obtained a fair-sized boulder of green Oldbury Chert. The gravel was similar to that already seen, and rested on Bagshot Sand.

Another section close by was visited, and then a sharp walk

through the woods brought the party to the Crown at Hadleigh, where tea was obtained.

Some few members found time to examine Hadleigh Church, into the wall of which a large sarsen has been built, and to visit the ruins of Hadleigh Castle.

In replying to the vote of thanks proposed by the President the Director stated that he hoped, in spite of the unfortunate delay, he had been able to bring out the following points :

1. That the Rayleigh Hills owe their existence as such to the occurrence of porous gravel and sandy patches which have resisted denudation.
2. That the presence of Lower Greensand Chert in the gravels points to former fluviatile connection with the Wealden Area.
3. That large boulders (sarsens) occur in these gravels at 250 ft. O.D., which are rarely if ever found in the much more extensive gravels at lower levels (70 ft.—80 ft. O.D.), e.g., at Southend (in Southchurch Road) and at Westcliff, etc.
4. That flints showing Eolithic chipping, similar to those on the Plateau south of the Thames, probably occur on the Rayleigh Hills in beds of stratified gravel.

The party returned to London by the 7.20 p.m. train.

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