by any known method—an assumption for which there is no ground whatever.

It seems to me that we are obliged to fall back on some form of the old theory, that sympathetic ophthalmia is due, partially if not entirely, to irritation of the ciliary nerves. No doubt there are difficulties in the way, which experimenters have so far failed to remove, but in seeking for an explanation of these failures several possibilities are open to us.

The common occurrence of sympathetic irritation in one eye after injury to the other is generally acknowledged, and it may be that the mechanism by which this irritation is conveyed differs in man from that in dogs, rabbits, and guinea-pigs, and this seems not so unlikely when we remember the anatomical arrangement of the whole ocular apparatus in man, designed to secure binocular vision. Or it may be that the explanation lies in the anatomical and physiological relationships of the nervous mechanism conveying the irritation, of which we as yet know nothing, and I believe that it is by the study of these relationships that our knowledge of the cause of sympathetic ophthalmia is most likely to be extended.

I have to acknowledge my great indebtedness to Dr. Lorrain Smith, not only for his permission to work in the Pathological Laboratory of Queen's College, but also for valuable aid and advice in performing the experiments, and in the course of the research.

REFERENCES.

- ¹ Von Graefe's Archiv, xxx, pt. 3, xxxi, pt. 2. Ueber die Ophthalmia Migratoria (L. Voss, Hamburg), 1889. Beiträge f. Augenhell., March, 1893.
² Archiv. of Ophthal., vol. xv, p. 281. ³ Ibid., vol. xvii, p. 187. ⁴ Quoted in Oph. Rev., 1891, p. 301. ⁵ Von Graefe's Archiv, xlii, pt. 1, 1896. ⁶ Archiv f. Augenhell., xxii, pt. 1. ⁷ Etude sur l'Ophthalmie Sympathique. Rep. of Internat. Med. Congr. at Rome. ⁸ Archiv f. Ophthal., xl, pt. 4. ⁹ Ibid., xxxviii, pt. 1. ¹⁰ Ibid., xxxviii, part 4. ¹¹ Ibid., xl, p. 46. ¹² Quoted by Berry in Edin. Med. Journ., March, 1897, p. 334. ¹³ Ann. d'Ocul., cxii. ¹⁴ Quoted by Velhagen, vide infra. ¹⁵ Archiv. of Ophthal., xxv, pt. 3. ¹⁶ Trans. Oph. Soc., 1894, p. 215. ¹⁷ Oph. Rev., 1897, p. 35. ¹⁸ Trans. Internat. Oph. Congr., 1894, p. 205. ¹⁹ La Semaine Médicale, 1897, p. 218. ²⁰ Ibid., p. 220. ²¹ Oph. Rev., 1893, p. 96. ²² Von Graefe's Archiv, xxxviii, pt. 4, 1892. ²³ Textbook of Ophthalmology, London, 1893, p. 293.

OPHTHALMITIS OCCURRING LONG AFTER ENUCLEATION OF THE FELLOW EYE FOR INJURY.*

By GEORGE FERDINANDS, M.D.,
Aberdeen.

ANY morbid condition occurring in an eye after its fellow has been removed for injury is of great interest to the ophthalmic surgeon. The two following cases which have come under my notice are worthy of record, especially as they tend to throw some doubt on the infallibility of preventive enucleation.

CASE I.—J. S., when 5 years old, injured her right eye while attempting to cut a garter with a knife. She was taken to the Aberdeen Royal Infirmary, where, according to the statement of the patient's mother, an operation was performed on the injured eye—probably an iridectomy—eight or nine days after admission. Three weeks later the patient was discharged. Not long after—the exact period cannot be ascertained—the parents noticed that the uninjured eye was “weak,” and the child could not bear light. Evidently the symptoms of sympathetic mischief had set in. The patient was taken back to the infirmary, where the exciting eye was removed, not, however, without some delay occasioned by the reluctance of the parents to consent to the removal of the injured organ. The sympathising eye then rapidly recovered, but, to use the patient's own words, “the eye was never very strong, especially in the winter.” On December 15th, 1891, that is, fourteen years after the accident, the patient consulted me for the first time. She wished to begin wearing an artificial eye but the socket would not admit one. On examination the socket was found occupied by a mass of hypertrophied conjunctiva, and a narrow band of cicatricial tissue limited the movement of the upper lid. The swollen conjunctiva was removed, the cicatricial band divided, and the patient was ultimately able to wear a comfortably-fitting glass eye, which she only used occasionally. On March, 1895, that is, three years and some months after the patient commenced the use of an artificial eye, she was led into my consulting room, and the following was her story:—“For months past her health had not been good, and her eye grew ‘weaker and weaker,’ until the sight got so bad that she could not see to move about.” Thereupon she thought it time to seek advice.

