TWO CASES
OF
ANÆSTHESIA AND LOSS OF MOTORY
FUNCTION OF THE FIFTH NERVE.

By JAMES DIXON, Esq.,
ASSISTANT SURGEON TO THE ROYAL LONDON OPHTHALMIC HOSPITAL.

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AN especial interest is imparted to the diseases of the fifth cerebral nerve, by the intimate connection which subsists between it and the senses of sight, smell, and taste: and as the very mechanism of one of these senses, namely, taste, is still a subject of dispute among physiologists, I trust that a report of two cases of anæsthesia of the fifth nerve, which have lately been under my notice, may prove not uninteresting to the present meeting.

Serres* claims to have been the first who observed and described anæsthesia of the fifth nerve; but, in fact, Herbert Mayo† had anticipated him by a year. Indeed, Bellingeri,‡ in 1818, had given some

* Serres, *Anatomie comparée du Cerveau*. Paris, 1824-6. Vol. ii., p. 67.

† Mayo, *Anatomical and Physiological Commentaries*. London, 1823. No. 2, p. 12.

‡ Bellingeri, *Dissertatio Inauguralis*, &c. Aug. Taur., 1818.

account of a disease of the sensitive portion of this nerve, and had made several experiments on his patient, as to the effects produced by it upon the senses of taste and smell. A body had been dissected in 1809 by Fribault and Maréchal, in which the fifth nerve was found almost destroyed by a tumour, originating from the dura mater: but this case is less interesting than those by Mayo and Serres, on account of the very scanty history which is given of the phænomena observed during life, neuralgia being the only symptom recorded. It seems strange, however, that this dissection of Fribault and Maréchal's (which was published in the *Journal de Médecine* for 1812) should not have attracted more attention, and have convinced medical men that the seat of neuralgia of the face was to be sought in the fifth, and not in the facial nerve, which in those days was so frequently divided, in the hope of curing the disease.

Since the publication of Mayo's and Serres's observations, many cases of anæsthesia of the fifth nerve have been noticed, and their various symptoms and *post mortem* appearances detailed, either in systematic treatises, or in the pages of medical journals. I have collected the particulars of forty-seven of these cases, many of which are of great interest, as illustrating the functions of the organs of sense.*

* In arranging these histories, I have been struck by the much greater frequency of disease affecting the fifth nerve on the

Vivisection (which, in the hands of Magendie and others, has been of such important service in explaining the phænomena of motion and feeling) has thrown but little light on the physiology of smell and taste : these are too delicate and purely subjective to admit of being profitably studied, except on the human body. Even then, *positive* conclusions can be drawn only where a careful *post mortem* dissection has shown what nerves, or what portions of the brain, have been diseased, and to what extent the morbid process has affected their structure.

left, than on the *right* side of the body. Out of forty-seven recorded cases of the kind, thirty occurred on the left, and only twelve on the right ; whilst in five patients, *both* nerves were affected at the same time.

Published cases of Anæsthesia and loss of motory function of the 5th Nerve.		
Right side.	Both sides.	Left side.
Bellingeri, 1. Serres, 1. Bell, 1. Watson, 1. Gama, 1. Carron du Villards, 1. Boyer, 1. Bishop, 1. Stamm, 1. James, 1. Tavignot, 1. Montault, 1.	Jodin, 1. Nélaton, 1. Cruveilhier, 1.* ———, 1.† Annan, 1.	Mayo, 1. Bell, 4. C. W. Bell, 1. Stanley, 1. Abercrombie, 1. Horner, 1. Colles, 1. Whiting, 1. Bishop, 1. Noble, 2. Carré, 1. Montault, 1. Voisin, 1. Tanquerel-Desplanches, 1. Landouzy, 1. Romberg, 4. Corrigan, 1. Stanski, 1. Jobert, 1. Vogt, 1. Magendie, 1. Tavignot, 1. Salomonsen, 1. Add the cases related in the present paper, 2.

