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The following papers were read:

Zoology. — "*Third note concerning certain details of the Monotremes-
skull.*" By Dr. J. F. VAN BEMMELEN The Hague. (Commu-
nicated by Prof. A. A. W. HUBRECHT.)

Ethmoid and Maxillo-turbinal.

In the structure of their ethmoid-bone Ornithorhynchus and
Echidna present great differences: the former having only one single
opening for the olfactory nerve and furthermore differing from all
other mammals by the exceptionally low number of only three
ethmo-turbinals; the latter on the contrary showing a lamina cri-
brosa of uncommon size, while by the very high number of eight
primary and a number of secondary ethmo-turbinals it occupies an
equally exceptional but opposite position.

Comparing the two Monotremes among themselves, the conclusion

seems to be justified that the structure of the ethmoïd in *Echidna* may have developed from a starting point like that of *Ornithorynchus* by the conchae increasing in number, and thereby necessitating the higher differentiation of the lamina cribrosa.

The question then arises: where have these new conchae made their appearance: before or behind the primary three? The answer must be in the latter sense, as there is no space left at the anterior side of the primary conchae for the intercalation of new ones, because in both animals the naso-turbinal and maxillo-turbinal are placed immediately in front of the first ethmoïdal concha in an absolutely identical position.

I am strengthened in this view by the observation, that in both forms the foramen sphenopalatinum is situated just beneath the third concha: thus, while in *Ornithorhynchus* it is found at the back side of the conchal area, in *Echidna* it occupies the interspace under the third and fourth concha.

This opinion harmonizes with the conclusion, which SEYDEL¹⁾ has arrived at by investigating the development of the nasal area in *Echidna*. He found the first rudiment of the ethmo-turbinals as one single protuberance on the lateral wall of the nasal cavity, which afterwards became divided into three parts by vertical grooves. SEYDEL makes reference to the observations of W. N. PARKER²⁾, on a young of *Echidna*, which showed six ethmo-turbinals, decreasing in size from before backwards, and thereupon gives as his opinion: (p. 515): "This gives certain evidence of a successive formation of new (olfactory) knobs behind the first-formed."

In most mammals the increase in number of the conchae in a caudal direction goes hand in hand with the excavation of the body of the sphenoid bone, i. e. the development of the sinus sphenoidal, by means of which the necessary space is obtained for the lodging of the new conchae. *Echidna* is among these mammals, for at the bottom of the hindmost five conchae a horizontal bony plate is to be found, taking its origin from the underside of the floor of the sella turcica, and stretching forward towards the level of the foramen sphenopalatinum, where it ends in a sharp concave border.

1) SEYDEL. O. Ueber Entwicklungsvorgänge an der Nasenhöhle und am Mundhöhlendache von *Echidna* nebst Beiträgen zur Morphologie des peripheren Geruchsorgans und des Gaumens der Wirbelthiere, in R. SEMON, Zoologische Forschungsreisen in Australien und dem Malayischen Archipel. Bd. III Lief. 3.

2) PARKER. W. N. On some points in the structure of the young of *Echidna aculeata*. Proc. Zool. Soc. London 1894.

In other mammals this bottom-plate of the sphenoidal sinus has been called by SEYDEL lamina terminalis or "untere Schlussplatte"

Though in *Echidna* it is well developed and easily visible in a paraseptal section through the macerated skull, its occurrence in this animal hitherto seems to have escaped notice, for not only is it absent in the figure ZUCKERKANDL has given in 1887 in his „Geruchsorgan der Säugethiere”, but it is equally omitted in the more recent illustration of GEGENBAUR's new Handbook of Vertebrate comparative anatomy (1898).

The structure of the maxillo-turbinal is the same in both *Monotremes*; it corresponds to the „verästigte” (ramified) type of HARWOOD-WIEDEMANN, the only difference between the two forms being that in *Ornithorhynchus* it is somewhat larger and more complicated.

ZUCKERKANDL's statement, that there exists a difference in this respect between *Echidna* and *Ornithorhynchus*, the first having a doubly-coiled („doppeltgewundenes”), the latter a folded („gefaltenes”) maxillo-turbinal is erroneous, and it is all the more desirable that this mistake should be elucidated, as it has found its way unaltered into GEGENBAUR's new handbook. Yet, as far as regards *Ornithorhynchus*, the veracity of the statement had already been challenged by SYMINGTON¹⁾, and for *Echidna*, by W. N. PARKER (l.c.) who, though agreeing with SYMINGTON, yet came to the conclusion, that *Echidna*'s „maxillary turbinal apparently belongs to the folded („gefaltene”) and not to the doubly-coiled („doppeltgewundene”) variety.”

Transverse sections through the organ, in the preserved as well as in the macerated state, leave no doubt that there exists a complete agreement between *Ornithorhynchus* and *Echidna*, both showing a well-marked branching type.

Physics. — Dr. E. VAN EVERDINGEN JR., “*On the HALL-effect and the resistance of crystals of bismuth within and without the magnetic field*” (Communication N^o. 61 (continued) from the Physical Laboratory at Leiden, by Prof. H. KAMERLINGH ONNES).

4. *Complete results for the HALL-coefficient.* It was mentioned in § 2 of the first part of this Communication²⁾ that the relation

¹⁾ SYMINGTON, J. On the nose, the organ of Jacobson and the dumb-bell-shaped-bone in the *Ornithorhynchus*. Proc. Zool. Soc. London 1891, pag. 575.

²⁾ Versl. d. Verg. Kon. Ak. v. Wet. 29 Sept. 1900, p. 277. Comm. Phys. Lab. Leiden, N^o. 61.