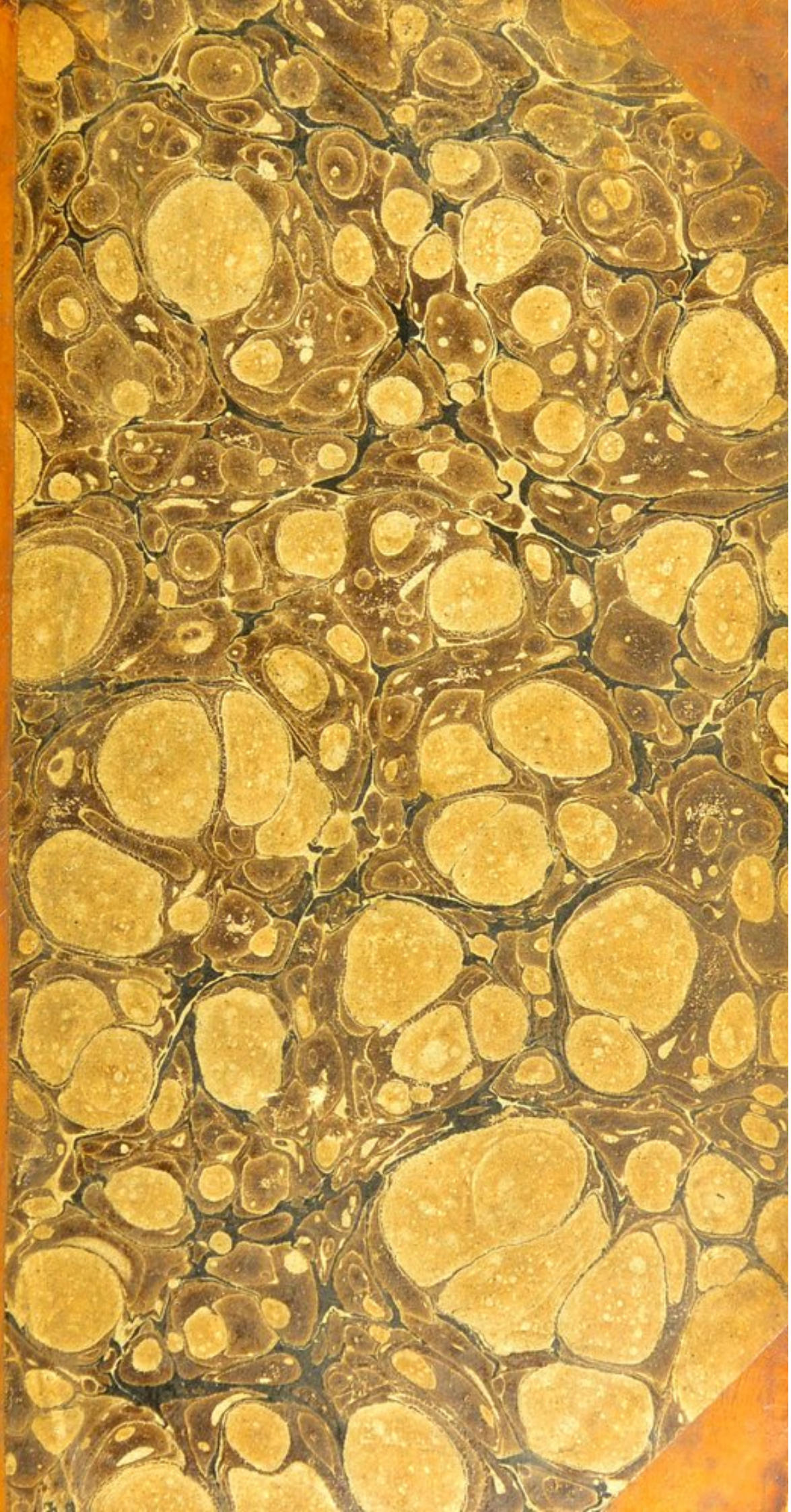

ON THE

NATURE, SYMPTOMS, AND TREATMENT

OF THE DIFFERENT SPECIES OF

AMAUROSIS,

OR

GUTTA SERENA;

Illustrated by Cases.

"But thou
Revisit'st not these eyes—that find no dawn;
So thick *a drop serene* hath quench'd their orbs,
Or dim suffusion veil'd."

Paradise Lost.

BY JOHN STEVENSON, Esq.

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PREFACE.

At the urgent solicitation of the President and Council of the Medical Society of London, I undertook to deliver, on a short notice, the Anniversary Oration, in March, 1817, in consequence of the premature death of the respectable individual (the late Mr. Royston) who had accepted the honorable appointment. In the conclusion of that Address it was suggested, that the more obscure species of Amaurosis depend probably, in the majority of instances, not, according to the prevailing notion, upon an exhausted state of nervous energy, but upon its temporary suspension or total annihilation, the effect of inflammatory action, or of congestion in the capillary vessels of the retina. This oration I was requested to publish. Several

reasons however induced me to decline complying with the flattering request. At the same time I promised, at a convenient opportunity, to enlarge and prepare for the press, that part of my oration which, as well on account of the novelty of the doctrine, as of the success of the practice founded upon it, had engaged the particular attention of the learned and numerous audience assembled on that occasion. In fulfilment of that pledge, I now submit the following pages to the candor and indulgence of my professional brethren.

My ideas of the nature of the disease were first excited by a dissection made many years ago whilst I was engaged in general private practice, which ill health compelled me to resign and exchange for a more limited and less laborious sphere of professional exertion. In the spring of 1804 I was called upon to attend a respectable patient between forty

and fifty years of age, who was found lying on the ground in an apoplectic fit. His person was tall and thin, his countenance pallid, and his habits were remarkably temperate and regular; consequently it could not have been thought likely that he should fall a sacrifice to apoplexy. Notwithstanding the various and active means that were employed to effect his recovery, he expired within twelve hours after the attack. In the forenoon of the following day, I willingly embraced an opportunity of examining the contents of the cranium, and found not only the most decisive marks of vascular congestion in the meninges, but likewise a large accumulation of discoloured serous fluid in the ventricles of the brain, and a mass of coagulated blood so situated as to compress the optic nerves at the part where they decussate. This latter discovery explained the cause of his total blindness, and of the fully expanded

state of the pupils of his eyes; although he was not, when I first saw him, entirely destitute of the power of sensation and feeling. This case served to shew, in confirmation of many similar pathological facts on record, that *pressure* is the immediate cause of Amaurosis: and that this disease occasionally takes place in constitutions apparently little disposed to suffer from cerebral plethora and its consequences. These circumstances made a strong impression on my mind at the time they occurred, and laid the foundation for those subsequent reflections, enquiries, and experiments, which have given birth to the present performance.

If what has been advanced should be deemed imperfect and unsatisfactory, I may plead in excuse, the acknowledged difficulty of the undertaking. From preceding authors I could derive no assistance with respect to the etiology of the more obscure

forms of the disease. All that has hitherto been written, is at direct variance with the views I have embraced on the subject. With the exception of the incidental remarks annexed to the cases of Gutta Serena published by the late Mr. Ware, no attempt had been previously made to elucidate the nature of the disease by a consideration of the modus operandi of its exciting causes. Gutta serena has indeed been generally regarded as the opprobrium of medical science, and as constituting one of the most formidable and intractable among the numerous class of disorders incident to the organ of vision. The celebrated Maitre-Jan, in his valuable work on "Diseases of the Eye," does not hesitate to pronounce it to be at all times, and in every stage, absolutely incurable. Nay, he declares that to seek for a cure is as visionary as searching for the philosopher's stone. "C'est rechercher la pierre phi-

losophale que de vouloir chercher des remedes pour guerir la goutte sereine; cette maladie est absolument incurable."*

The distinguished Professor Beer of Vienna, was particularly desirous of investigating the nature, and ascertaining the best modes of treating this disorder. In order to accomplish this object, he is said to have instituted and supported, for several years, at his own individual expense, an establishment exclusively devoted to the reception of amaurotic cases. The observations he has published in reference to this malady, shew the extreme obscurity in which it was involved. Many competent judges have not scrupled to avow their opinion, that his chapters on Amaurosis, although not destitute of useful remarks, are the most confused, and the least instructive of all that he has communicated

* Traité sur Maladies de l'Œil, p. 253.

relating to diseases of the eye. In fact, the complaint under consideration is, at this day, generally regarded as nearly synonymous with an incurable state of blindness.

My aim in the following work has been to investigate the nature of Amaurosis, and to prove by an appeal to reason, analogy, and facts, that in various instances, when unaccompanied with morbid changes of structure in any part of the eye-ball, this disease admits not only of satisfactory elucidation, but also of successful modes of treatment.

——— Si quid novisti rectius istis,
Candidus imperti; si non, his utere mecum.—HORACE.

105, Great Russell Street,
Bloomsbury,
Sept. 1st, 1821.

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1	13—for *these* read *their*
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59	10—for *result* read *results*
65	1—for *experience* read *expansion*
70	10—for *sneiderian* read *schneiderian*
85	1—Note, for *Cook* read *Cooke*
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100	6—for *basillary* read *basilary*
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257	10—for *even* read *ever*
	17 to 22—after *any* read *one of the more important viscera has suffered considerably from preceding attacks, it seldom entirely recovers its former healthy powers, but often becomes permanently injured in its structure*

CHAPTER I.

Definition and Symptoms.

The term Amaurosis, signifying *dimness of sight,* is derived from the compound Greek verb ἀμαυρόω, to darken or obscure. From a mistaken idea relative to the nature and cause of the disease, it was called by the Arabian physicians *Gutta Serena,* a name by which it is still frequently designated; *gutta,* because it was supposed to arise from a *drop of lymph*; and *serena,* in consequence of the pupil retaining its natural pellucidity, and not appearing clouded, as in Cataract.

"So thick *a drop serene* hath quench'd these orbs."

Milton.

The complaint has likewise occasionally been denominated *Cataracta, vel suffusio nigra,* by the Germans, and *La Goutte sereine* by the French. It also sometimes receives the appellation of *Palsy of the Retina,* or simply *Cæcitas,* or *Ambliopia.*

Vision being simply *impaired,* was said to be *suppressed,* but when wholly and irrecoverably *destroyed,* to be *abolished;* distinctions synonymous with the *perfect* and *imperfect Amaurosis* of modern authors.

Amaurosis, or more familiarly *Gutta Serena,* may be defined that disease of the *Eye* which consists in a diminution or total loss of sight, without any other visible imperfection in the organ than a dilated and immovable state of the pupil. Although this definition may comprehend the leading and characteristic points of the complaint, still it must be admitted that no general definition can meet the varied symptoms of each particular case. On this ac-

count it appears to me necessary to devote a few pages to a more ample consideration of this part of my subject.

If we admit for the present, what will hereafter be proved, that Amaurosis is indeed an affection of the optic nerve, under which term I mean to include its cerebral origin in the thalamus, the tractus opticus, and its expanded termination in the retina, it might be thought an easy task to describe it in such language, as to render the malady at all times readily cognizable. But such a conclusion would be found more specious than correct. For although, in many instances, but little difficulty may be experienced in ascertaining the nature of the complaint, it sometimes happens that there is scarcely any indication which can be implicitly relied on as unequivocally pointing out its real character.

This obscurity, and a great source of difficulty in the arrangement of this exten-

sive and complicated subject, arise principally from Amaurosis being understood, in the enlarged acceptation of the term, to embrace, not only those cases in which the texture of the optic nerve or retina is primarily impaired or destroyed, (Amaurosis idiopathica) but likewise those diseases which are accompanied with amaurotic symptoms, the result of a morbid affection of the choroid, and sclerotic coats, a change of structure in some of the internal parts of the eye-ball, or of the brain, (Amaurosis symptomatica) as well as of sympathy of the eye with a disordered state of the chylopoetic viscera; and of metastasis, or translation of diseased action from other parts, or organs, to that of vision.

Richter asserts, that a degree of *squinting* is the only symptom inseparable from Gutta Serena. It must be allowed that patients who labour under this disorder in one eye only, are generally incapable of

steadily directing it in the axis of vision towards the object at which they wish to look, in consequence of a loss of harmony and association with the sound organ, a failure which is apt to occasion a peculiar obliquity of sight, and other effects of depraved vision.

In some of the worst, or perfect species of the disease, in which both eyes are alike destitute of the faculty of sight, the will having lost its controuling influence over the external muscles of the eye-ball, they act irregularly or spasmodically, giving the appearance of that singular want of expression, or vacant unmeaning stare, or rolling motion, as if the eyes were engaged in a fruitless search after light; a symptom highly characteristic of this hopeless form of the disease:

——— "But thou
"Revisit'st not these eyes, that *roll in vain*
"To find thy piercing ray, and find no dawn."

Milton.

Bearing in mind that a peculiar cast, or confirmed squint, is frequently owing to a defective action only of one of the external muscles of the eye-ball, to a leucomatous speck in the centre of the cornea, to sympathy with a disordered state of the primæ viæ, and to morbid habit acquired in early life; when strabismus exists in connexion with impaired or lost sight, as a coincidence, and independent of any of the causes assigned above, it may be regarded as one of the least fallacious of the pathognomonic symptoms of Amaurosis. As such, we may avail ourselves of it as an useful guide to direct our judgment, in those cases especially in which, from the absence of any visible defect, we are constrained to form our opinion in a great degree from the assurances of the individual that he is blind, who has sometimes an interest in deceiving us.

A preternatural state of dilatation and

immobility of the pupil has been very generally esteemed one of the most certain marks of Amaurosis. Notwithstanding this prevalent belief, I feel warranted from facts and observation to assert, that this condition of the pupillary aperture does not, exclusively considered, justify such an inference. This symptom indeed furnishes a strong presumptive argument in favor of the supposition, but apart from collateral evidence, it ought not to be admitted as an undeniable proof of the presence of that disease. The varying size of the pupil, in a sound state of the eye, is wholly regulated by the motions of the iris, which are excited sympathetically by the stimulus of light upon the retina. Under ordinary circumstances therefore, the lively or torpid action of the iris, and the corresponding contracted or dilated state of the pupil on the sudden admission of light, indicate the degree of sensibility of the retina, and the consequent

perfection or imperfection of vision; so far at least as regards the sentient texture of the eye. But whatever appearance the pupil may present, it is of the highest consequence not to attach to it more importance than it really deserves; since the active or contracted, and the passive or dilated condition of the iris is, not unfrequently, wholly independent of the healthy or morbid state of the retina. Vision is incompatible with a diseased or compressed state of the optic nerve, taken in its enlarged sense, but not with a fixed or moveable, an expanded or diminished pupil.

I have known, for instance, a few cases in which, subsequently to the operation for Cataract by the absorbent practice, the pupil has remained permanently dilated, and yet the patient continued to enjoy a share of sight but little inferior to what is conferred by the most successful removal of the opaque lens. This fact is indeed at

variance with the declaration of Beer, who maintains, that such a state of the iris is the result of mischief done to the ciliary processes by the unskilful use of the needle, and that blindness is the inevitable consequence. Although it is not improbable that the accident alluded to may have occurred in the hands of an ignorant and inexpert operator, I cannot admit with the distinguished German Professor, that the wounding of the vascular texture in question is to be esteemed the inevitable source of a preternaturally dilated pupil, and total loss of sight. In fact, our knowledge of the physiology and pathology of the ciliary processes has hitherto been very imperfect and unsatisfactory. The recent suggestion of Dr. Young, that they principally contribute to the production of aqueous humour is rendered highly probable, on the one hand from their extreme vascularity, which does not appear, as far as can be

judged, subservient to any other purpose, and on the other, from the consideration that the aqueous humour is always secreted in proportion to the absorption of the vitreous, and the posterior chamber is filled with fluid in cases where the membrana pupillaris is retained, or in which the opening of the iris has been closed by an artificial membrane, or false Cataract. And it may also probably assist in altering the position and sphericity of the lens for the purpose of adjusting the eye to different distances. Without however contending for the use of the ciliary processes, I have no hesitation in stating, that the same phenomenon sometimes occurs under circumstances which negative the suspicion even that any injury can have been inflicted on them. The passage of a large lens through the natural opening of the iris has so far affected that membrane, as subsequently to destroy altogether the power of contrac-

tion, the pupil remaining, in consequence, ever afterwards in a fixed and dilated state.

