FROTHINGHAM (G.E)

~~Dr. B. Joy Jeffries~~

[COMPLIMENTS OF THE AUTHOR.]

SYMPATHETIC OPHTHALMIA.

BY

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PROFESSOR OF OPHTHALMOLOGY,

UNIVERSITY OF MICHIGAN.

(REPRINT FROM TRANSACTIONS OF THE MICHIGAN STATE MEDICAL SOCIETY, FOR 1876.)

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SYMPATHETIC OPHTHALMIA.

BY GEORGE E. FROTHINGHAM, M. D., OF ANN ARBOR.

The disease now known as sympathetic ophthalmia is one that should receive the earnest attention of all practicing physicians. The general practitioner may at any time be called to treat those diseases and injuries of the eye most likely to give rise to this affection, and unless he thoroughly understands the causes and the means of preventing this insidious and uncontrollable inflammation, the golden opportunity may pass and his patient be doomed to perfect and irremediable blindness. And yet there are few diseases of so grave a nature that receive so little attention. The reason for this is obvious, for it is a notorious fact that only in a few recent text-books is this subject referred to except in a very brief and superficial manner. Of the special works commonly used in this country as text-books, there is but one that treats of this subject in that thorough and comprehensive manner that its importance deserves.

In the chapters on diseases of the eye, contained in works on general surgery, there is but the briefest allusion to this disease,—a fact to be all the more regretted since it is upon these meager chapters that most general practitioners depend for their knowledge of ophthalmic diseases.

Although Demours and Wardrop described this disease so early as 1818, little or no notice was taken of it either in England or

France, and it was not until the publication of Mackenzie's work in 1844, and its translation into the French language in the same year, that attention in either country seemed to be generally directed to sympathetic iritis,—the form of disease described by this celebrated Scotch oculist.*

By some the credit of first describing sympathetic iritis has been given to McKenzie; but this is certainly a mistake, for he himself says: "The fact that disease in one eye is liable to be followed by similar disease in the other, has long attracted attention."

Lawrence, in his work published eleven years prior to McKenzie's, mentions this form of disease. He says, "The influence of one eye upon the other is not confined to cases of disease. When one eye has been lost by accident, the other eye often becomes diseased sooner or later without any imprudence or external influence that would be injurious under ordinary circumstances. This kind of occurrence is *so common* that it is necessary to warn those who have lost an eye of their danger, and to point out the necessary precautions for avoiding it; *for this affection of the sound eye, if it is not noticed and properly treated in the* EARLY *stage, often destroys sight.* Its most common form is slow inflammation, which may affect the *iris*, the retina or the *internal tunics generally.*" These remarks, and the cases cited by this author, show that not only was the disease familiar to him, but that its importance was fully appreciated; although to McKenzie is due the credit of giving a more accurate and elaborate description of cases, and of recommending the treatment first brought to notice by Wardrop in 1818.

To Wardrop belongs the honor of not only being the first among those to call attention to the disease, but of proposing the most efficient remedy known for more than thirty years after the publication of this book in 1818.

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* See article by T. R. Pooley, New York Med. Jour., Vol. 11, p. 242.

CHARACTER.

The onset of sympathetic ophthalmia is often sudden and unaccompanied by any premonitory symptoms whatever; but in a large per cent of the cases a state of sympathetic irritation precedes for a long or short period the development of actual inflammation. This premonitory sympathetic disturbance is characterized by symptoms of asthenopia, ciliary neuralgia, photophobia, lachrymation, amblyopia, and periodical interruptions of vision. Sometimes the trouble goes no farther than these functional disturbances; but at other times it passes gradually from this state of simple irritation into that of actual inflammatory action. It is, from this tendency, one of the most insidious as well as dangerous affections of the eye, and it should always be remembered in the treatment of cases where there is long persisting sympathetic irritability in one eye, the result of incurable disease and blindness in the other, the only safe course to pursue is promptly to enucleate the primarily diseased eye, and in all cases where the sight of the eye first affected is hopelessly lost, it is decided malpractice to delay its removal when it thus keeps alive an irritable state of the other eye.

Almost every form of inflammation of the eye, whether of the external or internal structures, is liable to produce inflammation in the other eye through sympathy. But there are some structures and some varieties of inflammatory action more liable to be accompanied by this complication than others are. The disease most likely to involve the other eye through sympathy is irido-cyclitis of the plastic or exudative variety. This form of disease is characterized by a great tendency to posterior synechia, inflammatory cloudiness of the vitreous, and consequent impairment of vision, episcleral injection of the ciliary region, increased tension of the globe in the early stage, and tenderness upon pressure over the ciliary body, and sometimes

keratitis punctata, phakitis, capsulitis, and other inflammatory complications.

Decided pain is not always present, and, when it does exist, is very varied in its character. It is sometimes constant, having periods of remissions and exascerbations, the latter generally at night. It is sometimes intermittent, returning at regular or irregular intervals. It is not always referred to the eye itself, but is felt in the form of neuralgia, affecting the branches of the fifth pair. There is often severe photophobia, and excessive lachrymation, and as the disease progresses other structures are involved, and the eyelids become puffed, the conjunctiva especially becoming much swollen and injected.

