to the Director, which, having been duly acknowledged by Mr. Robarts, the members walked about three miles, passing a large chalk pit in the Lower Chalk, to the coffee-house at Upper Warlingham Station, where they partook of a substantial tea, and returned to London by the 6.58 p.m. train.

EXCURSION TO READING AND CAVERSHAM.

SATURDAY, MAY 13TH, 1905.

Directors: H. W. MONCKTON, V.P.L.S., F.G.S. AND
O. A. SHRUBSOLE, F.G.S.

Excursion Secretary: H. KIDNER, F.G.S.

(*Report by* THE DIRECTORS.)

STARTING from Reading Station at about half-past two in the afternoon a party of twenty-three crossed the Thames into Oxfordshire at Caversham.

After passing through the village, Mr. Shrubsole drew attention to a section in the bank at the side of the Peppard Road. It showed gravel resting on Chalk at a level of 168 ft. O.D. He said that the gravel belongs to a terrace which has yielded flint implements and also remains of the Mammoth. The gravel is coloured Plateau Gravel on the new edition of the Geological Survey Map. It is however, within the valley. Mr. Monckton remarked that owing to the way in which the sheets of gravel extended from the plateaux into the valleys in the district it had been found convenient to colour as Plateau Gravel several patches and terraces which, though in the valley, were above the bottom of the valley, and seemed more closely connected with the gravel on the hill top than with that at the bottom of the valley. He mentioned the Grovelands terrace as a good example.

Near the top of the hill the party passed on to the Emmer Green Outlier of Eocene Beds. This outlier is to a large extent covered by gravel, and a pit was visited at a level of 269 ft. O.D. The gravel seemed to be about 10 ft. thick, was roughly stratified, and of a reddish colour. A few pebbles like those of the Triassic Pebble Beds were noticed, but they did not seem common.

Mr. Shrubsole said that occasionally implements had been found at this place.

Leaving the pit the party halted at a point from which a fine view of the valley of the Thames and the surrounding hills was obtained, and Mr. Monckton made some remarks on the geological history of the district. He said that the oldest formation at the surface of the ground before them was the Chalk, a bed of

marine origin, and it was succeeded with sundry breaks such as the period of the Mottled Clay by other strata of marine origin until the deposition of the Upper Bagshot Beds which formed Easthampstead Plain and some of the high ground seen in the distance. The Upper Bagshot is of the age of the Lower Barton Beds of Hampshire, and they are the last sign of the sea in this district, for there is no evidence that the Lenham-Bed Sea extended on the Reading side of Guildford.

At some time since Lower Barton days the area has become land, and also great earth movements have taken place, forming the folds which have given rise to the Thames Basin.

The speaker said that up to the present it had not been determined how much of the folding had taken place since the country became land, but however that might be the composition of the various gravels had led him to believe that the gravel on which they were standing had been brought down by the Thames, that the gravel-sheets of Bucklebury Common, etc., were formed by the Kennet and those of Easthampstead Plain, etc., by the Blackwater. At the same time he thought he ought to state that this view had not been fully accepted by geologists.

The party then walked to the brickfield at Rose Hill. The clay worked belongs mainly to the Reading Beds, but in one part of the pit the Directors pointed to *septaria*, and shells evidently from the London Clay and its basement bed, and in one place there appeared to be some London Clay in the side of the section.

The explanation is shown on the Geological Map, a patch of London Clay having been let down to the level of the Reading Beds by three faults arranged in the form of a triangle. It is probable that the place, where what appeared to be London Clay was seen in the section, was on the line of the northernmost of these faults.

Overlying the clay there is a patch of gravel with a level of 305 ft. O.D. Pebbles from the Triassic Pebble-Beds are abundant, and Mr. Shrubsole mentioned that he had found fragments of igneous rock. He remarked on the large amount of loam in the gravel, and thought that it indicated a broad rather than a rapid stream, with probably a lake-like condition, at times. He knew of no implements from this gravel. The party then crossed the dry chalk valley to the west of the Emmer Green outlier, and visited a gravel pit in the Kidmore Road, 265 ft. O.D. The gravel is fairly well stratified, of a dark colour, and contains many pebbles like those of the Triassic Pebble Beds. A few worked flints were found by members of the party.

This pit is in the same sheet of gravel as the former working at Toot's Farm, from which many fine implements have been obtained, but the site of that working and indeed most of the implementiferous drift of this patch is now built over.

The large chalk pit at Caversham, which was visited in 1876 ("Record of Excursions," p. 272), was passed on the way back to Reading.

Tea was served at McIlroy's Restaurant, and after a hearty vote of thanks had been given to the Directors, the members visited the Reading Museum, where the collection of flint-implements attracted special attention. The Museum was kept open specially for the members through the kindness of the curator.

REFERENCES.

1904. Geological Survey Map, Sheet 268, Reading. Drift Edition, colour printed. Price, 1s. 6d.
 1903. BLAKE, J. H., and H. W. MONCKTON,—“The Geology of the Country around Reading.” *Memoir Geol. Survey*. Price 1s. 6d. See “Rose Hill” and “Emmer Green,” in the Index and the list of works at page 84.

EXCURSION TO ERITH AND CRAYFORD.

SATURDAY, MAY 20TH, 1905.

Director: A. L. LEACH.

Excursion Secretary: H. KIDNER, F.G.S.

(*Report by THE DIRECTOR.*)

A PARTY of twenty-six met at Erith station at 2.47 p.m., and walked along the main road towards Crayford. To the west of this road the brickearths were seen to be excavated back to the buried cliff (of chalk and Thanet sand), which forms the western boundary of the River Drift in the Darent Valley. About a mile south of Erith the party entered “Norris's Pit” at North End. Here an interesting section (Fig. 1) of the Chalk, Thanet Sand, and brickearth was examined. The Chalk was seen to pass into the hill to the west without appreciable dip. The “Bullhead” bed, or base of the Thanet sand, was seen to be well developed, and reference was made to the theory by which Mr. Whitaker and Professor McKenny Hughes explain the origin of this bed. It was, however, pointed out that both here and at Charlton many flints occur of ovoid and well-rounded forms, and their presence is not explained by the theory of the underground solution of the chalk by percolating carbonated water. The Thanet Sand, about 25 ft. thick, was briefly glanced at, and then the disposition and materials of the Pleistocene River Drift were examined. In the Crayford district this Drift consists largely of brickearth associated with sandy and pebbly layers, very variable in lateral extent and in thickness. On the west the Drift is banked against and bounded by a buried cliff of chalk and lower tertiaries; on the east the Drift passes beneath the recent alluvium of the Thames and Darent. Using the term “brick-