Bulletin No. 479 (1911) is by Mr. Chase Palmer on the Geochemical Interpretation of Water Analyses, and it is pointed out "that the statement of water analyses in a form which does not recognize the *proportional reaction capacity* of the radicles fails to show the chemical character of the waters".

Bulletins Nos. 454 and 456 (1911) contain accounts of the Coal, Oil, and Gas of the Foxburg Quadrangle, and of the Oil and Gas Fields of the Carnegie Quadrangle, Pennsylvania.

Bulletin No. 475 (1911), by Messrs. J. E. Gilpin and O. E. Bransky, gives the results of experiments on the diffusion of Crude Petroleum through Fuller's Earth. It is found that the earth tends to retain the unsaturated hydrocarbons and sulphur compounds in petroleum, and very probably it retains largely the nitrogen compounds in the oil.

V.—Bibliography of the Foraminifera.

Palãontologisch - stratigraphische und zoologisch - systematische Literatur über marine Foraminiferen fossil und rezent bis Ende 1910. Zusammengestellt von Dr. Karl Beutler, Paläontologe in München. (Privately printed and sold by the author, price 3*s*., and postage 3*d*.) 8vo; pp. 144.

THIS is a useful compilation from Woodward, Sherborn, and Tutkovski, with much additional matter, thrown into an alphabetical list and divided up in the last few pages into Geological, Morphological, Systematic, Bibliographical, Geographical Distribution, Catalogues, and other headings, referring the reader by numerals back to the author list of papers. It apparently takes little or no notice of bibliographical details, and omits those painfully brought together by Sherborn, as well as all pagination of the works quoted from. It is also inaccurate in many particulars, notably in the omission of Lister's valuable contribution to the Zoology edited by Lankester, and of any reference to the first edition of Fichtel & Moll, etc. Further, the entry of an author's name as Cuvier, Fichtel, Diesing, Cross, Flint, Schroeter, and so on, is misleading, and only causes confusion. In all works of this nature the full names of the authors are essential, and in most cases easily ascertainable.

The book will be serviceable, however, if carefully used, and we thank Dr. Beutler for putting it together.

VI.—Brief Notices.

1. Thermal Waters in the Yellowstone National Park.—The origin of these waters is discussed by Mr. Arnold Hague (*Science*, n.s., xxxiii, p. 553, 1911), who maintains that they are not primitive in their origin, but are due to vadose or surface waters that have penetrated to a sufficient depth to attain a temperature that would force them again to the surface in the form of boiling springs and aqueous vapours. This conclusion is based on the nature and structure of the rocks through which the heated waters reach the surface, on the mineral constituents of the waters, and those in the sediments and incrustations deposited around springs and pools, and on the composition of the gases.

2. Crinoids.—A Trenton Echinoderm Fauna at Kirkfield, Ontario (Canada, Dept. Mines, Mem. 15 P., 1911), is discussed by Frank Springer. It yielded forty or more species, most of which were originally described by Elkanah Billings, but one is new (*Ottawacrinus billingsi*).

3. Dr. A. H. Clark discusses the systematic position of *Marsupites* in Proc. U.S. Nat. Mus., xl, 649–54, 1911; and Springer has a paper on the Crinoid fauna of the Knobstone formation in the same journal, vol. xli, pp. 175–208. Dr. Clark considers *Marsupites* to have been a pelagic comatulid and compares it and *Uintacrinus* with *Antedon* and other crinoids which have pelagic stages. He insists that *Marsupites* and *Uintacrinus*, unlike *Antedon*, were always, at all stages, free-swimming animals.

REPORTS AND PROCEEDINGS.

Geological Society of London.

January 10, 1912.—Professor W. W. Watts, Sc.D., LL.D., M.Sc., F.R.S., President, in the Chair.

The following communication was read:—

"On a Late Glacial Stage in the Valley of the River Lea, subsequent to the Epoch of River-Drift Man." By S. Hazzledine Warren, F.G.S. With Reports on the Flowering Plants, by Francis J. Lewis, M.Sc., F.L.S.; on the Mosses, by H. N. Dixon, M.A., F.L.S.; on the Mollusca, by Alfred Santer Kennard, F.G.S., and Bernard Barham Woodward, F.L.S., F.G S.; on the Coleoptera, by C. O. Waterhouse, I.S.O., F.E.S.; on the Entomostraca, by D. J. Scourfield, F.R.M.S.; and on the Microscopic Examination of the Sandy Residue, by George Macdonald Davies, F.G.S.

The paper describes a carbonaceous deposit, discovered by the author, which is embedded in the low-level River-Drift gravel of the Lea Valley, in the neighbourhood of Ponders End. It belongs to the close of the Pleistocene Period, and is very much later than the Moustierian deposits. It may be of Magdalenian age, but there is no evidence to suggest this. It is more probably post-Magdalenian, formed during the time of the supposed archæological hiatus between the Palæolithic and the Neolithic Epochs. The deposit yields a varied fauna and flora, which has been the subject of extended investigation. The results of this are embodied in the reports which are appended to the paper. The conclusions arrived at in these reports are in close agreement with each other, and indicate climatic conditions similar to those now found in Lapland. The evidence of this comparatively late Arctic climate in the South of England is important. It throws much light on many vexed questions, particularly with regard to the relationship of Palæolithic man to the Glacial Period. It may have been the Arctic conditions represented by the Ponders End stage (as it might appropriately be named) which caused the migration of Palæolithic man to less inclement regions. The correlation is also suggested between the Ponders End stage and the 'Trail' of the Rev. O. Fisher. The evidence is further interesting, as showing another important fluctuation of climate during the Pleistocene Period.