I have likewise known similar effects to result from an adhesion between the uveal surface of the iris, and the circumference of the capsule of the lens, the pupil having been under the influence of the belladonna during the existence of iritis. A milky, or soft Cataract, is usually so large and voluminous, as to protrude considerably forward, and by its pressure against the iris, is apt to occasion a dilated and immoveable pupil, which, when suffered to continue for a long period in that situation, has, in some instances never after recovered its contractile property.

I have recently had an opportunity of observing so singular an appearance of the pupil of a young gentleman who consulted me for Cataract of the right eye, accompanied with other curious phenomena, that I trust it will not be deemed uninteresting

if I introduce the particulars in this place. My patient, when at school, had been precipitated with great violence, and at a considerable elevation, from a rope swing, and fell upon his head. Slight symptoms of concussion of the brain speedily manifested themselves, but unfortunately were not regarded with that particular attention which any injury to that organ ought ever to excite. Recovering from the more immediate effects of the accident, he found his sight somewhat impaired. Many months after the event, I was requested to examine his eyes. The left iris possessed its full power of motion, but by a careful inspection of the eye in a strong light, I discovered a corrugated membranous substance floating in the situation of the vitreous humour, a dissolution of which (synchysis) had taken place, and impeded vision, according to the portion of the retina which became concealed in its irregular

movements. The sight of the right eye was rendered very imperfect by the presence of an opaque lens. The iris being notwithstanding very lively and active, and the degree of vision as great as it usually is in cases of this description of cataract, I ventured to recommend the trial of an operation, considering that it would afford a chance of benefiting, without much risk of doing harm. As the opaque crystalline did not exhibit the usual signs of hardness, the process by Keratonyxis as it is called by the German ophthalmologists, or the *anterior* * operation of English practitioners, was preferred. The introduction of the needle through the cornea produced scarcely any sensation, and I speedily succeeded, in the presence of several medical gentlemen, in making a central opening

* For a full description of that, and other improved modes of operating with the needle, the reader is referred to Sect. 8. of the second edition of the author's "Practical Treatise on Cataract."

through the capsule, and in freely breaking up the yielding texture of the diseased lens. Not the slightest inflammation ensued, and absorption commenced and proceeded with such extraordinary rapidity, that I felt justified in anticipating an early restoration to sight, the improvement in his sight keeping pace with the progressive removal of the opaque medium.

Under these favorable circumstances, the relations of my patient did not think it expedient to bring him to me after the expiration of the first four days subsequently to the operation, but waited until several weeks had elapsed, when they were induced to desire my attention, principally on account of the singular appearance which the eye had then assumed.

Instead of finding, as I had reason to expect, the whole ambit of the pupil cleared by the entire absorption of the disorganized lens, I was not a little surprised to notice

an extraordinary change in the aspect of the eye, which I was assured had only recently occurred. The iris appeared as if divided into two distinct parts by a perpendicular section, the nasal half had become retracted to nearly a line in breadth, affording a full view of the interior transparent humours, whilst the temporal portion preserved its natural conformation and situation. A part of the capsule had become corrugated, and had formed a slight adhesion with the pupillary edge of the temporal border of the iris. Not the most trifling uneasiness had been felt after the performance of the operation either in the eye, or any part of the head, nor had the alteration in the character of the pupil been preceded by any apparent symptom of inflammation. Feeling desirous of watching the progress of this anomalous case, the patient was requested to call upon me again, after an interval of a week. On presenting him-

self at the appointed time, a further change had taken place, the anterior chamber having become half filled with blood, the organ in other respects preserving its former appearance. A few only of the vessels of the conjunctiva were for the first time observed to be in a congestive state, but not the slightest complaint was made of pain. Four leeches were directed to be applied to the outer canthus, and a pill, consisting of half a grain of submuriate of mercury with three grains of compound extract of colocynth, to be taken every night, and a sufficient quantity of sulphate of magnesia in infusion of roses every morning, to insure two or three daily evacuations. By a perseverance in this plan for the space of a fortnight, the whole of the extravasated blood disappeared, and the eye resumed the same character it had exhibited previously to the sanguineous effusion. But the share of vision he had ac-

quired by means of the operation, in consequence of these repeated attacks, was so far lost that, when I last saw him, he could only perceive the motion of the hand, or the general outline of objects. Whether any further change will yet go on cannot, at present, be determined. I recollect more than one instance of a disease, bearing in several respects very similar features, in which, without any operation having been performed, various alterations of appearance rapidly succeeded each other, until the sight being at length wholly destroyed, the eye remained tranquil, and ceased to undergo any further apparent changes either in its external or internal structure.

I must also add, that complete Amaurosis may exist, although the pupil continues to perform its function in the most correct manner.

Some time since I was consulted by a female, in advanced life, who laboured under

a perfect and inveterate gutta serena of both eyes, the iris in each of which was affected most readily by different degrees of light admitted to it, and notwithstanding this presumptive evidence of a sound state of the retina she had not, for many years, been conscious of the slightest perception even of the most brilliant light. Several similar instances have occurred to my observation, more especially in those young persons who are afflicted with the congenital disease, in whom the ball of the eye is almost constantly observed to roll about in an unsteady and involuntary manner.

Janin, Richter, and several other writers, have noticed the occasional mobility of the iris in certain instances of Gutta Serena. Schmucker twice witnessed this peculiarity. The Baron de Wenzel attempted to explain the cause of this phenomenon, by supposing that it is owing to the ciliary nervous filaments which are distributed to, and confer

the power of action upon the iris, and which derive their origin from the lenticular ganglion, preserving their sensibility, whilst the immediate nerve of vision has been entirely divested of that property.*

The iris has been considered partly as muscular, endowed with a small share of voluntary power, † superadded to its predominating involuntary actions; the former being probably derived from the influence conveyed to it through the medium of filaments from the nasal or third branch of the 5th pair, (the trigemini) the latter from the energy imparted by its principal supplying nerves, the ciliary, which are branches from the ophthalmic, or lenticular ganglion. Its voluntary or adjusting motions, being under the direction of the will, must of course

* See Baron de Wenzel's "Treatise on the Cataract," translated by Ware, p. 49.

† Vide, on this point, the interesting Letter of Dr. Roget, in Mr. Travers's Synopsis, p. 72.

cease, when the communication between the retina and the sensorium is interrupted or destroyed.

But if the suggestion of a late author* should be established by future pathological enquiries, viz. that in those peculiar cases of perfect Amaurosis, in which the iris preserves its contractile and expansile powers, the cause of the disorder is seated in some part of the optic nerve within the cranium, the phenomenon in question may probably be explained in the following manner. As the involuntary motions of the iris are wholly subservient to the stimulus of light upon the sentient texture of the eye, the retina may still be susceptible of those impressions, as an instrument of vision, with which the iris has been accustomed and continues to sympathize, although they prove unavailing, as far as regards sight, on account of the bar opposed to the sub-

* Mr. Travers.

sequent transmission of those impressions to the brain, the seat of sensation and perception. The solution however of this question, it is apprehended, would be of little practical importance, since whatever the nature, the extent, or the situation of the disease, under which some part of the sentient apparatus of the organ of vision may suffer in this species of Gutta Serena, its removal is, in all probability, beyond the reach of art. Sometimes the case has been reversed, the retina has retained its sensibility, whilst the iris has become paralytic, a state of disease which is associated with a widely dilated and immovable pupil, and generally with a ptosis or falling of the upper lid, a combination referable to the communication which subsists between the nerves immediately supplying these respective parts. This peculiar state of the complaint, however, is so very rare an occurrence, as not to have fallen under

my own observation, and I believe that few practitioners, besides Schmucker, have had an opportunity of witnessing it.

Again, Amaurosis is by no means unfrequently accompanied with a fixed and contracted, instead of a dilated and freely movable pupil. This species of the disorder, though not perhaps invariably, is most commonly the consequence of a violent internal ophthalmia, and is usually combined with an angular, or irregular form of the pupillary border in one, or more points of its circumference, and with an opacity of the capsule of the lens, with which the posterior surface of the iris has become agglutinated; constituting the complicated adherent capsular cataract.*

From what has been advanced then it appears, that it is only in the sound state of the eye that the activity of the iris,

* Vide the Author's "Practical Treatise on Cataract," 2d edit. p. 16.

evinced by the lively motions of the pupil, affords the surest indication of the strength and perfection of the nerve of vision with which it is associated; whilst on the contrary, the fully dilated and absolutely motionless pupil, or its slow and incomplete contraction on the sudden admission of strong light to the organ, bespeak either the total abolition of, or a proportionate defect, in the sensibility of the retina. But it has also been shewn, that the iris may sustain a loss of its mobility, and become permanently contracted or dilated, from an agglutination of its component fibres, or from an union of its posterior surface with the tunica hyaloidea, or with a new formed adventitious membrane, the consequence of its texture having previously been the subject of adhesive inflammation.

A paralysis of the ciliary nerves occasions a gaping and immovable pupil, although the texture of the retina itself may not be

affected. And on the contrary, the motions of the pupil may be active, notwithstanding the insensibility of the optic nerve, provided the ciliary nerves and the iris are free and uncompressed.

Hence it is evident, that the various conditions of the pupillary aperture, considered abstractedly, do not warrant us in deducing any positive opinion relative to the precise nature and essential character of Amaurosis, nor in forming a decided judgment as to what will be the probable result of the case. For example, the lively or wholly torpid condition of the iris does not, individually, afford any certain criterion to enable us to determine whether the disease be curable, or incapable of relief; since it sometimes happens that Amaurosis, when recent and properly treated, is remediable, although it may be associated with a fixed and widely expanded pupil; whilst, on other occasions, the disorder proves absolutely

intractable, notwithstanding the iris may possess its natural power of action. Nor are instances wanting in which the pupil has regained its suspended capacity of motion, without having been followed by the subsequent restoration to sight. In the course of my practice I have had the mortification to meet with two cases of this description, in both of which, though encouraged to anticipate eventual success by the pupils having gradually recovered and retained, for a time, their full power of action, my endeavours to re-establish the function of vision were, notwithstanding, completely frustrated.

But although, abstractedly considered, so little confidence is to be reposed in the relative size and motion of the pupil as a pathognomonic symptom of Amaurosis, important information may be derived from its careful examination in a favourable light. An eye affected with that disease, especially

if it has become inveterate, will rarely be found to exhibit that clear jetty brightness constantly visible in a sound and healthy state of the organ. It is more commonly of a dull horn-like blackness, an appearance which is sufficient even of itself, independently of the actual condition of the iris, to excite the apprehensions of an experienced practitioner as to the tendency of the disorder; a suspicion which will be further strengthened in proportion as it is accompanied with defective vision.

Sometimes the colour of the pupil inclines towards a greenish tint, resembling that of the water of the calm sea. On other occasions, there seems to be a deep-seated diffused turbidity, or muddy aspect of the pupil, which has given rise to the complaint having been mistaken, and treated for Cataract. This error may however be always avoided, by attending to the state of the pupil, the mobility of which is not

influenced by incipient Cataract, and to the relative situation of the opacity, as compared with the more forward position of the crystalline; added to the consideration, that the semi-transparent state, or inconsiderable cloudiness of the humours of the eye, would alone produce only a slight imperfection and obscurity of vision. Sometimes indeed the diagnosis is rendered more difficult, by an Amaurosis being associated with this cloudiness, in which case there is not that disproportion between the want of sight, and of limpidity in the refractive media of the eye. Even under these difficulties the true nature of the malady may be very generally ascertained, by duly considering and comparing the phenomena with those which more peculiarly belong to Amaurosis, and by a careful enquiry into all the circumstances of the case, and the state of the constitution. The patient, whilst complaining of a sense of weakness of sight,

will be silent as to the perception of a *settled* mist before his eyes, a symptom which may be regarded as one of the earliest indications of the commencement of Cataract. At this period of the latter disease, dioptric glasses afford considerable improvement to vision, whilst in imperfect Amaurosis they are frequently useless. Another diagnostic symptom, strongly and very properly insisted on by writers on the subject, applies to the difference which the flame of a candle exhibits to persons respectively labouring under incipient Cataract, or Amaurosis. To the former it appears as if it were involved in a generally-diffused thin mist, or white cloud; but to the latter a halo, or the colours of the rainbow seem to encircle, or emanate from the mist. Again, the individual who is affected with the imperfect Amaurosis, usually experiences an occasional increase or diminution of his visual faculties, under different states of the circu-

lation, as influenced by a full and stimulant meal, by which some find their sight improved, others greatly deteriorated. Enlivening or distressing mental emotions, and other physical causes which have a tendency to excite or depress the energy of the nervous system, have a correspondent effect in affording a temporary benefit, or in causing a diminution of vision, which do not occur in cases of incipient Cataract.

Some time ago I was consulted by a young Gentleman who, a few months before, found a difficulty in accurately decyphering the letters of a book, on account of the uniform mist which appeared to envelop and obscure them. The sight became gradually worse, the sphere of vision sensibly abridged, and he could distinguish objects much better in a moderate than a strong light; the reverse of what generally obtains in Amaurosis. Upon inspecting the pupil, a slight muddiness or opacity

was visible in the situation of the crystalline lens; which circumstance, added to the activity of the pupil on exposure to vivid light, to his not having had any symptoms indicative of local congestion, or deep-seated pain in the eye, or any preceding or accompanying affection of the head, led me, contrary to the declaration of several other practitioners, to pronounce the case incipient Cataract, rather than imperfect Amaurosis; an opinion which has since been fully confirmed by the complete opacity of the crystalline.

That form of the complaint above described, which is attended with a deep-seated muddy appearance of the eye, appears to be caused by an alteration in the texture of the hyaloid membranous septa of the vitreous humour, constituting the disease termed Glaucoma,* and by the Germans, sometimes, Black Cataract.

* Glaucoma, or Glaucosis, from γλαυκος, azure, or

But one of the worst, and altogether incurable species of Gutta Serena, is that which is marked by an opaque dull whitish appearance at the fundus of the concave surface of the eye-ball, answering to the

sky-blue colour. Mons. St. Ives, (Diseases of the Eye, translated by Stockton, p. 231) adopting the opinion of the Greeks, who regarded Glaucoma as synonymous with Suffusio or Cataract, says, "that disease is called Glaucoma, in which the crystalline is of the colour of sea-water;" but he adds, "there are various opinions of this disease, both as to its origin, and the different seats allotted to it. Some have judged it to be simply an alteration of the *crystalline*, and others of the *vitreous* humour."

