

# ON THE LOBUS OLFACTORIUS IMPAR.

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MUCH interest has recently been aroused and a good deal of discussion has followed the publication of the first part of von Kupffer's (1) "Studies on the Development of the Head of the Craniota," in which he described the last connection between ectoderm and brain-tube as forming a neuropore situated at the anterior end of the dorsal wall of the tube—that after closure the evidence of the early presence of this neuropore was always to be found as a median, hollow, beak-like process of the tube. The ectoderm over it formed a thickened plate, and this plate and the beak-like process on gradual separation were connected by a cord.

The median ectodermal thickening he homologised with the olfactory pit or groove of the larval *Amphioxus* (named by von Kölliker), and with the single olfactory organ of the *Monorhina*. The median, hollow, beak-like process he named *lobus olfactorius impar* (a name already given by Langerhans to the similar median projection of the medullary tube in *Amphioxus*). The projection of the cavity of the ventricle into the lobus he named the *recessus lobus olfactorius impar*.

The cord mentioned as connecting the lobe with the median olfactory ectodermic plate he looked upon as a median olfactory nerve. This cord and plate rapidly disappeared during the development in embryos of the higher vertebrata, but it is otherwise with the lobus and

its recess, which can be readily recognised, even in the adult. Thus in the adult human brain the recess found dorsal to the anterior commissure between the two anterior pillars of the fornix, and in front of the ending of the median choroid plexus, and united fornix pillars, called recessus triangularis by Schwalbe, he considered to be the homologue of the recessus olfactorius impar. He also found the recess in the brains of other adult mammals.

Von Wijhe's previous observations on the embryos of birds agreed with those of von Kupffer in respect to the last point of connection between the brain-tube and ectoderm being always found between the lateral olfactory ectodermal plates, although he did not describe a median olfactory plate. This plate has, however, been noted by Miss Platt in *Acanthias*.

Rabl. Rückhard (2) also describes the recess and lobe in Selachians, and notes them as being present in Amphibia and Reptiles.

The views of His (3) are very different to those of von Kupffer. He recognises that von Kupffer has shown that the last part of the wall of the primitive ventricular cavity to lose its connection with the ectoderm is situated at the junction of its roof and anterior boundary, and that this has the form of a conical projection which remains for some time connected with the ectoderm by a cord. This projection is, however, considered by His as forming the dorsal sac of the lamina terminalis, and as having nothing to do with the olfactory function; he, therefore, calls it the *angulus terminalis*.

The olfactory lobes develop laterally from the lamina terminalis, and Kupffer founds his theory on the supposition that in the Cyclostoma, or Round-mouthed Animals, the neuropore runs to an unpaired olfactory organ. His claims to have shown that in these also the olfactory organ

is paired, and that what is called unpaired nasal cavity (from which they derive the name of Monorhina, or single-nostril animals) is not this in a morphological sense at all.

His describes the brain-tube as having not only a dorsal suture but also a frontal closing line, the latter extending from the infundibular recess to the angulus. That the neuropore, in His's sense, includes the whole of the lamina from the optic recess to the angulus, while in the sense of von Kupffer it includes only the angulus. He claims to have demonstrated this frontal closing line in selachians and in the rabbit.

Burckhardt (4) agrees with His that the conical projection has nothing to do with the olfactory function, and that it is formed by a recess of the ventricle, which he calls *recessus interolfactorius*, or *recessus neuroporicus*, and that there is a lamina supra-neuroporica between it and the paraphysis or anterior epiphysis of the roof of the thalamic brain.

As far as my own observations go I have long been familiar with the projection in the embryos of the dog-fish, bird, and mammal, but I am not as yet prepared to give a definite opinion as to it being a terminally situated sensory organ in the sense of von Kupffer, although this writer's opinion is a very suggestive one, or whether it has no claim to such a morphological status in the sense of His.

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- (2) H. Rabl. Rückhard:—  
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 2. Das Vorderhirn der Kanioten. *Anat. Anzeiger*. No. 17. June, 1894.

## (3) His:—

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3. Zur Allgemeinen Morphologie des Gehirns. Archiv. für Anat. and Physiol. Anat. Abtheilung. V. and VI. Heft. 1892. S. 346.
4. Die Entwicklung der Menschlichen und Thierischer Physiognomien, same number. S. 384.

## (4) Rudolf Burckhardt:—

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4. Ueber den Bauplan des Gehirns. Verhand. der Anat. Gesells. auf der achten Versamm., in Strassburg. May, 1894.

## (5) Studnicka:—

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## (6) Sorenson:—

1. The Pineal and Parietal Organ in *Phrynosoma Coronata*.
2. The Roof of the Diencephalon. Journal of Comparative Neurology, June, 1893.
3. Comparative Study of the Epiphysis and Roof of the Diencephalon. Journal of Comparative Neurology, April and September, 1894.

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PROFESSOR HADDON explained that in some lower forms the only opening to the alimentary canal was through the anterior part of the nervous system, and this might account for the little recess. Professor Fraser had referred to the condition in the lamprey, but that species was rather a group in itself and off the main line, and little could be deduced from its condition. In conclusion, he failed to see what the neural canal had to do with the olfactory organ.

PROFESSOR SYMINGTON said that the olfactory part of the brain has lately attracted great interest. He thought, however, they needed some further proof that the part described by Prof. Fraser

was in communication with the olfactory bulbs. In the adult brain it appears to have a slight communication with the olfactory bulbs, but he would like very much to know if Professor Fraser could show them the degree of communication between this recess and the olfactory bulbs, either in man or the higher mammals. He did not quite grasp this relation to the olfactory bulbs, and he did not yet quite realise the grounds upon which Professor Fraser had come to this conclusion.

PROFESSOR FRASER said he did not think it was a greater jump to conclude that the little recessus triangularis was the recess of an ancestral median olfactory lobe than the conclusion about the median eye. There was a median thickening of the ectoderm corresponding to the small hollow projection from the median aspect of the brain, just as there was a lateral thickening of the ectoderm corresponding to the lateral olfactory lobes. In his opinion it was a very erroneous and unscientific way to judge of the importance of a structure from the adult condition in which it was found.