

sympathetic, by cutting its afferent branches and exciting it, commencing at the sixth thoracic ganglion. The acceleration thus obtained is due to the action of the current on the *anse de Vieussens*—since, if we ligate the trunk below it, only the upper segment remains excitable. As the acceleration is the more marked, the nearer the electrodes approach this *anse de Vieussens*, we may conclude that the accelerator fibres increase in number as we pass upward.

What is the origin of these accelerator fibres? Do they come from the ganglia themselves or from the cord, passing along the afferent branches of the ganglia? They should be referred to the cord. To demonstrate this, the authors divided the vagus nerve, and obtained an acceleration of the pulse which diminished after section of the two branches of Vieussens; the pulsations then became a little more frequent than at the beginning of the experiment. The acceleration following the section of the vagus is due to a tonus coming from the cord; and the existence of this accelerator tonus proves the medullary origin of the fibres which end in the *anse* of Vieussens.

The authors go still further: they obtained an acceleration of the pulse from excitation of the cervical cord; under the same conditions they obtained it also after division of the accelerator nerves, but more slowly and only when the blood pressure had been considerably raised. The acceleration due to excitation of the cord is therefore due to two causes—excitation of the accelerator nerves and increase of the blood pressure.

En résumé, the accelerator fibres arise in the cervical cord, following first a descending track, to ascend again in the form of *anses*, or loops, to the six upper thoracic ganglia, and end in the *anse* of Vieussens.

As to the functions of the accelerator nerves, numerous experiments, noted with care, have demonstrated to the authors that these nerves counterbalance normally the influence of the inhibitory nerves. These two orders of nerve fibres are antagonistic to each other, and a true interference of action exists between them. When they are cut the phenomena of interference become still more marked by the use of induction currents. The authors combat the assertion of Baxt, according to which excitation of the vagus renders the heart insensible to the influence of the accelerator nerves.

NERVE TERMINATIONS IN THE TONGUE.—Paul Lannegrace, *Thèse d'agrégation*, Paris, 1878 (abstract in *Revue des Sciences Médicales*).

The study of the nerve terminations in the muscles of the tongue not having been undertaken by any histologist, M. Lannegrace devoted his personal researches in this direction. He found that the terminal organs of the motor nerves offered nothing very peculiar, but that the muscles of the tongue, above all the other muscles of the body, are rich in nerve fibres.

After passing rapidly over the terminations of the nerves of general sensibility, the author goes into details on the structure of the taste papillæ in man and other vertebrates. These organs are formed (1) of epithelial cells (gustatory cells), clearly differentiated from the epithelial covering of

the tongue, by the softness and delicacy of their structure, and they present a striking analogy to the rods and cones of the retina or the olfactory mucous membrane; (2) of terminal nervous filaments, pale in color, and placed and located immediately under the epithelium. Continuity between the nervous element and the epithelium, has not yet been demonstrated.

Beginning the study of the distribution of the nerves in the tongue and their functions, M. Lannegrace, after having stated and discussed the older and more recent experiments relative to the physiology of these nerves, formulates the following conclusions:

Motor Nerves.—The hypoglossal is a motor nerve for the tongue, the anastomosis it receives from the first cervical pair furnishing it its motor fibres.

The glosso-pharyngeal controls the contraction of the pillars of the palatal vault.

The lingual possesses no motor fibres.

The facial presides to a very slight degree over the contraction of the stylo-glossus muscle.

The fibres of the chorda tympani pass (at least, in part) to the muscular fibres of the tongue, but act only in case of the deprivation of function of the hypoglossal.

Sensory Nerves.—The hypoglossal, ordinarily insensible at its origin, becomes sensory outside of the cranium; it possesses both a direct and a recurrent sensibility, due either to anastomoses with the vagus, the cervical plexus, or the lingual. Section of the hypoglossal does not, apparently, diminish the general or gustatory sensibility of the tongue.

The glosso-pharyngeal presides over the gustatory sensibility, especially for the perception of bitters in the posterior portion of the tongue. It is not the only gustatory nerve, but it is the nerve of taste *par excellence*. With the pneumogastric it supplies sensation to the base of the tongue.

The mixed lingual (which receives the chorda tympani) presides over the general sensibility and the sense of taste in the anterior two-thirds of the tongue, but takes only a small part in the perception of flavors.

The chorda tympani possesses gustatory fibres, but it further has an indirect influence on the sense of taste, by virtue of the modifications it causes of the circulation in the anterior portion of the tongue.

M. Lannegrace closes his memoir by giving the various hypotheses of the origin of the chorda tympani.

ANATOMY OF THE DEPRESSOR NERVE.—This nerve, which was hitherto known only in the rabbit and the cat, was found by A. Kreidmann (*Arch. f. Anat. u. Phys.*, 1878, IV. & V., p. 405) also in man and other animals. In man the vagus consists of three or more bundles contained in one common sheath. From the most internal of these branches the superior laryngeal nerve arises. This nerve gives off a small twig, receives a second fine root from the vagus itself. So far, the arrangement is the same as in the rabbit. The difference, however, is that the depressor nerve, arising from these two roots, continues as a separate nerve in that animal, while in man it does not