Mr. Sharpe observes, in his Operations of Surgery, (vide p. 158,) "that Glaucoma is the Suffusio of the Latins, and the Cataract of the present times." "Le glaucome est, disent la plus grande partie des auteurs modernes qui en ont parlés dans des traités particuliers ou généraux, une maladie dans laquelle l'humeur *vitrée* est affectée d'opacités." Manuel de l'Oculiste, tom. prem, p. 320. It is frequently combined with an opacity of the lens, and other symptoms of organic disease of the tunics, as well as of the humours of the eye, and is absolutely incurable.

situation of the retina, in a morbid alteration of which nervous tunic it indeed consists. When this disease succeeds to deep-seated pain, it is probably the result of inflammation of the retina, which, like other transparent textures, becomes opaque from inflammatory action, occasioned either by an effusion of lymph upon the interior of the choroid, or by an actual change of its proper structure. In these instances, the whole of the back part of its internal surface undergoes a similar change, the cloudiness appearing somewhat concave, the pupil more or less expanded, the iris with little, or not any motion, the pupillary border irregular, and the vision nearly, or altogether extinguished.

But though this affection of the retina is generally produced by *acute* internal ophthalmia, in strumous habits it more frequently proceeds from insidious *chronic* morbid action. The symptoms accom-

panying this form of the disease are a varicose, or overloaded state of the superficial vessels of the eye, with a sense of tension and occasional uneasiness, rather than violent lancinating pains, indicating a congestion of the deep-seated vessels. The sclerotica, at the same time, frequently becomes thinner and semi-transparent, and admits of the reflection of the vascular texture of the subjacent choroid, which occasions a generally diffused livid, or purplish tint; or yielding, in certain points of its circumference, one or more staphylomatous protrusions are formed. The humours, losing their natural limpidity, assume a yellowish or muddy appearance, and are so greatly increased in bulk, as to press through the pupil, causing it to become widely dilated and immovable, the thin irregular border of which appears to stretch around, and to embrace the bulging lens. It is scarcely necessary to add, that vision is

wholly annihilated; although it is not unusual for the patient to be distressed by the sensation of flashes of light; a proof that the sentient texture of the eye is involved in the general disorganization.

But instead of the extensive and almost general morbid changes of structure in the several tunics and humours of the eye above detailed, the whole sometimes appear sound, except on looking, by the aid of a good light, into the interior of the eye-ball, an opaque white spot, or projecting chalk-like or pearly substance is visible at some part of the concave face of the retina, which is frequently covered with a net-work of coloured blood vessels derived from the arteria centralis retinæ. The disease has been denominated *Cancer of the Eye,* and sometimes, with more propriety, medullary fungus; and is not preceded by, nor in its early stage accompanied with pain, or any of the usual phenomena of inflammation.

The appearance and character of this dreadful malady are modified by the texture from which it originally springs, and no part of the organ is exempt from its occasional attack, except the crystalline humour, and the cornea.* At its commencement, before the fungus has begun its luxuriant growth, it appears in a detached molecula at the fundus of the eye, which resembles very much the soft medullary substance of the brain, whence its name, and which is occasionally found in other parts of the body. In its progress, when the sclerotica gives way, the several structures of the eye become so altered in their appearance, new parts being added, some absorbed, and those still remaining so blended together, as to defy any attempt to arrange, or even dissect them with accuracy. It is in fact, a "rudis indigestaque moles," an indistinguishable disorganized fungoid mass.

* Travers's Synopsis, p. 220. See also Saunders on the Eye, p. 115; and Wardrop on Fungus hæmatod.

As the complaint advances, the countenance of the patient assumes that inanimate saturnine and deadly pale colour, so peculiarly characteristic of the cancerous diathesis; and the sleep is interrupted by startings during the night, and his tranquillity in the day, by deep seated lancinating pain, or spasmodic shoots through the head, and eye-ball. If a child be the subject of the disease, he becomes heavy and lethargic, in the advanced stage of it, is disturbed by occasional convulsive starts, cries piteously at times, then falls into a state of torpidity, and temporary apparent insensibility, until, after a short interval, the same scene is acted over again. The stomach, sympathizing with the local disorder, is deranged in its functions, and frequently rejects the food in a crude undigested state, in consequence of which emaciation rapidly takes place, the little sufferer is more and more irritable and fretful, and at length

convulsions terminate his miserable existence.

In illustration of the early stage of this frightful disease, I will beg to insert the annexed case.

Last spring a child, only five years of age, was brought to me under the following circumstances. Through the perfectly transparent humours of the *right* eye, three distinct chalk-like tubercles appeared, two on the temporal, and one upon the nasal side of the concave surface of the retina, which were covered by a thin opaque membrane, but without any apparent vascular ramifications. In the *left* eye, only one of those substances was visible, lying nearer the outer canthus, and which seemed plentifully furnished with a net-work of blood-vessels, giving it a reddish appearance on a white ground. The pupils in both eyes were fully and immovably dilated, and the iris, in consequence of the increased accu-

mulation of the aqueous humour, or the projection of the vitreous, was so far forced forward, as to lie nearly in contact with the interior surface of the cornea. This melancholy disease came on and advanced very rapidly, without being, as far as could be judged, preceded by or accompanied with symptoms of pain, or of any visible inflammation, nor, as I am assured, until his journey to London, by any fulness even of the vessels of the conjunctiva. Except that his bowels were constitutionally torpid, his general health had not been disturbed. The left eye was attacked about twelve weeks before he was brought for my opinion, when he could distinguish small objects. The vision of the *right* had been lost nearly half a year, previously to which period, he possessed the perfect vision of both eyes. It scarcely need be added that, at the time I saw him, he was in a state of total darkness.

The strongest proof that this formidable malady, which I then pointed out to some medical friends as an example of the early stage of medullary fungus, has been unattended with obvious symptoms of external inflammation or pain is, that several practitioners in the country who had been previously consulted, and had repeatedly examined the case, pronounced it a decided instance of *Cataract*; under which conviction they recommended the child to be detained at home, until the disease should be sufficiently advanced to admit of an operation. Being at length considered in a fit state for that purpose, he was sent to London to undergo the necessary process, from which the anxious parents were taught to expect his eventual restoration to sight. Their poignant grief and disappointment, on being informed of the irremediable nature and hopelessness of the complaint, unless by the extirpation of *both eyes*, an operation which I could not, in this case

recommend, may be more easily conceived than described. *

There is still another form of Amaurosis to be noticed, in which the bottom of the eye exhibits, in a strong light, a silvery or yellowish spot situated near the axis of vision. This appearance has been attributed to a circumscribed opacity of the retina, answering to the porus opticus. Others have supposed it to be the macula lutea of Soemmering. It is however with more propriety ascribable to a diminished secretion of the black pigment, a defect which is sometimes experienced by persons advanced in life, or by those who have suffered under chronic wasting diseases, or choroideal inflammation. The eye, in this spe-

* The Clergyman of the parish in which the child resides, has called to inform me that my predictions relative to the nature and probable result of this deplorable case have been completely realized, the fungus having grown to a great bulk, deforming the countenance and producing excruciating pain, and the train of symptoms above enumerated.

cies of Amaurosis ceasing to resemble, by its dark concavity, a camera obscura, like that of the Albino, is greatly distressed by strong light, and the partial illumination of objects, by exposure to which the sight is very much confused and temporarily impaired.

A similar but more extensive disease is described by the late Mr. Hey in his Surgery, p. 49. "In some persons, that part of the eye which is seen through the pupil does not appear black as usual, but has a grey appearance, or is of a dark pearl-colour. This is so like the appearance of an incipient Cataract, that, if the sight of the person is diminished, a surgeon may be induced to form a wrong prognostic. The appearance which I now describe occurs in one species of Amaurosis, to which persons advanced in age, or middle aged, who have defective sight are subject. In examining attentively the eyes of such, one may ob-

serve that the part which puts on a greyish cast is situated at a greater distance behind the pupil than an incipient Cataract, and that it has a more shining polished appearance."

The sight of persons labouring under Amaurosis is very variously affected in different individuals. Some are capable of seeing a part only of the object at which they look, (hemiopsia) a portion of the retina still preserving its sensibility. Others have double, (diplopia) distorted, coloured, and various anomalous forms of vision, depending upon an organic affection of the brain, or optic nerve. The patient sometimes experiences myopic symptoms, at other periods, presbyotic. The degree of sight varies also at different times of the day, and in the incomplete Amaurosis, it is very commonly influenced by passions of the mind, and by the use of diffusible stimuli, which, though they may confer a temporary improvement of vision, yet after

their immediate exhilirating effects have subsided, the excitement is frequently followed by a corresponding depression, and increase of symptoms.

A female about forty-eight years of age, who has lost her left eye by a staphyloma of the cornea, states that her right began to excite great alarm by the extraordinary changes it had recently undergone. Till lately its sight seemed to be perfect, but she now finds that about four o'clock in the afternoon, a confusion and indistinctness of vision commences, from which hour the imperfection in her sight gradually grows worse. When lamps are produced, different objects, which she can alone distinguish by looking at them in a lateral direction (ambliopia luscorum) appear not only very obscure, but to have an oscillatory or wavering motion, which she compares to the unsteady flame of a candle agitated by a current of air. This disease, which has

assumed a mild intermittent character, may be regarded as a species of Hemeralopia, under which form, as well as that of Nyctalopia,* Amaurosis not unfrequently declares itself.

Two patients whom I attended some time since, both females under twenty years of age, possessed the power of discerning occasionally, and for a few minutes at a time, the small letters of a printed book, when in an instant, and without any assignable cause, they would become so blind as not to be able to distinguish, with any degree of precision, the largest object around them.†

* See Mr. Bamfield's valuable paper on this subject in the 5th volume of the Medico-Chirurgical Transactions.

† The late ingenious Dr. Adams, in a conversation with the author on the extraordinary case of Miss Mac Avoy of Liverpool, took occasion to suggest, that the asserted sudden loss and instantaneous recovery of sight in certain instances of Amaurosis, might possibly arise from the motion of an hydatid so situated as to press, at intervals only, upon some portion of the thalamus opticus.

It is necessary to advert to those anomalous states of depraved vision, characterised by the imaginary and false perception of various external bodies either fixed, or floating before the eyes, as sparks, flies, colours, &c. the prototypes, or reality of which do not exist. These ocular hallucinations it is of practical importance to notice, on the one hand as they point to the nature and seat of the disease, and on the other, because they are apt to excite the most fearful apprehensions as to their result, in the highly susceptible minds of those individuals who are most commonly the subjects of muscæ vel suffusiones* as they are termed, and which nosologists distinguish by various epithets derived from the substances they are supposed to resemble, as suffusio myodes, or myodesopia, suffusio

* Scotoma, Huernii, Med. pract.: Hypochyma, of the Greeks: La berlue or eblouissement of the French; and more commonly suffusio of the Latins.

scintillans, suffusio corruscans, suffusio auripluvialis, &c.

To attempt to detail their infinitely various and fantastic forms, as described by the generally anxious and observant patient, unless we could at the same time associate these several alterations of vision with the peculiar states of the retina which produce them, would be a task no less irksome and difficult, than useless and unprofitable.

The muscæ appear either fixed, or floating; the former being generally organic, and depend, as Boerrhave suggested, upon a varix of one of the vessels of the retina, or choroid, or upon some extravasated blood, lymph, or earthy deposit between, or upon one of those coats, which compress and render insensible a certain portion of the medullary texture of the retina, corresponding probably with the figure of the musca. As this species of the disease frequently

succeeds to causes which have a direct tendency to produce a congestive, or inflammatory state of the deep-seated vessels of the eye, as internal Ophthalmia, or overstraining the organ by intense application in looking at small and brilliant objects, it it not unlikely that a partial morbid secretion, or the rupture of a small capillary vessel, may occasion the alledged effusion and subsequent phenomena. This supposition is rendered still more probable by the fact, that mercurials exhibited at an early period after their formation, by promoting absorption, frequently relieve, and in some instances entirely remove the *fixed* muscæ. At all events it may be right to observe, that when these muscæ preserve, under the different movements of the eye, the same relative figure and position, and permanently occupy so inconsiderable a space in the field of vision as not to interfere materially with its function, they should not

excite the smallest alarm, unless associated with some other morbid state of the organ. I would add that, if the musca arise not from the causes above assigned, it may be independent of deranged structure, and the effect only of one congenital insensible point of the retina, which, if it does not perceptibly enlarge, generally remains stationary for life.

As the fixed muscæ are most commonly organic, so the volitantes or floating muscæ acknowledge a functional origin, and as the latter not unfrequently arise from sympathy of the retina with a deranged state of the chylopoetic viscera, in such instances they generally disappear on the restoration of the function of those organs. That this is really the case, almost every person may be assured by his own feelings, as there are very few individuals who have not experienced them, in a greater or less degree, after eating indigestible food, and

other causes, mental or physical, which interfere with the regular œconomy of the stomach, liver, or primæ viæ. A disturbed circulation, or a temporary congestion, or state of depletion of the blood-vessels of the retina, are likewise occasional causes of the muscæ volitantes. Hence their appearance in different cerebral and febrile affections, and on the interruption of the return of blood from the head. These several causes operate in producing a species of incomplete temporary amaurosis, by an almost empty, or by a congested state of the vessels of the nervous coat of the eye. From what has been stated respecting the two species of muscæ, unless they are associated with pain in the head, forehead, or orbit, with vertigo, tinnitus aurium, deep-seated uneasiness in the ball of the eye, with irregular pupillary aperture and opaque humours, indicating internal ophthalmia, they are to be esteemed rather

troublesome, than dangerous or alarming symptoms; and remediable, or not, according to the nature of the cause which produces them.

Another characteristic feature of incipient, or imperfect Amaurosis, is an inability to adjust the focal power of the eye to *near* objects, without experiencing fatigue and a sense of uneasiness in the organ, with more or less indistinctness and confusion of sight. This abridgment of the focal range, occurring especially in advanced life, depends, according to Scarpa,* "upon a debilitated state of the *muscles* of the eyes, in consequence of which the patient cannot conveniently accommodate the eye-ball to very near objects, or maintain it for a length of time in that position; and when the debility is confined to the muscles of one eye, this being unable to concur in the actions of

* Scarpa on Diseases of the Eyes, translated by Briggs, Note, page 499.

the other, strabismus and double vision are the necessary consequence."

It is undoubtedly true, that the globe of the eye must undergo some change in its external form, or more probably in its internal mechanism,* in order that the rays of light emanating from near objects may be brought to a focus, and form images upon the retina, with sufficient precision to constitute distinct vision. Accurate *near* sight requires therefore the *active* state of the adjusting faculty, whilst

* Dr. Porterfield, in his 'Treatise on the Eye,'* &c. Vol. i. Ch. 3, p. 389, & seq. shews, by unanswerable arguments and proofs, that the adjustment of the eye to different distances cannot depend upon the action of its *external* muscles, but is referable to the agency of its internal machinery, particularly of the ciliary ligament, by influencing the relative situation and sphericity of the crystalline Lens. Whoever will take the trouble to compare notes, will find a very close resemblance between Dr. Porterfield's doctrine, and the theory of a late author, on this point.

* Published at Edinburgh in the year 1759.

on the contrary, *distant* vision implies a *passive* state of the visual apparatus, the parallelism of the rays of light on such occasions superseding the necessity of any adjusting effort. Hence old people, in consequence of their sensorial power being in a state of decay, are generally presbyotic, or long-sighted.*

Instead however of imputing the loss of the adjusting power, under the circumstances stated, to a supposed weakness of the recti muscles of the eye-ball, according to Scarpa, or to a preternatural rigidity of them, suppositions altogether gratuitous,

* I am well aware that this change in the vision of persons advanced in life, has been attributed to the cornea approaching more to a plane surface, and requiring therefore the aid of convex glasses, in consequence partly of the aqueous humour being less abundant at that period, and in part to a condensation of its constituent lamellæ, the effect of a diminution of interstitial secretion and nutrition, from an obliteration probably of some of the fine capillary vessels.

and unsupported in many instances by analogy derived from a similar defect in other muscles of the body, to a change in the form of the cornea, or to defective secretion of aqueous humour, it is much more probable that it arises from an actual diminution of nervous influence in the sentient texture of the eye. This doctrine receives strong confirmation from the fact that, in such cases, the lively movement of the iris, and the ability steadily to maintain its healthy action, is proportioned to the strength of the adjusting power of the eye.

