AN INaugural Dissertation
ON
Amaurosis

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Amaurosis

The imperfection or loss of sight which results from affection of the nervous apparatus belonging to the eye, whether that affection be seated in the retina, optic nerve, or sensorium; whether it be idiopathic, sympathetic, whether it consists in vascular congestion, inflammation, organic change, or simply in functional disturbance is called Amaurosis. The word from its grecian origin means dim or darkened sight; it is a general term embracing affections of the nervous visual apparatus in all their forms & degrees. Some authors define it to be a diminution or complete loss of sight without any perceptible alteration in the organization of the eye; others as Cataracta Nigra because the pupil retains its natural blackness. Since Amaurosis may arise from affection of the sensorium, optic nerve, or retina, we can easily understand from
Their intimate connection how it happens that it sometimes appears in both eyes at once; yet it is often confined to one; or the one being diseased the other may after a longer or shorter interval take on the same affection. It may be divided into idiopathic, symptomatic and sympathetic, the first of which may be induced by causes acting immediately on the nervous apparatus such as excessive exertion of the organ; secondly it may be a symptom of affection of the sensorium; or thirdly it may be sympathy between the nervous structure of the eye and some other previously affected organ, as from irritation of the Stomach, or of the 5th pair of nerves. Since Amaurosis is a disease affecting the Sensorium—Optic Nerve, or Retina, we will first consider the disease arising from affections of the Brain. In the first place Temporary or permanent blindness may result from compression or concussion of that
organ which may be so compressed either from some external or internal injury as to bring about prejudice of the cranial cavity in the first instance as from a blow or fall on the substance of the brain and so extend itself as to involve the optic nerve and retina inducing some sort of inflammation or paralysis of the optic nerve; superinducing total impairment of, or obstructed vision. The causes operating upon the nervous apparatus externally as from blood injuries in whatever manner received. We call extrinsic causes.

Those operating from within the cranial cavity as from original disease are designated as intrinsic causes. Both eyes may be affected in amaurosis one alone oftenest from extrinsic causes; both being affected more generally from diseases arising internal for instance when one only is affected it is generally brought about by severe injury inflicted on the side of the head opposite to that one on which the injured eye is situated and how necessary is it for us to
Understand the minute arrangement of the nerve fibers of the brain, for without such a knowledge we shall be utterly unable to give a rational explanation of the phenomenon. Then in order to understand that the eye opposite to the injury is affected we will endeavor to explain it in this wise. The optic nerves springing from the corpora quadrigeminae and geniculata pass forwards and inwards from both sides of the brain converging so as to meet at the prooeusoliums of the sphenoid bone, forming the commissure of the optic nerve. Hence the fibers diverge from the commissure in proportion to their converged and pass through the foramen opticum into the boll of the eye and there spread themselves out over the vitreous humor constituting what is called the Retina; but let it be understood that the fibers of each nerve crop each other at the chiasmu at least some of the fibers of each nerve pass over to the eye opposite to the side from which the nerves spring.
The same is true in relation to the arrangement of the fibers of the whole encephalon for the fibers of one hemisphere of the brain decussate the fibers of the opposite side constituting the corpus callosum. Understanding the distribution of the nerve fibers of the brain and optic nerves, we can very easily comprehend why it is that a blow on one side of the head may affect the opposite, more or less in proportion to the injury received. Cerebral congestion may be said to be one of the most common sources of amaurosis. For if from any cause there has accumulated within the cranium a superabundance of blood as from some external or even internal injury, we can very readily imagine how easy it would be for impaired vision to be superinduced taking into consideration the conformity of the cranial cavity together with the delicate structure which constitutes the substance of the brain. When the blood from any cause becomes congested in the cranium, the latter acts as a barrier.
To the exit of the blood which by pressing upon the nervous mass brings about loss of sensibility or the power of either receiving or transmitting impressions and by contiguous sympathy the optic nerve and retina become involved and take on the same disease as that of the brain. Likewise inflammation occurring from any cause first invading the meninges of the brain may spread itself from side to side and then extending itself to the substance of the brain and superinduce loss of vision. But as inflammation is a destructive process it produces such a lesion of the parts as to cause the death of the patient in a very short time and by that means prevent the loss of sight from becoming manifest in the way which characterizes the imperfect vision of amaurosis. However some of the consequences of inflammation such as an effusion of serum, coagulable lymph or pus may so invade the nervous structure as
To superinduce partial or total paralysis of the whole body by obtunding the sensibility of the Encephaloids, and as a matter of course paralysis of the optic nerve follows; it will be necessary perhaps to speak of some of the intrinsic causes of the disease under consideration.

