

converted into quartzite), and clays. They were laid down in water which was too brackish at times for the establishment of a fresh-water fauna in the estuary and too fresh for a marine fauna. In short, the conditions were those of an estuary during a period of rather rapid sedimentation. This estuary probably was, as many southern estuaries are now, defended from the sea by low bars or sand islands, on the seaward side of which a marine, probably Chesapeake, fauna flourished, whose remains are now buried 700 to 1000 feet below the level of the Gulf of Mexico. On the shores grew palmettos, and drift-wood in abundance brought down by the rivers was strewn upon them. I regard it as likely that part of the gravels bored through by artesian wells, in the axis of what was the Gulf of Mississippi, are referable to an earlier period than that of the Grand-Gulf epoch, since the same processes were at work there throughout the whole of the Miocene. Coëval with the sediments of the Grand Gulf were marine deposits along the shores of the Gulf of Mexico, both east and west of the entrance to the Gulf of Mississippi. As the erosion of the land became more complete the slope of the drainage became less, the currents slower and the sediment finer and lighter, fine sand and clay replacing the gravel and coarser material of the earlier part of the epoch. In short, the clays to which Johnson has applied the name of the Pascagoula formation, began to be laid down, the sea was less energetically pushed back by the out-flowing river-waters, and the conditions became more favorable for the establishment of a brackish-water fauna.

The word formation has been used very loosely in American geological literature. In the sense in which we use the term for the Chesapeake Miocene, or the Grand Gulf, or Lafayette rocks, I conceive that these clays do not constitute a formation. They really represent for me a phase, the latest and most gentle, of the Grand Gulf, which is represented by the sands with palmetto leaves above the Chesapeake strata in the section at Alum Bluff on the Chattahoochee River. We may, slightly modifying Johnson's term, refer to them as the Pascagoula clays.

A correction is also required in the definition of these clays, or rather the fauna they contain. It is not, as supposed by Johnson, a marine fauna. All the species are or may be a part of a strictly brackish-water formation. The collections of Johnson, as well as material from the Mobile well, have been in my hands for study. The fauna comprises a large oyster, a small *Gnathodon*, which I have described under the name of *G. Johnsoni*, a small *Mastra*, also found in the Chesapeake Miocene, fragments of a *Corbicula*, and a *Hydrobia*, which I have named *H. Mobiliana*. The supposed *Venus* of which Judge Johnson speaks is the young of the *Gnathodon*. All these species are characteristic of estuaries, and will be discussed in my "Tertiary Mollusks of Florida," of which Part II. is now printing. The depth at which this fauna is encountered in the Mobile well is 735 feet, which gives an average dip from the locality near Vernal, Miss., where it comes to the surface, of about 25 feet to the mile; which corresponds very well to the dips of other strata of the Tertiary, which have been similarly traced. We are under serious obligations to Judge Johnson for the material he has so assiduously collected and which has helped so much to determine the geology of our southern tertiary formations.

WM. H. DALL,

Palæontologist U. S. Geol. Survey.

Washington, D. C., Sept. 13.

#### European Origin of the Aryans.

REFERRING to Dr. Isaac Taylor's letter in *Science*, Sept. 9, I must say that I cannot conceive how he can make the statements it contains, if, as he alleges, he has "carefully read" Omalius D'Hallow's writings.

Dr. Taylor's words are, "The comparatively modern theory that the Aryan race originated in the highlands of Central Asia, a theory of which D'Hallow does not seem to have heard." Now, in the article published in 1849, D'Hallow has these words: "On a voulu tirer la conclusion que ces langues (indo-germaniques) derivaient du sanscrit, et que tous les peuples qui les parlaient étaient originaires de l'Himalaya, deux propositions qui sont loin d'être incontestable."

As if this was not enough to make it clear as to what theories

he was attacking, he specifically states in a note to page 19 of his "Éléments d'Ethnographie," referring to this article in the Bulletin of the Belgian Academy, that it was directed against the linguists who derived the modern European languages and peoples from Central Asiatic ancestry; whereas it was his view that the ancient Persian and Indian tongues were imported from Europe into Asia.

I imagine that if Dr. Taylor had not had before him the "necessity of modifying former [printed] statements," he would not have overlooked this positive testimony by Omalius to himself.

Media, Pa., Sept. 12.

D. G. BRINTON.

#### The English Sparrow and Other Birds.

MY experience with the English sparrow accords with that of your correspondent X. in your issue of Sept. 2, 1892. Before this sparrow came and multiplied largely, my lawn was populated with cat-birds, red-birds (Cardinal grosbeck), robins, doves, blue-birds, yellow-birds, tomtits, chipping sparrows, wrens, etc.; but now the English sparrow has full possession of the entire premises. Now and then a cat-bird or a red-bird slips in as if to see whether he may again bring his family to their old umbrageous quarters, and to the rations which were provided for their support; but he is not reassured, and soon disappears.

The fecundity, energy, and perseverance of the little vandals are amazing. When the small fruits are abundant it requires a week of active shot-gun work to make them even cautious in visiting the fruit-garden. Some of them last spring took a notion to establish nests on the tops of window-shutters which opened under projecting eaves, and although their nests were swept off almost daily, they immediately began in each case to rebuild on the same spots, and continued this for at least a fortnight. In their nesting, as in some other things, they display more perseverance than discretion. The cats found that they were building in considerable numbers in a large hay-loft, and suppressed many a germ of mischief. The sparrows sometimes swarm like flies in the stable, where they will enter the troughs of horses, cows, and pigs whilst the animals are feeding.

I no longer shoot owls or hawks, but give them a welcome, and every cat and nest-hunting boy has the freedom of my premises.

Lexington, Va., Sept. 12.

W. H. RUFFNER.

#### BOOK-REVIEWS.

*Annual Report of the Board of Regents of the Smithsonian Institution to July, 1890.* Washington, Government Printing Office, 1891.

THE Smithsonian Report for 1890 contains: First, the proceedings of the Board of Regents for the session of January, 1890; second, the report of the executive committee exhibiting the financial affairs of the institution, including a statement of the Smithsonian fund and receipts and expenditures for the year 1889-1890; third, the annual report of the secretary giving an account of the operations and condition of the institution for the year 1889-1890, with statistics of exchanges, etc.; fourth, a general appendix comprising a selection of miscellaneous memoirs of interest to collaborators and correspondents of the institution, teachers, and others engaged in the promotion of knowledge. This volume is also profusely illustrated, adding greatly to its value and interest. Among the illustrations are maps of the National Zoölogical Park; maps of the Niagara River; maps of Central Africa, before and after Stanley; pictures illustrating primitive urn burial, the age of bronze in Egypt, specimens of quartz fibres; and many others too numerous to mention in detail here.

The object of the memoirs included in the general appendix is to furnish brief accounts of scientific discovery in particular directions; occasional reports of the investigations made by collaborators of the institution; memoirs of a general character or on special topics, whether original and prepared expressly for the purpose or selected from foreign journals; and briefly to present (as fully as space will permit) such papers not published in the Smithsonian Contributions or in the Miscellaneous Collections as may be supposed to be of interest or value to the numerous correspondents of the institution.