The following communication, by the lady who has lately been under my care, will serve to illustrate the nature of that defect in sight, generally ascribed to *muscular* weakness in the eye.

"Miss A. has occasionally, since her childhood, found great inconvenience in pursuing any occupation, requiring *fixedness*

of sight; for instance, when reading, she has been unable to get through a whole sentence without shutting her eyes to recover the vision, and this defect has been often relieved by wetting the eyes. Within the last six years, this confusion has so considerably increased, that the examination of any object has been a great inconvenience, not arising from pain, but a failure of sight, as the object before her would become a blank. A *strong* light has always been the most agreeable. By twilight, when others were occupied either in reading, or writing, she has found it impossible to do either. When she has occasionally tried spectacles of the greatest magnifying powers, she has been able to read any print clearly, but has never worn them long enough to ascertain how far they were prejudicial. Agitation of mind always appears, in some degree, to increase the indistinctness of sight, and the only painful

sensation felt, has been that of a heat and dryness, which has frequently been relieved by looking earnestly till her eyes have watered. Till ten years of age, she was extremely deaf. The late Mr. Ramsden, who attended her, declared it to be his opinion, that she would outgrow the defect, which has proved the case. About six years since, she had an eruption in one of her ears, which lasted two years, and from that time she has fancied her eyes have become worse.

A single leech was directed to be applied to each temple, which drew blood very freely, from which there did not appear any immediate effect, but a few hours after much distress was occasioned by shivering fits. The next day, Miss A. thought she saw more clearly by day-light than she did previously to the bleeding, but her sensations by candle-light were of the most painful nature; in short, she had no comfort but

in keeping her eyes closed, an inconvenience which continued for three or four days, when it gently subsided. The repetition of the leeches was attended with a much greater degree of exhaustion, and immediately with fits of shivering, which were followed by excessive drowsiness. But the ophthalmic drops considerably lessened the unpleasant sensations occasioned by candle-light. The chief benefit which Miss A. feels that she has derived is, the *never having lost her sight once since the first bleeding*; to this may be added that the *heat* and *dryness*, which she before experienced, *are now entirely removed.*

Formerly, Miss A. frequently experienced a great weight over her eyes, a kind of fulness, which she felt more particularly upon stooping, but that sensation was not attended with any pain. Miss A. was subject to habitual confinement of bowels, till within the last two years."

To the above particulars it may be right to add, that Miss A. is about twenty-six years of age, and has an exceedingly delicate constitution, of which no further proof need be adduced, than the extreme depression occasioned by the application of a *single leech* to each temple; and which were recommended on the supposition that local congestion constituted the proximate cause of her disease. Her eyes being habitually dry and uncomfortable, she was directed to admit the vapour of the aq. ammon. pur. to them, as suggested by Scarpa, and the following drops every night and morning, which produced a flow of tears, and a sensation of coolness and much comfort.

℞ Hydrag. Submur.
Vin. Opii.
Mucil. g. acac: aa ʒss.
Aq. Rosæ, ʒvij. Misce ft. Guttæ Ophth. bis die applicandæ.

℞ Mass: Pil. ex Hydrargyr: ℈j.
Extr. Rhabarb: gr. xij.
——— Gentian: mollis.
Pulv. Capsici: aa gr. vj. m ft.
Massa in Pil. No. xij dividenda, e quibus sumantur binæ hora decubitus.

℞ Infus: Rosæ ℥vss.
Magnes: Sulphat:
Tinct: Cort. Aurant. aa ℥ss, m Capt. Cochl. ampla iii bis vel ter indies.

By the use of the above remedies, Miss A. in the course of about a fortnight, was materially relieved from all her distressing feelings, and the eyes so far recovered their strength, as to enable her, without difficulty or uneasiness, to read for several successive hours by candle-light. Her general health and spirits improved also in an equal degree, under the subsequent use of a tonic mixture.

℞ Vin. Ferri ʒvj.
Tinct. Gentian. comp: ʒiii.
Infus: Rosæ ℥vij. Capt. Coch. larga. iij. bis quotidie.

I will only observe, that the plan of treatment which proved completely successful, forbids the supposition that the disease in question depended upon direct local debility, either of the external muscles of the eye-ball, or of the retina, and tends to confirm the doctrine I shall hereafter endeavour more fully to illustrate, viz. that the greater part of amaurotic affections which admit of relief, are the result of an inflammatory, or of a congestive state of the deep seated textures of the eye.

To return from this digression. I have known instances of Amaurosis occurring to several children of the same parents, which shews an hereditary tendency, by attacking occasionally one or more members of particular families in successive generations; and what is remarkable, the children so attacked have become respectively blind at about the same periods of life.

Although eyes of different hues are liable to become affected with Amaurosis, from the variety of its exciting causes, the disease seems to manifest, if I may be allowed the expression, a predilection for those of a blue, and still more for those of a black colour, in persons whose organ of vision has been habitually weak and irritable.

When one eye is the subject of Amaurosis, the other is always in danger of becoming subsequently affected, especially if the complaint be associated with diseased structure, or has not been the result of any known cause, or of accident.

To what has been already detailed, much more might be added on the symptoms of Amaurosis. In fact, this malady which, under ordinary circumstances, may be recognized without much difficulty by a well informed practitioner, is so far from displaying one uniform character that, on

the contrary, it sometimes assumes a variety of features, both as respects its origin and progress. And it is so differently modified, accordingly as it exists in a more or less simple or complicated form, as to impose by no means an easy task on those even the most conversant with ophthalmic diseases to decide, with accuracy, on its real nature. It occasionally happens indeed, that there is scarcely a single indication which can be relied on as unequivocally pointing out the genuine character of the complaint. Under these circumstances, and in such anomalous cases, it is only by duly appreciating the whole assemblage of symptoms, so as clearly to ascertain which are pathognomonic, and which may be considered occasional and accidental, the result of some organic alteration, that we can hope to arrive at a true knowledge of the disease, upon the nice discrimination of which our success in its treatment must necessarily depend.

Having, in the preceding pages, offered a general analytical view of the more prominent symptoms of Amaurosis, it may be useful, before proceeding to the next division of the subject, to give a brief and connected history of the disease.

Amaurosis sometimes makes its attack very suddenly, a circumstance which cannot excite our surprise, when we consider the variety of sources from which it is occasionally derived. I have met with several instances of patients having gone to bed apparently well in all respects, and with their sight perfect, who, on the succeeding morning, without any assignable cause, have found themselves labouring under a more or less complete loss of vision in one or both eyes,* the pupils being at the same time proportionably dilated, and unsusceptible of the impression of light.

* Vide Appendix.

All the cases of this description which I have hitherto witnessed, having been of the functional species, terminated favorably. It more frequently happens however, that the complaint begins and advances in a much more gradual and insidious manner, with such constant fluctuations in regard to its progress, as sometimes to lead the patient to hope, from his occasional temporary improvement of sight, that he will speedily recover, and again to depress him by a very perceptible increase of all his symptoms. Supposing each description of incipient Amaurosis to be alike free from the unequivocal marks of structural change, whilst the former, it is true, affords time for the interposition of appropriate remedies, it bespeaks notwithstanding, according to my observation and experience, a more alarming form of the disease. If not arrested, it is commonly the harbinger of, and is apt to terminate in, organic alteration

in the texture of the coats or humours, or some part of the sentient apparatus proper to the organ of vision, or in tumours, exostoses, or other excrescences within the cranium, affecting the origin, or course of the optic nerve.

Under ordinary circumstances, the patient first becomes sensible of a somewhat weakened sight, or rather of an interrupted state of vision, manifested by certain parts of small objects, as for example, the letters, or lines of a book, being at one time more distinctly visible than at another, the sight of which he alternately loses and regains by shutting or rubbing his eyes, or by moving his head in different directions. This symptom which, when it occurs, is the earliest intimation of the commencement of the disease, is to be regarded as a proof of the impaired sensibility of the optic nerve, and may perhaps be explained by supposing, that certain points of the retinal

experience, in consequence of the general diminution of its energy, speedily lose their perceptive faculty. Hence it becomes requisite, for the continuance of the function of the organ, that new surfaces should be successively presented, which may not yet have been exhausted by the impression of external objects. Or, the stimulus of attentively observing a small object, inviting a further afflux of blood to certain parts of the vascular texture of the retina, already possibly in a preternaturally turgid condition, may induce an additional accumulation of fluids, a consequent pressure upon, and a corresponding torpor in, a defined portion of its medullary lamina.

Without however contending for the accuracy of either of the above hypotheses in elucidation of the cause of the symptom in question, neither of which will admit of demonstrative evidence, I have repeatedly noticed, that it is not unfrequently the first

which excites our apprehensions as to the probable tendency of the disease. A young man, sixteen years of age, with congenital imperfect Amaurosis, has been brought for my opinion from the country. The pupils have a sluggish motion, and are considerably more dilated than natural. The humours are perfectly transparent, and he possesses sufficient vision to enable him to guide himself in a moderate degree of light, but in the full glare of the sun he becomes quite blind. His eyes are in an almost perpetually rolling motion, unless he controls them by the utmost exertion of the will, by which means he can obtain a voluntary power over and, for a short time, fix them. This however he rarely attempts to do, as he finds that it is *only* by this incessant movement of the eye, that he can preserve the imperfect sight of any object at which he looks; for if he inspect it for a few seconds without altering the

position of the eye, or head, it seems to vanish and disappear. On other occasions, the patient has a perception as if a spider's web, or thin gauze were interposed between his eyes, and every object at which he looks. He is apt to believe that he sees a more or less illumined surface, studded with black specks; or is annoyed by the imaginary appearance of a great variety of external and differently coloured motes, threads, or small undefined and fantastic figures or objects, (muscæ) fixed, or floating before him, which he instinctively attempts to remove with his hand, conceiving them to be the sole impediment to his vision, until, taught by experience, he knows that they are merely ocular hallucinations, indicative only of a depraved state of the organ of sight. The eye, at this period of the disease, begins to lose somewhat of its natural brilliancy and lustre, and the iris, in the majority of instances, becomes

more and more dilated, sluggish in its movements, and proportionally less sensible to the impression of light. Should one eye only be affected, its iris will still act in accordance with that of the sound organ, provided both be allowed to remain open at the same time; but if the latter be closed, the pupil of the really diseased eye will be found to have lost its power of motion, on the admission of the usual degrees of light. A young practitioner, by availing himself of this fact, may avoid an error which he might otherwise be liable to commit; namely, of incautiously pronouncing the sight of both eyes to be equally perfect, from observing that the pupil of each contracts alike on exposure to the stimulus of light; a circumstance owing entirely to the sympathy of consent producing this effect in consequence of omitting, during the examination, to shut the palpebræ of the sound eye.

In the incipient stage of the imperfect species of Amaurosis, the patient, contrary to what takes place in Cataract, is generally capable of seeing best in a strong reflected light. At this period of the disease, convex glasses are sometimes found to assist his sight; but when the malady is more fully formed, he derives not the smallest benefit from any sort of spectacles. To the above remarks there are however some exceptions, as it occasionally happens that, in imperfect Amaurosis, vision is best in moderately gloomy apartments, strong light having the effect to distress and overpower the organ. In such instances there is reason to suspect, either that inflammation has pre-existed, and left the eye in a preternaturally susceptible state, or that morbid action is going on in the retina itself, or some of the adjoining textures with which it sympathizes. With this impression I have, on several occasions, suc-

ceeded in restoring sight by topical and general depletion, and by the subsequent exhibition of mercurials, prohibiting at the same time the use of every kind of stimulant, and exposure to vivid light, and dazzling objects.

It is under these circumstances that the patient frequently experiences, during the formation of Amaurosis, a dryness of the sneiderian membrane, more or less pain in the head, forehead, or within the orbit, or in the eye from pressure, with a sense of fulness in the organ, symptoms which, if not irremediable, usually subside as soon as the sight becomes extinguished, provided they depend upon an affection of the eye-ball. But if these pains, whether diffused over the scalp, or confined to one particular part of the cranium answering to the situation of the anterior lobes of the brain, are severe in degree, increase by exercise, and imperfectly remit, and are ac-

companied with giddiness and drowsiness, derangement of the stomach, and torpor of the alimentary canal, laborious pulse, loss of flesh and strength, and a confusion of the intellectual powers, with indisposition to motion, and paralysis of one or more muscles; such an assemblage of symptoms clearly point out the connexion of Amaurosis with organic cerebral disease.

CHAPTER II.

Prognosis.

With respect to the prognosis in Amaurosis, it is evident that this must be founded upon the peculiar nature of the existing causes, the more or less simple, or complicated character of the disease, the period during which it has existed, and the violence, or mildness of the symptoms. If the disorder be complete and inveterate, with organic læsion, or altered structure of the immediate seat of vision, it must of course be considered beyond the reach of art. When the sight is wholly extinguished, and the iris is immovably dilated, or preternaturally contracted, the effect of local or cerebral disorganization, symptoms which have

been preceded by, or are accompanied with, violent pain of the cranium, the eye, or the forehead, the consequence of apoplexy, syphilis, blows upon the head, or eye-ball, or of obstinate internal ophthalmia; these, and other causes of a similar tendency, produce modifications of Amaurosis, or varied forms of the same disease, which may justly be pronounced, in almost every instance, absolutely incurable.

On the contrary, those cases of imperfect and recent Amaurosis most frequently admit of relief, which, although the patient may be in a greater or less degree deprived of the faculty of sight, have not originated from any of the causes above enumerated, nor from such as are capable of injuring the nerve of vision through the medium of the adjoining textures, which have not been ushered in by intense and long continued cephalalgia, ophthalmodynia, or a sense of great constriction of the eye-ball, in which

either laterally, but especially in the axis of vision, there are still some remains of sight, in which the pupil preserves its natural black colour, and although dilated, is yet regular in its circumference.

Those of a periodical character, provided they have not been allowed to exist for a length of time without control, may likewise be regarded as of a favorable nature, since they are almost invariably referable to sympathy of the eye with some gastric, hepatic, or intestinal irritation, or else symptomatic of hysteria, or chlorosis, the removal of which primary complaint, in by far the majority of instances, proves the means of restoring the suspended power of vision. A careful attention to the above particulars will enable us, on most occasions, to ascertain the nature and character of the disease, and to judge with a considerable degree of precision respecting the probability, or impossibility of affording relief.

CHAPTER III.

Exciting Causes.

Previously to entering on the consideration of the exciting causes of Amaurosis, it may be right to make one observation respecting the immediate seat of vision, in reference to the true nature of the disease. The most undeniable facts and satisfactory experiments have proved, that the picture or image of external objects is formed upon the delicately sensative and pulpy substance the retina; and we are led, both by anatomical and physiological reasoning to conclude, that through the medium of the optic nerve, of which the retina is but the expansion, the perception of this image is

conveyed to the sensorium; and, so far as the question relates to my present enquiry, this brief sketch of the function of the optic apparatus seems sufficient.

Mental consciousness of the impression made through the medium of the external senses upon the sensorium, is that delicate and difficult point of investigation which so immediately leads into the labyrinth of metaphysics, that I forbear to enter upon the speculation; and the more so, as it is foreign to my particular purpose.

