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A

PROBATIONARY ESSAY

ON

AMAUROSIS.

PROBATIONARY ESSAY

ON

AMAUROSIS:

SUBMITTED,

BY AUTHORITY OF THE PRESIDENT AND HIS COUNCIL.

TO

THE EXAMINATION

OF THE

Royal College of Surgeons of Edinburgh,

WHEN CANDIDATE

FOR ADMISSION INTO THEIR BODY,

IN CONFORMITY TO THEIR REGULATIONS RESPECTING THE ADMISSION OF

ORDINARY FELLOWS.

BY

ADAM MESSER,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, AND EXTRAORDINARY MEMBER OF THE ROYAL MEDICAL SOCIETY OF EDINBURGH.

Revisit'st not these eyes, that roll in vain
To find thy piercing ray, and find no dawn;
So thick a drop serene hath quench'd their orbs,
Or dim suffusion veil'd."
MILTON.

EDINBURGH:

PRINTED BY JAMES CLARKE AND CO. OLD STAMP OFFICE.

admitted 15 May 1826.

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IS RESPECTFULLY DEDICATED BY

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ON AMAUROSIS.

No part of the animal frame possesses a more beautiful structure than the eye: No part discharges a more important office; nor do any of the organs of sense present to the philosopher or anatomist things so wonderful or so worthy of his attention. Hence Porterfield has observed: "Of all parts of the body, none discovers more art and design than the eye: its parts are so excellently contrived, so elegantly formed, and nicely adjusted, that the organ is equally magnificent and curious as the sense is useful and entertaining."

An organ so delicate and complicated, must necessarily be subject to many diseases: among these is Amaurosis, or Gutta Serena, which will constitute the subject of the following essay.

Amaurosis, derived from the Greek word 'apavew, to obscure, is a disease of the Eye, attended with a diminution or total loss of sight, and arising from a paralytic affection of the Retina, or Optic Nerve.

Four species of this disease are enumerated by Cullen: That of Compression, after the causes, and with the symptoms of congestion; Atonic, after the causes, and with symptoms of debility; Spasmodic, after the causes, and with symptoms of spasm; and Venenata, from poison taken internally, or applied externally.

Amaurosis has been divided by Scarpa into the perfect or imperfect; inveterate or recent; and continued or periodical.

The symptoms of this disease are very irregular, and often fallacious. In many cases, the pupil is very much dilated, immoveable, and possesses its natural black colour and usual transparency; sometimes, in the most complete and incurable cases, the pupil is of its proper size, and even capable of very free motion; and, occasionally, it is actually smaller and more contracted than natural. According to

Richter, the Iris, in particular instances, not only possesses a power of motion, but is capable of moving with uncommon activity, so that, in a very moderate light, it will contract in an unusual degree, and nearly close the pupil. A degree of squinting, according to this author, is the only symptom which is inseparable from Amaurosis; and the pupil of a diseased eye seldom exhibits the clear shining blackness which is seen in a healthy eye. In general, it is of a dull, glossy, horn-like blackness, which symptom alone is frequently sufficient to apprise a well informed practitioner of the nature of the disease. Sometimes the colour of the pupil has an inclination to green, while, in other instances, this aperture seems to be dense, white, and cloudy, so that the complaint might easily be mistaken for the beginning of a Cataract. But this mistake, to which the inexperienced are liable, may be avoided by attending to the following circumstances:-The misty appearance is not situated close behind the pupil, in the place of the crystalline lens, but frequently is manifestly deeper in the eye. Nor is it in proportion to the diminution of sight, the patient being quite blind, while the misty appearance is so trivial, that, if it arose from the opacity of the crystalline lens, it could at most only occasion a slight weakness and obscurity in vision. It is more difAmaurosis is accompanied with this cloudiness in the eye; and, consequently, when the degree of blindness seems to bear some proportion to the degree of mistiness in the pupil. But, in this case, the true nature of the disease may generally be known, by considering, that though the patient's sight is weak, it is not rendered faulty by an appearance of mist before the eyes, which latter circumstance, according to Richter, is always complained of by persons who are beginning to be affected with Cataracts; not to mention that there are usually present several other symptoms, which exclusively belong to the Gutta Serena.

Sometimes the interior of the eye, deep-seated behind the pupil, seems quite white, and a concave light-coloured surface may be observed upon which the ramifications of blood-vessels can be plainly seen. In particular instances, this white surface extends over the whole back part of the eye; while in other cases, it only occupies a half, or a small portion of it. This peculiar appearance has been ascribed to a loss of transparency in the retina itself, and a consequent reflection of the rays of light.

