

by detached hills and intervening valleys. In the immediate neighbourhood of the Heath the diverging valleys occupied by the Hampstead and Highgate ponds, forming the headwaters of the Fleet river, were noticed, as probably resulting from the outflow of springs at the junction of the London Clay with the Bagshot Sands. Examples of these springs were well seen at the Vale of Health, and at Well Walk, and after tasting the chalybeate water at the latter spot, the party proceeded to the residence of the Director, and examined his collection of Tertiary fossils, many of which were obtained by him in the neighbourhood of Hampstead.

EXCURSION TO GUILDFORD.

JUNE 25TH, 1877.

Director—R. A. C. GODWIN-AUSTEN, Esq., F.R.S., &c.

(*Report by* C. J. A. MEYER, Esq., F.G.S.).

On this occasion Members assembled at Chilworth Station, where they were met by Mr. Godwin-Austen. After a few words as to the proposed course of the Excursion, the party proceeded to examine a bed of Elephant-gravel exposed in a new road-cutting. This gravel, which formed an eastern extension of the Peasmarsh valley-gravel, was observed to consist largely of unrolled and broken flints, mingled with fragments of the Bargate-stone, Chert, and Carstone (Ironstone), of the Lower Greensand. It contained apparently neither rounded flints nor Tertiary pebbles. The gravel rested here on Hythe Beds; further westward it covered both Atherfield Clay and Weald Clay.

The Tillingbourne stream, which was presently crossed on the way towards St. Martha's Hill, was described as running partly on the Weald Clay and partly on the Atherfield Clay, or lowest member of the Surrey Greensand. At the foot of St. Martha's Hill the party separated into two groups:—One with Professor Morris, taking the shortest path to the hill top; the other and more enterprising, under Mr. Godwin-Austen, taking a longer route, with the chance of finer sections. At the top of St. Martha's and while waiting for the re-union of the party, Mr. Meyer described briefly to those present the succession of the strata in-

cluded in the Surrey Greensand. On mounting the hill, they had passed over in succession the outcrop of the Atherfield Clay, Hythe Beds, Sandgate Beds, and Folkestone Beds of the Lower Greensand. The Atherfield Clay (first noticed in England by Mr. Godwin-Austen in 1843)* is here very rich in fossils in its lowest beds, which are most unfortunately, however, very rarely exposed. The Hythe Beds and Sandgate Beds exhibit by comparison a singular dearth of fossils—*Exogyra sinuata*, *Hinnites Leymerii*, *Terebratula sella*, an *Ammonite* or two, and a species of *Belemnite*, probably completing the list of those obtainable in this district. The pebble-bed and Bargate-stone series, forming the base of the Folkestone Beds, contains a fauna, remarkable chiefly for its wide range, and from its differing so entirely in this district from that of the lower beds. The ferruginous sand, with "Carstone" capping the hill on which they stood, was wholly unfossiliferous. This sand-bed had here a thickness of about 130 feet. In the Isle of Wight, where it was also unfossiliferous, its thickness was even greater. At Folkestone, curiously enough, it was almost entirely absent; its position being there held by a detrital bed of about one foot only in thickness.

The Members having now again collected, Mr. Godwin-Austen described to an attentive audience the leading geological and physical features of the great Wealden anticlinal with its margin of Chalk and Greensand; pointing out especially the relation of the English Wealden and Lower Greensand to the Neocomian rocks of France and Switzerland. Commenting at some length on the discovery of Devonian rocks beneath London, as proved by the recent well-boring at Meux's brewery, he traced their probable and almost certain connection with the Palæozoic rocks and Coal Measures of Belgium, the North of France, and the coal area of Bristol.

Turning now towards Guildford, the Warren Farm Section of highly inclined Grey Chalk and Chalk Marl was next visited; specimens of *Nautilus elegans*, *Terebratula obesa*, and *Inoceramus* rewarding the search for fossils. The two Chalk pits in Quarry Street were also briefly visited. The lowest of these contains but few fossils only of the zones of *Inoceramus labiatus*, *Terebratulina gracilis*, and *Holaster planus*. The larger and higher quarry embraces a section displaying the zones of *Holaster planus*,

* "Proc. Geol. Soc.," Vol. iv., pp. 167, 196,

Micraster cor-bovis, and *M. Desori* (?) ; and, in great force, the zone of *Micraster cor-testudinarium*, with many of their associated fossils. Sponges and cone-like pressure-striated concretions abound in both quarries on certain limited horizons. Time did not now, however, allow of a search for specimens.

On reaching Guildford the Members took carriages for the drive to Seale Rectory, near Farnham, the course taken being along the top of the Hogsback. The fineness of the day, and beauty and wide range of the view obtained during the drive must have rendered it one of pleasant memory to all concerned. To the geologist it was interesting to observe the subtle differences in outline and fertility of the country to North and South of this dividing ridge of Chalk. Rich foliage and high culture to the northwards indicating the position of the Tertiary, Woolwich and London, Clays and Sands, backed by the gloomy heath or fir covered hills of the Bagshot Sand, spreading out westwards towards Aldershot. To the south, again, heath lands, dark fir woods, and strips of corn land, mapping the outcrop of Neocomian clay, sand, or limestone. Yonder was Beech-covered Hascombe Hill overlooking the Weald. Yonder Hind-head and the Devil's Punch Bowl ; the latter a striking monument of subaerial denudation. Yonder Carstone-capped Crooksbury. Yonder Kettlebury and the once sandy waste of Thursley and Frensham Commons. Further away Alder Holt Forest, with the widest continuous spread of Gault in England. And yonder a glimpse of hills about Selbourne.

At Seale Rectory, snugly situate under the sunny side of the Hogsback, the now hungry party was entertained most hospitably by the Rector (the Rev. T. T. Griffith), a Member of the Association. A spirited address by Professor Morris, embodying a cordial vote of thanks to their leader and to their entertainer, and the examination of a series of fossils illustrative in part of the country traversed, brought the day's proceedings most pleasantly to a close.
