EXCURSION TO WEYBRIDGE AND ST. GEORGE'S HILL.

SATURDAY, MAY 6TH, 1911.

Director: HORACE B. WOODWARD, F.R.S.

Excursion Secretary: MISS E. PEARSE.

(*Report by THE DIRECTOR.*)

LEAVING Waterloo Station at 1.18 p.m., the party, which numbered 48, reached Weybridge at about 2 o'clock, and proceeded by St. George's Avenue, Egerton and Cavendish Roads, to the brickyard east of Firgrove Lodge (on the One-inch map).

The excavations at the brickyard had been made for the purpose of working the Bracklesham Clays, and the northern part of the section showed:—

		ft.	ft.
BRACKLESHAM BEDS.	Soil with flint pebbles	1	to 2
	Grey and greenish-grey sands with irregular bed of reddish-brown clay, also occasional lignite, and an ochreous seam at base	2	to 3
	Pale grey and lilac shaly clay, stained with ochreous matter, dug to depth of		8

No fossils had been obtained from these strata.

Towards the southern end of the pit the clay ended abruptly against the Lower Bagshot Sands, the junction being as sharp as if faulted. The boundary was a curved one, due to a basin or hollow of erosion, and the sands, where in contact with the clay, were hardened and so impregnated with iron-ore as to constitute an irregular band of ironstone, 6 or 8 inches thick. This contained some pieces of lignite, and was most ferruginous where in contact with the clay. The junction is shown in the photograph reproduced on Pl. XXXIV, Fig. 1.

The adjacent and underlying Bagshot Sands consisted of fine buff, pale grey, and pale lilac sand, tinged more or less with ochreous matter, and exposed to a depth of 12 ft.

At the southern end of the main excavation the Sands were overlain by rough gravel, 3 to 5 ft. thick, formed chiefly of flint pebbles, subangular flints, and chert. The gravel was much disturbed and mixed up with grey, lilac, brown and crimson clay, and greenish-grey sand.

The general section was of considerable interest, as it exhibited features identical with those described in 1887 by W. H. Hudleston*

* *Quart. Journ. Geol. Soc.*, vol. xliii, p. 448; section reproduced in "Geology of the London District," p. 43.

at Hatch Farm clay-pit, Woburn Hill, Addlestone, about $2\frac{1}{2}$ miles to the north-west. There the clay had been regarded (though not without doubt) by Hudleston as belonging to the Lower Bagshot Beds, on account of its comparatively low level, and because clay-bands occurred in the Lower Bagshot formation in the Walton and Weybridge cutting on the main L. and S. W. Railway.

The structure now seen at the Firgrove brickyard could not have been opened up when Hudleston's observations were made 24 years ago; and he then agreed that the Bracklesham or Middle Bagshot as well as the Lower Bagshot Beds were represented at the locality, as shown on the Geological Survey map.

Mr. H. W. Monckton agreed with the Director in regarding the clays of the two areas in question as equivalent, and as of Bracklesham age. A section by the main track-way, a short distance south of the Firgrove brickyard, showed a continuation of the basin of Bracklesham Beds. Three or four feet of grey clays there occupied a hollow in the Bagshot Sands, with the intervening indurated band of ironstone. The sands were exposed to a depth of 15 ft. and exhibited crimson colouring in places. This part of the pit is shown in the illustration, Pl. XXXIV, Fig. 2.

Contorted gravelly beds (resembling those before noticed) had been observed, at an elevation of about 185 ft., over the Bracklesham or Middle Bagshot clays by Hudleston, who attributed the phenomena to the agency of "a kind of *névé*, or a sliding mass of indurated snow," which brought from the higher ground of St. George's Hill flint-gravel, mixed with green sands and loams, and dragged or squeezed up portions of the Bracklesham clays at the lower level.*

The party now proceeded along the road from Brickyard Cottage, to the north of the excavations, to the gravel-pits on St. George's Hill, north-east of the British Camp. Here the elevation is about 250 ft.

The general section is as follows :

	ft.
Soil of peaty sand with occasional red flints, about	1
Plateau Gravel made up of black and grey flint-pebbles, sub-angular and partially rolled flints, with also Lower Greensand chert and ragstone, ironstone and quartz, resting irregularly on beds below	5
Barton or Upper Bagshot Sands, buff, brown, greenish and slightly loamy sands passing into rock-sand; seen to depth of	5

The Sands here were grouped on the Geological Survey map, by T. R. Polwhele, as Bracklesham Beds, although he remarked

* *Quart. Journ. Geol. Soc.*, vol. xlii, p. 170, and "Geology of the London District," p. 84.

Photo by H. B. Locke.

FIG. 1.—THE FIRGROVE BRICKYARD, ST. GEORGE'S HILL, MAIN PORTION, 1911.

A, Lower Bagshot Sands; *B*, Ironstone lining basin below Bracklesham clays.

Photo by H. B. Locke.

FIG. 2.—PIT AT SOUTHERN END OF FIRGROVE BRICKYARD, ST. GEORGE'S HILL, 1911.

