2° S.). The expeditions to the Andes have not recorded it above altitudes of 1,500 feet nor more than about a hundred miles back from the coast. On the east coast it is recorded as far south as the Sierras del Tandel, Argentina (38° S.) by Berg. It is found throughout Brazil and in eastern Ecuador well up towards the headwaters of the Amazon.

It has been introduced into many of the Lesser Antilles to catch insects (Herrera). In 1844, according to Gosse, it was introduced into Jamaica from the Barbadoes, where it has been used to catch field rats. It had been brought from Martinique to Barbadoes, and had been carried to Martinique from Cayenne. It appears doubtful that it is indigenous to any of the islands with the possible exception of Trinidad. Faunal lists from Cuba, Porto Rico and the Bahamas do not include it.

Bermuda is now its northern limit, both in latitude (33° N.) and in mean annual isotherm (70° F.), but this distance from the equator is exceeded on the east coast of South America both in latitude (38° S.) and in mean annual isotherm (58° F.). It is essentially a tropical and subtropical form, and I do not find record of it in the region of frost in either latitude or altitude, except for a small area in Argentina.

Bufo agua is known by various local names. The natives of parts of Brazil call it aguaquaquan, from which comes its specific name. In Jamaica it is known as a 'bull-frog.' The inhabitants are prejudiced against it throughout its range and it is killed at every opportunity.

There is a general belief that it is venomous. One Brazilian writer (Filho) says that travelers report the use of its venom in place of curari by the natives of the upper Amazon region.

Experiments show that the secretion of its cutaneous and parotoid glands, when injected into the circulation of dogs, fowls or frogs has poisonous effects, and in moderate doses causes convulsions, followed by death. There is no evidence that mere external application causes more than a slight irritation unless it reaches mucous membrane, when ulceration follows, or the cornea, which is rendered temporarily opaque.

There is not sufficient evidence to substantiate the popular belief among the natives of Bermuda that the animal can eject its secretion to a distance. There is some evidence that the secretion when taken into the digestive tract—as in the case of a dog getting it into the mouth—will cause death in a few hours, but there are no careful records of the physiological effects of the secretion beyond the fact that subcutaneous injections cause tetanic convulsions, followed by death in from one-half to two hours, according to dose.

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SCIENTIFIC BOOKS.

Le préhistorique, origine et antiquité de l'homme. Par GABRIEL et ADRIEN DE MORTILLET. 121 figures dans le texte. 3e édition. Paris, Schleicher frères, 1900. Pp. xxii + 709. Bibliothèque des sciences contemporaines.

The first edition of *Le préhistorique* dates from 1883. A second edition appeared two years later and was exhausted at the end of ten years. The value of the work, as well as the rapid growth of the science, has made a third edition imperative. Gabriel de Mortillet devoted the closing year of his life to this task, which was destined to be completed by his son and collaborator, Adrien de Mortillet.

The incorporation of an immense amount of new and valuable material, made possible by a recasting of the work, has of necessity limited its scope. The Neolithic period is left to be treated in a separate volume together with the Bronze age.

The two main divisions of the present volume are devoted to the Tertiary and early Quaternary, respectively. The authors are inclined to make the most of the evidence bearing on a

Tertiary precursor of man, devoting twelve chapters to it. The accounts of the discoveries at Thenay, Saint Prest and Puy-Courny, in France; Otta, Portugal; Yenangyoung, Upper Burma, and as core of others are faithfully reviewed.

The Calaveras skull is rejected. The deposit in which it was said to have been found is Quaternary instead of Tertiary, and the skull, besides being of doubtful origin, bears not a single mark of antiquity. Neither are the human remains from Olmo, Colle del Vento and Castenedolo, Italy, accepted as Pliocene.

The chapter on fossil monkeys closes with *Pithecanthropus erectus*, which is considered the immediate precursor of man. The authors conclude that while man did not exist during the Tertiary, there did exist precursors of man more intelligent than any of the living anthropoids.

Part second is devoted to the Early Quaternary, which, according to de Mortillet, corresponds to the Paleolithic period. The method of treatment here is less didactic than in the earlier editions, the subject matter being grouped under the following headings:

I. Industry, or Technology.
II. Man, or Anthropology.
III. Fauna, or Zoology.
IV. Flora, or Botany.
V. Geology.
VI. Geography.

The first successful attempt to establish a scientific system of relative chronology for prehistoric times was made by Thomsen of Copenhagen, in 1836. Of the subsequent writers who have contributed to the elaboration of Thomsen's triple division, Gabriel de Mortillet unquestionably ranks first. His classification is very generally accepted, and ought to be familiar to every one who wishes to keep abreast of archeological literature.

De Mortillet's system is based on the development of human industry, the successive steps of which are grouped under epochs. Following the method of nomenclature adopted by the geologist, he has given to each epoch the name of some well-known locality where the culture-stage in question is to be found in its purity.

The six epochs into which the Paleolithic period is divided, beginning with the oldest, are: Chellean, Acheulian, Mousterian, Solutréan, Magdalenian, and Tourasséan, the Acheulian and Tourasséan being regarded merely as epochs of transition.

After tracing the steps in the industrial evolution of the Paleolithic period, the authors pass in review all the discoveries of fossil human bones supposed to belong to the same period. The existence of two races is recognized —an earlier, referred to the first three epochs of the Paleolithic period and called Neanderthal, and a later, referred to the last three epochs of the same period and named Laugerian, or race of Laugerie-Basse. The Laugerian race is derived from the Neanderthal without intermixture from any foreign source. The transition may be traced in the human remains from Arcy, Eguisheim, Marcilly and Bréchamps.

Acting on the safe principle that it is better to discard correct testimony than to accept doubtful, of the 33 discoveries of human remains attributed to the lower half of the Paleolithic, 18 are discarded altogether, 4 are put in the doubtful list, and only 11 classed as authentic. Those accepted are: Neanderthal in Prussia, and Eguisheim in Alsace; La Naulette and Spy in Belgium; Tilbury and Bury Saint Edmunds, England; Denise, Marcilly, Bréchamps, Malarnaud and Arcy, in France. The doubtful are: Canstadt, in Würtemberg; Brüx, Bohemia; Schipka, Moravia; Hamilton, Ireland. Those to be discarded are: Nagy-Sap, Hungary; Brünn and Predmost, in Moravia; Podbaba, Bohemia; Stängenäs, Sweden; Gaylenreuth, Lahr and Bolwiller, Germany; Engis, Belgium; Maestricht, Holland; Kirkdale, Victroia Cave and Galley Hill, England; Moulin-Quignon, Clichy, Grenelle, Gravenoire and Estalas, France.

Of the human remains attributed to the second half of the Paleolithic period, the authentic are: the skeletons of Laugerie-Basse, Chancelade and Sorde inférieur, all in France. A number of finds, including Cro-Magnon, Furfooz and Baoussé-Roussé are classed as Neolithic sepultures.

Ten chapters are devoted to the contemporary fauna, and three to the flora. The question of the domestication of animals is decided

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.

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.

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

† *Geologist*, Vol. V., p. 452.