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33. JONKER, H. G. — »*Bijdragen tot de kennis der sedimentaire zwerfsteenen in Nederland.*

*I. De Hondsrug in de provincie Groningen.*

*2. Bovensilurische zwerfsteenen.*

*Eerste mededeeling: Zwerfsteenen van den ouderdom der oostbaltische zone G''.*

Versl. v. d. gew. Verg. d. Wis- en Nat. Afd. d. Kon. Ak. v. W. v. 28 Jan 1905, dl. XIII, 2, p. 548—565.

*Groningen, Min.-Geol. Institute, April 4, 1905.*

**Anatomy.** — “*Note on the Ganglion vomeronasale.*” By E. DE VRIES.  
(Communicated by Prof. T. PLACE.)

The description and drawings given in this note derive from a wellpreserved human embryo. This embryo was fixed in a ten percent solution of formaldehyde. After fixation the greatest diameter was 55 mm. Precise information as to the probable age of this embryo was not to be obtained, but the dimension of the embryo in connexion with the fact, that the corpus callosum was not yet formed, makes it probable that the age of the embryo may be estimated between 2½ and 3 months.

After the embryo being hardened in alcohol the head was cut off along the base of the crane and imbedded in paraffin; a complete series of frontal sections of 10  $\mu$  was made. A slight deviation from the frontal plane existed, so that the top of the right hemisphere first appeared in these sections. The greatest part was stained in haematoxylin and eosine in the usual manner, the rest of the sections with haematoxylin only, in slightly different ways.

A description is given of the right hemisphere, — which in the microscopical sections corresponds with the left one —, concerning only that part which has a closer relation to the rhinencephalon. This description is illustrated by four drawings of successive sections and by two semi-diagrammatic figures.

These figures (Fig. V, VI) are a projection of the olfactory lobe on a sagittal plane and constructed from the series of sections. Because the plane upon which the projection is performed is sagittal, only these curvatures of the olfactory lobe are seen, which have a component in that direction. The lines in these drawings denoted from I to IV indicate the place of the four sections marked with a corresponding roman number.

The olfactory lobe, as seen in this stage of development, forms

a hollow outgrowth from the base of the hemisphere vesicle. On the external surface of the lateral wall of the hemisphere, the lobe is limited by a shallow sulcus, the fissura rhinica. This sulcus runs in a fronto-occipital direction (fig. I, II, III F. rh.). On the external surface of the mesial wall of the hemisphere vesicle the olfactory lobe is bordered by a very broad sulcus which in the beginning runs also in a fronto-occipital direction but bends afterwards more vertically. This sulcus is the fissura prima of Hrs and only to be seen in the first two figures (fig. I, II F. pr.).

Bordered by these two grooves the olfactory lobe shows a double curvature from lateral to mesial and slightly from behind forwards. The anterior cornu of the lateral ventricle forms a prolongation in the olfactory lobe reaching into the top of the bulb. This cavity shows the same curvatures as the lobe, which can partly be seen from the diagrammatic figure V. In its general feature and apart from its curvatures this cavity of the olfactory lobe has the shape of a funnel, the mouth turned to the lateral ventricle the tube to the top of the olfactory bulb.

A close relation between the form of the external and internal surfaces of the hemisphere vesicle does not exist. The internal surface of the lateral wall is thickened by the appearance of the corpus striatum. This thickening of the wall begins wellmarked at some distance (2 mm) from the top of the hemisphere vesicle; a prolongation of this thickening, described by Hrs as the "Crus epirhnicum", which, along the top of the hemisphere unites the striatum with the rhinencephalon does not seem to exist. The ventral edge of the striatum is also clearly marked by a prominent crest, the crista ventralis corporis striati; (fig. I, Cr. v. str.) which is bordered by a deep sulcus (fig. I, S. v. str.). This sulcus on the internal surface of the vesicle does not agree in all respects with the fissura rhinica on the external surface.

The ventral edge of the striatum first proceeds in a fronto-occipital direction and then turns more ventrally over the posterior wall of the funnellike outgrowth of the rhinencephalon. By its typical configuration it is easy to follow this ventral edge of the striatum till it goes over in an analogous formation belonging to the rhinencephalon.

This formation of the rhinencephalon appears as a thickening of the internal surface of the mesial wall of the hemisphere vesicle. It begins pretty well marked a little more distant from the top of the hemisphere than the striatum. Dorsally and ventrally this thickening is limited by a deep groove, the sulcus rhinencephali dorsalis and

ventralis (fig. I and II, S. rh. d. and S. rh. v.). The ventral edge of this thickened part of the mesial wall forms a prominence, which goes over in a crest, the *crista ventralis rhinencephali*.

This crest first runs in fronto-occipital direction and then turns more ventrally over the posterior wall of the funnellike outgrowth of the rhinencephalon where it goes over continuously in the same formation proceeding from the stratum. This is clearly seen in figure II (Cr. v.) where the ventral crista is seen on the posterior wall of the depression of the rhinencephalon cut in a very oblique direction.

