in the negative. There is also no evidence that the Paleolithic hunter-populations knew anything about agriculture.

A comparative study of the fauna and flora of France and England leads to the conclusion that the British Isles were united to the continent during the early Quaternary. The Seine, instead of reaching the sea at Le Havre, flowed westward along the coast of Calvados, then north and west past the site of the present city of Cherbourg, to empty into a gulf of the Atlantic separating Cornwall from Brittany. The Somme traversed rather obliquely the Channel, and being augmented on the way by affluents from both France and England, passed between the Isle of Wight and England by way of Spithead and the Solent, where it emptied into the same gulf of the Atlantic some distance north of the Seine.

It is interesting to compare this view with that of Sir John Evans,* Mr. Codrington and the Rev. W. Fox.† The latter agree among themselves, although their conclusions were arrived at independently. They agree with de Mortillet in one respect only, viz., the river orgin of the Solent. But in their opinion, that river flowed east and not west, joining the the sea at Spithead. It was not the Somme, but a considerable stream, some of whose tributaries still exist in the small rivers which form the drainage of Dorset and Wilts.

There was also, during the Chellean epoch, a junction of Europe with America by way of the British Isles, the Faroes, Iceland and Greenland.

The volume closes with the geographic distribution of the types of industry characterizing the six epochs of the Paleolithic period. The abundance of rudely chipped Paleoliths in North America is recognized, but they are not considered as synchronous with the Chellean epoch in Europe. The Trenton terrace is referred to the same epoch as the Mousterian station of Santerno, Italy, which corresponds to 'the grand extension' of the glaciers.

In conclusion, by applying an absolute chronometric scale to the adopted system of relative chronology, the following results are obtained:

Chellean epoch (preglacial)	78,000 years.
Mousterian epoch (glacial)	100,000 "
Solutréan epoch	11,000 "
Magdalenian epoch	33,000 "
Total	222,000 "

To the 222,000 years of early Quaternary is to be added 'the 6,000 years since the beginning of the historic period in Egypt and a probable 10,000 years of the Protohistoric and Neolithic.' The authors believe this to be a very moderate estimate for the antiquity of man.

There is a limit to the amount of matter that can be pressed into a single volume. The one in question is exceedingly rich as it stands, being far more comprehensive than any other attempting to cover the same field. Yet many will regret that so few references were cited and that a series of maps was not incorporated. The science of prehistoric anthropology is sadly in need of cartographic enrichment. It would be difficult to conceive of a more fruitful source for such an enrichment than the combined knowledge of the de Mortillets.

We may, however, hope that the desired maps, augmented by others, will be included in the promised additional volume. May it soon appear!

GEORGE GRANT MACCURDY.

*'Ancient stone implements of Great Britain,' 2d edition, p. 690.

† *Geologist*, Vol. V., p. 452.

Analyse des Gaz. By M. E. POZZI ESCOT. Paris, Gauthier-Villars. 1900. Pp. 200.

Chapter I., on 'Sampling,' is by far the best in the book, being complete and well written; the writer regrets that the same can not be said of the following chapters. In the important branch of analysis by explosion not one of the later forms of explosion pipette is given. In Chapter III., on reagents, no mention is made of fuming sulphuric acid, which Winkler showed ten years ago to be the best absorbent for 'heavy hydrocarbons'; nor is any statement made of the limitations of the use of various reagents, nor of their capacity of absorption.

Chapter IV., on the analytical characters and methods of estimating the principal gases, might almost—as far as any special information about gas analysis is concerned—have been taken from any treatise on chemistry.

Chapter V., on qualitative analysis, is admirable.

In Chapter VI., on the analysis of gaseous mixtures, especially by combustion, no directions or precautions are given necessary for a successful result, nor is the treatment of the analysis of illuminating gas at all satisfactory.

Chapter VII., on gas analytical apparatus, describes in a general way a number of the important forms of apparatus.

Chapter VIII., on the calorific power of gases, is especially disappointing, the only methods given being that of Mahler—by the bomb, and by calculation, no mention being made of the excellent apparatus of Junkers.

In conclusion, the work, so far from being 'essentiellement pratique,' as reviewed in the *Comptes Rendus*, appears to be superficial, better adapted to give a general idea of the subject than for a laboratory manual.

Augustus H. Gill.

SCIENTIFIC JOURNALS AND ARTICLES.

The American Naturalist for January begins with a list of 'Plants used by the Indians of Eastern North America,' by Lucia B. Chamberlain. The plants are arranged in alphabetic order under the name of each of the tribes considered and the uses of the plants are noted. R. W. Shufeldt has an article 'On the Systematic Position of the Sand Grouse (*Pterocletes; Syrrhaptes*),' concluding that they belong where they are usually placed, between the Galli and Columbæ. G. H. Parker discusses 'Correlated Abnormalites in the Scutes and Bony Plates of the Carapace of the Sculptured Tortoise,' concluding that there is a more intimate relation between the plates and scutes than has been generally admitted. Roswell H. Johnson describes, with outline and skiagraph illustrations 'Three Polymelous Frogs' and C. H. Eigenmann and Ulysses O. Cox consider 'Some Cases of Saltatory Variation.' James Perrin Smith treats of 'The Larval Coil of Baculites' and deduces that Baculites probably originated from *Lytoceras*, and some 'Variation Notes' are given, taken from the *Bulletin of the Société d'Anthropologie*. The Editor announces that the 'News' department will be discontinued as the same field is covered by Science more promptly, but that the record of appointments, retirements and deaths will be continued and that there will be added notices of gifts to educational institutions, all to be published quarterly.

SOCIETIES AND ACADEMIES.

SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY OF THE NEW YORK ACADEMY OF SCIENCES.

A regular meeting of the Section was held at 12 West 31st Street, New York, on February 4, 1901. Professor George E. Hale, director of the Yerkes Observatory, gave a lecture on 'Astronomical Photography with a Visual Telescope.' The following is an abstract:

Photography was discovered in 1837, and the first astronomical photograph was taken in 1840 by Dr. Draper of New York. It was a photograph of the moon made on a daguerreotype plate, and gave great promise of future work. Bond in 1850 made the first photograph of the stars. Rutherfurd of New York, in 1858, made some remarkable photographs of the moon, and later some star photographs.

Photography has now become so valuable in astronomy that it is applied in every department. It is not true, however, that it will displace the eye. There are certain fields where the eye will be superior to the photographic plate, but in many other fields photography has led to results that never could have been obtained by visual observation. I shall speak tonight of work done at the Yerkes Observatory with a telescope designed for visual observation. It is fortunate that this telescope was not designed for photography alone, for by the use of methods recently devised it has been possible to use it for photography and the results are not at all inferior to what they might have been on a telescope designed for photography alone.

The forty inch telescope of the Yerkes Observatory can be considered as a long camera with a focal length of about sixty-four feet. Its field of view embraces a circle in the sky of only about five minutes of arc in diameter. In photographing groups and clusters of stars this long focal length makes it possible to separate stars which would have been run together into one mass with an instrument of shorter focal length. A means of counteracting the uncor-