EXCURSION TO FOOTSCRAY AND ORPINGTON.

APRIL 24TH, 1909.

Director : G. E. DIBLEY, F.G.S.*Excursion Secretary* : MARK WILKS.

(Report by THE DIRECTOR.)

ACCORDING to the programme the route was arranged in order to avoid an unduly tiring walk from Sidcup, *viâ* Footscray, to Orpington. The party therefore consisted of cycling members, who met at Footscray and proceeded eastward a quarter of a mile past the cross road leading from Bexley to St. Mary Cray, to a large chalk pit on the right-hand side of the road.

The chalk here is used for lime, and is of a soft character, and forms the outcrop at this point in a limited area, being capped to the north and east at a short distance by Thanet Sands and the Woolwich and Reading beds, which beds also occur in outliers to the south and east past Swanley, while the Cray flows from Orpington along the base of the low Tertiary escarpments towards Dartford. A close inspection of the pit above mentioned shows about 30 ft. of chalk; the top part consists of from 1 ft. to 2 ft. of weathered chalk; below this are four or five bands of sparsely scattered flint nodules, whilst about 6 ft. from the base there is a prominent band of tabular flint from two to four inches in thickness.

The fossils previously obtained from this pit by the Director and by the members on this occasion prove beyond doubt that the chalk here belongs to the top part of the *Micraster cor-anginum* zone, which is continuous from here eastward through Dartford, Farningham Road and Gravesend to Rochester.

The fossils include several species of sponges, *Parasmilia centralis*, *Cidaris sceptrifera*, *C. clavigera*, *Salenia* sp., *Cyphosoma konigii*, *Echinocorys scutatus*, *M. cor-anginum*, *Conulus albogalerus* (very common), *Terebratula semiglobosa*, *Rhynchonella reedensis*, *R. plicatilis*, *Spondylus spinosus*, *Lima* sp., *Ostrea* sp., *Pecten* sp. The Bryozoa are well represented, and *Actinocamax verus* also occur.

About a quarter of a mile farther east on this road is another small exposure at the back of a farmhouse; the fossils here belong to the same horizon. The cyclists then made for Orpington Station, where they met the party who had come by train. The chief geological features of the district were pointed out, and the party, now numbering 32, walked south as far as Green Street Green, to the extensive gravel pits at the confluence of

two valleys, one coming from the Keston district, the other from Chelsfield.

Towards the western end of the first pit a good section of brick-earth was seen. The gravels, which are here fully 30 ft. thick, rest upon the chalk, and consist of sub-angular flints and Oldhaven pebbles. Fragments of carstone from the Greensand occur. Mammalian remains are occasionally found. Lord Avebury obtained many years ago part of the skull of a musk ox, and latterly bones and teeth of mammoth and rhinoceros.

Palæolithic implements also are met with. A discussion followed as to the source of these gravels, then a move was made to the adjoining pit, where the junction of the gravel with the chalk was clearly seen.

From this spot the party retraced their steps along the Cray Valley as far as Church Lane, the road from Orpington right on to Footscray being over thick beds of gravel which were constantly revealed on either side.

Pits of gravel are worked at Footscray, and have also yielded mammalian remains.

At Church Lane the Director led the way to the church and pointed out the main features, flint being the chief material used exteriorly. The interior of the porch revealed a fine doorway in the transitional Norman style of architecture, while in the left wall is the fine canopied tomb of Nicholas of Orpington, dating from the 13th century. Both the canopy and doorway are constructed of hard chalk. The Director mentioned that in Ightham Church the effigy of a former occupant of the Mote House is carved in hard chalk.

Carstone has been largely used in the churchyard. Proceeding northwards a few hundred yards, a small exposure of chalk in a field was visited. This exposure, which was first seen by the Director accidentally two years ago, aroused his suspicion, from its distinct lithological appearance, and from the fact that only about a dozen flints were to be seen, that it might yield a different fauna to that in the pits already mentioned. Though the section is barely more than 30 ft. long, and about 10 ft. high, a diligent search revealed the presence of *Uintacrinus* plates and ossicles, which were also obtained plentifully on two other subsequent occasions. Many other fossils have been obtained, including *Kingenella lima*, *Pecten cretosus*, Bryozoa, and *Actinocamax verus*.

The party, especially the enthusiastic members, were well rewarded for their search on the present occasion, as ample proof of the existence of the *Uintacrinus*-zone was forthcoming after a few minutes' persistent work.

The interesting point in connection with this zone is that no evidence of its existence had been previously adduced in Kent

west of the Medway. The pits to the north at Footscray contain no trace of this zone, nor has there been, so far, any from the other areas which have been mentioned.

To the south, in Holwood Park, and in the neighbourhood of West Wickham, the Director has within the past two years proved the existence of this and the Marsupite zone, the latter being at a higher level O.D. From the fact of the entire absence of these zones at Footscray and their presence at Orpington, Holwood, Keston, and Wickham (and westward on into Surrey), without any relic between Footscray and the Chalk at Grays, it seems conclusive that a fault exists in the immediate neighbourhood.

After leaving this section the members adjourned to Mr. King's tea rooms, where after tea the usual thanks were proposed, and a pleasant walk enabled the members to catch the train for home.

REFERENCES.

Geological Survey Map, Old Edition, 1 in. to the mile. Sheet VI., Drift Edition.
1889. WHITAKER, W.—"Geology of London." *Mem. Geol. Surv.*

EXCURSION TO MAIDENHEAD.

SATURDAY, MAY 1ST, 1909.

Directors: LL. TREACHER, F.G.S., and H. J. OSBORNE WHITE, F.G.S.

Excursion Secretary: A. H. WILLIAMS.

(*Report by* LL. TREACHER.)

THE party, to the number of forty, assembled at Maidenhead Station at 3 o'clock and walked by Grenfell Road to Boyn Hill on the west side of the town. Over the flat top of the hill there is a considerable spread of Thames Valley Gravel, 10 or more feet in thickness, forming part of a terrace at a height of 90 ft. above the present level of the stream.

A brief halt was made near Cookham Workhouse, where the Directors pointed out that, in his sketch-map* of the district, Mr. Whitaker had distinguished three terraces of gravel along the valley side between Cookham and Maidenhead. The Directors, however, consider that the highest of these really consists of two distinct terraces with a difference in level of nearly 20 ft. between them. The gravel of both contains palæolithic implements, the types and conditions of which differ to some extent when compared in large numbers. Those from the higher part of the terrace at Boyn Hill and Furze Platt upper pit are smaller,

* See references at end of this report.