On examination the eye was found sensitive to pressure, the conjunctiva and sclerotic were injected, the cornea studded with keratitis punctata and the iris inflamed. V = fingers at 2 ft. barely. The socket showed no sign of inflammation neither was it sensitive to pressure. The patient was ordered atropine and put under mercury and iodide of

potassium. Under this treatment the eye made rapid progress, the vision being on June 21st $\frac{2}{3}$ and J. 1. Unfortunately this improvement was not permanent, and the eye has had several relapses, each of which only yielded temporarily to mercurial inunction. At present the vitreous shows signs of degeneration, and there are large floating opacities. V = $\frac{1}{2}$. The eye has to be kept continually under atropine, as its cessation causes a return of the active symptoms.

CASE II.—J. W., farm bailiff. In 1875 injured his left eye; in his own words, “the eye was reduced to a pulp.” It was removed four days after the injury. In 1896 he found that the artificial eye he was wearing irritated the socket, and as its use gave him “a pain over the brow” he discontinued wearing it. About this time he began to notice that he could not see to read so clearly as before, and this disability gradually increased until the eye showed “signs of inflammation.” The patient first consulted me on June 26th, 1897. Examination of the eye revealed well-marked irido-cyclitis and a subcorneal deposit. The eye was very sensitive to touch, and the patient complained of severe “neuralgic” pain in the brow and temple. V = fingers at 3 ft. The eye improved under mercury and atropine; the subcorneal deposit cleared up so that in July vision improved to $\frac{2}{3}$. In August, however, the inflammatory process returned in all its activity, in spite of treatment. In February, 1898, the cornea began to ulcerate. Just now the eye is quieter, and the corneal ulceration shows signs of healing. V = fingers at 4 ft. No view of the fundus could be obtained.

REMARKS.

The question of the difficulty of deciding whether such cases as narrated above are cases of true sympathetic ophthalmitis was fully discussed at the Ophthalmological Congress at Heidelberg. In the cases now recorded, the long interval between the removal of the injured eye and the onset of the inflammation is, I believe, without precedent. Of the thirty cases examined into by the Committee of the Ophthalmological Society, the interval between enucleation and the first appearance of sympathetic mischief was under three weeks in twenty-five cases, more than three and up to eight weeks in five cases. Since then Leopold Weiss¹ has recorded a case, which he regarded as one of sympathetic ophthalmitis, occurring nearly two and a-half years after enucleation for injury. So far as my own observation of the two cases goes, the symptoms and the progress are identical with those of sympathetic ophthalmitis. In Case I there is one point worthy of notice—that the inflammation appeared to follow the irritation caused by an artificial eye. The wearing of an artificial eye over a shrunken stump has been known to excite sympathetic mischief,² but in Case II the eye had evidently been wholly removed.

Hitherto in our treatment of injuries of the eye we have confined our attention almost exclusively to the injured organ itself. The recently-published experiments of Bach³—who found that irritation of an eye causes almost simultaneous sympathetic irritation of its fellow—while throwing fresh light on the probable cause of sympathetic inflammation, also indicates the direction in which additional preventive measures might be taken. The visual organs are so closely connected that clinically at least they should be regarded as one organ. In severe injuries of an eye, therefore, it may be well to extend our palliative treatment to its fellow.

REFERENCES.

- ¹ Archives of Ophth., xxii, 1. ² Lawson, Ophth. Hosp. Rep., 1867-69, vi. ³ Von Graefe's Arch., xlii, 1.

A CASE OF ACQUIRED NYSTAGMUS.

By ARCHIBALD S. PERCIVAL, M.B., B.C. CANTAB.,
Ophthalmic Surgeon to the Children's Hospital, Newcastle-upon-Tyne.

THE following case affords confirmatory evidence in support of the view that acquired nystagmus is essentially due to fatigue of the ocular muscles, and not to deficient illumination. The former view, as is well known, has been ably supported by Snell, Dransart, Nieden, and others.

J. A., a railway clerk, came to me complaining of dimness of sight. His visual acuity was normal when tested with test types under good illumination, and no abnormality of his fundus was detected on ophthalmoscopic examination. On inquiry as to the character of his work, he said that he was engaged all day in a well-lighted room, adding up long columns of figures in a large folio account book; he then declared that the figures that he looked at seemed to dance up and down.

On putting him into the position that he ordinarily assumed when at work, with his eyes running up the edges of the page of a large book, a vertical nystagmus at once became manifest. It is noteworthy that this nystagmus failed to appear on simply rotating his eyes upwards. He did not complain spontaneously of hemeralopia, but on inquiry he said he thought he saw less well than other people when the illumination was defective. I took him therefore into the dark room, and comparing his visual acuity with mine (which is presumably normal), I found that with

* Exhibited at a meeting of the Aberdeen Medico-Chirurgical Society

reduced illumination, while I could just discern "brilliant" he could only read "pearl" type. As I do not possess a proper photometric apparatus I could not determine whether his hemeralopia showed the peculiar features which are said to be characteristic of "miner's nystagmus."

