

Naso-Palatine Ganglion, or Ganglion of Cloquet.—This is simply the small swelling situated in the incisive fossa, the result apparently of the union of the naso-palatine nerves. The very name of ganglion is denied it by most writers.

Otic Ganglion.—This is an oval flattened body, of small size, lying on the sensor portion of the inferior maxillary nerve, immediately beneath the oval foramen. Its branches of communication are: by sensor filaments, with the auriculo-temporal nerve, by motor with the inferior maxillary nerve, and with the sympathetic by the plexus surrounding the middle meningeal artery. Branches of communication also exist with the glosso-pharyngeal, and through the medium of the lesser petrosal with the facial nerve.

The branches of distribution are two in number: one to the tensor tympani, and one to the tensor palati muscles.

Submaxillary Ganglion.—This is a small-sized circular body situated upon the submaxillary gland. It is connected, through communicating branches, with the gustatory nerve, sensor; with the facial through the medium of the chorda tympani, motor; and with the sympathetic by filaments from the plexus of the nervi molles.

The branches of distribution are five or six in number; these arise from the lower part of the ganglion, and supply the duct of the gland and mucous membrane of the floor of the mouth.

Relations of the ganglia, the Casserian excepted, will be understood as being mediate. Ganglia have as office intensification or modification of expression. The many associated with the fifth pair explain its complexity of relation.

FUNCTION OF THE FIFTH NERVE.

The resemblance of the fifth to spinal nerves is now regarded by most writers as complete.

The origin of the nerve is by two roots, the smaller being motor, the larger sensor. The origin is after this manner, or otherwise the motor division, joining the inferior maxillary division of the sensor branches just external to the ganglion of Casserio, is to be esteemed as a pure spinal nerve. The judgment and studies of the author accept this motor branch as a spinal root of the common nerve.

The nerve breaks up, in the Casserian ganglion, as understood, into three branches. The first and second of these receive no filaments from the lesser root, and are, therefore, purely sensor. The third is compound by reason of relation with the anterior division of the spinal cord through such lesser root.

The distribution of the first and second branches is to skin of forehead; to the lids, balls, and conjunctivæ of eyes; to the temples, the ears, and sides of cheeks; to the nose, outside and inside; to the upper lip and its appendages; to the pulps and alveolo-dental periosteæ of teeth; to the dura mater. The distribution of the third division is to the muscles of mastication

by its motor filaments; to the chin, the lower lip, the mucous membrane of mouth and tongue; to the pulps of inferior teeth, etc., by its sensory filaments.

In addition to the double function of a compound nerve, evidence worthy of acceptance connects the lingual branch of the third division with the special sense of taste, although it is to be noted that such office is attributed by equally good authority exclusively to filaments of the glosso-pharyngeal and chorda tympani.* The intimate inosculation existing between the filaments of the nerves named, serves without doubt to profoundly complicate inferences. The writer, with all deference, retains the old view, namely: that gustatory office belongs to all these nerves; the fifth doing its office in relation with the anterior two-thirds of the tongue.

It is in point here to refer to the fact that confusion exists as to the use of the terms taste and smell; the two being not so easy to keep separate. Taste, critically defined, relates to sensation arising out of the touch upon the tongue, anterior pillars of fauces and palate, of acid, saline, bitter, and sweet substances. Smell applies to sensations produced in the nerves when intangible, but not less real, substances come in contact with filaments of the olfactory nerve: necessarily as well with filaments of the trifacial.

The fifth nerve presides markedly over both salivary and oro-nasal mucous secretions. Excitement of its filaments increases these secretions; section being made of them, flow is diminished.† In this connection, if in no other, the nerve may justly be associated with both taste and smell, seeing that necessity exists for the intermediate agency of moisture, that such special functions exist at all.

Inferences of office are to be derived from study of parts in a state of disease. Pathological perversion of the fifth nerve shows the most marked separation of the two expressions of motility and sensibility according to the tract affected. Sensation and motion are alike destroyed only when disease of the nerve is general.

In such state of general involvement it is common to find the eyeball without sensibility; the muscles of mastication waste and become flabby; tongue and mouth grow so unconscious of the presence of food that morsels remain in the cavity until decomposed; the nostrils oftentime afford no response to applications of the most pungent character.

The fifth is to be accepted as a nerve of wide excito-motor capacity; it stimulates the facial in all its offices; water dashed over parts supplied by it excites the respiratory tract. It too often produces distant neuralgia as the result of an aching tooth.

* See a Text-Book on Physiology, by M. Foster, M.A., M.D., F.R.S., New York, 1881. Pp. 586-88. See also Principles of Human Physiology, by William Carpenter, M.D., etc., etc. Henry C. Lea, Philadelphia, 1876. Pp. 620-55.

† See Outlines of Physiology, by John Marshall, F.R.S., with additions by Francis Gurney Smith, M.D., p. 264. Henry C. Lea, Philadelphia, 1868.

The wide relation of this nerve is nowhere so markedly illustrated as during the dentitional period; convulsions, skin eruptions, diarrhoeas, indeed tetanus passing to a fatal termination, are all found in the category of its associations.

RÉSUMÉ.—The fifth nerve affords sensibility to the face and associate parts. It is the nerve of motion to the muscles of mastication. It has to do with taste and smell. Indirectly it is a prominent excito-motor apparatus.

CHAPTER IV.

ANATOMY OF THE TEETH.

THE direct and associative lesions of the teeth being so many and so common, study of oral diseases commences naturally with these organs. Here too begins the study of dentistry proper.

A tooth is a body *sui generis*; it resembles ivory, but is not that substance; it is allied with bone, but is not osseous.

Dissection of a tooth recognizes the presence of five constituents; these are:

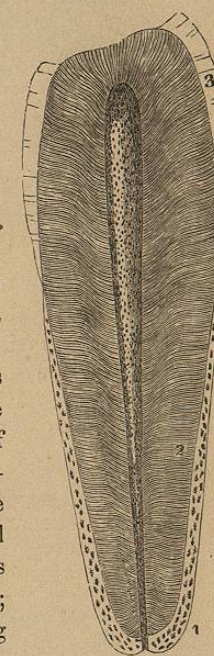
1. Pulp.
2. Dentine.
3. Enamel.
4. Cementum, or Crusta Petrosa.
5. Periodontium.

Fig. 40 shows the vertical section of a cuspid tooth. 1, cementum; 2, dentine; 3, enamel. The pulp is seen occupying the central cavity. The dotted envelope of the root represents the position of the cementum. The periodontium is a fascia attached to the cementum.

Pulp.—The pulp, exhibited here several times enlarged (Figs. 40, 41, 42), is a mass of delicate connective tissue, in which ramify the radicles of blood-vessels and nerve-filaments. It has no enveloping membrane proper, as will be understood in the study of odontogeny; it is the contracted original papilla, or tooth germ. Through the vessels of this body the internal structure of a tooth is nourished; in its death the organ loses its translucency, becoming discolored and opaque,—being, indeed, devitalized, except as nourishment is received from the periodontium. The pulp of a tooth is so highly endowed with nerve matter that the slightest touch suffices to provoke exquisite pain.

Dentine.—The dentine, or dentinal portion of a tooth, is marked 2 in the diagram (Fig. 40). This substance is called, also, the ivory. While histological dispute exists as to the real constitution of the structure, a full surgical signification is found in accepting it as a fibro-calcareous stroma,

FIG. 40.



Vertical section of a cuspid tooth.