Sometimes this form of inflammation is arrested, but very generally it progresses with less or greater rapidity; the pupil becomes occluded, and the iris altered in structure and bound down by firm adhesions to the anterior surface of the lens; the globe atrophies, and sight is destroyed. This disease in the great majority of cases is at first confined to one eye, but has so great a tendency to involve the other through sympathy that it is considered "the sympathetic ophthalmia *par excellence*."

Serious irido-cyclitis is also liable to be followed by sympathetic ophthalmia, but far less so than the plastic form of inflammation. In the early stage of this affection often the only symptom the patient complains of is dimness of vision; everything has a misty appearance, and this is most marked in a dim light, so that it is not infrequently mistaken for night blindness. The circum-corneal tenderness and redness are often absent, but as the disease advances the vitreous becomes cloudy; floating bodies appear in the field of vision; the iris changes color and fails to respond to light or the action of mydriatics; posterior synechia may occur, but not so frequently nor to such extent as in the plastic variety; the optic disk becomes excavated in many cases, and the eye assumes a glaucomatous condition.

Pain is often absent throughout the whole or a greater part of the progress of the disease. This variety is less destructive to vision and more amenable to treatment than the plastic form. Besides these varieties sympathetic inflammation may take the form of conjunctivitis, keratitis, iritis, choroiditis, choroido-retinitis, and irido-keratitis. The latter variety has more recently taken its place among the sympathetic affections, and by some its existence is doubted.

Rheindorf and Agnew have reported cases (Archives of Ophthalmology, Vol. IV., p. 389), but in none that I have seen reported are the symptoms so marked as in a case that occurred in my own practice. In Agnew's case the only change reported in the cornea was opaque spots on posterior surface,—a condition that often occurs in iritis from deposit of lymph upon the membrane of Descemet. In my own case the corneal changes were extreme. As I have seen the report of no case more marked I subjoin some brief notes descriptive of it. On the night of August 16, 1875, a young man received a severe injury from the effects of some powder exploding in a burning building. He was standing in front of the window, and with many others was thrown several feet toward the center of the street, and severely cut in several places by small fragments of glass and other hard substances with which the air was filled. Among the various wounds, one of which involved the common carotid, were two of the right eye, both penetrating the globe in the ciliary region, one about a line from the sclero-corneal junction just above the horizontal meridian, the other about three-quarters of a line from the cornea, and situated at the lower extremity of the vertical meridian.

The anterior chamber was completely filled with blood, and a bead of vitreous was protruding from the outer and lower of the two wounds. I supposed at the time that a fragment of glass had entered at each of the wounds and was then lodged in the eye, and that enucleation would soon be demanded. In

two days the clot filling the anterior chamber had absorbed and the patient could now count fingers with the wounded eye.

Much pain was experienced in it from this time on for the next ten days, though the vision was not diminished in any marked degree, nor did the vitreous become cloudy. A wide dilatation of the pupil had been obtained early, and by the free use of atropine it was maintained to a considerable degree throughout the attack. The change of color and appearance in the iris was not marked, but there was great redness and tenderness in region of the inner wound, and photophobia was extreme. The absence of symptoms of disorganization, and the considerable amount of vision possessed by the eye, forbade any radical procedure, and encouraged the expectant plan, although it seemed then certain that two foreign bodies were lodged in the eye.

At the end of ten days severe pain commenced in the left eye, and the pain in the injured eye began to diminish. By prompt use of atropine a partial dilatation of the pupil was obtained; the iris rapidly changing in its color, the aqueous becoming turbid and the cornea opaque in the central and lower portions. The pain continued all the time almost intolerable, requiring the fullest doses of morphine to procure any rest. By the 4th of September, nineteen days after the injury to the first eye, and seven days after the inflammation began in the second eye, a considerable collection of pus having formed in the anterior chamber, and the lower part of the cornea being infiltrated with pus, I made an opening with the keratome through the lower margin of the cornea and evacuated the pus. The operation was followed by immediate relief of the pain and amelioration of all the symptoms. The iris gradually resumed its natural appearance and the cornea recovered, with a slight opacity that still remains: vision now equals one-quarter.

The right eye also began to recover about the time that disease commenced in the left, and has also perfectly recovered from any inflammatory affection: vision equals one-half.

The remarkable feature of this injury being that no foreign bodies could be detected by ophthalmoscopic examination after recovery, nor was there any indication that they had passed out of the posterior part of the globe, but must have entered at the inner, and escaped at the lower opening.

This explanation is confirmed by the fact that a fragment of glass or some other hard substance had struck the right side of the root of the nose, and cutting down to the nasal bone had glanced in the direction of the innermost of the two wounds of the eyeball.

How this body could have traversed this region and not destroy the lens is an enigma to me, even after much careful study of the case and inspection of the eye and situation of the wounds received. The case is to me one of unusual interest, and at my request the patient has kindly consented to present himself here for your examination.