Amaurosis originates in very different ways. These are thought to depend upon some difference

in the cause of the complaint, and to indicate the propriety of using various modes of treatment. Sometimes the patient loses his sight suddenly, while in other cases, the power of seeing diminishes so slowly, that months, and even years, elapse before the disease attains the worst degree. Sometimes it commences with several symptoms, which seem to betray an increase of sensibility in the eye, or some irritation affecting this organ. In moderately light places, the patient can discern things very well, but in a great light, he is not able to see at all. The eye is sometimes so sensible, that a strong light will make it weep and become painful. Sometimes the disease commences with symptoms of weakness and diminished irritability, the sight is cloudy, and the patient feels as if some dust were upon his eyes, and is in the habit of frequently wiping them. His power of vision is greater after meals than when fasting, and the sight is always for a short time clearer after the external use of tonic remedies, such as hartshorn, cold water, &c.

Sometimes the symptoms seem to indicate a preternatural accumulation of the humours of the eye; the patient complains of a tension of the eye-ball, which is often particularly irksome and distressing. Whenever such a sensation is experienced, the eye-sight becomes weak; and on the subsidence of this feeling, the patient is again able to see better. The eye-ball feels hard, and occasionally is more or less enlarged, so that the state of the affected organ somewhat resembles that which takes place in hydrophthalmia, or dropsy of the eye. In some instances, this organ seems to be under the influence of some peculiar irritation. The patient sees several objects, which are in motion, and of different colours, more especially shining fiery spots, flames, and rays of light. Amaurosis sometimes arises after violent inveterate ophthalmia and headachs. Certain patients, before being attacked with the complaint, are repeatedly afflicted with catarrhs, which cease as soon as the Gutta Serena is formed.

This disease commonly attacks both eyes at once, and even in those occasional instances in which one only is deprived of sight, the other rarely continues for a long time sound. The disorder generally extends over the whole eye, but sometimes only a half of the organ is affected, the case being then named Amaurosis Dimidiata. In the first case, the patient is quite blind; in the second, he can discern only the half of objects. Sometimes the malady seems to be confined to a single little spot in the eye; in which case, the patient is conscious of having before the retina an immoveable black speck. It is to this

particular instance that some pathologists apply the term Scotomia. Patients also who may be said to be entirely blind, sometimes have a small part of the retina still susceptible to the impression of light, which is usually situated towards one side of the eye. The centre of the eye seems to be first, and most seriously affected in the Gutta Serena; hence the generality of patients who have an incipient imperfect Amaurosis, can always see objects situated laterally, better than those which are immediately before them.

Amaurosis is sometimes an intermittent disorder, appearing at regular or irregular intervals. It sometimes prevails at particular times, commonly all day, till a certain hour; or from one day till the next, or at a stated time every month; and it sometimes occurs at indeterminate periods. Another morbid affection is sometimes associated with the loss of sight, as in the case of a man mentioned by Richter, who became blind at 12 o'clock in the day, when the upper eyelid used also to hang down in consequence of being affected with paralysis. The attack always lasted twenty-four hours. In the following day, at 12 o'clock, the sight used to return, and the patient then suddenly regained the power of raising the upper eyelid: He would continue thus able to see for the space of the next twentyfour hours. Whenever he took bark, the duration of the disease was regularly doubled; that is to say, the man then alternately remained blind forty-eight hours, and recovered the power of seeing for only twenty-four. In another patient, the aqueous humour during the blindness always became discoloured, whitish and turbid; but its transparency regularly returned on the cessation of the attack.

The ordinary symptoms of the disease are as follows: At the first attack, the sight gradually grows weaker; the patient feels as if a gauze or cobweb were drawn over his eyes, and imagines he sees a white surface, studded with black specks, which he endeavours to wipe away. By degrees the pupil of the eye loses its brilliancy, and is dilated much beyond the natural size; and, if the eye be closed, the upper eye-lid gently rubbed, and then suddenly opened in a light place, the pupil will contract very little, or not at all. The sight grows weaker and weaker, spectacles and convex glasses are of no service, and the patient (generally speaking) sees better in the open day-light than in a darker situation. While he is at all conscious of the impression of the rays of light, or while a certain power of seeing still continues, the disease is called the imperfect, or incomplete Amaurosis, but when the patient is

wholly insensible of the stimulus of light, it is called perfect or complete.

