

Bryniau, and N.E.N. at Moel Hiraddug, so that it is greater than it appears to be in the section. The highest subdivision, the Upper Black Limestone, occurs at the north end, and the Upper Grey Limestone crops out from under it, and extends to Nant-yr-ogof, where there is a considerable fault, which brings up the top of the Lower Brown and the base of the Middle White Limestone. From the fault the Middle White extends three-quarters of a mile, when the Lower Brown Limestone crops out, continues some distance, and forms the conspicuous hill, Moel Hiraddug, on the top of which the lower beds of the Middle White Limestone are again exposed.

Along the west and parallel with the section there are two great faults, known as the Prestatyn fault and the Vale of Clwyd fault, and on the western side of the former a bare limestone hill, Graig-fawr, rises to an elevation of 500 feet, and presents a grand exposure of the Middle White Limestone, which is 600 feet in thickness. Numerous fossils occur at the north end of Graig-fawr, and a greater number has been obtained there than from the Middle White Limestone anywhere else.

On the west of the Carboniferous Limestone shown along the line of section several faults, including the two already referred to, have thrown down the limestone beneath the level of the sea, and the Lower Coal-measures have been proved to occur at Meliden and Dyserth, beneath a deep covering of drift. In one of the recent "Memoirs of the Geological Survey," by Mr. A. Strahan, M.A., F.G.S., a full description of the Geology—*Explanation of Quarter-sheet 79 N.W.*—will be found, with all the details of the drift and underlying strata.

III.—A SKETCH OF THE HISTORY OF THE RIVERS AND DENUDATION OF WEST KENT, ETC. By F. C. J. SPURRELL, F.G.S. 8vo. Greenwich, 1886. [Reprinted from the Report of the West Kent Natural History Society, 1886.]

THE author commences with some remarks on the "plane of marine denudation" which was produced over the Wealden area before the present features were carved out by subaërial forces. He observes that nowhere over the Wealden rocks is there to be found any deposit belonging to that old marine age; but it is quite possible that the Pliocene deposits of Lenham, etc., may be relics of the period. He then refers to the denudation by rain and rivers, and the breaching of the Chalk Downs, and states that "On the crest of the Downs there may be found in some places relics of the rocks from the Weald, Gault Clay, Chert, Greensand, Sand and Limestone, etc., lying on the Chalk, not in the condition of river gravel, but of patches of the old beach." The gravel of Shooter's Hill is, in his opinion, largely composed of the wreck of Bagshot Beds, and there are many similar outliers of pebbly gravel. These beds occur, as a rule, at a higher level than the Thames Valley gravels, and they may be distinguished from them by the absence of the erratic pebbles and fossils of northern origin (derived from Glacial Drifts), that occur in the newer deposits. These Thames Valley gravels, in Mr. Spurrell's opinion, lie below the 200 feet contour-line, the highest elevation being at Wimbledon, 190 feet.

Referring to the Flint Implements found at different levels over the whole district, he observes that he is unable to draw a sharp line of demarcation between Palæolithic and Neolithic forms.

Turning his attention to the subject of superficial deposits, he devotes the second part of his paper to the Warp and Trail, described by Joshua Trimmer, and the Rev. O. Fisher (see *GEOL. MAG.* 1867, p. 193); and this subject is illustrated with a number of sections showing the superficial disturbances affecting the Trail. To the folds he applies the name "Underplight," reserving the name Trail for the material filling the troughs and hollows. He believes that the folds or Underplight "may have resulted from the heavy pressure of a superincumbent mass of snow on a soil in a condition capable of yielding, and frequently repeated." No doubt many instances of Trail may in this way have been disturbed, for the Trail after all is generally but the relic of a more extensive gravelly accumulation which has been for the most part denuded. Surface disturbances of similar character are produced in strata over which the Chalky Boulder Clay has been accumulated, and are referable to the agent (probably land-ice) which formed it. Mr. J. G. Goodchild also has drawn attention to many instances of surface disturbance in Kent (to whose paper, by-the-by, no allusion is made by Mr. Spurrell), and he has suggested that they were probably produced in Glacial times (*Proc. Geol. Assoc.* vol. ix. p. 151).

R E V I E W S.

I.—MIKROSKOPISCHE PHYSIOGRAPHIE DER MASSIGEN GESTEINE.
 Von H. ROSENBUSCH. 1 Abtheilung. Zweite gänzlich umgearbeitete Auflage. (Stuttgart, 1886.) [Pp. 416.]

MICROSCOPIC PHYSIOGRAPHY OF THE MASSIVE ROCKS. By H. ROSENBUSCH. Part I. Second edition, completely revised.

THE appearance of a second edition of Professor Rosenbusch's well-known treatise on the microscopical study of the igneous rocks will be hailed with satisfaction by all workers in petrology. The present instalment is the first part only: the remaining portion, with the plates for the whole work, is to be expected next Easter.

On the publication of a new edition of a standard work, the reader naturally wishes to note what alterations and additions have been made to the former text; but the present edition is so completely re-written as to be practically a new work, and important differences of principle, as well as method, render futile any detailed comparison with the original. The chief features of the author's new treatment of the subject are the prominence given to structure and geological mode of occurrence, the subordination to them of purely mineralogical characters as a criterion of classification, and the abandonment, to a great extent, of geological age, or assumed age, as an essential character of igneous rocks. It is true that the division into older (Pre-Tertiary) and newer (Post-Cretaceous) groups is retained among the volcanic rocks: but the only reasons assigned for this artificial