

The approximation of the orbit of Biela's comet to that of the November meteor-stream, and consequently to that of Tempel's comet, 1866 (I.), was first pointed out by Prof. Bruhns, of Leipsic, in *Astron. Nach.*, No. 1681, but the heliocentrics there employed were deduced from the geocentric places of Santini's rough ephemeris.

PROF. FLOWER'S HUNTERIAN LECTURES
ON THE RELATION OF EXTINCT TO EXISTING MAMMALIA¹

IX.

THE disputed zoological position of the Lemurs, and the great importance which has been attached to them by some zoologists, who regard them as the direct transition between the lower and higher mammals, and as survivors of a large group now almost extinct, through which the higher Primates must have passed in the progress of their development, give great interest to the consideration of their ancient history.

Until very recently fossil Lemurs were quite unknown, at all events the affinities of certain remains provisionally assigned to the group were much questioned, but within the last few years the existence of Lemuroid animals in Europe during the early Tertiary period has been perfectly established, and remains of a large number of animals attributed, though with less certainty, to the order, have been found in beds of corresponding age in North America.

In 1872, a nearly complete skull of an animal somewhat allied to the modern African Pottos and Galagos, though of a more generalised character both of cranial conformation and dentition, was described by M. Delfortrie, under the name of *Palæolemur betillei*. It was found in phosphatic deposits, probably of early Miocene age, in the department of Lot. It was soon afterwards discovered that certain more or less fragmentary specimens which had been long before described, and had been generally though doubtfully referred to the *Ungulata*, were really nothing more than animals of the same group, and probably even of the same species. These are *Adapis parisiensis*, Cuvier, from the Paris gypsums, *Aphelotherium duvernoyi*, Gervais, and *Cænopithecus lemuroides*, Rutimeyer. The recognition of these animals as Lemuroids shows how little reliance can be placed upon the characters of the molar teeth alone in judging of affinities, and should also lead to the re-examination of some of the smaller mammals of our own Tertiaries, such as *Miolophus*, as it is not improbable that Lemurs may be found among them. The same deposits in which M. Delfortrie's specimen was found, have since yielded two other skulls, one of smaller and the other of larger size, named by M. Filhol, *Necrolemur antiquus* and *Adapis magnus* respectively. It should, however, be mentioned that M. Filhol only admits the first to be a true Lemur, and considers the genus *Adapis* as the type of a hitherto unknown group of mammals, intermediate between the Lemurs and Pachyderms, to which he gives the name of *Pachylemur*.

Of the supposed low and generalised forms of Primates from the Tertiaries of North America, the existence of which was announced almost simultaneously by Professors Marsh and Cope in 1872, it is difficult to speak with certainty at present, as the descriptions which have reached this country are not very detailed. As many as fifteen genera have already been named. They are nearly all from the Eocene formations, two only having been found in the lower Miocene.

The remains of no true monkeys have hitherto been discovered in the Eocene, but several species have been found both in Miocene and Pliocene formations in

¹ Abstract of a course of lectures delivered at the Royal College of Surgeons "On the Relation of Extinct to Existing Mammalia, with Special Reference to the Derivative Hypothesis," in conclusion of the course of 1873. (See Reports in NATURE for that year.) Continued from vol. xiii. p. 514.

Europe. The most abundant and best preserved are those from Greece, *Mesopithecus pentelici*, allied to the existing genus *Sennopithecus*, though with shorter and stouter limbs. Others have been found in the Siwalik Hills of India allied to the same form, and in France, the South of Germany, and Italy, related to the Macaques and to the Gibbons. The most interesting species is one known by the lower jaw only, from a Miocene bed at St. Gaudens, in France, described by Lartet under the name of *Dryopithecus fontani*. Its affinities have given rise to some discussion, but as far as can be decided from the evidence before us, it appears intermediate between the chimpanzee and gorilla, and of the size of the former. Considering how nearly the Miocene fauna of Europe resembles in its general features the actual fauna of Africa, it is not surprising that an ape of the genus *Troglodytes* should have formed part of it. No remains of monkeys allied to the existing American forms have been found in the Old World, and conversely, all those discovered by Lund in the Brazilian caverns belong to the families now inhabiting the same part of the world. No monkeys have yet been found in the alluvial deposits of the plains, which are so rich in the great Edentates, nor in fact have they been met with in any older South American Tertiaries. The ancient history of the group, as revealed to us by palæontology, is therefore extremely incomplete. Further researches into the fauna of the North American Eocenes may throw some light upon it.

No actual remains of man have been met with which can be said with certainty to be older than the Pleistocene period, though it is asserted that his existence upon the earth in the Pliocene and even Miocene epoch is proved by works of art found in deposits of those ages. These, however, are questions to be decided by the antiquary and the geologist, and are beyond the scope of the anatomist. The oldest known remains of man from European caves (with perhaps the exception of the celebrated skeleton from the Neanderthal, the age of which is doubtful) do not differ more from modern Europeans than do several of the lowest modern races. In other words, no proof of the existence in former times of a race of men inferior in general organisation to the Australians, and forming any nearer approach to the lower animals, has yet been discovered.

In reviewing our present knowledge of the palæontology of the Mammalia we see immense progress of late years, giving hopes for the future. Here and there we have tolerably complete histories of gradual modification of forms with advancing time, and adapted to the exigencies of changing circumstances, as among the *Ungulata* and the *Carnivora*; and we have many instances of extinct forms filling the gaps between those now existing. But still there are great gaps or rather gulfs between most of the large groups or orders, without at present any trace of connecting links, or anything to indicate how they were once filled up, as must have been the case if they have all been gradually evolved from a common origin. We have very much to learn before we can speak with any confidence upon the manner in which all the diversities of form we see around us have been brought about, or attempt to construct pedigrees or phylogenies, except in the most provisional and tentative manner.

INTERNATIONAL METEOROLOGY

THE Permanent Committee of the Vienna Meteorological Congress has just held its third meeting in London, which lasted from the 18th to the 22nd April inclusive. The members present were Prof. Buys Ballot (Holland), president, Professors Bruhns (Germany), Cantoni (Italy), Mohn (Norway), Wild (Russia), and Mr. Scott. Prof. Jelinek (Austria) was unfortunately absent owing to ill-health.