That Amaurosis is really an affection of the nerve subservient to vision, admits of actual demonstration, its destruction or malconformation being invariably accompanied with complete blindness, and its œconomy being always more or less disturbed or impaired, according to the degree in which it may have sustained any functional derangement. The same causes, likewise which, never fail to paralize the

nerves of any of the other organs of our senses, when applied to that of sight, as certainly induce in it a corresponding torpor, or insensibility; a state of disease, which has sometimes been removed by remedies similar in their operation to those which have proved available and curative in the former description of cases.

Upon these grounds, then, fully acquiescing in the general notions relative to the immediate seat of vision, and to the nature of Amaurosis, I am, nevertheless, by no means prepared to explain the precise condition of the nerve affected in this complaint. It is not improbable indeed, that it may be susceptible of various changes under the application of different exciting causes, each of which may operate in rendering the function of the eye more or less imperfect. But this supposition is, in fact, altogether conjectural, since it is to be lamented that, whilst the structure and œco-

nomy of almost every other part of the human body have been developed with considerable accuracy, our acquaintance with the ultimate nature and essence of that compound we call the nervous system, is still very imperfect. Nor have any of the various hypotheses of ingenious and learned philosophers of different ages clearly illustrated its physiology, or satisfactorily elucidated the mode in which it contributes to the production of sensation and motion. Our knowledge even of the brain, the fountain-head and source of this wonderful system, is reduced to correct anatomical notions of the form, color, size, relative situations, protuberances, cavities, and the arrangement of the different substances which enter into its composition. From unquestionable experiment we learn, that this curious formation is requisite for the perception of external objects, "which" says Reid, "is one main link which connects the material with the intellectual world."

The sum of our acquaintance with the nerves, exclusively of their more obvious physical qualities, consists in our being satisfied, from undeniable facts and experiments, that they are the true conductors of sensation. But as to the manner in which the nerves, distributed to the several organs of the senses, are enabled to transmit the different kinds of impressions, so as to excite correspondent perceptions in the sensorium, we are absolutely ignorant.

The hypothesis may be suggested, that as the extremities of the nerves of the several senses are destined to be acted on by different external stimuli, and to perform distinct offices, the organization of each seems to be modified in conformity to the peculiar nature of the impressing agent. This idea is countenanced by the fact that, whilst the arteries and veins preserve one uniform character, whatever their size, their distribution, or their function,

the nerves of the senses have a structure different in appearance, but all admirably adapted to receive, and be affected by, the impressions of their respective stimuli.

Our actual knowledge with regard to the physiology of the nervous system being therefore confined within narrow limits, it is not wonderful that its morbid derangements should hitherto have been less successfully explored, than those of any other organized texture. Researches on this subject are, it must be confessed, attended with more than ordinary difficulties, particularly because in some diseases of the nerves, as in certain cases of Neuralgia, no *apparent* change being discoverable in their own structure, nor in that of the parts with which they are immediately connected, we are left to judge of their existence by an alteration only in their function. These investigations as they apply to the retina, are involved in the

greatest obscurity, on account of the extreme delicacy and minuteness of its texture, the precise state of which cannot be examined, during life, like the more external parts of the eye, and because, from the peculiar structure and economy of the nerve of vision, we can derive no information from analogy, or from comparing it with the organization and function of any of the nerves of the other organs of the senses, or with that of the olfactory, which arise from the cerebrum, from each of which it differs, not only in being larger, but in possessing also a greater quantity of medullary substance in proportion to its size.

Important therefore as the diseases of the nerves of vision unquestionably are, this part of pathology is by no means thoroughly developed. It is indeed only by means of an accurate knowledge of the diversified symptoms, and of the various

exciting causes of Amaurosis, and by careful dissections, connecting the morbid phenomena with the diseased changes and preceding history of the particular case, that we can ever indulge the hope of being able to refer, with an approximation to truth, the diversity of complicated symptoms which occasionally present themselves in affections of this nerve, to a corresponding morbid alteration in its structure.

In the mean time, as nothing contributes more towards the right understanding of the nature of disease, than a clear insight into, and a full comprehension of the source from which it originates, I shall now proceed to offer some remarks on the *exciting* causes of Amaurosis. To include the consideration of the whole of that numerous and diversified list to be found in authors, and especially in continental writers on the subject, or to enter into an elabo-

rate analysis of all the different species of the disease, would carry me far beyond the limits which I prescribe to myself in this undertaking. My intention, on the present occasion, is to shew, that at least the greater number of the exciting causes of Amaurosis, of the nature and modus operandi of which we have any distinct conception, produce their morbid effect on one common principle, and that this principle not only harmonizes with the known laws of the animal economy, and with the phenomena of this disease of the sentient texture of the eye, but supplies us likewise with a more rational view of its nature and cure, than the doctrine and opinions usually entertained on the subject.

It will be allowed that in Physic, as well as in the other branches of sound Philosophy, in proportion to the simplicity of our premises, provided that the principles on which they are founded are correct, will

be the clearness and perspicuity of the inferences deduced from them. And it will also be granted, that we should never seek for latent and obscure principles, when we can explain phenomena upon a simple doctrine, carrying with it some satisfactory evidence. In accordance with these assumed data, it is my design to argue in favor of a simple principle of doctrine relative to Amaurosis, and which I shall briefly define to be *Pressure.*

"Ignorant as we confessedly are of the ultimate nature and essence of the nervous system, we fortunately know enough of the *laws* by which it is governed, or rather of the circumstances by which it is influenced, in some degree at least to understand the nature and causes, and to explain the phenomena of many of its morbid affections. Enquiries into those laws would tend infinitely more to advance the science and practice of medicine, than perplexing our-

selves in vain efforts to fathom and comprehend what the Author of nature has placed beyond our reach, and indulging in speculations which, however interesting and seductive, can lead to no satisfactory conclusions.*" Without pretending to explain the precise changes which are produced in the part acted upon, it may be regarded as a *law* of the nervous system, that *pressure,* by whatever agent, or in whatever manner inflicted, never fails to impair, or wholly to destroy the future developement of nervous energy, according to the degree and force of its application. This fact is not only true with respect to the brain, the source and depository of perception and volition, but with regard also to the nerves, the peculiar function of each being alike suspended,

* See Dr. Cook's valuable work on Nervous Diseases, vol. i. p. 157.

or altogether abolished by the morbid influence of undue pressure.*

* " Expériences sur des Animaux vivans dans le cours de Physiologie expérimentale, 1771. Après avoir pratiqué au crâne d'un chien vivant une ouverture avec la couronne du trépan, et ouvert la dure-mère par une incision cruciale, on a comprimé le cerveau, tautôt avec un petit rouleau de bois ou autre, ou même avec le bout du doigt, quelquefois en versant de l'eau ou du mercure dans le crâne, par le moyen d'un tuyau de verre, dont le bout, introduit dans le trou du trépan, était uni à l'os dans tout son contour, avec de la cire, dans lequel on a versé plus ou moins d'eau ou de mercure pour faire une compression plus ou moins forte ; mais de quelque manière qu'elle se fît, elle produisait constamment les effets suivans ; d'abord, l'animal cessait d'aboyer et tombait dans l'assoupissement ; augmentait-on la compression, l'animal était agité par des vives convulsions ; la compression du cerveau était-elle plus forte encore, l'assoupissement le plus profond avait lieu, les convulsions cessaient, l'animal avait la respiration stertoreuse, ses membres étaient dans le plus grand relâchement, et il éprouvait la paralysie de quelqu'un d'eux, qui était durable si on ne cessait de comprimer le cerveau, ou mourait promptement d'apoplexie si elle était augmentée. Cette expérience qui a été réitérée dans la même cours, et dans d'autres circonstances, a toujours offert les

When pressure is applied with violence to a nerve, it completely destroys its texture and organization, but if it act only slightly and transiently, its effects are seldom either serious or lasting, the suspended function of the nerve being generally restored, the nervous system possessing, like other vital parts, the property of again righting itself on the cause which oppressed it being withdrawn.

It should however always be borne in mind that, whilst very considerable pres-

mêmes résultats, et en quelque endroits du crâne qu'ait été faite l'ouverture, pour comprimer immédiatement telle ou telle partie du cerveau. Ces expériences sur les animaux vivans confirment les résultats des observations adoptées par les auteurs sur les effets de la compression du cerveau. Nous y ajouterons que nous avons cru remarquer que dans ceux des animaux qu'on avait fait promptement périr d'apoplexie, il y avait beaucoup moins d'eau et plus de sang que dans les animaux dont on avait moins fortement et plus long-temps comprimé le cerveau." Observat. sur l'Apoplexie, par Portal, p. 366.

sure invariably induces such an alteration in the condition of the compressed nerve as to render the loss of its sensorial power certain and irreparable, it is probable that a degree of pressure which, suffered to remain for a short time only would occasion merely temporary inconvenience, if long continued, would be liable to entail permanent and irremediable mischief.

As it is universally admitted that the different organs in the human body are indebted for a capability of performing their respective functions to the presence, and through the medium of the nervous influence with which they are endowed, and as pressure impairs or destroys that power, it follows as a necessary consequence, that whatever contributes to the production of pressure, ought to be regarded as the immediate cause of the subsequently torpid, or injured function of that organ. Let us apply this doctrine to

the elucidation of Amaurosis, which has been explained to consist in the diminution, or total loss of sensibility in the nerve appropriated to vision. And if it can be shewn, that the greater proportion of cases of that disease are connected with topical pressure, we shall have made no inconsiderable advances towards establishing, not only a plain and consistent theory relative to its nature, but likewise a mode of treatment founded upon it, at once rational and scientific, and as such promising a share of success commensurate with the circumstances of the case.

But I must here caution the reader against the conclusion that, in suggesting *pressure* as the *most frequent* and *general cause* of Amaurosis, I mean to deny that it may, and does occasionally acknowledge a very different, nay sometimes even a diametrically opposite origin. I am ready to admit, that it has been, in a few rare in-

stances, the result of inanition from great and sudden loss of blood, or of debility from protracted and exhausting diseases. The disease has likewise been produced by the operation of narcotics, and other causes operating either directly upon the nerve of vision, or more indirectly through sympathy of the eye with some distant organ. With these reservations, the doctrine is, I conceive, as universally applicable as it is generally true. For can it be doubted, that pressure acting upon the optic nerve at its source in the brain, the thalamus opticus, upon its course, the tractus opticus, or upon its expanded extremity, the retina, is not invariably productive of greater or less derangement, or the total annihilation of its function, according to the degree of force with which that pressure has been applied?

The pressure may operate externally upon the whole substance, or primarily and

more directly upon the vascular, subsequently affecting the medullary structure of of any portion of the sentient apparatus proper to the organ of vision. As instances of the former may be mentioned, such as arise from pressure upon the source, or progress of the optic nerve, either through the medium of the contents of an abscess, different kinds of tumours,* or earthy concretions in the cerebrum situated so as mechanically to affect some portion of its sensative texture, of an extravasation of blood or serum into the lateral ventricles, or excrescences upon the neurilema of the tractus opticus, of which there is a beautiful example amongst the morbid preparations in Mr. Heaviside's Museum, of an exostosis, or fracture of that portion of the

* Amaurosis ex steatomate in cerebro. Bonnet: Obs. x. Ob vesicam nervis opticis incumbentem. Id. Obs. 2. A tumore globoso nervis opticis insidente. Id. ob. j. A calculo juxta nervum opticum. Id. Obs. 2.

sphenoid bone which forms the cella turcica, or of the foramen opticum.

Whilst the direct operation of the causes just enumerated is upon that division of the optic nerve contained within the cranium, there are others which act upon a similarly mechanical principle upon its expanded termination in the globe of the eye. In the instances alluded to, the retina only sympathizes with, or is subsequently involved in the morbid affection, or changes of structure in the adjoining parts. The causes which preside over their formation, point out the propriety of this manner of regarding them. Thus e. g. Amaurosis, the effect of external pressure upon the retina, is not unfrequently the consequence of, or is associated with a staphyloma of the cornea, or sclerotica, of a preternatural accumulation of interstitial fluid between the retina, or choroid, or between the latter tunic and the sclero-

tica, of a morbid increase of the liquid contents of the vitreous cells, or of the aqueous humour constituting hydrophthalmia, of the dislocation and subsequent pressure of an enucleated lens upon the retina, and of various other morbid changes which now and then take place within the orbit, or in the interior of the eye-ball. Gutta Serena proceeding from these, or analagous causes, should be esteemed organic, and symptomatic; the cure or hopelessness of which must depend upon the practicability, or impossibility of removing the original and primary disease.

It is however an unquestionable fact, that Amaurosis sometimes appears as an idiopathic complaint, in which case the morbid state or disorganization of the thalamus opticus itself, of the sensitive portion, or neurilema of the optic nerve, or the vascular or medullary lamina of the retina, are the parts primarily affected, and

the direct and immediate cause of the defective state, or total loss of vision. Patients having died of some other complaint with which they became simultaneously afflicted; opportunities have occasionally been afforded of ascertaining the character of this disease of the eye, and its morbid appearances, by dissection. Although alterations of structure have, in some of the instances alluded to, been sufficiently apparent satisfactorily to account for the amaurotic symptoms during life, it has also happened that not the slightest perceptible change could be observed in any part of the optic apparatus. In this state of ambiguity, and in the absence of any visible organic defect, the disorder has been usually ascribed to some change indeed in the nerve, but of a nature too obscure and concealed to be traced either by the eye, or the knife of the anatomist.*

*"On voit par le resultat de l'ouverture des corps

With a view to elucidate the nature of some of the cases of this description, the

des personnes mortes après des fièvres avec des affections comateuses profondes, que si l'on trouve souvent des altérations dans le cerveau qui ressemblent à celles que l'on voit dans celui des personnes qui sont mortes de l'apoplexie la mieux prononcée, les vaisseaux du cerveau gorgés de sang, &c ; quelquefois on n'y reconnaît non-seulement aucune de ces altérations, mais même le cerveau paraît-il être dans l'état le plus naturel ; cependant peut-on croire que ce viscère est bien sain, parcequ'on n'y voit aucun altération ? Ne peut-il pas y en avoir qui ne soient point appârentes pour nous, et qui soient cependant très-réelles et capable de troubler les fonctions cerébrales ? Ne doit-on pas se méfier des résultats qu'on a cru pouvoir tirer de ces autopsies, quand on connaît la difficulté qu'il y a de disséquer le cerveau ; quand on sait que la plus petite dilatation de la plus petite artériole d'un nerf peut troubler, intercepter les fonctions vitales ; quand on sait, par exemple, que la Goutte Sereine est quelquefois l'effet d'une simple dilatation de l'artère centrale du nerf optique, la surdite du nerf-acoustique, &c. Ainsi très-souvent on a pu croire qu'il n'y avait aucune congestion sanguine, ni autre altération dans le cerveau, quoiqu'il y en eût de très-réelles, mais qu'on ne voyait pas assez sensiblement pour les signaler." Portal, Observat. sur l'Apoplexie, p. 286.

late Mr. Ware* suggested, " that one probable cause of Gutta Serena in not a few of the instances in which no account has been given, and especially in those cases where the blindness has been accompanied with an inability of moving the upper eyelid, consists in a dilatation of the anterior portion of the circulus arteriosus." Presuming that the situation and construction of the arterial circle is familiar to every student acquainted with the anatomy of the brain, I shall only observe that the optic nerve which it crosses, and with which it lies nearly in contact, will be very apt to suffer compression, and become in consequence paralytic, in the event of the blood-vessels, which collectively serve to form that circle, undergoing any unusual enlargement. If instead of the anterior, its posterior part should be dilated, the

* Chirurgical Observations relative to the Eye, vol. ii. p. 428.

nervi motores oculorum must be liable to become compressed, and the eye-lids, and probably the eyes, lose their power of motion. In case both portions of the circulus arteriosus be at the same time affected, not only a ptosis of the upper palpebra, but also a loss of sight and motion of the eye-ball will ensue.