Another cause of sympathetic ophthalmia is the irritation of the ciliary nerves caused by calcareous deposits in an eye long diseased, or the production of true bony formation in the choroid. Time does not admit of a full discussion of this interesting feature of sympathetic disease; but a single recent case will illustrate how pain may be lighted up in an eye which has been quiet for years, and how it may then suddenly affect the other through sympathy. A. G., residing in Coldwater, Michigan, at the age of six was injured in the left eye by the explosion of a chemical mixture. He is now twenty-four years of age. At the age of seven he was completely blind in the injured eye; but the sight was perfect in the other, and there was never any pain or tenderness of the sightless one.

On the 17th of January, 1876, pain commenced in the blind eye, and a few days after the right eye began to be affected with pain also. The disturbance in both eyes steadily increasing, he was advised by Drs. Cutter and Wurtz, whom he consulted, to have the blind eye removed. He presented himself to me shortly after, and the right eye was then found to be

in a state of inflammation; the vision was blurred; the iris responded sluggishly to light and atropine. There was great photophobia, and the eyeball was much injected, sensitive to pressure, and increased in its tension. Enucleation being strongly indicated, I performed this operation on the 5th of February, nineteen days after pain commenced in the sightless eye.

The sympathetic disease in the right eye began from that time to improve, and in a few weeks the patient returned to his work, and has remained well ever since. On the 24th of April I examined the patient and found the eye presenting a perfectly normal appearance,—tension normal and vision perfect. On examining the enucleated eye a thick bony formation was found in the choroid, and had undoubtedly as it increased slowly in size, begun to press unduly upon some of the ciliary nerves and given rise to the pain in it, and the sympathetic disturbance in the other eye.

The traumatic cause of sympathetic ophthalmia includes all injuries of the eye, but more particularly such as are very liable to set up plastic inflammation of the ciliary body. Simple blows are sufficient, and are particularly liable to this accident, if by them the lens has become dislocated in any way so as to cause pressure upon the ciliary body. Penetrating wounds of the eye are very liable to cause this affection, and are more dangerous when they involve the ciliary region or are in close proximity to it. Simple incised wounds in this region which do not wound the lens and allow of perfect co-aptation of the edges and union by first intention, are not so likely to be followed by this complication. Yet it cannot be denied that even clean cut wounds of this region that heal readily by first intention are somewhat liable to this accident. It has been observed in cataract extraction by that extreme peripheric incision that followed the introduction of Von Graefe's method, and the present tendency to carry the incision further forward and

thus remove it somewhat from the ciliary region is a step in the right direction. A wound of the cornea alone is not likely to produce sympathetic disturbance, except in those cases where the iris prolapses, and then, from the dragging and traction upon the ciliary attachment, the danger is much increased, and if the wound is peripheral and the prolapse considerable, as is apt to occur after cataract extraction when a large iridectomy has not been performed, the danger is often great, and requires prompt treatment of the cyst that is formed by the iris and bulges between the lips of the incision. Otherwise the continued traction upon the ciliary region will keep up sympathetic *irritation* of the other eye, if it does not light up actual inflammation in it. From the great liability to prolapse of the iris after extraction, and the serious consequences that are thus liable to result, the safest mode of extraction always includes a large iridectomy.

It is from this traction of the iris upon the ciliary body that synechia, both anterior and posterior, is a source of so much danger, and that the use of atropine when this condition exists is often followed by great pain in the eye to which it is applied, and sympathetic disturbances of the other. Anterior staphyloma, including the iris, is a source of great danger, and the old operation of ablation of the cornea for its relief, involving, as it does, the ciliary region of the eye in a puckered and contracted cicatrix, is, in my opinion, an operation that should be abandoned. Punctured wounds of the eye which lacerate the capsule of the lens and produce traumatic cataract are very dangerous, and should be watched with the utmost care and the injured lens promptly extracted if it produces any considerable or continued pain in the injured eye or sympathetic disturbance in the other. This tendency of traumatic cataract to produce disorganization of the injured eye, and through sympathetic complication to destroy the other also, is greater in adults than in children. Indeed, destructive action of a

wounded lens may be said to have an exact ratio to the age of the patient, and is a matter that should always be borne in mind by the physician attending such a case.

Another cause of sympathetic ophthalmia is mutilation of an eye by the operation of couching or reclination of cataract. This operation, giving less than fifty per cent of successful results, and so often, when failing, destroying the other eye as well, ought in these times to be completely abandoned; but that it is not I am often reminded by patients who consult me and upon whom this operation has been performed. And often I find any operation on the other eye hopeless by reason of the destructive changes sympathetically induced by the previous operation.

I hope all members of this Society will remember that a senile cataract operated upon in this way acts as a foreign body, and is liable at any time, within years after its displacement, to set up destructive inflammatory action liable to destroy both eyes before it terminates. With this fact before them, and the fact that extraction affords about ninety per cent of success and hardly any danger of sympathetic action upon the other, they will see that couching and reclination of cataract is *decidedly malpractice.*

The lodgment of foreign bodies in the eye is one of the most frequent causes of this disease. These bodies may possibly become encapsulated and remain for a long while without producing sympathetic disturbance, but the eye is never safe.

