the evolution of the titanotheres is based on thousands of measurements, of the skull and teeth especially, and on comparisons of an exceptionally rich series of specimens in successive geological levels. So far as they have gone they appear to confirm the hypotheses of the separate and combined operation of the four factors on different classes of characters. A few illustrations only may be given of results which will be set forth very fully in the monograph.

1. Heredity appears to dominate the origin of new cuspules in the teeth because they arise in the form of rectigradations, that is, with a slow, definite, and continuous origin, in an adaptive direction and controlled by ancestral affinity. That is, the *same* results appear independently in descendants of the *same* ancestors.

2. Ontogeny rather than heredity appears to be in part an initial factor in fashioning the form of the cranium. We can not regard this as controlled by ancestral affinity, because descendants of the *same* ancestors give rise to *different* results, that is, to extremely divergent broad-skulled and extremely long-skulled forms.

3. Environment, besides its indirect action through heredity and ontogeny, seems to act broadly upon such change as the continuous increase of size, which independently favors the increase in size of the members of four series of titanotheres in contrast to a fifth which is dwarfed in size.

4. Selection (by our definition not an initiative factor), while generally operating on the whole sum of characters or the sum total of the organism, seems in this case to have operated especially on fluctuations in skull breadth or skull length respectively, in relation to the browsing or grazing habit; these congenital fluctuations being connected with ontogeny and organic selection.

The above is a very brief statement of the results of analysis of the evolution processes in general, and of the application of these processes to titanothere evolution in particular. It applies especially to the origin of new characters, with the clear appreciation of the end result that all such characters, or the potentiality of giving rise to them, finally become *germinal* or hereditary.

Henry Fairfield Osborn

QUOTATIONS

The Concilium Bibliographicum

We learn that at the recent meeting of the International Congress of Zoology held in Boston a committee was formed to raise an adequate endowment fund for the Concilium Bibliographicum. With the one exception of the final settlement of the question of nomenclature—if, indeed, such a settlement be possible—there is no step which the congress could have taken of such importance as this for zoologists in general, nor are there many which could have anything like its economic importance. The literature of zoology is at once the most extensive and the least accessible of all those of the natural sciences. It is estimated that the number of persons engaged in zoological investigations of one kind or another amounts to several thousands, while—to ignore altogether works published independently—there are more than 3,000 periodicals, written in over 20 different languages, which may contain matter of interest for the naturalist. Unfortunately, the difficulty of the situation is made greater by the refusal of most of these journals to limit the matter they publish to any one branch of zoology and also by the importance which claims of "priority" may give to articles that have appeared in the most obscure periodicals. Moreover, it is precisely those papers which, directly or indirectly, are of the greatest economic importance (whether to economic entomology, to the study of fisheries, or to parasitology) that are the hardest for the working zoologist to hear of and to obtain.

The Concilium Bibliographicum was founded in 1896 under the auspices of the International Congress of Zoology. Its offices are situated in Zurich and its staff of librarians and clerks is under the direction of Dr. H. H. Field. The work of the Concilium is to examine as many of the periodicals of the world as are accessible to it, to make abstracts of their contents, and to publish the results of its labors in the form of a card catalogue

of zoological literature. Each article is read by a zoologist who determines for what classes of workers the paper is of interest and prepares a brief résumé, noting any new species or genera described. In order to indicate the contents of the articles, the topics met with have been arranged in the form of a comprehensive classification and then numbered, so that each paper is assigned by a numerical symbol to the divisions with which it deals. The reference to each paper is printed on a card and bears the appropriate numbers to designate one of the topics treated in the publication. Where the reviewer finds various matters treated in one paper several different editions of the cards are printed, differing only from one another in the classificatory symbol employed. Thus a given work may be found to contain an account of the occurrence of a white badger in a given country, together with considerations on albinism in general. The paper would emerge from the hands of the reviewer with a symbol for each of these aspects. The indication 11.57 would mean that the paper in question dealt with albinism, and the card would accordingly be sent to subscribers interested in that subject; the symbol 9.74 Meles would mean that the card must go to all subscribers interested in the badger; and a third symbol would designate the country or district in which the animal was found. The naturalist interested in the absence of pigment in animals (albinism) subscribes for that portion of the catalogue which deals with his subject, and receives every two months the new citations of papers on albinism. Some of these may refer to observations made near at hand; but much will relate to foreign publications and might remain unknown save for the agency of the Concilium. The whole series of cards may be subscribed for by an institution, which thus secures a bibliography of zoology since 1896, the value of which, in saving time and ensuring acquaintance with the literature of any branch of the subject, is incalculable. Since it is issued on cards the catalogue is not only always up to date, but has all the references on a given topic together at one point.

Unfortunately, the actual services rendered by the Concilium, great though they have been, have fallen somewhat short of its program. This, however, is entirely due to the limitation of its resources. The organizers of the institute are satisfied that the experimental period has proved beyond question that the program can be fully realized if they be provided with the necessary means. It is to find these means that the committee we have mentioned has been formed. Their success is greatly to be desired, and that, as we have shown, in wider interests than those of zoology alone.—From the London *Times*.

A LETTER RELATING TO THE BIOGRAPHY OF LAMARCK

PROFESSOR JOUBIN, chairman of the Lamarck Memorial Committee, has just sent the American members of this committee a copy of a letter dealing with the biography of Lamarck, written by his son nearly half a century ago. Its materials are timely and I append a translation.

LETTER OF GILLAUME DE LAMARCK, SON OF THE GREAT NATURALIST, WRITTEN JUNE 11, 1865, TO HIS SON EUGÈNE DE LAMARCK, THEN LIEUTENANT ON BOARD THE SLOOP OF WAR "SURPRISE"

My Dear Son:

I have read with pleasure the few lines you sent me taken from a work of which I have never heard. *Histoire naturelle des professeurs du Jardin des Plantes*—this is indeed a singular title. One would have thought it the history of some class or other of animals; one of the most important works of my father is entitled: *Histoire des Animaux sans Vertèbres;* but "The Natural History of the Professors"—that seems to me a little strong.

Be this as it may, the eulogy does exist and it is merited. Moreover, this is not the first that I see. Nevertheless, the name of my father has remained in obscurity. I always feel provoked when I see the statues erected to Georges Cuvier, to de Jussieu, to Géoffroy Saint-Hilaire, or when I see the names of these scientists given to the streets which surround the Jardin des Plantes, when I see the busts of the professors in the galleries of the Natural History Museum, all with the exception of that of my father. But what can one do about it? It does not merely suffice to have the reputation, to have the scientific