* Taste and smell were lost in this case on both sides, but the tumour involved the fifth nerve on the *left* side only.

† The author's name is not given in the *Gazette Médicale*, where the case is copied from the *Bullettino delle Scienze Mediche*.

Magendie's* well-known experiments have shown that slough or ulceration of the cornea, and loss of the humours of the eye, invariably take place whenever the fifth nerve is completely divided within the cavity of the skull in a living animal. The morbid phænomena observed in the human subject have been, in many cases, at seeming variance with the deductions from these experiments. A patient has had, for instance, total loss of feeling in all the parts supplied by the fifth nerve—in the skin, the conjunctiva, the tongue, the lining membrane of the nostril ; and yet the eye has for many months remained free from inflammation, its coats and humours retaining a perfectly healthy appearance. In other cases, again, the eye has undergone that destructive process which invariably follows the section of the nerve in the experiments of Magendie.

It becomes, then, an object of much practical interest to determine the causes of such different terminations, in apparently the same disease.

Sir Charles Bell thought that, inasmuch as this anæsthesia was frequently accompanied by palsy of the facial nerve, the constant exposure of the conjunctiva to floating particles of dust and other foreign bodies produced, at first, inflammation, and, at a later stage, slough of the cornea. But this theory is overthrown by the fact, that, in several

* Magendie, (et Desmoulins) *Anatomie des Systèmes des Animaux à Vertèbres*. Paris, 1825. 1st part, pp. 710 et seqq. *Leçons sur les Fonctions et les Maladies du Système Nerveux*. Paris, 1841.

recorded instances of destructive inflammation of the eye, there was at the same time palsy of the third cerebral nerve; so that the upper lid constantly hung over, and protected the cornea: and again, we every day see patients who have their *orbiculares palpebrarum* muscles paralysed, in consequence of disease of the seventh nerve, without their becoming subject to any inflammation of the eye in consequence.

Others have asserted, that the eye is endangered or not, in proportion as the disease has, or has not, implicated the Casserian ganglion. But the records of *post mortem* dissections prove this theory likewise to be untenable. In a case, related by Bell,* where the ophthalmic branch of the fifth nerve was diseased, slough of the cornea took place; but in another case, by Bishop,† where all the three foramina for transmitting the divisions of the fifth nerve were obliterated, the cornea remained sound.

Destruction of the trunk of the nerve between the brain and the Casserian ganglion, or degeneration of the latter, was followed by slough of the cornea in three patients, examined by Abercrombie,‡ Stanley,§ and Horner.¶ On the other hand,

* Bell, *The Nervous System of the Human Body*. 3rd edit., 1836, p. 271.

† Paper read at the Royal Society; *Medical Gazette*, 1833, vol. xiii., p. 463.

‡ Abercrombie, *Diseases of the Brain and Spinal Cord*. 3rd edit., 1834, p. 424.

§ *Med. Gazette*, vol. i., p. 531.

¶ *American Journal of the Medical Sciences*, 1829, vol. iv., p. 58.

Serres,* Whiting,† and Gama,‡ found the same morbid changes in three other patients, and yet in no one of these cases did slough of the cornea ensue ; and in only one of them was there any inflammation of the eye at all.

The cases which I am about to relate to the Society exemplify these two forms of diseased action. In the first patient, anæsthesia of the fifth nerve has existed for sixteen months ; and yet there is not the slightest inflammation of the eye, nor any opacity of its humours. In the other case, inflammation attacked the eye within eight months from the commencement of the disease in the nerve ; the cornea became opaque ; lymph was effused into the pupil and anterior chamber ; and when I last saw the patient, there was every probability of a total disorganization of the globe.