The above case well illustrates the care with which patients' statements about themselves should be accepted. In this case the "dimness of sight" resolved itself on investigation into a complaint that objects seemed to dance up and down, and of some slight form of hemeralopia. I am convinced that many cases of asthenopia, which are not completely relieved by appropriate correcting glasses, would be found on careful investigation to be due to some form of muscular asthenopia, for example, heterophoria, or perhaps a nystagmus due to fatigue of the ocular rotators.

TRAUMATIC LESION OF THE PONS VAROLII.*

By J. E. GRAHAM, M.D.

THE following case, which came under my observation five years ago, I thought of sufficient interest to present to this Association.

History.—The history was first taken in 1892. It was partly obtained from the parents, who had to trust to memory. A. L., aged 10 years. Nothing of note in the family history. The patient was perfectly well until 18 months old, when, while playing on a pile of wood about 2 feet high, he fell, and a slender jagged end of a spruce stick about 2 feet long entered the mouth and penetrated the soft palate near its junction with the hard palate. In the fall the stick was broken at the line of the teeth, and was so firmly imbedded in the tissue that it had to be moved from side to side, and much force was required to draw it out. The sliver measured between 3 and 4 inches. Profuse hæmorrhage followed. The accident occurred at 5 P.M., and the patient cried until 11 P.M., when vomiting of clotted blood commenced. Immediately after the vomiting, convulsions set in lasting about two hours, during which the child struggled violently. A second series of convulsions similar to the first, but shorter in duration, occurred on the next day. On the third night after the accident he had a third convulsive attack, and during the afternoon a fourth. The latter was followed by pain, which continued until morning, when the paralysis of the right arm and leg was noticed. The face of the opposite side was affected. The left eye was turned slightly inwards, and the pupil was contracted. He swallowed liquids with difficulty; no solid food was given. He vomited occasionally for two weeks, and remained in bed for seven months. Convulsions occurred frequently, which were epileptiform in character. Since the recovery of his strength he has had many convulsions—at first several in a day, but latterly they have become less frequent. A series would often last seven or eight hours. Latterly they have occupied ten to fifteen minutes, and the last one only five minutes. For the last five years they have occurred at night. They have been more frequent during the fall of each year. Constipation seems to precede the convulsions. His mind is always clear, but he is not so bright as other boys. The affected side is always colder than the other, and the right hand, which is rigid during the day, quite flaccid at night.

Present Condition.—The patient is a strong healthy-looking boy. Integument: Some small circular spots of psoriasis are found on the right leg and left arm. The teeth are a little irregular, otherwise normal. A scar, half an inch long, is seen in the soft palate running forward and outward from the median line, a quarter of an inch behind the hard palate. The following measurements of the two sides were made:

	Right.	Left.
Chest	17½	14
Humerus (length)	8½	9½
Radius (length)	7	7½
Median humeral circumference of arm	6½	7
Circumference 2 inches below elbow	6½	7½
Circumference of wrist	5	5½
Thigh (6 inches above knee)	13	14
Calf	9½	10
Ankle	6½	7

The face is drawn slightly to the left side. No motion of the muscles of the fore right arm is possible, except slight additional flexion of the fingers, which are always considerably flexed, and cannot be easily extended. Motion of all the muscles of the humeral region can be made with some awkwardness. In the lower extremity all the muscles seem capable of motion, but the foot is capable of only about half the normal flexion on the leg, due apparently to some contraction of the muscles of the calf. Patient has an awkward limp, which seems due in part to the loss of motion in the ankle-joint, and in part to lessened general power over the muscles of the joint.

The following notes were taken by Dr. Robbin, of the Royal Victoria Hospital, September 1st, 1897:—

Present Condition.—Patient is a fairly well-nourished young man of 15, of rather above average stature. Intelligence is but fair. Facial expression is dull and heavy, and mental condition corresponds to this to some extent. Face is flushed, and has a slightly bluish tint. Fingernails are cyanosed considerably; the extremities are cold; finger-nails of the right hand are rough and harsh. Pupils are equal, and react well to light and accommodation. There is no paresis of the eyeballs, and no nystagmus. There is marked atrophy of the right upper extremity, and marked contracture of the flexors of elbow, wrist, and fingers. This con-

tracture is most marked at the wrist, which is flexed to such an extent that the metacarpal bones make an angle of about 60° with the radius and ulna. There is some deformity of the carpus as a result of this. There is also some atrophy of the right lower extremity, but this is less marked. There is slight contracture of the right calf muscles, so that complete flexion of the ankle is not possible. On the flexor surface of hands and feet, and to a less extent on the flexor surfaces elsewhere, are seen a number of small scaly patches of an eruption somewhat resembling psoriasis. Pulse 64. Respirations 18. Temperature 98.5.

