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ART. XXVIII.—PHYSIOLOGY OF THE FIFTH PAIR OF NERVES, BUT MORE PARTICULARLY OF THE OPHTHALMIC BRANCH.

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The fifth is a most important nerve; it is one of sensation, giving feeling to all parts to which it is distributed, head, face, skin covering them; eyes, nose, tongue, mouth, &c. It is to Sir C. Bell that we are indebted for the knowledge that this is a nerve of sensation. If it be injured either by disease or wound, where it escapes from the cranium, the result is that one side of the face loses its sense of touch; the parts may be cut or burned, still the patient does not feel it, yet the power of motion is retained.

The ophthalmic division of the fifth divides into three branches, namely—the lachrymal, frontal, and nasal. The lachrymal gives a branch to communicate with the superior maxillary, and another to the facial; it supplies the lachrymal gland, and conjunctiva lining the superior palpebra. The frontal supplies the corrugator supercillii, orbicularis palpebrarum, occipito-frontalis muscles, and the integuments of the forehead and superior eyelid; it communicates with the infra trochlear branch of the nasal.

The nasal or third division of the ophthalmic, previous to its entering the orbit, receives a branch from the sympathetic; and after it enters the orbit it gives a branch to the lenticular ganglion; and as it passes over the optic nerve, it gives off the two ciliary to the ciliary ligament and iris. It then gives off another branch which is connected with the supra trochlear, and is distributed to the lachrymal passages, and to the integuments and muscles on the side and dorsum of the nose. The proper nasal branch is distributed, and gives sensation, to the septum of the nose; another branch is lost in the integuments on the tip of the nose, to which it gives sensation.

The inferior palpebra is supplied by the terminating branch of the second division of the fifth, which also gives a branch to communicate with the nasal nerve on the side of the nose.

From the different connections of this nerve, we can easily understand the sympathy that exists between the conjunctiva and the inferior oblique muscle. The inferior oblique has its motor nerve from the inferior oblique branch of the third, which also gives a branch to the lenticular ganglion, the same ganglion receiving a twig from the nasal branch of the fifth, which imparts sensation to the conjunctiva.

The connection of the fifth nerve is more direct with the superior oblique muscle, whose motor nerve being the fourth, receives a branch directly from the fifth. It is the sensitive properties of the ophthalmic branch of the fifth nerve which cause profuse lachrymation, redness of the conjunctiva, and sneezing, when the nose is stimulated by any irritating substance. That this effect is caused through the fifth is evident from the pathological fact, that if the fifth be paralysed, although odours are perceived by the first or olfactory nerve, still no tickling or irritation of the nose will produce sneezing; indeed the person so afflicted does not even feel it.

Among the many offices of the ophthalmic branch of the fifth, I believe it to be, in a peculiar manner, the protector nerve of the eye: and here I conceive the following very important questions arise:—

Does it protect the eye in any other way than by discovering bodies when in contact with that organ, and thus exciting its involuntary motions for the purpose of rejecting the foreign body?

I hold that it does, and will explain my views presently. There is an involuntary motion of the eye for its protection, independent of the fifth nerve, which is the action produced by sight; danger is seen to approach the eye before it touches it, and the impression is borne to the sensorium by the optic nerve, and, as quickly as received, the sensorium issues its mandate through the portio dura (which is the motor nerve of all the muscles of the face) to the orbicularis palpebrarum, which immediately closes the lids to ward off the approaching danger. But when the danger is not seen, and the eye is once touched, or even the eye-lashes, the muscle contracts the same way, the impression being borne to the sensorium by the fifth, and the