

animals. This led to a closer examination of the bed, when it was found that mixed with the shells was a large quantity of burned wood, with bits of burned horn and bone, while many of the shells themselves had evidently been subjected to a strong heat. These facts left no doubt that the bed was in many respects similar to the famous Danish "Kjokken Möddings." During the progress of the engineering operations, which have completely removed the shells, a tolerably careful search was made for other traces of humanity, and no implements that could safely be accepted as such were discovered, although some bits of broken bone, the tynne of a deer horn, and, most important of all, part of a long bone of some animal unmistakably split artificially, probably either with the object of extracting the marrow or of fashioning an implement, rewarded the search.

As the "Midden" thinned out in any direction it was found to be interbedded with the gravel of the old beach, and in one part was overlain by a stratum of sand and gravel of some thickness, in which could be found traces of burned wood and shells similar to those of the "Midden" below, just as we would expect to find it if the heap had been formed close to high-water mark where it could be reached by the waves of an unusually high tide, which would throw the gravel over the shells, and partly interstratify them.

These facts would seem to prove that not only was the shell mound a haunt of early man before the ten or twelve feet of earth, etc., was laid down upon it, but that the rude people who found in the shells of the sea-shore their most convenient food-supply, lived when the 25-feet beach was at the sea-level, and consequently when the geography of the country was different from what it is to-day.

I am obliged to Prof. H. Alleyne Nicholson for kindly identifying some of the fragments of shells sent to him as being those of *Mytilus edulis*, *Purpura lapillus*, *Tellina balthica* and *Littorina littorea*, all recent species, and the bit of deer horn as being "almost certainly" one of the tynes of the antler of the red deer.

NOTICES OF MEMOIRS.

I.—M. TH. FUCHS ON THE ORIGIN OF FALSE-BEDDING.

In the "Report of the Imperial Geological Institute of Vienna," September 30, 1877, M. Th. FUCHS points out that when by great storms, or high tides forced up against the land by strong winds, the sea is massed up along the coast (as it is sometimes to the height of 10, 20, and even 30 feet), the coarser detritus, as shingle, blocks, and boulders, is suddenly swept down to a lower level, even over the mud-zone, by the deep and strong counter-current of the displaced water finding its level again; thus giving rise to false-bedding on a large scale and apparent local unconformity.—T. R. J.

II.—EAST-AFRICAN AMMONITES.

(Report Imper. Geol. Instit. Vienna, Sept. 30, 1877.)

A series of Jurassic Ammonites from the East Coast of Africa, col-

lected by Dr. Hildebrandt, offer a striking analogy to those from the *Acanthicus*-zone of East-India, published by Dr. Waagen. Some *Planulati* among them may possibly be identical with *Ammonites torquatus* or *Amm. bathyplocus*.—COUNT MARSCHALL.

III.—F. KARBER ON MIOCENE FORAMINIFERA IN THE PHILIPPINES.

(Imper. Geol. Institut. Vienna, Report, September 30, 1877.)

The fossil Foraminifera at Luzon, in the Philippines, are *Nodosaria*, *Cristellaria*, *Polymorphina*, *Globigerina*, etc., characteristic of a rather deep-sea deposit. The same forms having been found in the Nicobar Islands, Java, Celebes, and Borneo, an extensive Miocene sea may be supposed to have existed from the Nicobars to Luzon.—COUNT MARSCHALL.

IV.—DR. O. LENZ—ON WEST-AFRICAN GEOLOGY.¹

(Report Imper. Geol. Institut. Vienna, December 4, 1877.)

Some Organic Remains have been collected near Landana and Caconge, 5° 15' Lat. S., and 12° Long. E. Greenwich, on the West Coast of Africa. The coast there consists of steep cliffs and rocks, rising to a height of 50 feet. Inland is a series of hills, projecting from the West-Africa chain, which ranges N.-S., and is composed of gneiss, mica-schist, talc-schist, quartzites, etc. This is the "Sierra do Cristal" or "Sierra complida" of the Portuguese. On the banks of the Gaboon and Ogowe Rivers (from 1° Lat. N., to 1° Lat. S.) this promontory consists of horizontal calcareous sandstones with Cretaceous fossils. Further South, it appears as a deep-brown, friable, very fine-grained ferruginous, and non-calcareous oolite. In it are Corals, with *Leda*, *Maetra*, *Tellina*, *Cardium*, etc. Remains of Fishes, very well preserved, have been found near Landana, about 36 miles south of Point Padron. A large slab of grey, fine-grained, somewhat argillaceous sandstone contains the vertebræ and skull, with teeth and branchial arches, of a large Fish, more or less compressed. Teeth, also, and dorsal spines of a Ray, a tooth of a Crocodile, a coprolite, and a very large and probably Cretaceous *Nautilus*, were collected in the same locality. The last-mentioned fossil was full of a light-coloured limestone, crowded with small Gasteropods and Bivalves. The cliffs, 20 feet high, along the coast of Ambrissetta, east of the mouth of the Congo (or "Livingstone") River, are composed of a light-grey limestone abounding with shells of *Ostrea*.—COUNT MARSCHALL.

REVIEWS.

I.—RECORDS OF THE GEOLOGICAL SURVEY OF INDIA, VOL. XI. PT. I. 1878.

THE "Records" of this Survey enter upon their second decade with a quarterly part of nearly three times the usual size; the first for 1878, containing, besides the Annual Report of the Superintendent, several important papers by the officers: "Notes on the Geology of the Upper Godaverí Basin" (Hughes); "Notes on the

¹ See GEOL. MAG. New Ser. Vol. IV. p. 27.