Dr. Wells reports a case in which the disease was induced twenty-six years after the foreign body had been lodged in the eye.

In this case the injured eye had shrunken to one-fourth of its original size, but was painful upon pressure.

Mr. Lawson (Injuries of the Eye) also reports a case where sympathetic ophthalmia was induced fourteen years after the lodgment of a piece of gun-cap in an eye. It should be

remembered that suppurative inflammation following the lodgment of a foreign body in the eye affords no immunity from sympathetic inflammation unless by chance the foreign body is discharged with the matter, and even then the immunity is not complete.

The wearing of an artificial eye has been known to cause sympathetic ophthalmia. This should always be borne in mind, and the patient advised to lay aside the eye whenever there is disturbance of the other eye, and on no account to wear one which causes pain, or to have one fitted to a stump that is painful or tender upon pressure.

As regards the pathogeny of this disease, the theory first advanced by Henri Müller is now generally conceded, that sympathetic disturbance of the second eye, of whatever character, is brought about through the agency of the ciliary nerves. The modus operandi is not known, and it is not the object of this paper to present and discuss the theories that have been put forth to explain this phenomenon.

TREATMENT.

In the treatment of an eye threatened with sympathetic ophthalmia complete rest should be enjoined, not only while the injured or primarily diseased eye is painful or suffering from inflammation, but also for a long time after. It is a common remark with patients suffering from disease in one eye that the use of the other, or even its exposure to light, is productive of pain in the affected eye. And not only does it have a tendency to prolong and aggravate the attack in the first eye, but has also a strong tendency to induce sympathetic derangements which it otherwise might escape.

While either eye remains irritable light should be excluded, either by confining the patient to a darkened room, or, if the patient goes out, by the use of a bandage or dark blue glasses, as the severity of symptoms may call for. A wide dilatation

of the pupil should be obtained as early as possible, and the irritability of the eye should be relieved by the use of atropine, and inflammatory action combated by appropriate measures, never forgetting that rest of any inflamed part is a very important antiphlogistic measure.

Time does not admit of an extensive and thorough review of all the forms of this disease, and the measures appropriate to combat them in all the various phases that may be presented, and I shall dismiss the question of medical treatment by declaring the disease to be exceedingly intractable and little influenced by any system of medication that has yet been tried, and shall pass on to the consideration of the surgical treatment, often sadly neglected, and sometimes, I fear, as badly abused. The *chief* surgical procedures that have been resorted to are: 1st, induction of suppurative destruction of the globe; 2d, iridectomy; 3d, division of the ciliary nerves; and 4th, enucleation of the globe. To some of these modes I shall but briefly refer.

It is a fact that has long been observed, that when an eye has been lost by suppuration (and the ciliary nerves thus destroyed), the eye is not so likely to suffer from sympathetic disturbance as when an eye is lost or affected by internal non-suppurative inflammation. The practice of inducing suppurative inflammation in the human eye as a means of preventing sympathetic ophthalmia was first suggested by Wardrop, in 1818, and was first put in practice by Mr. Barton of Manchester, England, who published his cases in the Crompton Medical Gazette, in 1837 (see McKenzie's work, p. 416, note 8).

As injustice has sometimes been done Mr. Wardrop in this matter,* I quote a few passages from the work of Mr. William McKenzie, which show not only the exact nature of Wardrop's suggestions, but also McKenzie's claim. He says: "There is

* See Dr. Pooley's Article, New York Med. Journal, Vol. 11, p. 254

a disease, Mr. Wardrop informs us, frequent in the eye of the horse, having the appearance of a specific inflammation, which usually affects one eye and then the other, and sooner or later destroys vision. It is known to farriers that if the eye first affected suppurates and sinks in the orbit, the disease does not attack the other, or subsides if it had commenced in it. They therefore adopt the practice of destroying the diseased eye in order to save the other. They do this rudely by putting lime between the eyelids or by thrusting a nail into the eyeball, so as to excite violent inflammation and suppuration. Mr. Wardrop has frequently succeeded in saving one eye of the horse by adopting this practice; but he destroyed the eye by making an incision in the cornea and discharging through it the lens and vitreous humor. 'In some of the diseases of the human eye,' says he, 'where the disease makes a similar progress, first affecting one eye and then the other with complete blindness, the practice so successful in animals might, by judicious discrimination, be beneficially adopted.' "

"The practice thus hinted at by Mr. Wardrop has actually been adopted, though with a somewhat different view, by Mr. Barton of Manchester, in cases of injury of the eye with fragments of percussion caps. * * * * Mr. Barton, it is true, opens the injured eye, with a view of extracting the fragment of the cap, on the pressure of which he considers the sympathetic inflammation to depend. He not only opens the cornea, but he cuts away a large flap of it. He then applies a poultice, and waits till the fragment is discharged. In the cases published by Mr. Crompton, this practice appears not only to have relieved the patients of the pain they were suffering in the injured eye, but to have arrested the reflex disease which threatened the other.

