Others, by permission of Mr. Francis Pym, perambulated the ancient earthwork known as Cæsar's Camp, supposed to have been originally a British post and afterwards the camp overlooking the Salinæ of the Romans.

Tea at the "Greyhound" having been done full justice to, the members, after thanking their Director and numerous hosts, left for London by the 7.53 train.

REFERENCES.

- Geological Survey Map, Sheets 46 N.W. and 52 S.E.
 1875. BONNEY, T. G.—"Cambridgeshire Geology." *Cambridge*.
 1887. WOODWARD, H. B.—"Geology of England and Wales," 2nd Edition, pp. 377-8. *London*.

EXCURSION TO WOTTON AND RANMER.

SATURDAY, JULY 9TH, 1892.

Directors: THOMAS LEIGHTON, F.G.S., and G. S. BOULGER, F.L.S., F.G.S.

(*Report by G. S. BOULGER.*)

ON arrival, at 2.33 p.m., at Gomshall Station, where the clouds attempted to frighten with unfulfilled threatenings of rain, the false-bedded iron-stained sands of the Folkestone series, riddled by sand-martins, were noticed in the railway-cutting.

The numerous party then crossed the alluvial flat of the Hammer brook, with its many alders, and walked eastward along the strike of the upper part of the Hythe Beds, gradually ascending to the watershed between the Tillingbourne and the Mole. At Wotton, where due mention was made of the honoured name of John Evelyn, the summit level of this road crosses the outcrop of the Folkestone Sands, which are exposed for some distance in a road-cutting crowned by fine beeches. Some discussion was here aroused by pockets and lines of considerable extent of a dark-brown or almost black sandy soil, which, according to one view, was coloured by decayed vegetable matter connected with the tree roots, whilst in the opinion of others it was only iron-stained.

On the descent of the hill the east and west fault, which alters the dip from 5° N.E. to 10° N.E. and brings up the Bargate Stone, was crossed, about a mile west of the line of Sheet 75 of the Geological Survey Horizontal Sections, from which fig. 2 is reduced. This fault is thus alluded to by the late Mr. Drew on p. 233 of the Survey Memoir on "The Geology of the Weald": "North of Leith Hill there is a long east and west fault, the greatest downthrow of which is about 100 feet (north). . . . There is further evidence of this in the road west of the Rookery, where there is sandstone at a higher level than the Bargate Beds, which latter are geologically higher." The Bargate Stone here exposed in the road cutting was a soft conglomerate of coarse

sand and small black pebbles (lydites), held together by a calcareous cement. This is its most easterly exposure.

Passing the Rookery, the party next visited a sand-pit at the west end of Westcott Heath, iron-shot and containing many of the curious limonite "concretions," or ætites, containing silver-sand, the formation of which concretions has never been satisfactorily explained. These sands closely resemble those of Woburn, Bedfordshire. They are mapped as Hythe Beds, though more resembling the Folkestone series; but, as Mr. Drew says (*op. cit.*, p. 134), "from Dorking to Westgate Street (Westcott), the Lower Greensand, with the exception of the Atherfield Clay, is much the same from top to bottom."

Slightly retracing our steps, and turning down a lane leading northward across the Folkestone outcrop, in about a mile a most interesting junction-exposure of Folkestone Beds capped by Gault was reached. Fragmentary fossils were found in the clay, and the photographer of the party took a view of the section. The roadside then indicated the clayey surface-soil in the abundance of fleabane (*Inula dysenterica*), and of the larger horsetail (*Equisetum maximum*), until, entering the Denbies estate and crossing the railway, we began the ascent of the Chalk escarpment, bright with its characteristic summer flowers, such as *Calamintha acinos*, *Centaurea scabiosa* and *Reseda lutea*.

On reaching the summit of the escarpment a brief general account of the landscape was given, special attention being directed to the manner in which the fault that had been crossed during the afternoon had narrowed the Lower Greensand outcrop from about four miles to a mile, and had produced a gap in the lofty escarpment of the Hythe Beds, through which high ground covered with Weald Clay was visible due south of the spot where the party then were.

Having crossed Ranmer Common, the party entered a wood where the luxuriant fox-gloves at once suggested to one of the directors that the Chalk must here be capped with some non-calcareous bed. In a dry valley, running northward from within a quarter of a mile of the face of the escarpment, Mr. Leighton had here observed, some months previously, a large accumulation of water-worn flints, now being worked for road-metal. This suggested a water-course belonging to a time when the escarpment was considerably south of its present line, a suggestion that was vastly strengthened by the finding on the occasion of our visit of several fragments of ironstone of undoubtedly Lower Cretaceous origin.

Leaving the wood and recrossing the common, members took the path from Denbies down the escarpment to Dorking. A passing glance was given to the Dorking Chalk-pit (Lower Chalk) at the base of the escarpment, and then the party re-assembled for a comfortable tea at the Temperance

N. **FIG. 1.—SECTION OF NORTHERN VALLEY OF THE WEALD. (LENGTH OF SECTION ABOUT 9 MILES.)**

FIG. 2.—SECTION FROM LEITH HILL TO RANMER COMMON.

(Reduced from the Survey Memoir.)

Refreshment-rooms, not many minutes' walk from the Dorking Station, whence they had to start, at 8.23 p.m., for the return journey to town. Some surprise was very generally expressed at the fact that such a pretty walk over so instructive a line of country, accessible for a half-day excursion, had never before been traversed by the Association.

REFERENCES.

Geological Survey Map, Sheet 8 (Drift Edition).

New Ordnance Survey Map, Sheet 286.

1875. TOPLEY, W.—"Geology of the Weald." *Mem. Geol. Survey.*

EXCURSION TO TAPLOW AND BOWSEY HILL.

SATURDAY, JULY 16TH, 1892.

Director—J. H. BLAKE, F.G.S., H.M. Geological Survey.

(*Report by THE DIRECTOR.*)

THE party from London left Paddington at 9.20 a.m., and arrived at Taplow at 10.20, where they were met by the Director and other members of the Association. They then proceeded to the chalk-pit situated about one mile N.W. of the railway station, in the wooded sloping grounds of W. H. Grenfell, Esq., M.P., the object being to examine the phosphatic chalk there.

The Director explained that his colleague, Mr. A. Strahan, M.A., F.G.S., whom he regretted was unable to be present, had made a special investigation of the phosphatic chalk in this pit, and had carefully examined the ground in the vicinity with the object of tracing the extension of the phosphatic matter. Some shafts had been sunk, and in one in the hill-side, above and close to the pit, the following measurements were made, and the exact depths of the phosphatic bands below the base of the Tertiary strata obtained :—

		ft.	in.
READING BEDS.	{ Clay	7	0
	{ Green sand with green-coated flints . . .	2	6
	{ White chalk	18	0
UPPER CHALK.	{ Brownish white chalk	2	0
	{ Brown chalk [upper phosphatic band] . .	11	0
	{ Hard white chalk	12	0
	{ Soft brown chalk [lower phosphatic band] .	4	0

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The existence of the phosphatic chalk, containing *Belemnitella quadrata*, at Taplow, was made known to the Geological Society of London by Mr. Strahan in a paper published in August, 1891; and from a more recent paper by the same author, published in *Natural Science* in the previous month (June, 1892), the Director read a few extracts, as follows :—

"An exactly similar rock [to this at Taplow] had been