Case 1.—Sophia Donald, aged 53, residing at Beckenham, applied at the Ophthalmic Hospital, (February 2nd, 1844,) complaining of general dimness of sight, and double vision. The appearance of the eyes was healthy, except for some sluggishness in the motions of the left iris ; the pupillary opening of which was larger than that of the right. There was no strabismus, nor any irregular action of the muscles of the eye-ball. Her pulse was natural. Her bowels were confined ; but in other respects her health was pretty good.

* Serres, loc. cit. † Case quoted in Bell's Work, p. 352.

‡ Gama, *Traité des Plaies de la Tête*, &c. Paris, 1830, p. 180.

She stated that the dimness of sight in the left eye began about two months ago ; and was followed, in about three weeks, by dimness in the other. Violent headache, which was almost constant during a month, preceded the impairment of vision. This headache was so severe (her friends told us) as, at times, to affect her reason. In the course of conversation she incidentally mentioned that one side of her face "felt dead." This led to a further examination ; and it was found that the fifth nerve on the left side was completely paralysed. Before detailing the results of experiments, I may mention that after a few doses of purgative medicine, the double vision and the dimness in the right eye entirely ceased ; the general dimness in the left eye still remaining.

For the sake of comparison, I have arranged the results of Magendie's experiments and the symptoms observed in this patient's case in opposite columns ; and it will be seen that they correspond in every particular, except as regards the state of the eye and vision.

*Results of the division of the fifth nerve according to Magendie.**

Results of experiments on patient.

Feb. 9, 1844.

1. Muscles of mastication cease to act.

The difference between the two masseter muscles is not so evident as that between the temporals; on account of the movements of the coronoid process of the jaw interfering with the examination. The hands being placed on both temporal muscles, at each elevation of the jaw the muscle of the right side contracts, the left remains motionless. By putting a finger into the patient's mouth and applying the thumb so as to grasp the masseter, the flabbiness of the left muscle as compared with the right is very marked.

2. All sensation in the face lost: the muscles retaining their power.

Skin.—She cannot feel the prick of a pin on any part of the left half of the face; except on a small space (bounded by the zygoma, the course of the facial artery, and the lower margin of the jaw-bone,) supplied by twigs from the cervical plexus. The skin of the temple is insensible, as far back as a line drawn from the tragus vertically upwards. The whole of the pinna retains its sensibility.

Eye.—The ocular and palpebral conjunctiva is utterly without feeling. It did not redden when scratched with a pin, or pinched with forceps; nor did any acrid substances, as snuff, nitrate of silver, or sulphate of copper, induce injection of its vessels.

* Loc. cit.

Nose.—A feather may be thrust into the left nostril and turned in every direction without being felt. The Schneiderian membrane on this side is dry, while that of the right nostril secretes naturally.

Tongue.—The patient cannot feel the prick of a pin or the pinch of a forceps on the left half of the tongue; and in eating, her food collects between that part and the cheek.

3. Taste lost by the anterior part of the tongue : remaining at the base.

Quinine, introduced on the tip of the finger and rubbed upon the *base* of the tongue on the left side, was tasted : but it was not tasted when rubbed upon the *edge* of the tongue towards its *fore part*.

4. Smell lost.

When the right nostril is closed, she cannot smell essence of bergamot, rhubarb, kreosote, or snuff; which she does perfectly with the right nostril open. Vapour of ammonia snuffed up the left nostril produced but slight effect—no more than might be caused by some passing into the right nostril by the posterior opening : but when drawn into the right nostril, it took away her breath, and produced a flow of tears from the right eye, but none from the left.

5. Hearing lost.

With the right ear she can hear my watch tick at a distance of nine inches. With the left she cannot hear it except when placed almost in contact with the ear. (Her hearing, she says, was formerly as good on one side as on the other.)

6. Division of the fifth nerve in rabbits, guinea-pigs, cats, and dogs, produced—

i. Blindness.

The patient could still distinguish, at this stage of the disease, the form and colour of large objects with the left eye; so that the sight on the affected side was only *impaired*, while the senses of smell and taste were *totally lost*. A year later (1845) amaurosis of the left eye was complete; but then this was accompanied by paralysis of part of the third nerve, and the disease had probably implicated the second also.

ii. Immobility of the iris: the pupil sometimes dilated, sometimes contracted.