Hydrocephalus or an accumulation of serum in the ventricles of the brain may superinduce amaurosis by an over-distension of the ventricles especially of the third ventricle pressing upon the optic commissure and thereby induce partial or total blindness. Hydrocephalus may be either internal or external, that is the fluid fluid may be in the ventricles or in the arachnoid membrane, and this disease may exist in the brain either in an acute or chronic form. The state of the retina in the former varies according to the stage of the affection, during the period of excitement there is an increased sensibility to light; strong lights are avoided, the eyes being opened only in the dusk of...
of evening; if the lids are separated the cornea turns up behind the upper. When effusion occurs dullness succeeds to the increased sensibility. The natural direction and harmony of the optic axes are lost, the patient squints and looks downwards. The pupils are dilated or exhibit oscillatory movements without being sensible to light in the first or paralytic stage when convulsions come on succeeded by palsy the sight is lost, the pupil highly dilated sometimes contracted but motionless. There is generally squinting with fixed direction of the eyes downwards. Sometimes loss of sight is an early symptom of hydrocephalus. We hope that this digression in the way of giving some of the symptoms of amaurosis will not be out of order in as much as it is very necessary to point them out in connection with the causes of disease. The brain is liable to be enlarged upon by Tumors of all kinds and they may originate either on the internal surface of the cranium or within the substance of the brain itself, such as exostoses tubercular
deposits of... and these may press upon the brain in such a manner as to preclude vision entirely. Those intrinsic causes of blindness are a great deal more obscure and less understood than those of the extrinsic character; for instance a patient may be laboring under obstructed vision from a Tumor either hard or soft pressing on the brain and he may even complain of fulness, great pain, and refer them to a particular part of the cranium, yet we have no means of ascertaining the precise cause of the affection unless the patient be laboring under some constitutional disease, to which the Tumors are referable. Whereas on the other hand Amaurosis arising from extrinsic causes which acting from without the cranium are quite palpable and easy to be understood. As we have spoken some what at length upon Amaurosis consequent upon affections of the brain (though we do not pretend to have done it justice by any means; for a disease involving so much obscurity as the one in question
requires a much longer time and a much closer discussion than can be bestowed upon it here. We now propose to say something of the optic nerve, which is liable to be affected from intrinsic or extrinsic causes—superinducing amaurosis. However, in speaking of the diseases to which the optic nerve is liable, we do not intend to isolate it from its connections with the brain and retina, for they are so intimately connected in their structure that it would be almost impossible for one to be diseased without involving more or less the others, especially the retina. Fractures of the skull at the anterior part of its basis may cause pressure on one or both optic nerves, or may otherwise injure them. They may be variously affected by diseases of the bone or of its membranous covering in the same situation. Such diseases may have a venereal origin which may be indicated by the simultaneous existence of other symptoms referable to the same cause: for example, if the
disease depend upon Syphilis and the nerve be
pressed upon by some Syphilitic inflammation, there will
have been some other symptoms appearing in other
portions of the System prior to or at the very time
at which the nerve is invaded, which are referable to
the same cause, and knowing these facts we may be able
at once to remedy the affection by measures calculated
to eradicate the disease constitutionally. But there are
other causes than those of Syphilitic origin which are
apt to encroach upon the optic Nerve, whose origin we
know not and whose invasions are so obscure that for
their removal we are compelled to adopt such rational
principles of treatment as may be suggested. Amaurosis
may be caused by injury of the optic nerve in penetrating
wounds of the orbit; or in fractures with displacement
of the orbital parietes; it is sometimes brought on
by gouty and Rheumatic Diathesis causing a chalky
deposit in or about the region of the optic nerve—
A German author Von-Adnow has delineated the following
Morbid changes in the optic nerve arising from these diseases viz., thickening of the meningeal, effusion of fibrin between it and the substance of the nerve, ecchymosis in the situation of the artery centralis and induration of the medullary texture. As we do not intend to discuss regularly the pathological lesions of the visual apparatus superinduced by amaurosis, we deem it to be nothing amiss to insert a few as we have done above, however little they may contribute to its full elucidation. Amaurosis arising from disease of the optic nerve is developed slowly, commonly in one eye only seldom in both at once; a black cloud appears before the eye and becomes gradually thicker while the patient experiences an annoying distortion of objects without the smallest uneasy sensation in the optic to head. He only feels a slight sensation of pressure in the back of the orbit as if the globe were pushed out of the socket, of which however there is no appearance. In the very beginning of the affection the pupil is—
