

such like substances, I take to be the chips left by the hand of time, the only record of a period during which an entire fauna may have died out and been replaced by another; and they teach us not to calculate, from the thickness of the deposit, the centuries that may have elapsed.

NOTICES OF MEMOIRS.

I.—ON THE FOSSIL ANIMALS OF PIKERMI, ATTICA.

By M. A. GAUDRY.

IN announcing the completion of the publication of his researches on the fossil bones of Pikermi, undertaken for the Academy of Sciences, Paris, during the years 1855–1860, M. Gaudry described the character of the specimens obtained, numbering 4940, which belong to 371 individuals, and 51 species.

At the time of Cuvier's works no fossil apes were known, but since then fourteen fossil species have been discovered. The remains of the *Mesopithecus* of Greece are so numerous that the author was able to figure the whole of its skeleton, and has determined it to be intermediate between the *Semnopithecus* and the *Macaci*; it has the skull of the former, and the limbs of the latter.

Besides apes, there have been found carnivora, the *Limocynon*, a small bear, a small dog, a small cat, and a genus called *Promephitis*, allied to the martens.

There have also been found at Pikermi, three civets of the genus *Ictitherium*, very closely related to the hyæna.

Gigantic bones have been found in Greece, belonging, as he has reason to believe, to the *Dinotherium*; they offer a very interesting relation, for the limbs are those of a Proboscidian, whilst the skull has analogies with those of aquatic animals, such as the Lamantins (or Manatees) now living in the Atlantic Ocean.

Formerly, the distinctions between the mastodon and the elephant were very evident; but the researches of English palæontologists in India have revealed species intermediate between these two genera. As species increase in number, their characters become so nearly related that it is difficult to avoid confounding them with simple varieties. In order to be able to recognise the different species of mastodon Dr. Falconer proposed to separate them into Trilophodons and Tetralophodons; but it is now found that the mastodon of Pentélique possesses teeth of both Trilophodon and Tetralophodon.

The rhinoceros presents no less curious transitions than the mastodon. The first fossil rhinoceros which Cuvier described appeared very different from the living species, for its nostrils were separated by a great partition; we know now of at least two species with a semi-partition, forming a passage between those that have a partition and those that have none. One species of rhinoceros,

found at Pikermi, is intermediate between the two species which live in Africa; it has the skull of one, and limbs nearly identical with those of the other. Another species agrees closely with the rhinoceros now inhabiting Sumatra.

Hipparions were extremely abundant in Greece. M. Gaudry has determined 1900 fragments; the comparison of all these species has led him to perceive almost insensible gradations between them, and to refer them to but one species.

The wild-boar of Erymanthia is intercalated with species already known in Tertiary strata.

The giraffe of Attica forms a link which unites the living giraffe with fossil ruminants.

Pikermi is the first locality where great numbers of fossil antelopes have been discovered; they are allied to species living at the present day, thus the *Tragocerus* resemble the goat in its horns, although it is a true antelope; the *Palæoryx* has horns like the *Oryx*, but differs from that genus in its molar teeth; the *Palæorca*s approaches to the *Orcas* by its horns, and to gazelles by other characters.

M. Gaudry states that Pikermi is not the only locality where these fossil remains have been found, but that they are distributed over the whole country. He has drawn up tables, showing the geological range of all the species.—*Comptes Rendus*, Feb. 19, 1866.

II.—ON SOME STONE HAMMERS OF THE ANCIENT AMERICANS, USED IN THE WORKING OF THE COPPER AND NATIVE SILVER MINES OF LAKE SUPERIOR.

By M. J. MARCOU.

AT one of the workings, called the "Mine de la Compagnie du Nord-Ouest," at Point Kievenau, some excavations were discovered, which indicate that this locality has been largely worked by the Indians. In these old workings were found a great number of stone hammer-heads of an oval or elliptical shape, weighing about two or three kilogrammes, and formed of such hard rocks as leptynite,¹ quartz, and porphyry. These hammers are heavy and difficult to handle, being only employed to break very hard rocks, and as no specimens set in hafts have been met with, the means employed by the Indians for fixing and using them is not known.

M. Marcou, however, states that, when crossing the prairies many years ago, he noticed in the possession of the Kioway Indians (the wildest and most uncivilized of all the tribes in North America) one of these stone hammers set in a handle. The hammer head was composed of quartz, and weighed about two kilogrammes, it was much worn, and one of the ends was chipped; it was bound to a handle with a strip of bison skin.—*Comptes Rendus*, Feb. 26, 1866.

¹ Composed of quartz and felspar.

III.—NOTE ON A BED OF FOSSILS IN HAUTE-LOIRE.

By M. BERTRAND DE LOM.