The left iris, when exposed to the light, contracts; slowly, but as completely as the right. [As the disease went on, this power of contraction was lost—1845.]

iii. Insensibility of eye-ball.

See Exp. 2, *ante*.

iv. Suppression of tears: the eye still remaining moist from mucous secretion.

The patient told us, of her own accord, that she had yesterday some little dispute with her husband, and cried; when she found, to her surprise, that she could weep only with the right eye.

The conjunctiva still remains moist.

v. Cessation of winking; except when the eye was exposed to

The orbicularis palpebrarum, and indeed all the muscles supplied by the facial nerve, are quite perfect in their actions.

Winking is performed simultaneously on

strong sun-
light.

both sides ; and the introduction of a foreign body, such as a pellet of paper, between the left globe and the palpebræ, not being felt, does not induce any increased action of the orbicular muscle.

On the right side the fifth nerve is quite unaffected, either in its motory or sensitive portions.

After attending two or three times, the patient was lost sight of, until October 3rd, when I met her accidentally.

A considerable change had taken place in her condition. There was complete *ptosis* of the left upper eye-lid ; and when this was raised with the finger, she had no perception of light. When placed, however, in the full glare of sunshine (the right eye being shut), she said she could perceive "some little glimmer." The left iris was quite motionless, even when the sun's rays fell directly on the retina. Contractions of the iris did now and then take place, but they were irregular, and quite independent of light. Besides the *levator palpebræ*, the *superior rectus* muscle was paralysed : the eye-ball could be freely moved downwards, or inwards, or outwards ; but not upwards. The humours and coats of the eye were perfectly clear and healthy-looking ; although the disease of the fifth nerve had now been going on for about ten months.

The patient stated, that from February (when she ceased to attend at the Ophthalmic Hospital) until the last week in July, no particular change took

place in her health. At the latter period, pain came on in the left side of the head ; and was so severe as to prevent sleep for many nights, and to deprive her at times of her senses and memory. The blindness of the left eye became complete about the beginning of August : and toward the end of that month the upper eye-lid dropped. This palsy of the levator muscle occurred suddenly ; and (as it so often does) in the night-time.

The attacks of headache had been, for the last month, less frequent ; but, during that period, she had several times lost all recollection of where she was, and what she was doing. Her deafness, too, had increased : she could not hear the ticking of a watch placed against the left ear ; and could only hear it with the right, at a distance of about four inches. The facial nerve was quite unaffected.

January 1st, 1845.—Hardly any change has taken place in the state of the patient since October of last year. Her health is pretty good : but she has occasionally a feeling of general faintness, which seems for a few seconds to pervade her limbs, as if all power in them were gone. Her memory also, now and then, suddenly fails ; so that, for a short time, she forgets where she is.

All sight, and even all perception of light, is lost in the left eye ; but still no change can be detected in any of its coats or humours, nor are the movements of the eye-ball impaired in any direction except upwards. The paralysis of the *levator palpebræ* continues as before.

March 10th.—I saw the patient again to-day, and was surprised to find her left eye as wide open as the other, and all its movements apparently restored. She told me that, on the morning of the 28th of January (a month after my last visit), her husband noticed that her left eye was partly open; and in the course of the day she could completely lift the lid, which had been quite paralysed the night before. I made a careful examination of the eye, and found that not only the *levator palpebræ*, but the *superior rectus*, also, had regained its power, and that the globe could be turned upwards as perfectly as the right: in short, there was no difference between the motions of the two eyes. The left iris was still in the same condition as on my last visit: the pupil neither dilated nor contracted, and slightly oval in shape. On my drawing up the window-blind, the patient remarked that she could see more light; and afterwards, with the right eye closed, she noticed readily each time that I waved my hand to and fro before the left one. She had, therefore, gained some degree of sensibility of the retina; for the day was dull and cloudy, and, on my formervisit, she could not discern even a ray of sun-light. She told me, also, that “she could now cry with the left eye as well as with the other.” When ammonia was snuffed up the left nostril, it took away her breath, and produced a watering of the eye.