Considerably dilated and the pupillary margin of the perfectly motionless Iris is angular at various points so that the pupil often presents an irregular pentagon or hexagon. We now take up the affections of the retina upon which the disease chiefly depends. The Retina may be affected originally or exclusively or secondarily and in conjunction with other parts of the Globe. Under the name of amaurosis cases of the first description are generally understood; and in order to prevent confusion it would be well to confine the term to them. In the affections which either originally or subsequently involve the nervous, together with other structures, such as general inflammation of the globe, inflammation of the internal tunics; whether idiopathic, syphilitic or arthritis; in glaucoma, atrophy and dropsy of the eye; in fugue hematodes, cancer & melanosis; blindness is ultimately produced; and in as much as the retina is disorganized, they may be said at last to be amaurotic. Though the
diseases are properly named from other more prominent characters. Amaurosis from affections of the retina may be superinduced by the same causes which bring it about from affections of the brain. In other words, viz., congestion, inflammation, external or internal violence, whether from blows or falls, from encroachment of tumors either of arthritic or syphilitic origin, from local or constitutional disease. We might very safely remark here, that although it is very rarely the case, plays a very important part in the production of amaurosis, for in anemia there is great diminution in the solid constituents of the blood, consequent upon this there must be a loss of hue in the structure of the retina, a pliability of its vessels, and of course under such a state of things a want of sensibility and cognizance on the part of the retina to respond to the impressions made upon it. Hence there exists in some instances considerable confusion of vision. We make these remarks concerning anemia notwithstanding some authors discard the idea of
amaurosis ever occurring as a consequence of it; and this may be termed the asthenic variety of amaurosis. And when the disease occurs in that opposite state of the system which constitutes plethora it may be termed the sthenic variety. The retina may be so much injured in the operation for crouching or depressing a hard lens on the retina as to partially or completely destroy its structure and in that manner cause complete loss of vision, but that misfortune would only be brought about by an unskilful manipulator; for it has been ascertained that small punctures or slight pressure from the lens have no bad effects upon the retina unless carried to too great an extent. Having as we believe sufficiently enlarged upon the causes of the disease under consideration, we will now attempt to portray some of the most prominent symptoms. The leading of which are the variously altered state of the function. We find sight impaired in all possible ways. various imaginary objects & colors appear before the eyes. In different instances there are all
Kinds and degree of defective perception in respect to form, color, and proportion of objects, and their relation to each other, augmented and diminished sensibility to light, impediments to vision most diversified in degree and kind. In the beginning of the affection—patients complains of the sight being weak ordinary, Muscae Supravene, real objects are seen but imperfectly, they appear more or less obscured by cloud or haziness, the letters of a book run into each other and become confused. The eye is soon tired and waters or becomes bloodshot if exercise is continued. Sometimes near objects are not clearly recognized, while those more distant are seen perfectly. This incipient stage in which vision is partially impaired is called Amblyopia, or weakness of sight, though it is sometimes found as a permanent condition. In some instances the bulk of the retina to light is so much increased that the patient avoids all places of strong light and seeks comparative darkness. This intolerance of light is called photophobia.
Under such circumstances the patient sometimes discerns for a few moments even the smallest objects in an extremely weak light; while at other times he cannot distinguish even larger things in the same light. This state of things, which is ophthalmia acuta temp of sight, deserves particular attention; the sensibility of the retina may become so considerable that the presence of light cannot be borne at least it causes severe pain in the eye, with discharge of tears and confusion of all objects. The patient remains in a darkened chamber and therefore may be said to be laboring under nyctalopia or day-blindness, a term commonly the retina is in an opposite state. Its increasing insensitivity and the consequent necessity of a powerful impression to produce any effect, lead the patient to seek clear and bright light, and in attempting to read places his back before the window, that the light may fall upon the book. When the ophthalmia with increased sensibility proceeds a little farther a shining glare appears before the eye, with tremulous rainbow colors...