Mr. Ware, in support of this opinion, gives, in a note, the following passage from Dr. Baillie's valuable work "On the Morbid Anatomy of the Human body," in which it is stated, "that it is very common to find in the brain of persons advanced in life, the trunks of the internal carotids, upon the side of the cella turcica, very much diseased, and this disease extends frequently more or less into the small branches. The disorder consists in bony or earthy matter being deposited in the coats of the arteries, by which they *lose a part* of their contractile and *distensile pow-*

ers, as well as of their tenacity." Mr. Ware adds, by way of comment upon the above passage, "that it seems not a little to favour the opinion now advanced, that most of the persons I have seen who have been attacked with the united symptoms of blindness and falling of the upper-lid, have been both young and plethoric; and such subjects appear more likely to suffer from an undue dilatation of the blood-vessels than those of a different habit. I am further informed by Surgeons who have resided in hot climates, that persons after much fatigue, when the blood is likely to be most rarified,* and the vessels through which it passes of consequence most dilated, have not unfrequently in such a state of body

* It will, I presume, scarcely be admitted that the rarefaction of the blood is a tenable theory. The uniformity of temperature which is maintained under circumstances alike of high and low temperature, and in all climates, seems to refute the notion.

been attacked with sudden blindness, without any apparent defect or disorder of the eye; and that the cure of such patients has generally been accomplished in a short time by bleeding, blistering, purging, and the application of volatile remedies to the eyes; in which instances, as well as in the former, it seems not a little probable that the blindness was occasioned by a dilatation of the blood-vessels within the cranium."

The above observations from a long experienced, and late highly respectable practitioner, and which derive additional weight from the circumstance of their being founded upon anatomical considerations of the morbid structure of the parts affected, would seem very satisfactorily to account for one species of Gutta Serena. But plausible as the reasoning on the subject may be, the inferences deduced may, perhaps, be fairly called in question on the following,

amongst other grounds of objection that might be advanced.

1st. Were the alledged notions correct, ought not the prevalence of the malady in old age, to bear a relation to the frequency with which ossification in those branches of the internal carotid and basillary arteries, which concur in forming the circulus arti-nosus, are found to take place in advanced life?

2ndly. But even admitting that topical plethora will be likely to exist in the brain, from the causes assigned, and produce paralysis of the optic nerve, such a catastrophe is happily guarded against by another wise provision in the economy of those vessels, viz. in "consequence of the earthy or bony deposit in their coats, they *lose* a part of their contractile and *distensile* powers."

3dly. That the idea is altogether gratuitous and assumed, may be inferred from

the circumstance of its first promulgator having omitted to furnish any examples of Gutta Serena originating from that source, and which it is more than probable would not have escaped the accurate observation of Dr. Baillie had such a combination existed.

4thly. That Mr. Ware, in his treatment of the disease, did not act upon his belief in that supposition, may be concluded from his almost indiscriminate recommendation of electricity, and other topical stimulants in cases of that description—active and diffusible stimulants which, if the suggestion were well-founded, could not possibly prove beneficial, and might even have a dangerous tendency by risking the rupture of vessels that "have lost a part of their contractile and distensile powers, as well as of their tenacity."

There is however another vessel adverted to by the same ingenious writer, the dila-

tation of which would essentially affect the sight. When it is considered that the artery alluded to, the arteria centralis retinæ,* not only passes through the axis of that portion of the optic nerve denominated tractus opticus, but penetrates also its medullary expansion the retina, and branching into many new divisions is extensively ramified in its internal surface, and sends likewise a branch through the vitreous humour to be distributed upon the posterior lamella of the capsule of the crystalline lens, it is natural to imagine that any alteration in its capacity must be liable to influence the function of vision. Accordingly, Mr. Ware "suspected that the dilatation of this vessel might be the cause of blindness in those instances where it has come on suddenly, and in which, though all objects placed directly before the eyes were totally invisible, there nevertheless re-

* See Professor Murray's Description of the Arteries, page 28.

mained some sense of light so as to give a confused perception of objects sideways. In such cases it is to be noticed that the pupils are seldom much dilated; notwithstanding which, they admit of very little variation of size in different degrees of light." p. 434.

If however we reflect upon the structure of the tractus opticus, that it is loosely inclosed in a somewhat firm sheath, called its neurilema, resembling somewhat in texture the dense fibrous character of the sclerotica, it must necessarily follow, on the caliber of that vessel being materially enlarged, that the intermediate nervous substance would be subjected to a degree of pressure, proportioned to the extent to which the said arterial tube might be distended. But as the pressure, thus occasioned, must be quaquaversum, or upon every part of the surrounding nerve, it is not easy to comprehend on what principle,

under the supposed affection of the central artery, the patient should still continue to enjoy vision in a lateral direction, or why the iris should, in this particular case, be only partially dilated, "admitting at the same time of but little variation in size."

These views of the subject, added to the consideration that no proofs are brought forward to substantiate the fancied existence of either of the above causes of Gutta Serena, and that all the phenomena detailed as characterizing the disease supposed to spring from these respective vessels, admit of an easier and less exceptionable solution, by referring them to organic cerebral affection, or to a topical congestion of the capillaries belonging to the retina, lead me to doubt the propriety of subscribing to either hypothesis. I may further suggest that, it may be for the purpose of obviating the morbid effects of casual slight variations in the diameter of the central

artery, that the nervous structure of the tractus opticus preserves a firmer consistence, and exhibits a fibrous appearance,* until it becomes expanded in the form of retina, when it assumes a medullary character. And further, if the above supposition were correct, would not symptoms of Amaurosis be the almost inevitable consequence of every inconsiderable determination of blood to, or vascular excitement in the cerebrum, the force of which must be broken, and the disease rendered comparatively less frequent, by its general diffusion, and regular distribution among the infinitely small and numerous ramifications of the vascular lamina of the retina? When indeed we reflect, that every part of our wonderfully organized frame is constituted and framed with the most exquisite and consummate skill, is so admirably adapted, and so nicely adjusted to the peculiar office

* Bichât, Anatom. Descript. tom. 3, p. 155.

each is designed to fulfil, it cannot be imagined, that an organ of such inestimable value as that of sight, would be left by the Divine Artificer, in a condition exposed to be operated on and disturbed by causes, as frequent in their occurrence, as they would prove injurious in their effects.

But why, I would ask, are the vessels above alluded to supposed to bear, almost exclusively, the full weight and morbid influence of a preternatural accumulation of blood in the brain, whilst the sensative texture of the eye seems to have been as much overlooked as if it did not exist, or at least had not any share in the phenomena of the disease? On the contrary, is it not more probable that the retina, the immediate seat of vision, on which the rays of light impinge, and make probably their first sensible impression must be, on that account, and in consequence also of its vascularity and peculiarly delicate structure, the first

to suffer under the circumstances stated, and to have its economy affected by the congestive state, or irregular action of its own, or neighbouring blood-vessels, than parts which may be said to perform a more secondary and subordinate duty?

It appears to me therefore that it is to the circulating system, as influencing the sentient function of the retina, we must look for an explanation of many of the phenomena, and the most probable and rational mode of curing several of the more obscure diseases of the nerve of vision.

From the course of the ophthalmic arteries, and from their peculiar distribution throughout the internal parts of the eye, it cannot reasonably be doubted that an uniform and equal current of blood is indispensable to the healthful economy of the organ. And it is easy to comprehend, how any material disturbance in that circulation may interfere with the function of the re-

tina, and prove the means of exciting most of the phenomena occasionally incident to vision, and which are scarcely indeed, if at all explicable, upon any other theory. It is, I may repeat, exceedingly probable from analogy, supported by well ascertained facts, that the greater part of the various and anomalous affections of the retina, characterized by impaired or depraved sight, without organic læsion, are the result of particular changes in its vascular structure, subsequently extending to and affecting its medullary lamina, although we are not, in the present state of our knowledge, able to point out the exact nature of those respective changes upon which the morbid symptoms depend.

In elucidation of this subject, a variety of facts may be adduced both in the healthful, and morbid state of the organ. Sauvages* states, that the pulsation even of the

* Nosol: Method: class viii ord. i.

optic artery may be perceived by attentively looking at a white wall well illuminated. And Richter † asserts, that a plethoric person who held his breath, and inspected with great earnestness a whited wall, was conscious of discerning a kind of net-work, which appeared and disappeared in exact correspondence with the pulsation of the heart and arteries, and which he attributes to the alternate compression of the retina, by the systole of small arteries with which that portion of the eye is most plentifully supplied.

For notwithstanding the retina, as compared with some other textures, has been found rarely to have undergone any perceptible changes in its organization, it is nevertheless exceedingly prone, from apparently slight causes, to sustain functional irregularity and derangement. Thus we know, from almost daily experience, that

† Richter's Anfangsgründe.

in plethoric habits, a simply dependant posture of the head is very apt to occasion vertigo, and in some cases cephalalgia, and that violent strainings, by causing an unusual quantity of blood to be thrown upon, or accumulated in the vascular apparatus of the eye, frequently induces, in such constitutions, different species of ocular spectra, especially the suffusio scintillans.* The various ocular spectra, such as fiery sparks, drops of blood, black spots, &c. which occur in acute internal ophthal-

* Amongst the symptoms of Amaurosis from *plethoric congestion*, Mr. Travers states,* that "the patient frequently complains, particularly in straining, stooping, or on first lying down, of seeing luminous sparks or flashes (with which persons labouring under dyspepsia are often troubled on first closing their eyes to sleep), and a reflection of one or more of the choroidœal vessels, the visible pulsation of which is a cause of much distress to him. A person thus affected, accurately described to me the zona minor iridis, as distinctly presented to his view."

* Synopsis on Diseases of the Eye, p. 158.

mia, particularly of the retina, typhoid fevers, and other affections of the brain, are referable either to a congestion in the brain, or in the capillary vessels of the retina.

It is likewise highly probable that the individual described by Boerhave* to have uniformly lost his sight when drunk, and as constantly to have recovered it when sober, laboured under an habitual cerebral plethora, and that the Amaurosis produced by the stimulating property of fermented liquors, was the effect of an additional quantity of blood being impelled into the brain, involving the medullary substance of the retina, which being compressed, a temporary suspension of its function ensued. For were this symptom the result of the narcotic effect of the intoxicating liquors upon the stomach, subsequently affecting the organ of vision by sympathy,

* De morbis oculorum.

it would prove not the rare, but the common attendant of intemperance. Do not indeed the flushed countenance, the rapid full pulse, the frequent head-ache and delirium, the constant vertigo and depraved vision,* the occasional sickness, and nasal hæmorrhage, the profound sleep, oftentimes associated with stertorous breathing, clearly indicate a topical accumulation of blood in the brain of inebriates? Sauvages† indeed enumerates amongst the species of Apoplexy, the Apoplexia temulenta, which he says is so nearly allied to the sanguineous, as to have misled in-

* The following pointed Epigram, said to have been written some years since on occasion of two illustrious Statesmen going to the House of Commons, after having sacrificed too largely at the shrine of Bacchus, very well illustrates the different temporary effects of vinous potation upon the organ of vision.

I cannot see the Speaker, Hal, can you?
Not see the Speaker! d——n me, I see two!

† Sauvages, vol. i. p. 487.

cautious practitioners. The greater number of apoplexies from intemperance being only temporary, depend probably upon simple distention of vessels without rupture. Lieutaud quotes a case from De Haen, in which the vessels of the pia mater were found in all parts aneurismal and varicose. Portal* comprehends amongst apoplexies from plethora, that which arises from drunkenness, (par ivresse) which is occasioned, as dissections have proved, by blood carried in too great abundance to the vessels of the brain, which, by excessively dilating them, compresses the central substance, and the origin of the nerves, so that rupture and effusion take place.†

The variety of colours observed by a person whose eye is struck, or pressed upon by the finger, is ascribable to unequal pressure on different portions of the

* Portal sur Apoplexie, p. 76.

† Cook on Nervous Diseases, p. 221.

retina, by which its function is deranged; one determined condition and state of its medullary substance being probably necessary for distinct vision, which by the pressure of the finger, or by concussion of the brain, becomes disordered. When the ocular spectra however take place from the causes assigned, they in fact indicate a tendency to, or bespeak an actual disease of, the sentient texture of the eye, and are accordingly enumerated by writers on the subject, among the precursory symptoms of Amaurosis, in which indeed, when considerable, and allowed to proceed without interruption, they not unfrequently terminate. But in the instance alluded to, the nerve of vision must be considered as only secondarily affected; and if the functional derangement be not urgent, it may be expected to subside on the removal of the exciting cause.

From the facts above stated it may be

inferred that, whilst a small degree of pressure applied to the medullary and perceptive lamina of the retina through the medium of its vascular texture, is fully adequate to produce certain kinds of ocular spectra, and other functional disturbances, the example quoted from Boerhaave proves to a demonstration, that if the congestive state of the organ be carried to a much greater extent, it is followed by the complete loss of its sensorial energy, or in other words partial paralysis, in the form of Amaurosis.

On the same principle may be explained the supervention of amaurotic symptoms, in habits predisposed to cerebral plethora, on the sudden cessation of accustomed hæmorrhages, or habitual discharges, from insolation, excessive corporeal exertions, as in parturition, long and forcible straining in the act of vomiting, coughing, sneezing, and in fevers accompanied with symptoms

indicative of great determination of blood to the head and eyes, as well as from other causes which have an obvious tendency to cause congestion in the vessels of the brain.

Thus, in persons of what is called the apoplectic make, and in whom there is an evident disposition to cerebral congestion, manifested by a sense of weight and oppression about the head, accompanied with drowsiness, vertigo, and the appearance of black spots, or sparks before the eyes on stooping down, or holding the breath; great exertions of the body, or violent passions of the mind, have sometimes brought on a more or less serious affection of the intellectual faculties, and muscular powers: or occasionally simply a diminution, or loss of sight. Schmucker assures us, that it is not uncommon for soldiers who are performing forced marches in hot weather

and under a vertical sun,* to become suddenly blind. This fact has been confirmed to me by a military officer of great experience, who served many years in the plains of Hindoostan, who also adds, that the soldiers more frequently die, under such circumstances, either with maniacal, epileptic, or apoplectic symptoms, the result of a greater or less degree of fulness, or rupture of the blood-vessels in the brain. Richter informs us of a man who became blind on a sudden, while carrying a heavy burthen up stairs; and of another individual who laboured excessively hard

* Dr. Thomas† observes, "that the coup de soleil or stroke of the sun, which so frequently occurs in warm climates to those who are long exposed under its immediate influence, seems evidently to be an attack of apoplexy." Morgagni found indeed in the right ventricle of a man who died of apoplexy from that cause, a large coagulum of blood, equal to the size of a hen's egg, and in whom the plexus choroides was full of hydatids.

† Modern Practice of Physic, p. 295.

for three days in succession, on the latter of which he lost his sight. The same author likewise speaks of a person who was suddenly deprived of vision during a violent fit of vomiting. Hildanus saw a case of Amaurosis which originated from sneezing.* Pechilini † was consulted by a young female, who became blind in consequence of the suppression of the catamenia, and recovered her sight as soon as the menstrual discharge returned. ‡ Beer saw a woman who was amaurotic during three successive pregnancies, from the two first attacks of which she recovered, but the last terminated in complete Gutta Serena. That the instances of Amaurosis just alluded to arise from topical deter-

* Morgagni says, lib. i. sect. xii. that he knew more than one instance of persons who, being very full of blood, were seized with violent apoplexy on straining at the water-closet.