Nose.—The left nostril was not so dry as it used to be; but smell was still wanting in it. When

the right nostril was closed, the odour of snuff was not recognized.*

Skin.—The common sensibility of the skin was not in the least restored ; the loss of feeling being still rigorously bounded by the median plane ; and extending over the left half of the forehead, nose, upper and under lip, and chin ; the left eye-ball and lids, and cheek (except the region before alluded to, over the parotid gland and masseter).

Tongue.—For testing the gustatory powers of the tongue, I had provided substances perfectly inodorous, namely :—sugar, common salt, and disulphate of quina ; and these, being finely powdered, had the same appearance ; so that the patient could not possibly be misled by confounding taste with smell, nor by knowing beforehand what substance was to be tried upon her.

The mouth was first thoroughly rinsed with warm water, and this was repeated after each experiment, until all taste of the substance employed had been got rid of.

Experiment 1st.—I carefully introduced some sugar upon the tip of a wetted finger to the base of the tongue on the left side ; at the same time fixing the tongue, so that no other part than that to be tested should come in contact with the sugar. To prevent

* The effect produced by the ammonia is of course to be accounted for by its *pungency* acting upon the membrane of the air-passages—just as it would stimulate the conjunctiva—which is quite distinct from any *odorous property* it may possess.

the necessity of the patient's speaking, and thereby bringing the substances upon the right side of the tongue or upon its tip, I resorted to signals. When I had rubbed the substance on the tongue for a second or two, I asked, "Do you taste anything?" She raised her hand in token of affirmation. "Is it bitter, salt, or sweet?" She moved her hand a second time when I came to the right word. In this first experiment the sugar was tasted at once.

Experiment 2nd.—Salt was as instantly recognized when rubbed on the same part.

Experiment 3rd.—I next rubbed sugar on the left side of the *tip* of the tongue, and about an inch further back—no taste whatever.

Experiment 4th.—Salt on the same part—not tasted.

Experiment 5th.—Sugar on the *base*—right side—tasted instantly.

Experiment 6th.—Disulphate of quina to the front part of the right side—tasted instantly.

Experiment 7th.—Salt to the same spot—tasted.

Experiment 8th.—Quinine to the base: left side—tasted.

Experiment 9th.—(Repetition of Experiment 1st) sugar to the base, left side—tasted.

Experiment 10th.—(Repetition of Experiment 2nd) salt to the base, left side—tasted.

I next tried the tactile sensibility of the tongue. Her eyes being closed, I pricked with a sharp-pointed probe all over the anterior part of the left half of the tongue. She did not know I was touching her: but

as soon as I reached the *base* of the organ on that side, or passed over the median plane, she felt it instantly : sensation being perfect all over the right half of the tongue.

Hearing.—She heard distinctly the ticking of my watch at a distance of four or five inches from the left ear, the right meatus being closed. (Compare the report of February 9th, 1844.)

June 1st.—Since the above observations were made, no change whatever has occurred in the condition of the patient.

A cause might reasonably have been assigned for this affection of the fifth nerve, by supposing a tumour to exist within the cavity of the skull, compressing both the motor and the sensitive portion of the nerve : and the impaired, and occasionally double vision might be accounted for by the indirect pressure exerted on the brain. That the pressure which interfered with the functions of the nerve was applied near its root, or at the Casserian ganglion, was evident, from the fact of the motor portion being equally affected with the sensitive : and that the pressure did not encroach upon the *foramen lacerum orbitale* seemed likely, from there being no enlargement of the branches of the ophthalmic vein, nor any paralysis of the 3rd, 4th, or 6th nerves ; parts which could hardly have escaped injury from a tumour pressing upon the cavernous sinus.