surrounding and confusing objects. A light cloud may pass before the eye, or luminous and fiery points. Flashing or streaks may appear. These often continue when the sensibility of the retina has been completely extinguished, and lead the patient to indulge in hopes that his vision may be restored. This condition is termed photopsia. One of the most frequent symptoms is broken or interrupted vision, the eye misses parts of objects, letters or words are lost in reading and the patient moves the whole head to search them out. Sometimes the upper or lower half, sometimes the right or left half is not seen, and this may be termed hemiopsia. Sometimes a small part only of the retina retains its sensibility and such things only are seen as are placed in a particular direction with respect to the eye. Objects having to be raised higher or lower, placed to the right or left, side as the case may be. Things sometimes appear deformed. Sometimes as if enveloped in a mist or cloud which may be light, dark, or
changeable. This cloud becomes thicker & more extensive until the perception of objects is destroyed: A very common symptom of incipient amaurosis is the appearance of floating or moving objects before the eye. Dark, grey, or semi-transparent threads, spots, streaks, insels, rings, chains, globules, indeed minute substances of every description seem to float before the eye, moving rapidly upwards and then falling, more conspicuous and more troublesome in impeding vision in a clear light. These floating objects are called Muscae volitantes. There is occasionally seen by the patient a single black speck floating before his vision, this is termed scotoma. It is not uncommon for the patient to see before the eye a black disk which increases in size as the affection proceeds, becoming larger & larger until at last it covers the whole field of vision. As the moving bodies increase in number they become more completely opaque, and unite so as to form a net or thick veil, more or less completely enveloping whatever the patient looks at.
And this net appears dark in a clear place, or against a white ground. While in the dark it is shining and whitish or of a yellowish color. Double vision which is a common circumstance, in incipient amaurosis is owing partly to the axes of the eye not corresponding. The movements of the two eyes coincide in certain directions so that the double sight is only partial, and moreover when either eye is closed vision with the other is single. The very rare occurrence of double vision in one eye only must according to best authors be referred to the retina—sometimes we have short-sightedness or farsightedness yet the latter is most common. Although the various kinds of imperfect vision which we have enumerated and described are designated by appropriate names they are not distinct diseases, but are to be assigned to a common cause, viz., disease or disorder of the retina, the pathological condition of which, especially in the early or active stage of disease, and the particular circumstances in the affecting which give rise to each of these modifications.
we are unable as yet to explain; it remains still as many others of the arcane of medicine, enveloped in a cloud of mist, to be brought to light in no other manner but by removing the amaurotic spot from the vision of our beloved, which is even now making gigantic strides towards perfection. In the commencement of the affection patients seem to discern objects better when they are placed at their sides, than when placed directly in the visual axis. This is owing very probably to the commencement of the disease in the central portion of the retina and gradually pushing out to the margin of the expansion which explains the gradual diminution of vision which as a general thing characterizes the disease; yet so far as the origin, progress of the disease are concerned, they are very various. It may be produced suddenly and reach its full development in a few hours, sometimes blindness is produced in a few days, weeks, or months, while in other instances years elapse before vision is altogether lost. The pupil of amaurotic patients exhibit various changes: some
of which are so conspicuous as to attract even the notice of careless observers. The former is dilated often considerably even in the strongest light, sometimes it is equally contracted and that permanently. The pupil as we have before stated is often oval and angular at different points of its circumference it also deviates from its normal situation in the eyeball being more frequently displaced upward and inward. In many cases the clear blackness which characterizes the normal state of the opening is lost and the pupil has instead a dull smoky or cloudy discoloration of greenish greyish or leaden cast. Sometimes it is of a yellowish green much like that of glaucoma. Partially State of the Iris together with dilated pupil is a general state of things, but by no means does it universally obtain in amaurosis. In as much as the mobility of the iris depends upon the susceptibility of the retina to the influence of light we may therefore very safely conclude that the pupil is dilatable & contractible until the amaurosis is complete. We may have some doubt as to whether the
patient has amaurosis or not from the fact that the
iris of the affected eye moves in harmony with the other
after its independent action is destroyed, hence we should
