West Hoathly Station, where tea was provided at the Railway Inn. South of the station is a tunnel through the Wadhurst Clay, from the waste-heaps of which *Cypridea*, *Cyrena*, *Paludina*, with sun-cracks and other markings, were obtained.

REFERENCES.

Ordnance Survey Map, New Series, sheet 202.

Geological Survey Map, sheets 5 and 6.

W. TOPLEY.—“Geology of the Weald,” ‘Mem. Geol. Survey,’ 1875, Chaps. VI., XV., Figs. 12, 51.

J. L. LOBLEY.—“Report of the Excursion to Tilgate Forest,” &c. ‘Proc. Geol. Assoc.’ Vol. vii, pp. 372-375. (This Report, with the Section here reproduced, describes a line of country a little west of that now described; but it sufficiently represents the structure of the district.)

EXCURSION TO ALDERSHOT AND WELLINGTON COLLEGE.

SATURDAY, JULY 11TH.

Director : Rev. A. IRVING, B.Sc., B.A., F.G.S., of Wellington College.

(*Report by THE DIRECTOR.*)

The party leaving Waterloo arrived at Aldershot Station at 11.36, where they were met by the Director. The time allowed for the field-work indicated in the programme was found insufficient for that purpose; so the sections about Cæsar's Camp had to be deferred to another opportunity. With the great heat prevailing and the dry sandy nature of the district, the time at the disposal of the party was quite filled up in examining the sections near Aldershot Town, including (1) that at the foot of Redan Hill in the railway-cutting, where a bed of well-rolled pebbles occurs at the base of the Upper Bagshot Sands; (2) the pebble-beds of Bagshot age, which crop out along the escarpment running east and west, on the north side of the town of Aldershot and surmounted by the Cambridge Hospital; (3) the brickyard section, in which Bagshot Sands are seen (with a layer of iron-stone at the base of the Sands of the same nature as that which is deposited by peaty waters in some of the modern streams of the Bagshot District) lying on an eroded surface of London Clay, the latter being here worked extensively for bricks. Owing to

numerous slips in the clay during the suspension of clay-digging in the summer, the details of the section could not, unfortunately, be made out so clearly as they could be during the winter and spring. The most important characteristic of the Bagshot Sands here occurring (mapped as i, 4, Lower Bagshot, by the Geological Survey) is the numerous bands of pure pipe-clay which are interstratified with the layers of sand, some of these bands of pipe-clay having a thickness of several inches. The Director pointed out that there not only appeared here a certain amount of discordancy between the London Clay and the superimposed Bagshot Sands, and that the deposition of the ferruginous layer might be considered as perhaps pointing to the action of decaying vegetation along an old land-margin, before the sands were deposited; but a comparison of all the sections known to him in the Bagshot district, in which the order of superposition of the various members of the Bagshot formation is beyond question, seemed to point to the conclusion that these layers of pipe-clay are most characteristic of the horizon of the Middle Bagshot Beds (of Bracklesham age). In the section due north from the brick-yard, exposed in a road-cutting on the other side of the valley in which the cavalry-barracks are situated, a bed of the same character is exposed (loamy ferruginous sand, with interstratified seams of pipe-clay), and beneath this bed was observed a bed of sandy materials with numerous green grains interspersed through the brown sand. This lower bed most probably represents the green sands of the Middle Bagshots, the decoloration of the uniformly green sands, to the extent here shown, having been actually observed by the Director in new exposures made during the past five or six years near Wellington College. These data seem (in the absence of fossil-evidence) to lead us to regard the loamy bed with pipe-clay seams on both sides of the valley of Aldershot, as the uppermost bed of the Middle series—a bed whose character is very persistent throughout the district. For further data in support of the view as to the overlap of the higher portions of the Bagshot series against the London Clay, in the Aldershot District, reference is made to the ‘*Quart. Journ. Geol. Soc.*,’ Vol. xli, pp. 500-503.