When, at a later period, the blindness of the left eye became complete, and the movements of the

globe annihilated, these symptoms seemed easily accounted for, by supposing an increase to have taken place in the bulk of the tumour, whereby the optic nerve and the other parts going into the orbit might have been compressed. The sudden and complete recovery of the motions of the eye-ball and lid, and the partial restoration of vision which took place, were therefore the more unexpected.

In the next case the disease appears to have exclusively confined itself to the fifth nerve, both portions of which were rendered totally unserviceable. There was at no time any impairment of the functions of the motor nerves of the eye-ball; and the loss of sight was due not to disease of the retina, but to the deposit of lymph in the substance of the cornea, in the anterior chamber, and on the capsule of the lens, as the result of inflammation.

The existence of neuralgia in parts quite insensible to outward impressions, (which has frequently been noticed in other cases) illustrates, in an interesting manner, the law by which irritation in the course or at the root of a nerve is manifested at its periphery.

Case 2.—Johanna Harris, aged 59, came to the Ophthalmic Hospital, (October 8th, 1844,) with ulcerations at the inner *canthus* of the left eye, and on the left *ala nasi*. She had followed the very trying employment of shoe-binding since her childhood, and her sight had latterly become so dim that

she could no longer see to work. Her general appearance was that of a person suffering from long-continued pain : her pulse was feeble and slow. The ulcerations had hard, irregular, raised edges, and were remarkably dry, and destitute of secretion on their surface.

On her first visit she was ordered to take the *liquor arsenicalis* ; and under this treatment the ulcerations soon healed up.

My attention was now directed to the condition of the fifth nerve, in consequence of the insensibility to pain which the ulcerated surfaces had presented. I found total anæsthesia of the left eye-ball, the Schneiderian membrane of the nostril, the skin of the forehead as high as the vertex, and of the left half of the face, except the ear and the skin over the masseter muscle, where branches of the cervical plexus ramify. The left portion of the tongue supplied by the fifth nerve was also insensible. The patient told me that she had suffered very much about six or seven months ago from tooth-ache, and in consequence had the left canine tooth extracted. About a fortnight afterwards she found on awakening one morning that the left side of the face was numb, and it had continued without feeling ever since.

Eye.—The left eye-ball might be scratched, or the conjunctiva pinched, or touched with nitrate of silver, without the slightest sensation being experienced, and even without producing injection of the vessels of the part.

Tongue.—Finely-pounded sugar, rubbed on the

left side of the tongue *towards its fore part*, was not tasted at all; but *at the base* of the organ on the same side the taste was distinctly perceived. Throughout the right half of the tongue both feeling and taste were perfect.

That the disease had implicated the motor portion of the fifth nerve, was evident from the loose and flaccid condition of the temporal and masseter muscles on the left side, which took no share in the movements of mastication.

All the muscles supplied by the facial nerve were perfect in their action.

Except the healing of the sores on the nose and at the corner of the eye, little change was observed in the patient's condition until

December 20th, when she came to the hospital with the left eye much inflamed. The feeling in the left side of the face was somewhat restored, and the patient could tell, without looking, what part of the skin was touched with a pen. She said that the sense of taste was also returning in the left half of the tongue. The following was the state of the eye. The conjunctiva much and uniformly reddened; the sclerotica also injected, especially around the cornea. The cornea itself was rather dull; towards its lower portion it seemed as if the epithelium had been scraped off: but this appearance was probably the result of a vesication of the corneal epithelium, as there was a transparent *bulla* of the raised membrane still visible upon the upper part of the cornea. The iris was dull, slightly greenish in colour, and

quite uninfluenced by light. The patient felt but very little pain ; only now and then, she said, there was a burning sensation in the eye-ball, which soon passed off again. The surface of the eye, which hitherto had been totally without feeling, had had its sensitiveness so much restored, that a slight touch upon the ocular or palpebral conjunctiva was recognised instantly. The sight had become rather worse since the inflammation came on ; the hand waved between the eye and the light could only be discerned as a moving shadow.