cause the patient to shut the sound eye or each alternately
that we may distinguish the difference. Cases of amaurosis
differ very materially as regards the accompanying pain
whether in the eye or head. Sometimes the disease is developed
slowly without pain; sometimes there is an uneasy feeling
in the eye and neighboring parts; a sensation of fulness
and an unusual weight in the globe. Frequently the
disease is accompanied by headache, often intense; giddiness;
dizziness; pain in the eye-brow or side of the head occasionally
severe; fulness and pain in the head aggravated by motion
or employment of the organ. The states of the digestive
organs & circulation are various, the former may or may
not be affected, yet sometimes it is greatly deranged
which together with other circumstances contributes to the
origin and continuance of the disease. The latter sometimes
accelerated or it may be weak and pulsible, hence, the appropriate
Terms of Stintio as Stintio Amaurosis. We must now day something in regard to the diagnosis: The most certain means of distinguishing Amaurosis from Cataract is by the Cataract Test, which consists simply in dilating the pupil of the affected eye with belladonna rubbed on the surface of the lids, or made into solution and applied immediately to the eye, dilatation will gradually come on in a few hour or two: after which the patient must be conducted to a dark room, when a candle should be lighted and held immediately in front of the eye of the patient, and if the case be Amaurosis there will be seen three images of the candle: the first caused by reflection of the cornea, the second by reflection from the anterior surface of the crystalline lens which images are in the upright position. A third caused by reflection from the posterior surface of the lens, it being in an inverted position, but if the disease be Cataract to the contrary there will be seen only the two upright images or perhaps only one, and besides there can generally
be seen an opacity behind the pupil in cataract. Amaurosis also may be confounded with glaucoma though in the latter disease other features are often involved besides the retina. There is also deep-seated gradual discoloration of the pupil, and an altered color of the iris; but when in the commencement of the affection there is a sluggish, motile lip state of the iris with dilated pupil, the distinction is still more easy. Fortunately it is more important in reference to the prognosis of the two diseases than in the treatment; for what is applicable to one affection may answer in the other, though the chances of benefit is much less in glaucoma than in Amaurosis. The prognosis of the disease under consideration turns principally on two points viz. the degree in which vision is impaired, and the length of time the disease has existed. We think favorably of Amaurosis when the disease is evidently caused by active congestion in the head. Our prognosis is doubtful in the earliest cases if the insensibility of the nervous structure be complete. It is equally so, in imperfect Amaurosis of long standing. The prognosis
is bad. When the disease is preceded or accompanied with severe pain in the brow or head, not relieved by treatment or if relieved quickly returning, the same observation applies to cases attended with epileptic symptoms, paralytic affections or great change in the pupil, under such circumstances we may reasonably suspect the existence of organic change in the Vicina, Optic Nerve, Orbit, Skull, or Brain. When only one eye is affected we may very naturally expect an occurrence of the same disease in the other, knowing this fact we must institute such active treatment as to prevent it. And now to the treatment of this much-to-be-dreaded affection Paresis and we are sorry indeed, that this affection on account of its obscurity is so little understood as sometimes to baffle all attempts to afford relief. And what heart is it that would not shrink at the idea of having in spite of all medical aid to become blind and having to grope his way in utter darkness while he destroys his earthly honor? I cannot forget the sentiment
of the poet; who says that:
Some praise the eyes they love to see,
As rivaling the western star:
But eyes, I know, well worth to me,
A thousand firmaments afar.

But let us not forget the treatment of this most formidable disease. Of course this must be regulated upon general principles; and we must not forget the causes upon which impairment or total loss of vision depends and always endeavor by such means as are in our power to remove them. In as much as most authors believe that the disease depends chiefly upon congestion or inflammation of the visual apparatus, either acute or chronic, we must employ antiphlogistic treatment, following it up with a decision and steadiness commensurate with the importance of the affected organ. Under this head we must include general & local bloodletting, more particularly the latter as by cupping from the back of the neck or temples, the application of leeches, the evacuation of the balsam.
by purgatives and a restricted diet; keeping the organ in a state of repose more or less according to the nature of the case. As an antiphlogistic remedy, especially in this disease, bloodletting either locally or generally stands at the head of the list. Mercury we believe to be next in order, both as a purgative and in its constitutional effect.