"This, then, affords good ground for following a similar plan, *not only in cases where we have reason to believe that some foreign body is lodged in the eye, but even in other cases, where the*

one eye being disorganized and deprived of sight, the other eye seems likely to be destroyed by sympathetic inflammation. Where there is a suspicion that some foreign body is lodged within the injured eye, there can be no question but that Mr. Barton's practice ought to be adopted; *but even in other cases, why should we hesitate to lay open an eye in which vision is extinguished, if the operation affords a reasonable hope of our thereby saving the other?"*

This treatment was soon put into practice in France, and in Germany Von Graefe accomplished the same result by the use of the seton, a practice which he introduced and advised.

It was the best treatment known until 1854, and was the only one recommended by Dr. Gross in his system of surgery until his edition of 1872, when he wisely employed a specialist to revise his chapter on diseases of the eye.

The large number of cases of sympathetic ophthalmia which arose from painful or tender stumps of eyes lost by suppurative inflammation showed that this mode of treatment was not a sufficient one, and led thoughtful men to look for some more successful operation.

Section of the ciliary nerves was recommended by Von Graefe, but the operation did not meet with a success that warranted adoption, and has never come into general practice. Section of the optic nerve, also recommended at one time by the same author, failed to recommend itself to general adoption. Neither has iridectomy, strongly recommended by some, proved beneficial. Indeed, the weight of authority is now against attempting the operation upon the eye threatened with the disease, since it is more likely to hasten and aggravate the attack than to prevent or ameliorate it. And if the disease is propagated, as is at present conceded, through the agency of the ciliary nerves, it is irrational to suppose that an iridectomy upon the injured eye will have any tendency to prevent the disease, since it cannot remove the source of irritation, unless

by the mutilation of the eye suppuration be induced, and the ciliary nerves destroyed. Even Von Graefe deprecated this operation after the inflammation was fully declared, and a recent writer on the subject says: "In the cases I have had to deal with I have never resorted to it. I have seen the result in the hands of others, but with such uniform want of success as to deter me from ever undertaking it myself."

The occurrence of intra-ocular hemorrhage is very likely to follow this operation, and this, a cause of itself, can but add to the danger of sympathetic disturbance of the other eye, and insure or hasten that which it is intended to avert.

The following case (see Mich. Univ. Med. Jour., 1871–2, p. 531), reported by Dr. Eugene Smith of Detroit, illustrates the effect of this operation:

The eye, lost by plastic irido-choroiditis, was reduced to quantitative perception of light, and was increased in its tension. The Dr. advised and performed an iridectomy June 23, 1871. He says: "The anterior chamber filled with blood notwithstanding the utmost care to prevent it, and *would refill as fast as permitted to escape.*" At the end of 17 days inflammatory reaction occurred, and by Aug. 2d, the other eye having become sympathetically affected, the eye was enucleated, with the effect of relieving the sympathetic symptoms to such an extent that the patient writes, twelve days after the operation, that his remaining eye is nearly as well as ever.

In 1854 White Cooper published an article on lacerations of the sclera, and after calling attention to the inefficiency of all known treatment, suggested the propriety of enucleating the injured eye as soon as its fellow showed the slightest symptoms of becoming affected.

In October of the same year Augustine Prichard, Surgeon to the Royal Hospital at Bristol, published a report of twenty cases treated by him, in which he had extirpated the injured eye as soon as the other showed serious signs of inflammation.

He stated that, although his opinion as to the value of this treatment needed confirmation, he should continue to recommend this operation to all who applied to him for relief from this disease. *

The questions for us to consider are: What has the experience of the past twenty-two years taught us concerning the value of this operation? and what are the conditions that call for its performance?

As to its value we may say: 1st, that experience has proved enucleation to be a sure preventive of sympathetic ophthalmia if the injured eye is removed before the other eye has become at all affected; 2d, that it is almost equally sure to relieve all merely functional derangements or sympathetic irritation; 3d, that in milder forms of sympathetic inflammation—*e. g.* serous irido-choroiditis—enucleation usually arrests the intensity of the inflammatory action and often affects a cure; 4th, that in the severe plastic forms of irido-cyclitis, although it may often retard the progress of the disease, it seldom arrests and cures it.