Cupping to 3x to the left temple was ordered, and a grain of calomel three times a-day. After the mercury had produced some soreness of the mouth it was discontinued, as no benefit seemed to result from it. The use of quinine was afterwards resumed.

1845. January 14th.—The patient has complained for some days past of occasional sudden and acute pains, which run along the branches of the inferior dental nerve from the mental foramen, along the course of the infra-orbital nerve, and are very severe at the left *ala nasi*, just where the naso-lobe twig comes out from behind the nasal bone.

The livid injection of the conjunctiva around the edge of the cornea continues ; the cornea itself is almost bare of epithelium, and looks dry and dull. The iris remains motionless, and of a dirty-green tint ; the pupil is contracted, and obscured by lymph. The entire surface of the eye-ball is dryer than that of the right ; and, from the commence-

ment of the disease, the secretion of the lacrymal gland seems to have been completely arrested.

21st.—The nervous pains have ceased, and sensation is partly restored in the skin of the upper and lower lip, and in the *ala nasi*, on which parts she could to-day feel the touch of a probe ; but the cheek, the eye-lids, and the forehead, are as insensible as ever. The eye is, if possible, dryer than before, and the cornea rather more hazy ; but the redness around its border has diminished.

24th.—The injection of the conjunctiva and sclerótica is still less ; but the most marked change has taken place in the cornea, which has almost entirely regained its transparency. The eye-ball is still quite insensible. There has been some return of neuralgia since the last report, but only in a slight degree. The treatment has chiefly consisted in active purging, with frictions of mercurial ointment and opium to the left half of the forehead.

February 7th.—The patient did not come to the hospital last week, but returned this morning worse than ever. She is tormented with neuralgia, and the eye is in the following condition : a dull red zone surrounds the edge of the cornea, which is so opaque, especially in the middle, that the pupil cannot be discerned. This opacity is not interstitial, but seems to be caused by lymph upon the posterior face of the cornea. The lower part of the anterior chamber is also full of flocculent lymph, into which red vessels are prolonged.

At this interesting stage of the disease I lost sight

of the patient, and she has not since visited the hospital.*

It would be trespassing too much on the attention of the Society, at the close of so long a paper as the present, if I were to enter into details upon the physiological questions which it suggests. Much has been said and written of late years about the sense of taste, and the nerves by which it is effected. If we find Magendie, Mayo, Müller, Gurlt and Kornfeld, Alcock, Guyot and Cazalis, and Reid, attributing tasting powers both to the glosso-pharyngeal nerve, and to the lingual branch of the fifth ; other physiologists, as Valentin, Marshall Hall and Broughton, Panizza and Wagner, are equally positive in restricting those powers to the glosso-pharyngeal alone ; whilst Romberg has a theory altogether different from either of the preceding.

The opposite conclusions to which the same kind of experiments, made with great care, have conducted Reid and Panizza, show that much still remains to be done in this branch of physiological

* Since writing the above, I have seen the patient again (August 5th, 1845). All perception of light is lost in the left eye ; the pupil being closed by lymph. The cornea, strange to say, has regained its transparency. The eye-ball, like every other part supplied by the fifth nerve, is utterly without feeling. There is palsy of the external rectus and levator palpebræ muscles ; and, in a slighter degree, of those supplied by the facial nerve. The patient is quite deaf on the left side. She has frequent attacks of giddiness, and loss of memory. The pain no longer follows the course of the fifth nerve, but is referred to the inside of the skull.

inquiry. I allude to these various theories to account for the balanced opinions with which I made the observations just recorded; not being prepossessed, I believe, by a wish to prove or to disprove any particular hypothesis, but simply desirous of learning as much as I could of a subject both interesting and obscure.