THIS stratum, called "Coupet," properly belonging to the neighbouring volcano, merits particular attention from geologists; for, independently of the Pozzuolana,¹ which is there found in inexhaustible quantities, and of the corundums and gems also met with, it yields a considerable number of bones of large and small mammals—pachyderms, ruminants, carnivores, and rodents—belonging, for the most part, to extinct species. The bones of the mastodon, and those of the elephant, are found there under conditions so similar as to lead to the conclusion that these animals lived contemporaneously, an opinion contrary to that held by most palæontologists.—*Comptes Rendus*, Feb. 26, 1866.

IV.—FOSSILS OF THE APTIEN STAGE OF SPAIN.

By PROF. H. COQUAND.

[MONOGRAPHIE PALEONTOLOGIQUE DE L'ETAGE APTIEN DE L'ESPAGNE, par H. COQUAND, Professeur de Géologie et de Mineralogie. 8vo., Marseille, 1866, pp. 221, 23 plates.]

THE Aptien stage, of D'Orbigny, is one of the lower members of the Cretaceous series, and the volume before us, describing its (invertebrate) fauna, is of the highest value. In his preface the author tells us that he has spared neither his time nor his money to render the work as perfect as possible, and the truth of this remark is well borne out in the manner in which it has been executed. It is the result of study during three months in the provinces of Teruel and Castellon de la Plana (Aragon), where the Aptien stage is best developed. Prof. Coquand confines himself to the Palæontology of the district he examined, reserving the Geology for another work. He commences by reviewing the previous labours of Geologists in this field, amongst whom MM. de Verneuil, Collomb, and Alcibar are foremost. He then gives short accounts of the Aptien, Gardonien, and Carentonien stages of the Cretaceous series, as an introduction to the more complete descriptions he intends to publish afterwards. He describes 231 species of Fossils from the Aptien beds, comprising 3 Annelids, 25 Cephalopods, 52 Gasteropods, 121 Conchifers, 9 Brachiopods, 14 Echinoderms, 6 Corals, and 1 Foraminifer; and gives lists of the Aptien Fossils of Switzerland, of the Aptien Fossils common to Switzerland and Spain, of those species common to Yonne and Spain, of those common to Provence and Spain, to England and Spain, to South America and Europe, and lastly, those common to North Africa and Spain.—H. B. W.

¹ Volcanic ash, used as mortar for building puposes. It derives its name from the town Pozzuoli, in the Bay of Naples.

V.—GEOLOGY OF BAS-BOULONNAIS.

By M. E. RIGAUX.

NOTICE STRATIGRAPHIQUE SUR LE BAS-BOULONNAIS, par E. RIGAUX. [Bulletin de la Société Académique de Boulogne, No. 4, 1865.]

THE Bas-Boulonnais occupies a small Jurassic basin, resting on Palæozoic strata, in the Cretaceous area of the north-east of France.

M. Rigaux gives numerous sections of, and lists of fossils from, all the strata exposed in this region.

The Palæozoic formations are (1) the Devonian, which extends from Blacourt stream, near the road between Calais and Boulogne, and disappears near Fiennes (at Caffiers it is overlain by Gault); and (2) the Carboniferous, consisting of, first, a Dolomitic bed, then a mass of Limestone, then Coal, and above that another bed of Limestone, similar to the one below. This succession M. Rigaux believes to have been due to a disturbance which has caused an inversion of the strata, so as to make the same bed of Limestone appear above, as well as below the coal.

The Jurassic rocks, comprising the Bathonien, Callovien, Oxfordien, Corallien, Kimméridgien, Portlandien, and Wealden stages, are then described. A table of the strata is given, showing their lithological divisions, and the zones characterised by particular species of fossils.—H. B. W.

VI.—QUARTERLY JOURNAL OF SCIENCE.

THE April Number of this Journal opens with a long article, entitled "Darwin and his teachings," accompanied with a lithographed portrait of that distinguished naturalist. His writings, consisting of original observations on nearly every branch of Natural History, but principally his "Origin of Species," are here discussed.

There is also a paper "On the Antiquity of the Volcanos of Auvergne," by Dr. Daubeny, F.R.S., etc., and in giving a notice of his conclusions we cannot do better than quote the following paragraph:—

"Everything therefore concurs to bespeak a high antiquity for these formations, and to indicate a long-continued operation of denuding forces upon the beds of igneous matter since their eruption; and yet all these events must have been posterior to the formation of some at least of the fresh-water beds of the Auvergne country, formations which Sir Charles Lyell refers to the Eocene period. It seems, indeed, most probable that these eruptions of igneous matter had broken out at the time when the district was covered by extensive sheets of fresh water, like the great lakes of North America, and hence may have been derived their greater compactness, as compared with the more modern volcanic products before alluded to, an indication of their having been erupted under a pressure greater than that of the atmosphere."

Amongst other articles is one on "Comparative Philology as indicating the Antiquity of Man," by Mr. David Parkes.