A, Lower Bagshot Sands; *B*, Bracklesham Clays, with ironstone at base lining basin.

that it was impossible to draw a very marked line between the Bracklesham and overlying Upper Bagshot (or Barton) Sands.* The Director had been disposed to group the Sands with the Upper or Barton Beds, and this opinion was now confirmed by Mr. Monckton. At St. Anne's Hill, Chertsey, the basal Barton Beds consist of pebble-beds, and these may be present on St. George's Hill, though no exposure had been seen. The clayey Bracklesham Beds occur at some distance lower down, and no doubt throw out the spring which, as noted by Hudleston,† issues from the northern side of the British Camp.

The gravel was grouped with the "Southern Drift" by Prestwich.‡ It was probably formed by streams carrying material from the Wealden area, and it may be of late Pliocene age. Reference was made by the Director to the earlier Pliocene depression, indicated by Mr. W. P. D. Stebbing's discovery of marine fossils in the sands at Netley Heath, about eight miles south of St. George's Hill.

The connection between the old Plateau gravels and the present drainage-area of the Thames valley appears more intimate with the deposits on the southern side than with those on the northern side of the valley; and the former deposits may have been uplifted during the final elevation of the London Basin.

Dr. A. E. Salter§ had drawn attention to the occurrence of blocks of greywether sandstone in the Plateau gravels of the district, but it was not clear whether any specimen had been obtained at St. George's Hill. It was satisfactory, therefore, that two small blocks of the sandstone were found by Mr. A. C. Young.

Search was made for Eolithic implements, and one worn example was obtained by Mr. Ll. Treacher. The sand associated with the gravel furnished good material for mortar.

The party now proceeded through the woodland to the British Camp, which in the opinion of some authorities was occupied by Cæsar before he crossed the Thames in July B.C. 54 at the Cowey (or Coway) Stakes, at Lower Halliford, between Walton-on-Thames and Shepperton. On this subject, however, antiquaries are not of one mind; and Mr. Montagu Sharpe, who considers that Cæsar crossed the river at Brentford, used his influence to have a post erected, in 1909, alongside the Brentford Ferry Stage, to commemorate the event.||

It was remarked that the woodland area of St. George's Hill was originally part of the great Forest of Windsor, and a more

* Whitaker, "Geol. London Basin," *Mem. Geol. Surv.*, vol. iv, 1872, p. 333.

† *Proc. Geol. Assoc.*, vol. ix, 1886, p. 543.

‡ *Quart. Journ. Geol. Soc.*, vol. xlv, 1890, p. 159.

§ *Proc. Geol. Assoc.*, vol. xv, 1898, p. 272.

|| Sharpened stakes for the defence of the fords as well as to define the passages have been found both at Lower Halliford and near the mouth of the Brent. See Dr. T. Rice Holmes, "Ancient Britain and the Invasion of Julius Cæsar," 1907, pp. 693, 742.

open heathy tract, the Scots pine being subsequently introduced into the region from North Britain.

Tea was provided at the Swiss Cottage, to the west of the British Camp, where a hearty vote of thanks was accorded to the Director. The party afterwards proceeded by the direct woodland road to the Brooklands Automobile Racing Ground, free entry having been kindly granted by the Secretary, Major Lindsay Lloyd. A fine view was obtained of the Motor Course, which traverses a tract of Bagshot Sands on the north, and of Valley Gravel and Alluvium of the River Wey on the south. Attention was also directed to several sections of the Lower Bagshot Sands and loams, with evidence of land-slipping accompanied by miniature faulting.

Weybridge Station was reached in time for the 6.35 p.m. train to Waterloo.

REFERENCES.

- Geological Survey Map of London District, Sheet 3. 1s. 6d.
 1886. HUDLESTON, W. H.—"On a Recent Section through Walton Common," &c. *Quart. Journ. Geol. Soc.*, vol. xlii, p. 147. (St. George's Hill, p. 169.)
 1887. ————"Supplementary Note on the Walton Common Section." *Ibid.*, vol. xliii, p. 443. (St. George's Hill, pp. 451, etc.)
 1886. ————"Excursion to Walton Common and St. George's Hill." *Proc. Geol. Assoc.*, vol. ix, p. 537.
 1909. WOODWARD, H. B.—"The Geology of the London District." *Mem. Geol. Survey*.
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EXCURSION TO HOOK, NATELY, AND BASINGSTOKE.

SATURDAY, MAY 13TH, 1911.

Directors : G. E. BLUNDELL, F.G.S., AND H. W. MONCKTON,
 TREAS. L.S., F.G.S.

Excursion Secretary : MISS E. PEARSE.

(*Report by THE DIRECTORS.*)

A PARTY of about twenty-nine left Hook Station soon after 3.0 p.m., and walked in a westerly direction towards Newnham. On reaching a bridge over the railway nearly a mile from the station, Mr. Monckton gave a short account of the geology of the district. He said that the highest member of the Eocene Series present was the thick bed of yellow sand which the members had seen from the train as they passed through the cuttings between Brookwood and Winchfield stations. Fossils were not common in these sands, but sufficient had been found to show that they