Returning to the station the party booked for Wellington College. Alighting there, in the very heart of the main mass of the Bagshot strata of the London Basin, their first business was the examination of the section exposed in the railway-cuttings to

the north and south of the station. The position of the green bed running along both cuttings was pointed out, this being overlaid by a ferruginous loamy bed with seams of pipe-clay, which in its turn is surmounted by the Bagshot pebble-bed, marking (according to present nomenclature) the upper limit of the Middle division of the Bagshot series. The succession of these beds had been made clearer by cleaning down the weathered sides of the cutting with the spade a few days before. At the northern end of the cutting a halt was made, and the Director pointed out from this spot the succession of the whole Middle Bagshot series, as it is there exhibited, together with the close correspondence between the sequence and thickness of the beds there and of precisely similar beds in the well-section at Wellington College, half-a-mile distant, as also of beds exposed in the new drainage-works some two years ago at York Town about $3\frac{1}{2}$ miles distant. Facts were also pointed out which favour the view that the valley which here runs east and west has been formed by denudation along a small anti-clinal flexure, the result of earth movements in times posterior to the deposition of the Bagshot Sands. The result of this would seem to be that the beds to the south of this valley (which are undoubtedly Middle Bagshot) are repeated to the north in the direction of Wokingham, although such a view is not in harmony with the delimitation of the Middle Bagshot hereabouts as laid down on the Survey Map. For further particulars as to this question reference may be made to the Director's paper (Q.J.G.S., Vol. xli, 496-499, with Fig. 2, and pp. 503, 504), also to a previous paper in the Proceedings of the Association, 'On the Bagshot Strata of the London Basin,' in Vol. viii.

After a walk of a quarter of an hour from this spot, the thirsty dust-laden party found itself unexpectedly in a shady corner of the Director's lawn, where the tea and other refreshments which had been provided for them by Mrs. Irving were found to be very acceptable. After some remarks by the Director on the specimens illustrating the physical history of the Bagshot formation, including the very perfect specimens of *Ostrea flabellula*, *Cardita planicosta*, *Natica ambulacra*, &c., which were found during last year in digging a well in the green sands of the Middle Bagshot at Yateley, and an account of a process recently worked out by the Director for purifying soft waters from dissolved vegetable-matter (Patent 8,056, for the year 1884), there was barely sufficient time

left to do justice to the excellent dinner which had been provided for the party by Mr. James, of the Wellington Hotel. On the way to the hotel, the party was conducted by the cascade which connects the middle and lowermost lakes on the Wellington College Estate, where the water falls over a heap of fragments of the Sarsen-stones (which are very common in the Bagshot country), and large unrolled flints, several of which exhibit very distinct casts of Echinoderms.

EXCURSION TO WOKINGHAM, EASTHAMPSTEAD AND ASCOT.

SATURDAY, JULY 18TH, 1885.

Director: REV. A. IRVING, B.Sc., B.A., F.G.S.

(*Report by THE DIRECTOR*)

The Members who joined this excursion arrived at Wokingham, mostly from London, at 12.30, several having also previously arrived from other quarters. Earlier in the day, permission having been previously obtained, several excavations were made in the Bagshot Sands. In this way clear proof was obtained of the presence of the bed of well-rolled pebbles of flint which occurs so frequently at the base of the Upper division; and in the cutting near St. Paul's Church (See Q.J.G.S., Vol. xli, pp. 504 505) the junction of the Bagshot Sands with the London Clay had been laid bare by removal of the turf and surface-soil. In these the abrupt transition from the London Clay (well exposed in Mr. Phillips' brickyard just below) to Bagshot Sands was observed, and the presence of well-rolled flint-pebbles at the line of junction was noted. The Bagshot Sands here exposed are a part of the Wokingham outlier, and are mapped as Lower Bagshot (i, 4). The evidence already published by the Director (*loc. cit.*) in favour of regarding this outlier rather as consisting of beds belonging to higher members of the series seemed thus to receive further confirmation by the exposure of the layer of pebbles at their junction with the London Clay, and by the ascertained unevenness of the London Clay beneath the Sands in the station-yard. Through the generous hospitality of the Rev. J. T. Brown and Mrs. Brown, the Director was now able to announce to the party that they had