The remote causes of Amaurosis may be properly divided into three principal classes. The first class of causes seems to depend upon an extraordinary plethora and turgidity of the bloodvessels of the brain, or those of the optic nerves, or retina, upon which last parts a degree of pressure is thus supposed to be occasioned. A considerable plethora, especially when the patient heats himself, or lets his head hang down, will frequently excite the appearance of black specks before the eyes, and sometimes complete blindness. Inebriety seems to be a cause of this affection, for Boerhaave mentions a man, who always lost his sight on getting tipsy, and regained it on becoming sober. It is likewise thought, that this disease is produced by the suppression of some habitual discharge of blood, by not being bled according to custom, by the stoppage of the menses, and by the cessation of hemorrhage from piles. In the same manner, the disease may be brought on by great bodily exertions, which determine a more rapid current of blood to the head, several instances of which are mentioned by Richter.

Pregnant women are sometimes deprived of their sight during labour, an instance of which is mentioned by Schmucker. Vomiting is said sometimes to have

the same effect, as likewise travelling on foot in hot weather, and bending the head forwards, especially when the body is plethoric or heated. External injuries of the head sometimes induce Amaurosis; an instance is mentioned by Richter, of a man who received a smart box on the ear, and lost his sight on the spot. A concussion of the head, according to this author, may probably sometimes produce an atony of the bloodvessels, giving rise to their dilatation and consequent pressure on the adjacent nerves; but Mr. Samuel Cooper thinks it more likely, that the blow itself actually ruptures them, and produces an effusion of blood. The former author suspects, that the Gutta Serena which arises during a violent Ophthalmia, or during a severe inflammatory fever, may be of the same nature, and that persons who become blind, while exposing themselves to the burning sun with their heads uncovered, have their sight impaired in a similar way.

The second class of causes is supposed to operate by weakening either the whole body, or the eye alone. The causes are various which operate locally in weakening the eyes. Nothing has a greater tendency to weaken these organs, than keeping them fixed very attentively, for a long time, on minute objects; but if these, however minute, are di-

versified, the eyes suffer much less. The sight is particularly injured by looking at objects with only one eye at a time, as is done with telescopes and magnifying glasses; for, when one eye remains shut, the pupil of that which is open always becomes dilated beyond its natural diameter, and admits an extraordinary quantity of light into the organ. It is generally very much hurt by being employed in the close inspection of brilliant, light-coloured, shining objects; and Richter condemns the practice of illuminating objects, which we wish to see in the evening, with more lights, or with a lamp which intercepts and collects all the rays of light, and reflects them upon the body which is to be looked at. The reflection of the sun upon snow; a vivid flash of lightning, or gazing attentively on the moon, are likewise mentioned by him as producing blindness.

The third class of causes comprehends irritations, which, in some inexplicable way, directly or indirectly, affect the optic nerves, and render them insensible to the impression of light.

Most of these irritations are asserted to lie in the abdominal viscera, and it would appear, that Amaurosis arises from irritation of the gastric organs more frequently than from any other cause whatever, as persons thus affected have generally suffered much from long-continued grief, anger, and other passions, which

are thought to have a great effect in disordering the biliary secretions and digestive functions in general. Worms in the alimentary canal, for the same reason, may induce blindness; but there are other causes besides these; as a violent fright, by irritating the nerves, and mechanical irritation, as small shot received into the orbit of the right eye has induced blindness in the left, and, upon excision of the shot, sight has been restored.

The prognosis depends much on the cause of the disease.

The perfect inveterate Amaurosis of Scarpa, attended with organic lesion of the substance constituting the immediate organ of sight, is said by him to be absolutely incurable. The imperfect recent Amaurosis, particularly that which is periodical, is commonly curable, as depending on the state of the stomach, and primæ viæ, or on causes which can be removed. When it has been of long duration, especially in persons of advanced age, whose eye-sight has been weak from their youth; when it has come on slowly, at first with a morbid irritability of the retina, and then with a gradual diminution of sense in this part, till total blindness was the consequence; when the pupil is motionless, not circular, and not much dilated, the case is hopeless.

The prognosis is likewise unfavourable when the pain extends over all the head, when there is a continual sensation of tightness in the eyeball, which is preceded by a violent protracted excitement of the nervous system, and then by general debility and languor of the constitution, such as excessive venery and hard drinking. When the complaint is connected with epileptic fits, or when it arises from violent, long continued, internal ophthalmia, from external injuries, lues venerea, foreign bodies in the eye-ball, or exostoses about the orbit; and, lastly, when conjoined with a manifest change in the figure and dimensions of the eye-ball, the disease is incurable.