† Pechil. Obs. Medic.

mination of blood to the cerebrum, and organ of vision, is rendered more than probable by what is stated by Portal in his "Anatomie medical," respecting a woman who became blind subsequently to the birth of her first child; after that of the second, she became deaf; and after the third, she nearly lost the faculty of speech. On occasion of her next pregnancy, by having recourse to bleeding, which had not previously been adopted, she not only escaped a repetition of the amaurotic seizure, but the effects of the former attacks were very materially subdued, the impaired sight having greatly improved by the judicious use of the lancet. I need scarcely add, that amaurotic symptoms frequently usher in, or succeed to, an apoplectic paroxysm.

Bonnetus gives an instance of a young man who experienced a fatal paralysis, and who besides suffering under an hemiplegia, lost also the sight of the eye of the

same side, the cause of which combination of phenomena was ascertained after death, by the presence of a large quantity of blood and serum in the ventricles of the brain.

Binding the cravat very tightly around the neck has produced evident signs of Amaurosis, the effect doubtless of a remora of blood in the brain, by the tight ligature compressing the external jugular veins more strongly than the carotid arteries, and thus preventing the free return of the venous blood from the vessels of the head to the right auricle of the heart. Dr. Donald Munro states, that he has known soldiers carried off by apoplexy from that cause; and Winslow has made a similar observation in the Memoirs of the Academy of Sciences for 1741. An interesting case of apoplexy, brought on by turning the head to look back at a ship, without at the same time moving the whole body,

is detailed in Fothergill's works, vol. iii. p. 214.

The above examples, to which many more of a similar description might be adduced, are amply sufficient to shew, that whatever contributes to produce a local accumulation of blood upon the brain, or the vascular texture of the eye, will be capable of exciting apoplexy, or partial paralysis in the form of amaurotic symptoms, according to the degree and seat of the compressing cause.

The external local causes of Amaurosis demand more ample consideration, not only as they tend to the elucidation of my ideas on the nature of that disease, but because their agency in producing it has been attempted to be explained upon principles which appear, to my apprehension, equally visionary and erroneous, and as such leading to improper, and inefficacious modes of treatment.

To this class belong a description of cases which, though usually regarded as the offspring of exhausted sensorial energy in the nerve of vision, I hope to be able to prove, admit of a very different construction. Under this head are included all those instances of defective sight which, from the accompanying symptoms, and from the absence of those which indicate a morbid state of the other textures of the eye, are clearly, I think, referable to an affection of the retina and choroid coats; for, from their vicinity, one can scarcely be affected without the other contiguous tunic participating, more or less, in the same morbid action. This description of disease is produced by intense application of the organ to the inspection of minute and dazzling objects. Hence the frequency of weakness of sight amongst silk stocking weavers,*

* "Your work," says Dr. Storer, the learned and highly respectable senior physician of Nottingham, in a

milliners, embroiderers, and other mechanics and artists, whose occupations oblige them to exercise their visual organ with too little intermission and variety, in looking intently at their delicate light coloured and highly illumined manipulations. Persons addicted to read, write, or perform much fine needle-work by the aid of candles, and what is much worse, by the brilliant and artificial light of lamps, rarely fail, if their organ of vision be constitutionally feeble, to discover, sooner or later, a greater or less decay of sight.

In a work* on this subject, I have endeavoured to shew that, instead of pri-

letter I had the pleasure to receive from him last year, "seems to me, after perusing it once and again, to fix the principles and illustrate the effects of the practice to which experience had gradually conducted me in cases of "Weakness of Sight," so frequently occurring in our manufacture."

* Practical Treatise on Weakness of Sight: 3d Edit. 8vo. Chap. i.

mary local debility, or exhausted sensorial power in the nerve of vision, the disease occasioned by the excessive use, or rather abuse, and the inordinate exposure of the eye to bright and dazzling objects, acknowledges as its proximate cause, an inflammatory, or at least a preternaturally turgid condition of the blood-vessels of the retina and choroid. A great variety of facts are adduced in that publication with a view to prove, as far as the nature of the case will admit, that the direct effect of local stimulants upon the eye, is to cause an increased action of the vessels of the part to which they are applied, and a consequent accumulation of blood in them; that an irregular balance in the circulation and partial congestion, are most apt to take place in weak and delicate constitutions; that light, though the natural stimulus to the nerve of vision, when admitted to it in an excessive proportion, occasions a plethoric state,

and pain and intolerance of sight, or photophobia, as a consequence of the tension of the deep-seated vessels of the eye. This doctrine is supported, not only by numerous pathological facts, and much analogical reasoning, but likewise by what may be esteemed nearly tantamount to demonstrative evidence, viz. the *immediate relief* of the more urgent symptoms, and their ultimate removal, by local and general depletion.

By pursuing this mode of reasoning, and applying it, in an extended sense, to the subject under discussion, we shall, I apprehend, be enabled to throw additional light on the nature of the more prevalent kinds of functional amaurosis. We are authorized to conclude, that a certain degree of fulness in the blood-vessels of the retina, as of every other organized texture, is indispensable to its health and economy. When this state becomes con-

siderably altered by the operation of the causes above alluded to, an inflammatory condition, or over distension of the vascular lamina of the retina ensues, the result of which will be a morbid sensibility of the organ to light, with the concourse of phenomena described as constituting the disease termed "Weakness of Sight."

A higher degree of vascular excitement announces the presence of *acute* retinal inflammation, which is characterized by symptoms of a similar, but more urgent description; namely, a greater share of intolerance of light, accompanied with more distressing and deep-seated pain referred to the fundus of the orbit, and darting very frequently to the temples, occiput, and through different parts of the head, contracted pupils, ocular spectra in the shape of drops of blood, sparks of fire, or meteoric flashes, disproportionate *external* redness, with constitutional derange-

ment, quick hard pulse, and obstinate watchfulness.

If these symptoms are not speedily removed, the pain and sensibility to light which prevail in the first stage rapidly diminish, the pupil at the same time begins to lose its preternatural contraction, and the sight becomes more imperfect, until in a short time, such is the progress of the disease, that with a complete cessation of the acute symptoms, the iris is fully and immoveably dilated, unless fixed by adhesive inflammation, and the sense of sight is in a great measure or wholly, and generally irreparably destroyed.

It is only in that state of congestion, or as the French term it engorgement, in which so great a quantity of blood is made to enter into, or press upon the retina, as to paralize its sensorial power, or in which its organization is greatly injured, that the sensibility of the organ becomes dimi-

nished or altogether annihilated. Though I am ready to admit with Bichât, that parts most supplied with nerves, as the brain, the tongue, and the retina are, comparatively speaking, rarely affected with inflammation; yet when it does occur, its presence at the onset is marked by an increase of organic sensibility, a state which quickly verges into the opposite, in consequence of congestion, disturbed function, disorganization, or altered structure of the part affected.

Whatever may be the nature of the nervous power, there is just reason from a variety of phenomena to believe, that it is greatly influenced by, and intimately connected with, the state of the circulation in the blood-vessels of the brain; that when these are excited, a greater portion of sensorial influence is generated, when in a state of congestion, its formation is less abundant, or else its transmission from the brain to the muscles of voluntary motion,

is in some degree impeded; and lastly, in consequence of profuse hæmorrhages, and other causes of debility, there is an evident deficiency or diminution of nervous energy. We know too that the nerves, or internuncii, as Mr. Hunter terms them, serve as conductors of the nervous influence to, and from, every part of the body. But as to the nature of the nervous influence, or the manner in which it is generated, and serves to actuate the different parts and textures of the living machine, we have not any clear conception, and can only judge by its effects. In Phrenitis, a disease distinguished by evidently increased activity and inflammatory diathesis of the circulating system of the brain, the amount of sensorial or perceptive energy which, under such circumstances, is developed, may justly be pronounced to be morbidly and inordinately great. The vividness of the imagination, the acuteness of the senses, the continued

loss of sleep, and the extraordinary exertions, which frequently assume a maniacal violence, furnish strong arguments in favor of that supposition. The acute stage of neuralgia, that exquisitely painful complaint of the nerves, arises probably from a state of congestion, or inflammatory action in the blood-vessels supplying the affected nerve.*

Inflammation of the nervous substance of every other part, or organ, is accompanied with similarly increased organic sensibility, by which alone indeed we are enabled, on

* This doctrine is maintained by Dr. Parry in his Elements of Pathology and Therapeutics. And Mr. Charles Bell is stated by Dr. Cooke, in his valuable publication on Palsy, p. 97, "to have described to him an instance of partial palsy of certain muscles, preceded by inflammation of a nerve, accompanied with excruciating pain and great tenderness of the nerve on pressure," a fact which tends to illustrate and confirm my views of the origin and cause of certain species of amaurosis. The case alluded to, yielded to topical and general *depletion*.

many occasions, to judge of its existence, the cessation of which may depend upon the spontaneous subsidence, or resolution of inflammatory action, an alteration or a congestive state of the vascular texture, and consequent pressure and paralysis of its sentient structure. In this stage, there is indeed a loss of its specific power of perception, and of pain, a condition of parts which bears a close resemblance to inflammatory apoplexy, both in regard to the exciting cause, the symptoms, and the mode of treatment. For, the same causes which, acting upon the substance of the brain occasion an abolition of the senses and voluntary power, operating upon the nerve of vision, deprive it of its sensibility; and the two cases depending alike upon congestion and its consequences, are relievable only by topical and general depletion, and counter-irritation.

Those persons who are under the necessity of exerting the eyes in the inspection of light dazzling objects, frequently complain of symptoms indicative of retinal inflammation for some time previously to their experiencing any material inconvenience in their sight.

The above observations warrant, I conceive, the following corollaries, viz. that a certain degree of fulness of the blood-vessels of the retina is essential to the healthful state of the organ; that an increased plethora, or inflammatory condition of them deranges their function, and produces the disease termed "Weakness of Sight;" that more active symptoms of the same nature, constitute acute inflammation of the retina, or deep-seated ophthalmia. In the chronic state of the disease, the increased bulk produced by the distention of the vessels of the lamina of the retina, occasions pressure upon its medullary texture, and deprives it

of its natural sensibility, or in other words, induces paralysis; amaurosis, as already remarked, being a common result of internal inflammation of the eye. Between these different degrees of a plethoric, and truly inflammatory condition of the immediate seat of vision, there may be an almost infinite number of shades and gradations, occasioning that variety, and anomalous character in the symptoms, which are observable in the different affections of the retina.

This view of the subject, whilst it is not incompatible with the soundest principles of pathology, holds out more consolatory hopes of relief, by pointing to a more rational and practical mode of treatment, than the vague and undefined notions usually entertained, relative to the supposed exhausted state of the nervous influence in these respective derangements of the organ of vision.

But, in attributing these phenomena to the immediate agency of the *vascular* apparatus of the eye, I must by no means be understood as wishing to insinuate, that the nervous system holds only a secondary, and subordinate place in the relation of cause and effect. On the contrary, it has already been explained, that the brain and the nerves constitute the most important division of the human body, and are the entire agents of sensation and volition. I wish only to shew my opinion, that their healthy economy depends, in a remarkable degree, upon the condition and action of the blood-vessels, and as respects amaurosis, upon the circulation in the brain itself, as well as the capillary vessels distributed to the optic nerve, or its expanded termination, the retina.

In a similar manner may be explained the effects of sudden and violent perturbations of the mind, which have been

known sometimes to induce amaurotic symptoms. Richter tells us of a man who lost his sight after being in a violent passion. That eminent writer however states, that strong passions act indirectly upon the eye, "by disordering the bilious secretion, and bringing on a wrong state of the fluids in the alimentary canal."

If, however, we reflect upon the immediate and palpable effect of strong and furious anger, it will, I conceive, be found more rational to impute the loss of vision occasionally resulting from it, to topical congestion of blood in the brain, and the consequent interruption of the nervous influence in the sentient texture of the retina. For, is not the circulation considerably accelerated and urged on with more than ordinary impetuosity, are not the cutaneous vessels visibly enlarged, and the features of a person thus agitated evidently inflated? Do not his eyes appear red,

suffused and protuberant, his cheeks flushed and swollen, and all the muscles of his face in rigid and violent action? And, can the sometimes instantaneous affection of the brain, and the accompanying, or subsequently impaired function of the optic nerve, depend upon the slow and reflex operation of a disordered state of the chylopoietic viscera? Dr. Cheyne* relates an instance of sudden death, by apoplexy, occasioned by anger. Bonetus mentions the case of a lady, who, in a sudden fit of anger, was seized with the strong apoplexy attended with stertorous breathing, of which she died, and in whose head blood was found effused and concreted in each ventricle of the brain.† Many other writers, both ancient and modern, might be quoted in confirmation of the opinion, that violent

* Cheyne on Apoplexy, p. 4.

† Bonetus Observ. xij. p. 87.

passions of the mind, Ψυχῆς ἀκρατία πάθια,‡ and other causes, by determining blood to the head, are capable of exciting apoplexy, and other diseases of the sensorium.

" He whom anger stings, drops if he dies at once,
" And rushes apoplectic down."

The same causes which may induce apoplexy, as Armstrong in the above couplet asserts, are liable also to entail a morbid affection of the optic nerve, should the thalamus he compressed by effusion of blood in the lateral ventricles of the brain, or the vascular lamina of the retina be overdistended.

Thus too, " a sudden fright, which operates" according to Richter, " as a frequent cause of gutta serena by *irritating* the nerves," admits of a similarly plain and satisfactory elucidation. And, on the like

‡ Aretæus, de signis & causis morbor: diutur. lib. j. capt. 7.

principle, may be explained the supervention of amaurotic symptoms, in habits predisposed to congestion in the brain, on the suppression of accustomed evacuations, especially those of a sanguineous nature. M. Boucher* says, that apoplexy is often the consequence of the suppression of the hæmorrhoidal flux, and of the periodical discharge in females; in both cases, he observes, the blood is more easily accumulated in the interior of the head, finding less resistance there than in other parts, and the delicate vessels which terminate in the white substance of the brain, are easily forced by this excess of blood. In various authors, as Morgagni, Quarin, Portal, &c. there are histories illustrative of the accession of apoplectic, and amaurotic symptoms on the cessation of hæmaturia, the sudden stoppage of urine, chronic diarrhœa, habitually profuse perspiration, and the dis-

* Journal de Medicine, vol. 47.

charge from old ulcers, and other causes which have a tendency, either directly or indirectly to produce a preternatural accumulation of blood upon the vessels of the brain. Thus, insolation, inebriety, violent passions of the mind, and great exertions of the body, as already suggested, p. 117, not unfrequently become the occasion of over-distension, or extravasation of blood in one of the ventricles, or other parts of the brain, and in consequence apoplexy, or a paralytic affection of some of the organs of the different senses, accordingly as the origin of the nerves, which respectively supply them, are exposed to compression. These effects may also arise from interrupted circulation, the causes of which Dr. Abercrombie observes may be referred to the following heads, "Derangement of the relation between the arteries and veins of the brain, in connection with a general state of plethora; causes which directly

diminish the capacity of the venous system of the brain, or any part of it; diseases of the sinuses impeding the passage of the blood from the veins, or diminishing the area of the sinuses at particular parts; interruption of the circulation in the veins of the neck; and diseases of the lungs and of the heart."*

To what other supposition can we attribute, in such instances, the origin of the impaired sight, but to a congestive state of the brain, or vascular texture of the retina, or how, upon any other hypothesis, can we satisfactorily account for the sometimes instantaneous and complete relief afforded by general and topical depletion? If the effect produced by the operation of these causes were simply a torpor, or paralysis of the nerve of vision, independently of local pressure, would not the abstraction of blood and other evacuations, tend rather to exasperate

* Abercrombie on Apoplexy, p. 20.

than alleviate the symptoms, by a still further exhaustion of sensorial power?

