ing and valuable section was explained. This section, like that at Charlton, has been fully described in these pages.* It shows the Chalk with Thanet Sands above considerably thinner than at Charlton, the Woolwich Beds better developed, the Blackheath pebbles reduced to less than a foot in thickness, and the Basement-bed of the London Clay with about, in one place, 20 feet of the London Clay itself.

The party returned to London from Lewisham Junction.

ORDINARY MEETING.

MAY 6TH, 1881.

W. H. HUDLESTON, Esq., M.A., F.G.S., President, in the Chair.

The Donations to the Library were announced as usual, and the donors thanked.

The following were elected Members of the Association:—Henry M. Platnauer, Esq., John D. Butler, Esq., T. Hay Wilson, Esq., and William Smith, Esq.

The following paper was read:—

ON CONIFERA. By J. S. GARDNER, Esq., F.G.S.

EXCURSION TO CROYDON, SHIRLEY, AND ADDINGTON.

SATURDAY, MAY 7th, 1881.

Directors:—JOHN FLOWER, Esq., M.A., F.Z.S., J. LOGAN LOBLEY, Esq., F.G.S., and H. M. KLAASSEN, Esq.

The Members of the Association having been joined, at East Croydon Station, by a number of the Members of the Croydon Microscopical and Natural History Club, the party proceeded eastward along the Upper Addiscombe Road, passing over the extreme western edge of the Oldhaven Beds and a small outlier of London Clay, extending northward from Park Hill. The sands of the

* See Proc. Geol. Assoc. Vol. iv., p. 528.

Oldhaven Series were well seen in one or two excavations recently made in digging foundations for new houses.

Near the southern end of Ashburton Road the party examined, by the kind permission of the occupier of the land, H. Johnson, Esq., two very remarkable springs in the side of the hill on the south side of the road—one at a point about 30 feet, and the other about 40 feet above the level of the road. The former of these, which is by far the larger of the two, is about 255 feet above the sea level. It has hollowed out for itself a considerable basin in the hill side, which has probably been increased artificially, and the stream flowing from it has cut out a considerable valley for itself. These features were here pointed out by Mr. Flower, who also explained the general structure of the hill, and of the Oldhaven and Woolwich and Reading Beds of which it was composed. He also stated that there were numerous similar springs along the northern side of this hill, forming some of the sources of the Wandle and the Ravensbourne. The general opinion is that these springs arise at points where clay beds, sloping to the north, come to the surface of the ground on the side of the hill, and there discharge the water absorbed by the large masses of overlying pebble beds; but, looking to the large quantity of water which is discharged from some of these springs, even in very dry weather, it seems not improbable that such at least have a direct connection with the large mass of chalk which extends southward up to the North Downs, and attains in some places a height of nearly 900 feet.

The party then proceeding towards Shirley House, the course of the watershed ridge, here very broad and flat, dividing the basin of the Wandle from that of the Ravensbourne, running through the grounds of Shirley House (courteously thrown open to the party by F. Banbury, Esq.), and along the edge of the fields on the west side of the Stroud Green Road, was described by Mr. Flower, who also pointed out a spot on the water shed ridge, in a ditch, about forty yards from the Stroud Green Road, where, in winter, a spring rises, from which the water flows eastward into the Ravensbourne, and westward into the Wandle.

After inspecting another fine spring and a small lake, the party proceeded, through beautiful plantations, to the Addington Hills, where the section of the lower beds of the Oldhaven Series at the back of the Sand Rock Hotel was inspected and was described by

Mr. Lobley, as also a pit excavated in the upper beds of the Old-haven Series.

The Addington Hills form the northern escarpment of the Old-haven and Woolwich and Reading Beds, which here attain a height of nearly 500 feet above the sea level. From the edge of the escarpment the chief physical features of the country, and the distant objects of interest, were pointed out by the Directors. Attention was particularly called to the small valley immediately at the foot of the hills, cut down into the chalk, and to the still larger valley between that and the South Norwood Hill, which is formed in the London Clay, the two valleys being, together, about four miles across. Mr. Flower suggested that probably this was once the valley of the ancient stream which came down the valley from Merstham; while the deep valleys which run up into these hills were caused, in times long past, by the action of the springs similar to those already visited. The water shed between the Wandle and the Ravensbourne crosses these valleys nearly at right angles.

By the kind permission of the Archbishop of Canterbury Addington Park was next visited. A small lake fed by springs from the Pebble Beds, and situated in a deep valley cut out of them, was examined and described by the Directors, and the party then moved on to the Pinetum, where were seen some very fine specimens of *Abies Douglasii*, *Abies Menziesii*, and *Pinus Nobilis*. The "Fir Mount," overlooking Addington village and the site of a hunting seat much used by King Henry VIII., was the last point of special interest in the Park. From here fine views were obtained, embracing the high grounds of Worms Heath, four miles distant, which are capped with Pebble Beds, no doubt once continuous with those in Addington Park.

Proceeding down the steep face of the escarpment to Addington Village, situated on the chalk, the party returned home by the road on the south side of the Park. In the beautiful lane between Heathfield and Ballards the Wandle and Ravensbourne watershed was again crossed. At the Ballards Farm two remarkable blocks of sandstone, believed to be Sarsden stones, and lying on the chalk, were examined by the kind permission of Chas. Goschen, Esq. From hence the party returned, across the fields, to the East Croydon Station.