On the contrary, all cases of imperfect, recent Amaurosis, whether the blindness be total or partial, are generally curable, when not produced by causes capable of contusing or destroying the organic structure of the optic nerve or retina; as when the part is in some degree sensible to the impression of light; when the pupil is not excessively dilated, and its disk remains regular, while the bottom of the eye is of a deep black colour; when there is no acute continual pain in the head and eye-brow, nor any sense of constriction in the globe of the eye itself; when the disease arises from violent anger, deep sorrow, fright, a loaded or vitiated state of the

stomach, general plethora, or the same partial affection of the head, suppression of the menses, habitual bleedings from the nose, &c. great loss of blood, nervous debility not too great, and when it occurs in young subjects. It is likewise, for the most part, curable, when it arises from convulsions, or the efforts of difficult parturition; towards the termination of acute or intermittent fevers; and, when periodical, coming on at stated intervals.

From the observations of Scarpa, that species of Amaurosis which he calls imperfect, alone admits of cure; and, accordingly, when the case is recent, the principal indication is to unload the stomach and intestines of the crudities, worms, or morbific stimuli, and afterwards to strengthen the gastric system, facilitate the digestion, and, at the same time, excite the whole nervous system, and particularly that of the eyes, which are affected and rendered torpid by a sympathetic connection.

With respect to the first part of the treatment, the intention is perfectly answered by emetics and alteratives; and of the former, Tartar Emetic is preferable to every other. When afterwards given in small and divided doses, it answers the purpose of an alterative medicine, the action of which may be increased by conjoining it with gummy and saponaceous substances. Scarpa therefore

recommends to dissolve for an adult, three grains of tartarized antimony in four ounces of water, of which two table spoonfuls may be taken every half hour, until it produces nausea, and afterwards copious vomiting. On the following day, he prescribes resolvent powders, composed of one ounce of the crystals of Tartar, and one grain of the Tartar Emetic, divided into six equal parts, of which the patient should take one in the morning, another four hours afterwards, and the third in the evening, during eight or ten successive days. This medicine will produce a slight nausea, and some evacuations of the bowels more than usual. and perhaps after some days, even vomiting. But if during the use of this opening powder, the patient make ineffectual efforts to vomit, and complain of a bitter taste and want of appetite, without any amendment of sight, the emetic should be repeated, and even a third and fourth time, if a tendency to vomit and other symptoms require it. When the stomach has been thus cleared, and the bowels evacuated by a brisk cathartic, the patient may have in a great measure recovered his sight. should now be exhibited to strengthen the stomach and nervous system. For this purpose, a powder may be taken, composed of one ounce of the cinchona, and half an ounce of Valerian root,

divided into six equal parts, one of which should be taken morning and evening, in any convenient vehicle, which may be continued for at least five weeks. The food should consist of tender juicy substances and weak broths, with a moderate quantity of wine; and gentle exercise should be taken in a salubrious air.

As a local application, the vapour of the aqua ammoniæ puræ, properly applied to the affected eye, is very serviceable. This remedy is made use of, by holding a small phial, containing it, near the patient's eye, so that the highly penetrating vapour with which it is surrounded, may excite a pricking sensation in that organ, by the action of which, in less than half an hour, the eye which is exposed to it becomes red, and waters copiously. It is then proper to desist from it, and repeat the use of it after the lapse of three or four hours. If both eyes are affected, two small phials are to be filled with the aqua ammoniæ puræ, or, if one only be employed, it should be held first to the one eye, and then to the other, until both water abundantly and become red. The aqua ammoniæ puræ must be renewed every third day, in order to preserve the activity. This application should be used from the beginning of the treatment of the imperfect Amaurosis, or, at least, after the stomach has been unloaded by an

Emetic, and continued for some time after the Amaurosis is dissipated. Other practitioners, besides Scarpa, affirm that they have used this local remedy, in such cases, with advantage.

Stimuli are recommended to be applied to parts of the body which sympathise with the eyes, for assisting the action of the vapour of the caustic volatile alkali. These are, blisters to the neck, friction upon the eye-brows with the Anodyne Liniment, and irritation of the nerves of the internal nostrils, by means of sternutary powders, the last of which Mr. S. Cooper rather thinks empyrical.