Enucleation is positively indicated in all cases where severe or continued inflammatory action exists in an eye the sight of which is hopelessly destroyed. In such cases it is not wise to wait for premonitory symptoms to arise in the other eye, as cases have been observed in which in four days, without premonitory symptoms, an eye became so affected with sympathetic irido-cyclitis that vision was reduced to 3-200, and where all efforts failed to save it from complete destruction. Such cases show the folly of retaining diseased and sightless stumps at such risk to the remaining eye. If a foreign body is lodged in the eye this operation becomes imperative if the sight is destroyed and the foreign body cannot be safely removed, so as to prevent severe or recurrent inflammations. Although

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* See Article on Sympathetic Ophthalmia, by T. R. Pooley, M. D., N. Y. Med. Jour., Vol. 11.

foreign bodies may become encysted, and remain in the eye for a long time without exciting action in the other eye, yet they have been known to do so after many years, and an eye containing a foreign body is never safe. The history of numerous cases teaches us that there is but one safe course to pursue, and that is promptly to enucleate the injured eye. Not only should this course be pursued in cases in which foreign bodies are lodged in the eye, but in all cases where there are repeated attacks of inflammation in eyes that have been destroyed by disease. Such patients frequently consult us for relief from the effects of a cold they think they have caught in their eye. In such cases no time should be lost in temporizing prescriptions; but the eye should be promptly enucleated before the other has become involved in the disease. In cases of severe inflammatory action in such an injured or diseased eye, some authors advise waiting until the severe inflammatory action has subsided, fearing the operation may excite excessive reaction, and lead to meningitis.*

In a recent report of a case of this disease the writer† states that "if too much time has elapsed and suppuration begun, it would be very dangerous to enucleate the eye." I regard this teaching as incorrect and injurious, without foundation in experience or correct principles of surgery as applied to other parts of the body. If amputation should be decided upon in disorganization of a knee joint, no one would think of deferring it for fear of excessive reaction following its removal. On the contrary, every experienced surgeon knows that amputations performed under these circumstances are followed, as a rule, by complete relief, and are much safer than primary amputations. The system, rid of the irritation of the disorganizing structure, rallies at once. Just so is it in suppurative or other inflammations of the eye. Instead of increasing the tendency to brain

* Stellwag, pp. 261, and 485-6.
† Dr. Eugene Smith, Det. Rev., March, 1876.

inflammation, the removal of such a diseased and painful stump is marked by the most rapid relief and convalescence, and the tendency to extension of the inflammation to the meninges of the brain is actually lessened by removing a source of irritation that affects the brain sympathetically, just the same as it does the fellow eye. It should be remembered that the dura-mater is supplied with branches from the ophthalmic division of the 5th, and the intimate connection of the ciliary ganglion with the cavernous sympathetic plexus causes inflammation of an eye to disturb the brain, and may, in febrile states of the system, be an exciting cause of cerebral or meningeal inflammation. In such cases enucleation must be a safeguard against brain complications, and we are sometimes called upon for the removal of painful eyes merely for this effect of relieving irritation of the brain.

The following case will illustrate this fact: Miss C——— of Marshall, Mich., consulted me June 6th, 1875, for severe headaches that rendered her existence miserable. Both eyes were blind, and had been for years. The left eye still retained the perception of light; the other was stone blind, and very painful. She had herself noticed that the pain began in the eye first, and the headache commenced almost immediately afterwards; and without consulting any physician on the subject, asked me to enucleate the eye, if I thought it advisable. After hearing the history of the case I was convinced that the headaches were caused by pain in the eye, and recommended the enucleation as a means of relieving the pain in both it and the head as well. I accordingly enucleated the right eye on the same day, with the effect of relieving the patient almost completely of the paroxysms of headache, and the relief has continued permanent up to the present time.

The following cases will illustrate the rapid convalescence after enucleation of an eye affected at the time with destructive suppurative inflammation, a condition which, left to its natural

course, is often tedious and painful almost beyond the point of endurance:

Case 1. J—— N—— of Otter Lake, Mich., received an injury to the left eye in July, 1872. The injury was received while hammering a piece of steel, and the patient noticed the sight was impaired and that vision was double. He consulted a physician in a few days, when some pain appeared and the eye looked red and slightly swollen. The physician gave him a collyrium of nitrate of silver, which only aggravated the pain and swelling, and on the 29th the patient consulted me, with the eye tense and swollen, pain extreme, the anterior chamber full of pus, conjunctiva swollen and overlapping the cornea and protruding between the edges of the swollen lids, the appetite gone, tongue heavily coated, pulse full and bounding, and all the symptoms, general and local, that usually accompany the severer forms of Pan-ophthalmitis. After several days of continued suffering the patient consented to have the eye enucleated, and I performed the operation at 3 P. M., Aug. 3d. The effect was immediate relief of all pain; a night of perfect rest followed the operation. A considerable breakfast was taken the next morning, and in the afternoon the patient was up and dressed. The following day he walked out into the yard, and left for home, a journey of about 150 miles, in six days after the operation. At the time of the operation, and for several days previous, the patient was severely ill, exacting from me four or five visits a day, and obtaining no rest except when under the influence of half-grain doses of morphine, and these only secured a brief period of ease.

Case 2. J—— S——, Ann Arbor, was attacked with a severe inflammation in the right eye. This eye had been the seat of several inflammatory attacks, sight having been destroyed more than a year previous to this attack. At this time the inflammation assumed a suppurative character and was very painful. The patient required the largest doses of morphine to procure

any rest, and even with these, and free opening of the cornea for the purpose of allowing pus to escape, the pain was so continuous and severe that the patient begged to have the eye enucleated, saying he would rather die than bear his sufferings longer. I accordingly made the operation on the 27th of March, 1873. The eyeball at the time was so intimately adherent to the surrounding structures that every portion had to be dissected off with the curved scissors. The operation afforded the most complete and immediate relief, and recovery was so rapid that only two visits were required afterwards. The symptoms of sympathetic irritation which existed in the other eye rapidly disappeared, and the vision in it has remained perfect ever since. On section of the enucleated eye the interior was found to be undergoing purulent disorganization, and so far advanced that nearly half the contents consisted of pus.