Counter irritation is also a valuable auxiliary in the treatment of Amaurosis. As to the employment of the above remedies in any given case of vascular excitement, we do not intend to lay down any definite rules; we only wish to be understood as treating Amaurosis in a general manner; and that these remedies are to be employed according to the nature and demands of the affection, as a general thing however general bloodletting will not be required oftener than once or twice in the course of the disease; local abstraction of blood if pain and fulness about the eye or head still persists either by laches to the temples or cupping on the back of the neck. As to counter irritation we believe that a succession of blisters will accomplish
This object better than any other remedy of the kind, keeping up a discharge from them by the application of savine cures. These blisters should be employed at intervals of six or seven days. As to the employment of mercury an excellent adjuvant in the treatment of this form of Amaurosis. It should not be employed a few times only and then relinquished, but should be persevered in. Mercury is applicable in the acute as well as the chronic stage of Amaurosis. In the former case it may be necessary to induce phyalism, for which purpose it should be administered in small frequent doses such as one half to one grain every two hours combined or not with opium, but when in the acute form phyalism is not to be desired, from 3 to 5 grs. calomel may be administered every night or every second night on going to bed, followed the next morning with some mild adjuvant, such as castor oil, rhubarb or magnesia in some pleasant vehicle. In the chronic stage of Amaurosis headache attended with general and
Local fulness our treatment must be active. It is better in such cases perhaps to include phthisis. But in some cases of the chronic kind especially when there is neither general or local phthisis our best mode of treatment would be the local abstraction of blood. Contra-indication with blisters or setons, mild preparations of mercury such as the Hg. cum cineris, or blue pill given every other night and followed the next morning with an aperient. When the means which we have recommended fail, we may not reasonably expect any very great benefit from other doses. We must pursue such modes of living as will be most conducive to the improvement of health. Reside in pure air, frequent exercise in the open air, a plain, mild, but nutritious diet, and repose of the affected organs, form a combination of measures best calculated to invigorate the system generally and thus to arrest local disease. The treatment we have described must be graduated according to the violence of the disease, constitution, age, and number.
other circumstances. No one mode of treatment is proper in all cases. It must not be supposed that all amaurotic patients require blood-letting & salivation. Amaurosis often comes on slowly and insidiously in persons of enfeebled constitution, in such cases it would be blindness in us to resort to general blood-letting or salivation, it would be adding fuel to fire, in such cases we should employ such means as would tend to invigorate the system; nutritious diet, moderate exercise in open air, and occasional purge of the milder mercurials, perhaps the local abstraction of blood with counter-irritation from our best means of relief. When speaking of the causes of amaurosis we mentioned a great many injuries and constitutional diseases which might give rise to it, viz: Those arising from either an extrinsic or intrinsic source, and also of amaurosis arising idiopathically, symptomatically and sympathetically. We will just here take occasion to say that amaurosis superinduced by any of the above
named causes must be treated upon general principles removing all known sources of irritation adopting such remedies as will be applicable in any constitutional disease when we have reason to believe there to be a source of the disorder; combating all congestion or inflammation whether local or general with such antiphlogistic remedies as we have mentioned, taking care not to administer calomel to any great extent in periplectic or enfeebled conditions of the system, but on the other hand in the latter cases after mild antiphlogistic means and clearing the alimentary canal, it may be necessary to administer tonics, such as Sarsaparilla, quinine, Calomel; and perhaps in some dejected and consumptive individuals the administration of iodide of Potash & cod liver oil would not be out of place. There is one more remedy whose virtues in the treatment of amaurosis are not to be despised. As this remedy when administered either externally or internally has been found to be a great stimulant of the Nervous System.
It had been used in Amaurosis. The remedy alluded to was
Stychnia was best adapted perhaps to those cases in which
there is little vascular excitement, but on the other
hand are atomic condition of the retina, without blem
of its structure. When some cases cured such as the confinement
of the eyes to very small objects, or working in rooms
imperfectly supplied with light, the sensibility of the
retina seems to be in a great measure lost, there can
be no better remedy to stimulate the retina to activity
than the use of Stychnia, conjoined with such other
remedies as the nature of the case may demand. The
best mode of administering this article is in solution
apply directly to the eye, for which purpose 25 grs.
Stychnia. Should be dissolved in 31 of acetic acid,
To which is added 3.51 of distilled water: Two or three
drops of this collyrium should be drooped upon the
affected eye 3 or 4 times a day, until slight twitching
of the muscles is experienced, after which it should
be withdrawn, and again repeated after the substi
of such manifestations. But if intense headache—
supervene upon its use it should be discontinued
entirely. This remedy is particularly applicable in
those cases of amaurosis where there is perpetual

dilatation of the pupil, for this agent has almost
as decided an effect in producing contraction as
Belladonna has in causing dilatation of the pupil.