

existing knowledge of the subject on which they have undertaken to write, when we compare it with the summary which they offer on p. 253 of No. 138 of this journal and the appended remark »A cela se bornaient nos connaissances sur la distribution de l'hémoglobine dans le grand groupe des Invertébrés, quand, en 1873 etc.«

London, May 1883.

### 3. Upon the Foetal Membranes of the Marsupials.

By Henry F. Osborn, Asst. Prof. of Nat. Science, Princeton College, N. J., U. S. A.

I have recently been making a study of the foetal Membranes of the Marsupials which has brought out some new facts in regard to the early life history of these animals. I send you an abstract of my results which will be published in full in the July or October number of the Quarterly Journal of Microscopical Science.

My material for examination consisted (1) of a large number of Opossum embryos, which were found in the uterus of a recently impregnated female, (2) a foetus, considerably advanced, which was obtained from one of the smaller Australian Marsupials, (3) a Kangaroo foetus of about twelve days intra-uterine growth. The relations of the membranes in all these embryos were found to be very much as in the Kangaroo foetus described by Professor Owen in 1833. Each embryo was surrounded by a large subzonal membrane. Within this the embryo lay closely enveloped in the amnion. The yolk sac, supplied by two arteries and a vein, was very large and had a disclike area of attachment over about one third of the inner surface of the subzonal membrane. This attached area was in most cases circumscribed by the vena terminalis of the yolk sac and was highly vascular. The Allantois was found in all stages of development, in the Opossum and Kangaroo it was free, in specimen 2. it was slightly adherent to the subzonal membrane without any signs of villi.

In the Opossum embryos, which were the first observed, the subzonal membrane over the attached portion of the yolk sac was found to be covered with conical villi just visible to the naked eye. Under the microscope these were found to be hollow upgrowths of the subzonal epithelium consisting of a single layer of columnar cells. The subsequent relations of these villi could only be conjectured, but in specimen 2 similar villi were found composed of a cap of flattened subzonal cells covering a solid papilla formed upon the surface of the yolk sac. The latter was supplied with capillary blood vessels so that in all respects these yolk sac villi may be considered similar in structure with the simplest type of allantoic villi

which are found among the placental mammals. The difference is one of degree only, the embryos are minute, so are the villi, yet in each embryo they could be plainly seen with the naked eye. It must be noted that these villi were confined to that portion of the subzonal membrane to which the yolk sac was attached and were not found elsewhere; also that in the case of the Opossum embryos, which were observed in situ, the villous area was in close contact with a furrow in the uterine wall, while the other portions of the subzonal membrane were free. This contact was not so close as to be called an »attachment«, for a slight touch with the needle freed the embryos, from their position. An unfortunate accident prevented a satisfactory study of the uterine wall which was very desirable in order to ascertain whether anything in the nature of Crypts were present for the reception of these villi.

I think it may be safely inferred from these facts that the functions of the Allantoic placenta in the higher mammals are performed in a feeble way by the yolk sac of the Marsupials, the process agreeing precisely in kind but differing in degree. The subzonal attachment of the Allantois in one of the embryos, which was not so positively determined, may indicate the first step towards the transfer of the function of nourishment from the yolk sac to the Allantois.

The bearing which these features have upon the early history and evolution of the placenta is obvious, but a discussion of these questions must be reserved for a more extended paper.

#### 4. Das Os intermedium tarsi der Säugethiere.

Von Professor Dr. Paul Albrecht in Brüssel.

Im Anschlusse an die ausgezeichnete Arbeit des Herrn Professor Dr. Bardeleben über das Os intermedium tarsi der Säugethiere<sup>1</sup> erlaube ich mir zu bemerken, daß ich selbst schon seit vielen Jahren diesen Knochen gefunden, die Veröffentlichung meiner Ansichten über denselben aber noch immer hinaus geschoben habe.

Da es mir selbstverständlich völlig fern liegt, Herrn Professor Bardeleben die verdiente Priorität streitig zu machen, so wird es mir doch, wie ich hoffe, gestattet sein, bei dieser Gelegenheit die von ihm mitgetheilten Thatsachen zu bestätigen. Da ich den Bardelebenschens Ausdruck Os trigonum für den betreffenden Knochen sehr gut gewählt finde, so will ich auch von jetzt an denselben in dieser Weise bezeichnen.

<sup>1</sup> Zoologischer Anzeiger No. 139.

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