The line described by this ventral border of the corpus striatum and thickened part of the rhinencephalon has, looked at as a whole, the form of a horseshoe with its top directed to the occipital pole of the brain and meantime turned ventrally, while its opening is turned to the frontal pole of the hemisphere vesicle. The connection of rhinencephalon and striatum, which lies initially in the base of the brain comes with the outgrowth of the rhinencephalon partly on the posterior wall which borders the cavity, that proceeds in the olfactory lobe. This connection between striatum and rhinencephalon is therefore a primary one.

The olfactory bulb in this stage of development of the rhinencephalon is limited by a circular groove, the *sulcus circularis bulbi* (Fig. I, II, S. c. b.), which deeply cuts in on the frontal pole of the bulb, becomes more flat on both sides and is seen as a round shallow groove at the posterior pole of the bulb (Fig. V S. c. b.). The top of the bulb is turned to the mesial side and in a slightly forward direction, while the form of the bulb can be seen in the diagrammatic drawing figure V.

The nerves which belong to the formation of the rhinencephalon are of two different kinds, and leave the brain at two different places. The first kind of nerves proceed from the top of the olfactory bulb. They are easily recognised by the fact, that their nuclei are small and not very numerous, so that the fundamental substance in which they are imbedded is distinctly seen.

These nerves split up into very small tracts in the neighbourhood of the mucous membrane of the nose, where they seem to end. These nerves, which contain the olfactory nervefibres do not have any connection with the ganglion olfactorium. They all pass along this ganglion.

The second place from where the nervefibres proceed is given by the mesial part of the *sulcus circularis bulbi*. These nervefibres can be differentiated from the olfactoryfibres by the fact, that their nuclei are a little larger, and more numerous than the nuclei of the

olfactory nervefibres; the fundamental substance in which these nuclei are imbedded deeply stains with eosine. Where these fibres leave the brain, the superficial layer of the hemisphere vesicle becomes richer in elongated nuclei (A. vn. fig. I, II, III, IV and VI). They form four bundles (Rd. N. vn. fig. III, IV and VI), which all converge into the ganglion olfactorium (G. vn. fig. III, IV, VI). The nerves leaving this ganglion are arranged in five bundles (Fig. VI Nn. vn) which all went to the mesial side along the cartilaginous septum nasi (Fig. I Sp. m. n.). Unfortunately the course of these nerves could be no further traced out, the head being cut off too close along the base of the brain. In a second human embryo however, of the same age, which was not so well preserved, it was possible to find back the same relations and to see, that all these nervefibres run exclusively to the organon vomeronasale (RUYSCH, JACOBSON). In the whole course of these nerves ganglioncells are seen. The so called ganglion olfactorium has therefore no connection with the olfactory nervefibres but is the sensorial ganglion belonging to the organon vomeronasale.

In figure VI is given a semidiagrammatic drawing constructed from the sections where the whole apparatus belonging to the organon vomeronasale is projected upon a sagittal plane. The ganglion vomeronasale (G. vn.) is seen in the niveau of the top of the olfactory bulb from which proceed to the periphery the nervi vomeronasales (Nn. Vn.) and to the centrum the so called internal olfactory roots (Rd. N. vn.), which enter the brain in a large triangleshaped zone, the area vomeronasalis (A. vn.)

In the guinea pig these relations are slightly different. From the organon vomeronasale proceed two nervestrands, which at a short distance and still in the submucosa of the nose have each a ganglion. This paired ganglion vomeronasale has two roots which very soon unite and intermingle with the nervi olfactorii, with which they perforate the lamina cribrosa. Arrived at the base of the brain they enter the olfactory bulb over a large area, reaching from the sulcus circularis bulbi at the mesial side to some distance from the same sulcus at the lateral side of the olfactory bulb.

Probably the same relations occur through the whole series of vertebrate animals. Though the existence of an organon vomeronasale can be doubted in anamnia, it seems very probable, that the nerve described by Locy (Anat. Anz. 1905, Heft 2 and 3) in Selachii is identical with the nerve of the organon vomeronasale as described here.

From the preceding description it is obvious, that we have

to consider the organon vomeronasale as a special senseorgan of which the function is unknown, while the duality seen in the central tracts belonging to the rhinencephalon finds its source in the anatomical independence between the system of the olfactory nerves and the system of nerves belonging to the organon vomeronasale.

My thanks to Prof. J. W. LANGELAAN under whose direction these researches were made.

**Anatomy.** — "*Note on the Innervation of the Trunkmyotome*".

By J. W. VAN BISSELIÏK. (From the Anatomical Institute at Leiden). (Communicated by Prof. T. PLACE).

These researches form a sequel to professor LANGELAAN's first communication "*On the Form of the Trunkmyotome*"<sup>1)</sup>, and were performed under his direction in the anatomical institute at Leiden.

The aim of this research was to know if one single spinal nerve innervates only one single myotome.

The method followed, existed in dissecting a spinal nerve and to see if the different territories to which the nervestrands can be followed, belonged to one and the same myotome. To this purpose an *Acanthias* or a *Mustelus* was cut through along the mid-sagittal plane and treated with a one tenth percent solution of osmic acid. The nerves stained black and were easy to follow with the naked eye or with a magnifier.