Glandular System.—Both epitrochlears are palpable, the right being slightly enlarged. Glands in left axilla and left groin are very moderately enlarged. In all cases these glands are firm and freely movable.

Locomotor System.—Skin is rather dry; general nutrition is fairly good; muscles on left side are of normal size and tone. On the right side there is some atrophy, but muscular tone is not increased, though contracture is present as already described.

Dimensions of Limbs.

	Right.	Left.
Calf	11¼ inches	12½ inches
Mid-thigh	14½ "	16½ "
Forearm (maximum) ...	7½ "	9½ "
Middle upper arm ...	7½ "	9½ "

Nervous System.—Intelligence is perhaps rather below the average; mentally the patient is rather dull, though somewhat neurotic. He sleeps well.

Gait.—In walking patient tends to drag the right toe to the ground. **Voluntary Power.**—On left side this is normal; on the right side there is but slight weakness in the lower extremity. Weakness is marked in the right arm. There is a slight paresis about the right angle of the mouth. Right half of occiput frontalis appears at times to contract less readily than opposite half. There are at times distinct spasmodic contractions of the muscle of the left side of the face, and if there is any difference the electro-instability to the faradic current is also more marked on the left side. Co-ordination is poor in the right upper extremity, and the muscular sense impaired.

Sensation is normal save in the right upper extremity. On both flexor and extensor surfaces of the right forearm and hand sensation is rather dulled, both to touch, pain, and temperature. Patient is slower in recognising touch and temperature on this side.

Reflexes.—Superficial reflexes seem normal. Deep reflexes in both upper and lower right extremities are increased, and ankle clonus is present on the right side. Clonus of the right quadriceps femoris can be induced by suddenly drawing the patella downward, and spontaneous clonic movements of the right quadriceps which last for some time. These are not constant, but recur frequently. Organic reflexes normal.

Atrophy.—There is slight atrophy of the muscles of the right upper extremity, more marked in the right arm. There is also contracture, as already mentioned. There is no spastic condition present. The small muscles of the hand do not appear to be particularly involved, but the pectorales are decidedly wasted, and there is perhaps slight atrophy of the scapular muscles. No tremor or athetoid movements are noticed in the hand.

Electrical Reactions: Faradism.—There is no diminution in the reaction of the paralysed muscles to faradism. If the reaction is at all changed, the paralysed arm reacts more readily than the sound arm.

Circulatory System.—Normal, save for the slight cyanosis already remarked on.

Respiratory System.—Normal.

Digestive System.—Tongue large and flabby, clean; papillæ are large. The organ is fissured. Appetite is good. There are no symptoms of gastric derangement. Bowels regular.

Abdomen is negative to physical examination.

Urine.—Clear straw, acid, 1000, no albumen, no sugar, urea 1.1 per cent., no bile, microscopically negative.

Special Senses.—Hearing is good; taste normal to bitter, sweet, sour, and salt.

Smell.—No definite abnormality, though patient appears unfamiliar with several of the substances generally used to test smell.

Speech is slow and drawing, and rather indistinct, many words being slurred over.

Since the meeting of the Association a careful examination of the eyes was made by Dr. J. McCallum, whose report is here given:

"V.R. ½, no Hm.; L. ½, no Hm. Pupils equal, 3½ mm. in diameter, active to light, consensually and convergence. When investigating the hemiopic pupillary reflex I was unable to satisfy myself that the pupil remained immobile when light was thrown upon the blind side. The difficulty of concentrating light upon the blind area, and that alone, is apparent. Temporal side of right disc slightly pale, no central scotoma. The annexed charts of the field of vision reveal a right homonymous hemianopsia which is absolute. The boundary line between the normal and the obliterated halves passes around the fixation point and is oblique. The half fields which are preserved show contraction for white, red, and green, although visual activity and colour sense are still normal."

There is marked atrophy of the muscles of the right side of the face, the palpebral fissure is smaller than the left. Movements of the eyeballs quite normal. Paralysis of the muscles of the lower portion of the right side of the face. The muscles of the right eye and the right side of forehead are slightly affected. A distinct spasm is occasionally noticed on movement of the muscles connected with the left corner of the mouth, and the left orbicularis.

The electrical reactions are nearly the same on both sides. The muscles of the left side respond a little more readily than those of the right, giving the impression that the former are hypertrophied.

* Read in the Section of Medicine at the Annual Meeting of the British Medical Association, held in Montreal, in 1897.