Electricity has been proposed as one of the principal means of curing Amaurosis; but Scarpa rather regards it as a secondary remedy. Mr. Hey, one of its most zealous advocates, confesses that it is only useful in recent cases of this disease, and most frequently only when combined with appropriate internal remedies, of which purgatives are the principal. Electricity, according to Mr. Cooper, is said to have proved more strikingly useful in cases of Amaurosis arising from lightning, than when the disease has been produced by any other cause.

In the cure of the imperfect periodical Amaurosis, Cinchona, when given early, contrary to what might have been expected, is found improper, as tending rather to aggravate the affection, and render the attacks more frequent, and longer continued. Emetics, afterwards internal resolvents, should be employed; tonics, and the Cinchona, which was previously useless or injurious, may now be exhibited with advantage.

When imperfect Amaurosis arises from excessive heat, exposure of the head to the rays of the sun, violent anger in plethoric persons,-general and partial blood-letting, cold fomentations to the eyes and the whole head, afterwards an Emetic or Cathartic, in small doses, constitute, according to Schmucker, the best method of cure, and such, as he affirms, he has frequently used with success: but I should rather think that an emetic is improper, as it is apt to produce fulness of the vessels of the head. The same is proper when the disease arises from the menses recently and suddenly suppressed; as the principal indication, previous to the use of an emetic, is to produce the discharge of blood from the uterus by means of leeches applied to the internal surface of the labia pudendi; pediluvia, and afterwards an emetic and resolvent pills, composed of aloes, myrrh, and rhubarb. Should these fail of success, Scarpa recommends a stream of electricity, conducted from the loins, across the pelvis, in every direction, and thence repeatedly to the thighs and feet, which, he

says, has frequently succeeded after a trial of several weeks.

When the disease arises from the suppression of a habitual hæmorrhoidal flux, Scarpa recommends leeches and fomentations to be applied to the hæmorrhoidal veins, an emetic, and afterwards the resolvent pills, or those composed of aloes, &c. When it is not produced by any such cause, Richter prescribes topical corroborant remedies, particularly bathing the whole head, and especially the parts about the eyes, with cold water. When induced by depressing affections of the mind, profuse hæmorrhage, or minute inspection of small and luminous substances, the cure consists chiefly in removing the sordes from the stomach, and strengthening the nervous system in general, as formerly mentioned.

When this malady arises from the variolous, rheumatic, or gouty metastasis, or from the impetigo of the head imprudently repelled, the same attention is to be paid in clearing the stomach; and it will likewise be expedient to determine the morbific humour from the eyes, to some other part, by a consensual irritation, excited in the neck or neighbouring parts, by blisters or setons.

In the incomplete Amaurosis, which arises from general nervous debility, in consequence of profuse hæmorrhage, convulsions from *inanition*, or long continued and intense study, chiefly by candle-light, especially in young persons, small and divided dozes of Tineture of Rhubarb are proper for cleansing the intestinal canal, and afterwards corroborant and cardiac remedies, and avoiding all causes of irritation. When the stomach is cleared, the decoction of Cinchona with Valerian, the infusion of Quassia, with a few drops of Sulphuric Æther in each doze, and nutritious animal food of easy digestion, are proper. Due attention is to be paid to air and exercise, as mentioned under the general indication of cure; the patient should avoid as much as possible mental anxiety, and should not fix his eyes on very minute or lucid objects, and ought to moderate the impression of light on the eyes, by never exposing them to it, unless they are defended by plain green or French-grey glasses. By these means the sight will gradually improve; and if the debility be confined to one eye, it will be proper to keep it covered for some time.

When Gutta Serena appears to arise from effusion, either upon the surface or within the cavities of the brain, or from tumours of an encysted, steatomatous, scrofulous, or bony character, and likewise in some anomalous cases in which other means have failed, Mercury has been successfully employed. The practitioners should be directed by circum-

stances, as to the form in which it should be employed, but Calomel and the Blue Pill are most generally used, and these may be continued till the mouth is a little affected, chiefly to obtain its alterative effects on the system. The Corrosive Sublimate has been recommended by Mr. Ware, but it does not appear to possess any great advantage over other preparations of this metal.

It is, however, to be regretted, that, as the causes of Amaurosis are often involved in much obscurity, all our efforts to cure the disease will often prove abortive, and the practitioner will have cause to lament his inability, notwithstanding the remedies which he employs, to restore to his patient the use of the most noble and important of his senses.

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