Many such cases have occurred in my own practice, but time does not permit even the briefest description of them.

To show that such instances are not confined to my own practice, I quote one of the many cases I have seen reported. The following I give in exact words of the author, Prof. J. J. Chisholm, of the University of Maryland, surgeon in charge of the Baltimore Eye and Ear Institute (reported in Virginia Medical Monthly, August, 1875):

"F. G., aged 62, came to the Baltimore Eye and Ear Institute from his country home, two hundred miles distant. He had lost his eye three years since. For the past six weeks he had been suffering intense pain in the lost eye, which has kept him from writing, and which has recently made the good eye weak and dim. I found the eye in a state of acute inflammation, with the cornea in a sloughy state and the anterior chamber apparently full of pus. He was anxious for relief, and walked the room restlessly on account of his severe suffering. Chloroform was administered, the patient went quietly to sleep,

the eye was enucleated in accordance with the method already described, and the patient put to bed. Four hours after the operation I found the patient free from all pain and feeling so well that he desired to accompany a friend who had some business in a distant portion of the city. He had experienced no nausea from the anæsthetic. Eight hours after the operation he was enjoying such perfect relief that he took cars to return to his home."

I would not have spent the time on this point that I have only that this theory of waiting for acute inflammation to subside, originally put forth by Von Graefe, is blindly followed by so many, and leads them to subject their patients to prolonged torture and suffering, jeopardizing the only remaining eye, often keeping those who can ill afford the time incapacitated for labor for months, when by prompt enucleation they might resume their labor in a few days.

There is one point in the last quoted case worthy of a moment's reflection. This patient visited Baltimore from his country home, 200 miles distant, for this simple and safe operation. Why was this necessary? Had a limb been crushed he would not have gone so far to receive the needed surgical aid. Ambitious surgeons would hardly have allowed him to escape from his home unrelieved. And yet the pain and danger call for no more prompt relief in one case than in the other. The real secret is that too many of our profession have imbibed their notions of ophthalmic surgery from such teaching as the following, extracted from the fourth edition of Gross, and only corrected within the last few years:

"The question may here be asked what should be the treatment when a foreign body lodged in the eye cannot be extracted? Should the humors be evacuated, or the organ itself be extirpated, as some have recommended; or should the case be managed upon general principles? Manifestly the latter, unless there be great local and general suffering, or the integ-

rity of the sound eye be seriously threatened by sympathetic action, in which event no time should be lost in effecting collapse, the extraneous substance almost invariably escaping along with the contents of the organ. As to the excision of the eye, I can hardly conceive of any case, however severe, *warranting so ruthless a procedure.*"

To this teaching, long adhered to after modern surgery had shown it to be a dangerous error, and the discouraging remarks of this much read author concerning cataract extraction, and his unwarranted recommendation of couching after the operation had become obsolete with all good surgeons, many a case of sympathetic ophthalmia has probably been due, and many a patient has suffered prolonged and unnecessary torture. It teaches us, also, how early impressions prevent the adoption of new truths, and lead to a persistence in error by one whose opinions are upon many points so valuable, and who has done so much to disseminate correct principles of general surgery.

When the sight of an eye is hopelessly destroyed we have a safe rule to follow; and that is always to enucleate the diseased eye if painful upon pressure, severely inflamed, or subject to recurrent attacks of inflammation, waiting, in recent cases of injuries, until such a degree of inflammatory action has followed that any prospect of restoring sight is past.

When sight is retained in the injured eye the case is far more perplexing. So uncertain are any rules in guiding us, and so fallible is the most experienced and mature judgment in deciding the propriety of enucleating an eye retaining some degree of sight, as a means of protecting the other eye, that after many departures from it there is a manifest tendency to return to the practice advised by Von Graefe, viz.: "To abstain from enucleation in all cases in which the least vestige of sight yet remains in the injured eye."*

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* See Dr. Samelsohn's article in Archives of Ophthalmology and Otology, Vol. 5, p. 56.

There are, no doubt, many cases where this advice should be departed from, but at the present time no therapeutic rules can be laid down sufficiently certain to guide us in departing from it, and not until a larger number of cases shall have been carefully recorded and studied can such rules be deduced.

