

government endowments for technical education (at present about \$3,500,000 a year), especially for research, are desirable, the author of the paper, as well as those who discussed it, agreed that the greatest need is the improvement of the system of secondary education.

J. L. H.

RELATIONS OF THE LEMURES, PRIMATES AND UNGULATES.

PROF. A. A. W. HUBRECHT has contributed to the second volume of the Gegenbaur *Festschrift* an important memoir upon the placentation of *Tarsius*, in which he reaches the conclusion that this animal should be entirely removed from the Lemuroidea, where it has always stood hitherto, and placed with the true Primates or Anthroproidea. The following is a recapitulation of his conclusions:

1. Numerous peculiarities in the formation of the blastocyst of *Tarsius spectrum* show it to be more closely related to monkeys and man than to any other mammalian genus.

2. The ventral stalk in the blastocyst of man and monkeys, with the ontogenesis of which we were up to now most imperfectly acquainted, is explained both onto- and phylogenetically by the facts which we observe in *Tarsius*.

3. By its dentition *Tarsius* takes an intermediate place between the monkeys and mesozoic Insectivora; the upper molars are purely tritubercular, the lower ones tuberculo-sectorial with well-developed pr^a , me^a , pa^a , hy^a and en^a .

4. Among fossil Mammals the genus *Anaptomorphus* Cope takes up an intermediate position between *Tarsius* and man. Cope was thereby actuated to choose the specific name *homunculus*.

5. The Mammalian order of the Primates should henceforth be looked upon as fully distinct from that of the Lemures; the former reaches back into the Mesozoic Per-

iod and has been independent of all the other Mammalian orders through the whole Tertiaries.

6. To the order of Primates belong (1) man, (2) the monkeys, (3) the two genera *Tarsius* (recent) and *Anaptomorphus* (fossil, lower Eocene), which have been hitherto classified with the Lemures.

7. Undoubtedly a greater number of fossil genera will have to be classed with the Primates; great prudence should, however, prevail before we assign that place to any of them. It is better to wait for more complete skeletons before we attempt to establish any sharp distinction between fossil Primates and Lemures.

8. The Lemures (inclusive of Cope's extinct Mesodonta) have in their turn close relationships to numerous Primitive Tertiary mammalian types, such as the unspecialized Ungulata, Condylarthra, Creodonts, etc. The placentation and the blastocyst are in the Lemures fundamentally different from those of *Tarsius*, but are at the same time undoubtedly phylogenetically comparable to those of the latter mammals.

9. The placentation and the formation of the blastocyst in the Primates cannot be derived from what we find in the Lemures. They can, however, without difficulty be brought into genetic relationship with processes such as we notice in central Insectivorous genera, such as *Erinaceus*.

CURRENT NOTES ON PHYSIOGRAPHY.

GRAPE BELT OF WESTERN NEW YORK.

GRAPE raising is an important industry along the Erie shore of western New York, and it appears that, in addition to the favoring climatic influences of the lake, the gravelly bars of the ancient expanded lake offer the best soils for vineyards, as described by Tarr (Bull. 109, Cornell Univ. Agr. Exp. Station). These ancient lake shores lie on the Erie plain, an inner lowland denuded on the weak lower Devonian