As a first result it was found, that all nerves passed through the connective tissue laying between the myotomes; therefore a minute dissection of this tissue was necessary.

The myotome itself is covered by a very thin layer of a fibrous tissue which constitutes a perimysium. This perimysium extends between the muscular fibres of the myotome forming an endomysium. It affords a continuous investment for every muscular fibre and forms in this way a frame for the muscular tissue. Where this muscular tissue is broken off the framework is continuous and enables us to recognize parts of the myotome belonging together. The myotomes covered by their perimysium are separated by a coarser and denser fibrous tissue. This intermyotomal tissue forms lamellae which have only a very loose connection with the perimysium, so that it is possible to dissect these lamellae as discrete formations. These intermyotomal septa pass over in the fibrous tissue of the skin and form a continuous formation with the latter. Where the myotome

<sup>1)</sup> Proc. K. Akad. W. Amsterdam 28 May 1904.

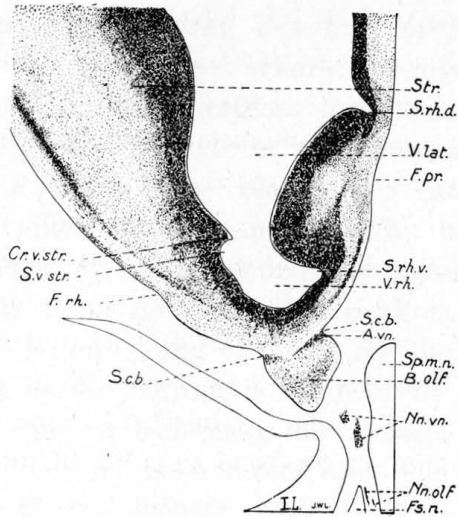


Fig. 1.

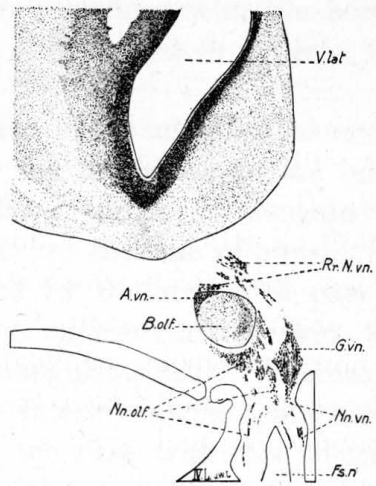


Fig. 4.

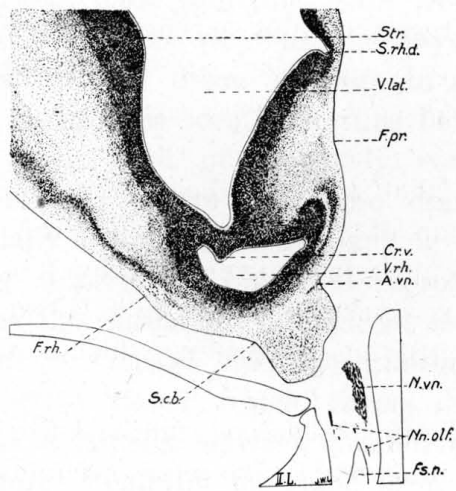


Fig. 2.

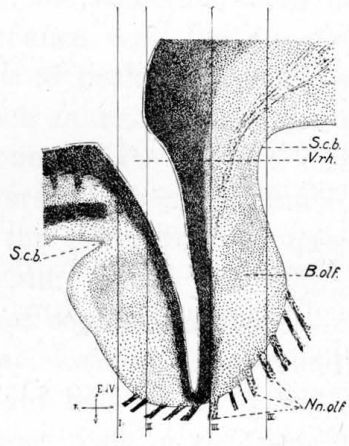


Fig. 5.

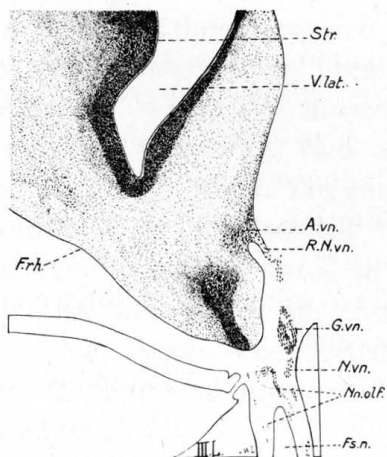


Fig. 3.

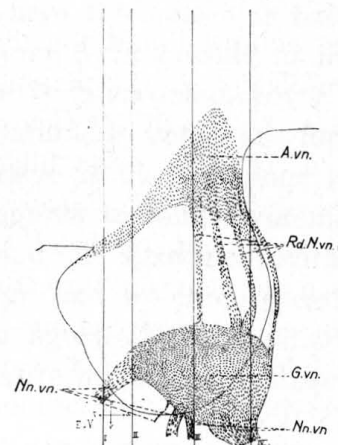


Fig. 6.