Cases have been recorded in which after the eye secondarily affected has been completely lost, useful vision has remained in the injured or primarily diseased eye. A case once came under my observation in which irido-choroiditis originating in the right eye affected the left through sympathy and led to its complete destruction. The right, however, still retained good perception of light, although the pupil was occluded and the iris firmly bound down by adhesions to the lens. At the earnest solicitation of the patient I operated upon this eye, performing a large iridectomy and extracting the lens, which was found to be opaque. The result, I am informed by his physicians (Drs. Hayden and Metcalf of Eaton Rapids, Mich.), was such as to enable the patient to read, and the operation, performed five years since, has continued a permanent success. The patient, then a young man of about 25, has since engaged in successful business. The following case, reported by Dr. Pooley, of New York (Archives of Ophthalmology, Vol. I., No. 2, p. 553), is so instructive in this connection, that I quote it entire, in his own language, as follows:

"V. M. R., age 32, a merchant, consulted me July 6, 1869. Seven years ago, while breaking stone with a hammer, a piece of steel flew off from the hammer and struck him forcibly upon the left eyelid, through which it penetrated and entered the eye. The foreign body remained for some weeks in the eye (exactly how long he does not remember), and was then removed by his family physician. The wound healed, but two weeks later the eye began to be painful, red, and swollen. A week after the commencement of the trouble in the left eye the right eye began to show signs of sympathetic irritation. He

first noticed lachrymation, and then temporary obscurations of the visual field; subsequently this eye also became painful, red, and swollen. In two years the right, or sympathetically affected eye, had lost all perception of light. *The sight in the other, the injured eye, now began steadily to improve.*

"His condition at the time he came under my observation was as follows: There was a scar upon the upper sclero-corneal margin of the left eye, in which the iris was engaged, so as to form an anterior synechia and a pyriform pupil. The iris throughout its entire pupillary border was attached to the capsule of the lens, immovable, and somewhat discolored; the pupil, with the exception of a small aperture, filled with a false membrane.

"*In the right eye* the color of the iris was changed to a dirty green, and a dense opacity occupied the lower border of the cornea. The pupil was completely occluded by a false membrane, and the whole globe somewhat atrophied.

"Vision in the right eye was *completely abolished, there being not even perception of light.* Sight in the *left eye* equals two-fifths. Tn. in left eye. T. somewhat diminished in the right. The fundus of the left eye could be illuminated with the ophthalmoscope, but no details were discernible. For the last four or five years he has had recurrences of ciliary inflammation, with more or less pain in both eyes, *but always commencing in the right or non-injured eye.*

"The last attack took place about four months before I saw him.

"I advised enucleation of the right eye, inasmuch as it evidently was now the source of irritation, and after its removal an iridectomy might with advantage be performed upon the other.

"Dr. Knapp, who saw him with me in consultation, confirmed this opinion. The patient, however, refused to submit to the operation and passed from under my observation."

Another still more instructive case, bearing upon this point, is reported by Dr. J. Samelsohn of Cologne. The case is too lengthy to include in detail in this paper, but it can be found in full in the 5th Vol. of the Archives of Ophthalmology and Otology, should any one desire more complete notes.

This patient, a lad of fourteen, was injured by a blow upon the left eye on April 1st, 1874. The next day the eye was found to have a slight prolapse of the iris through a small peripheral rupture of the cornea, symptoms of irritation were present, and vision was reduced to such an extent that fingers could not be seen nor counted at any distance. Six days after the accident pus was detected in the anterior chamber, and a low grade of inflammation followed until the first week in May, when the sight slightly improved, so that fingers held to the outer side of the eye could be counted at the distance of a foot. A violent relapse then occurred, which on the 9th of May suddenly abated, and on the same day symptoms of sympathetic ophthalmia appeared in the right (or uninjured) eye. By the 15th it had reduced the vision of this eye to $\frac{3}{4}$. In consideration of the undoubted sympathetic nature of the disease in this eye and evident loss of sight in the injured eye, enucleation was recommended, but not submitted to. Soon the disease in the second eye showed absolute symptoms of plastic iridocyclitis, and the proposition to enucleate was again *urgently* repeated, but the parents' consent was absolutely refused. The patient was taken into the hospital and treated by confinement to bed in a darkened room, and free use of atropine in both eyes. Under this treatment the case so far recovered that by May 29 vision of the right eye was normal, and of the injured eye was 1-23. The patient was then discharged with a doubtful prognosis. By June 20th all symptoms of irritation had disappeared, vision of each eye as before. After more than a year had elapsed, the patient having part of the time attended school and the balance of the time had been apprenticed at a

work requiring constant use of the eyes, the doctor made an examination and found the right eye perfectly normal, and the sight of the injured eye restored to one-half normal vision.

In commenting upon this case the doctor says: "That I did not enucleate in this case under the existing circumstances, was owing wholly to the unconquerable opposition of the patient's relatives, and that they were finally right, proves amply that we are yet at the alpha as to prognosis in sympathetic disturbances, and that the therapeutic rules which at this day govern prophylactic enucleation are still very uncertain."

The length to which this paper has already been carried forbids further discussion of the many interesting questions connected with this disease, but if, by what has been said, the attention of those who have listened has been called to the importance of this subject, and if they shall thus be led to contribute to that abundant report of cases from which only can be derived those principles that must guide us in the most perplexing of this class of cases, the object of the writer will be accomplished and the time of this society will not have been spent in vain.