Again, abstruse literary lucubrations, or perplexing and anxious avocations, which demand great exertions of the intellectual faculties, predispose to various affections of the head, and amongst the number to amaurosis; the sedentary life which such painful mental exercise imposes, by diminishing, as Portal observes,* that force and activity of the circulation necessary to health, occasions a stagnation and congestion upon the brain, and apoplexy, or other organic diseases of the sensorium, dependent upon cerebral pressure. If the bodily structure of such studious persons be of what is called the apoplectic make, I believe we shall find, that their laborious mental pursuits are generally connected with symptoms indicative of local accumulation of blood in the brain. Do not the

* Sur l'Apoplexie, p. 152.

symptoms of head-ache, drowsiness, vertigo, heat, or sense of weight and oppression upon the temples, forehead, or vertex, of which such persons are often heard to complain, and which are generally relieved, or temporarily removed by the local application of cold water to the head and neck, bespeak the existence of such topical congestion? Is not the more or less tardy and oppressed circulation, the constipated bowels, the disposition to hypochondriasis, lowness of spirits, inaction, and occasional confusion of the mental powers, additional confirmation of the same fact? Are not individuals thus formed and employed, peculiarly liable to become the subjects of apoplexy, palsy, and other nervous affections, evidently connected with a plethoric condition of the sensorium? And, have we not on record many distressing instances of mental alienation, or imbecility, which have, in some instances, led to the

commission even of suicide, amongst characters distinguished for the ardour and extent of their political, legal, religious, or scientific acquirements, and the examination of whose brain has discovered the clearest manifestations of local turgescency, inflammation, effusion, or altered structure in some part of that vital organ?

I am not ignorant, that many persons are engaged in studious occupations without feeling any head-ache, or other inconveniences which point out a congestive state of the cerebral system. This probably arises from the arteries which convey the blood to the brain, viz. the carotids and vertebrals, being less in size than usual, or to their peculiar make not favouring such a determination. In illustration of the former hypothesis, I may add that I have repeatedly examined the pulsation of the temporal artery in such subjects, and have invariably found it small and unresisting.

The Duchess of ——— brought to me, last year, a young gentleman about fourteen years of age, to ask whether a rational explanation could be offered relative to the following curious fact; viz. that when he was anxious to get his lesson expeditiously, he found his aptitude to learn greatly improved by placing himself in such a position, as that his head might be the most dependent part of his body; nay, that his mental energies increased if he placed himself in an inverted posture, or with his head in the situation of his feet. Upon feeling, at the same time, his pulse with the fingers of one hand, and the temporal artery with those of the other, the cause of the phenomenon seemed clear and satisfactory. For, though the pulsation in these arteries corresponded very exactly, there was the most perceptible difference as to their respective strength; the radial being, in comparison, infinitely more vigorous, and

larger in caliber, than that of the temporal branch of the carotid, the action of which could scarcely be distinguished. Hence we may infer that, in the ordinary posture of his body, the brain does not receive an adequate supply of blood for the full display of its sensorial powers, but that when the accumulation of the circulating fluid to that viscus is favoured by a very dependant position of the head, a more free evolution of intellectual energy takes place, shewing the connection between a certain degree of vascular plenitude, and the subsequent developement of nervous or sensorial energy.

The train of phenomena above enumerated as being liable to affect persons of studious habits, is usually ascribed to a disordered state of the digestive organs, brought on by a sedentary mode of life. That the chylopoietic viscera are, under such circumstances, almost invariably more or less disturbed, is a fact universally ad-

mitted, but the deranged state of the sentient and intellectual powers has been pretty constantly regarded as the effect, and not the cause of the accompanying complaints in the abdominal region. If, however, we subscribe to a doctrine which I apprehend it will not be easy to controvert, viz. that the brain is the seat of intellect, and of all the mental emotions, it is surely more consistent with rational pathology to infer that, under unusual excitements of the mind, the sensorium is primarily affected, and that the derangement of the primæ viæ is the secondary result of the intimate sympathy which subsists between the functions of the brain, and the gastric organ. It is probable, indeed, that violent mental exertions have a direct tendency to exhaust the sensorial energy, agreeably to the well known couplet,

> "The mind too finely wrought,
> Preys on itself, and is destroyed by thought,"

in consequence of which a torpor in the circulating system, and a congestion in the brain may ensue, and produce, by a reflected influence, the phenomena arising from a diseased condition of the blood-vessels, or altered structure in some part of the brain itself. A fine illustration of the effects of intense application of the mind to any abstruse subject, is afforded in the instance of Jedidiah Buxton, the illiterate English labourer, remarkable for his powers of calculation by the aid, principally, of a singularly retentive memory, as he was never taught to read or write. After being exercised in some most difficult and complex arithmetical questions, he said in his own simple, but expressive language, "that for a whole month after he had, with infinite labour, accomplished their solution, he was *drunk* with reckoning by his memory, and that he would never again attempt so much, for fear of falling into a

similarly disagreeable situation. What he meant by being *drunk* was, that his senses were so much stupified, as to render him for some time afterwards incapable of his usual labour, or indeed of any business whatever."*

"Congestion of the head, with its worst effects, extravasation of blood, inflammation, and effusion, are all particularly apt to arise from *affections* of the mind. To explain this fact, we must consider that the brain is the immediate seat of mental perception and feeling, upon which account it is not at all surprising that it should be most quickly and powerfully subject to the influence of the depressing passions, and as these affections operate by diminishing the energy and the circulation through the whole body, it is natural to expect that the brain should be liable to suffer more im-

* Bingley's Biographical Conversations, 2d Edit. p. 318.

mediately and severely in these complaints, than other parts of the machine; and that this is the case, is a truth which every days experience tends to confirm." Howship's Practical Observations on Surgery and Morbid Anatomy, p. 67. The author annexes some cases, with dissections, confirmatory of this statement, and at pages 89 and 90 of the same work he adds, "Both the *exciting* and *depressing passions* are capable of disturbing the just balance of action in the vascular system within the head. The first operate by increasing, the second by diminishing the action of the vessels, but in both instances, the consequence is an increased determination of blood to the head. Ambiguous cases will sometimes occur, in which, unless the principle of depletion is carefully kept in view, I am persuaded no good whatever will be done, however clearly these cases, to a superficial observer, may seem to require an opposite mode of treat-

ment. It is only by long attention to the subject, that we can acquire the habit of justly appreciating the importance of affections of the mind, in their operation upon the brain, nervous system, and constitution in general." The above valuable practical facts perfectly coincide with my own clinical observations, and serve to explain the influence of mental emotions in producing amaurosis. And as grief is one of the most depressing passions we can, on the above principles, account for the frequency of that disease amongst young widows, and those who have experienced distressing losses, or severe mental afflictions.

The foregoing remarks on the tendency of great mental exertions to produce an accumulation of blood in the brain, will contribute to elucidate the probable cause of the blindness of our most distinguished epic poet.

In Fenton's Life of Milton, prefixed to

an edition of that author's incomparable work 'Paradise Lost,' published in the year 1739, we find the following striking passage: "At his initiation, he is said to have applied himself to letters with such indefatigable industry, that he rarely was prevailed with to quit his studies before midnight, which not only made him frequently *subject* to *severe pains in his head*; but likewise occasioned that weakness in his eyes, which terminated in a total privation of sight." He is also represented by his biographer, to have had a fair and *ruddy* countenance, which, coupled with the liability to frequent and intense head-ache, lead to the suspicion that he laboured under an habitual cerebral congestion. The violent and abstruse polemical discussions in which the warmth and freedom of his political and religious sentiments, and the perturbed character of the times in which he lived, involved him, would tend to keep up, and administer to a

perpetual excitement in the mind of one distinguished alike for acuteness of feeling, extent of learning, vividness of imagination, great susceptibility, and impetuosity of temper. It also appears, from his elegant latin letter of consultation, addressed to Thevenot a celebrated French Oculist, explanatory of his own case, that he laboured under great derangement of the digestive organs; which, it is not improbable, as just now suggested, might arise from the sympathy of the stomach with the irritated state of the sensorium.

"Decennium, opinor, plus minus est, ex quo debilitari atque hebescere visum sensi, *eodemque tempore lienem, visceraque omnia gravari, flatibusque vexari, &c.—visa* sunt *omnia* nunc dextrorsum, nunc sinistrosum *natare;* frontem totam atque tempora inveterati quidem vapores videnter insedisse; qui somnolentâ quâdam gravitate oculos, a cibo præsertim usque ad

vesperam, plerumque urgent atque deprimente."*

These data, however scanty, supported as they are by analogy, warrant, I conceive, the following inferences, relative to the nature and cause of the amaurotic symptoms in the case under consideration; viz. that Milton inherited, what is called, a sanguineous temperament, and that he had a constitutional determination of blood to the head, evinced by occasional giddiness, vertigo, violent cephalalgia, and disturbed state of the chylopoietic viscera. These predisposing causes of cerebral congestion were increased by his excessive mental exertions; and affected more particularly the vascular texture of the eye, in consequence of the intense and protracted application of the organ to reading and writing; the effect of which, it has been

* Miltoni Opera. Amstelodam. 1698, p. 330.

already shewn, (p. 124,) is to cause an increased accumulation of blood upon the organ of vision, and eventually terminated, on the principle already explained, (p. 127,) in the total loss of sight; the retina, from the meteoric flashes with which he was annoyed, having been evidently under the influence of organic disease.

To the foregoing speculations it may indeed be objected, that if the explanation of the phenomena I have ventured to suggest, and the deductions founded on them were correct, similar affections of the head, and consequent impaired vision, ought to prevail as universally as the causes specified are general. In reply however, it may be urged, that the same exciting causes produce dissimilar results in different subjects, according to the habit, tendency, and disposition of certain constitutions to be differently acted upon by the same morbid agents. The origin and

cause of the locality of diseases has been ingeniously accounted for, on the supposition that one "organ, or particular texture in every individual, in consequence of original or acquired susceptibility, possesses a lower degree of vital energy, or is less equal to maintain healthy action than other parts. If a hurried or irregular balance of the circulation take place from circumstances of a general or partial nature, or from an external or internal cause, the part or organ which is physically weaker, or more imperfect in its organization, will be the first to suffer under the influence of morbid applications."* Admitting as probable, what must be confessed to be a hypothetical and gratuitous assumption, namely, the alledged existence of a connate, or engrafted imperfection in some particular part, or organ predisposing to, and deter-

* Scudamore "on the Nature and Cure of Gout and Rheumatism," &c. 3d edit. p. 653.

mining the local character of disease, we can satisfactorily explain, why certain persons are prone to one disease, or a particular assemblage of symptoms from the application of the same exciting cause which, in another individual, produces a very different train of phenomena. Thus, for example, wet feet are liable to occasion a cough in some, a fit of gout in the arthritic, inflammation of the eyes, abdominal pains and diarrhœa respectively in others, and rheumatism in those in whom the tendinous, ligamentous, and bursal textures, are readily disposed to take on such kind of diseased action. One patient is more especially subject to hepatitis, another to pneumonia, a third to inflammation of the external parts, and a fourth of the deep-seated tunics of the eye, when, from any cause of local or general excitement, the whole, or a part only of the vascular system is thrown into disorder, or violent and

irregular action. A degree of light, which affords an agreeable impression to the eyes of some individuals, produces, in others, a very distressing sensation.

Hence, an acquaintance with the idiosyncrasies of different individuals, will be found of essential service in directing us to discover the nature, and successfully to conduct the cure of their diseases. Nor should it even be forgotten, that after an organ, or particular texture has been once, or often the subject of morbid derangement, it becomes proportionably more liable, from the application of an apparently trifling cause, to be again similarly affected. And it should be added that, when the organ of vision, or any of the more important viscera have suffered considerably from preceding attacks, they seldom entirely recover their former healthy powers, but often also become permanently injured in their structure. The slightest disturbance

in the constitution, in such cases, invites a return of morbid symptoms, and in some violent paroxysms, these injured parts run so readily into disease, that irreparable mischief will be apt to ensue, if not promptly arrested by the most vigorous and decisive practice. Half measures, or temporizing treatment, calculated indeed to moderate, but not subdue morbid action, will, at all events, be found inadequate to prevent that dreary set of chronic symptoms, which embitter the future existence of the patient, and in the end, more than reconcile him to its shortened duration.

I shall now proceed to consider another very obscure class of exciting causes of amaurosis. It cannot be denied, that the symptoms of that disease occasionally supervene upon morbid irritations which, however inexplicable their agency, from connecting cause with effect, we presume to believe are primarily seated in some of the abdominal viscera.

I am aware that the direct operation of these causes has been imputed to the sympathy established between the eye and the gastric organ, and that a recent anatomical discovery of an union between certain filaments of the lenticular ganglion of the eye with the great sympathetic,* has been supposed to afford a clear and explicit elucidation of the phenomenon. That certain kinds of irritation in the primæ viæ, are occasionally transferred to the retina, and produce, or at least are associated with that species of blindness which is distinguished by a greater or less insensibility of its sentient structure, it would betray the grosest ignorance and scepticism to deny.

But we are, notwithstanding this admission, still unprepared to explain either the manner in which the nerve of vision is rendered insensible to its accustomed

* By M. J. Ribes. See Wardrop's Essays, p. 182.

stimulus, or why of all the cerebral nerves the optic, or its retinal expansion, should alone suffer on such occasions. That the most intimate connection subsists between the cerebral and ganglionic systems, or in other words, between the various parts of the nervous system and the chylopoietic viscera, and especially between the brain and the contiguous organs of the senses, is a truth fully illustrated by a great variety of natural, as well as morbid phenomena. Irritation, or local injury of the digestive organs, is very apt to influence either individually, or in conjunction, the several senses of sight, hearing, taste, and smell, accordingly as the nerves subservient to these respective organs are either collectively or individually affected. The reflex operation of injuries of the head in exciting vomiting and abdominal constipation, demonstrates the existence of this close and intimate sympathy. Admitting therefore

that certain kinds of irritation primarily affecting the chylopoietic organs, are translated by sympathy, or some other unknown means, to the optic nerve, or retina, so as to induce such an alteration of sensibility as to disqualify these parts from the performance of their peculiar function, we must not regard the amaurotic symptoms thus produced, as indications of an organic or structural, but simply as evidence of a functional derangement, or torpor. This description of Gutta Serena, constitutes the symptomatic species, and is for the most part, when treated at an early period after its commencement, a tractable form of the disease. But as we know not, with certainty, in what peculiar changes in the condition of the nerve of vision, the cessation of its function in these cases depends, we are not acquainted with any remedy, by the application of which to the eye itself, we can ensure the resumption of its healthy eco-

nomy. As the defective sight, in the instances alluded to, arises from a remote origin, our attention should of course, on such occasions, be directed to the primary seat of the complaint, and when its source is clearly ascertained, and the remote cause wholly removed, there will be good grounds for anticipating the subsequent and spontaneous recovery of sight.

Under this head it has been customary, with systematic writers, to arrange the effects of certain narcotic and poisonous substances, which, when applied locally to the eye, or sympathetically through the medium of the stomach, are supposed to act on the nerve of vision, and to produce Gutta Serena by their primary, or secondary influence upon the retina.

Whilst it has been proved by several ingenious experimentalists, that there are certain kinds of poisons, both animal and vegetable, so highly deleterious that they

seem suddenly, and at once to destroy the nervous energy, so as to render the brain, and the whole nervous system, incapable of being affected by their natural stimuli,*

* Mr. Brodie, from a series of ingenious experiments, concludes that several of the narcotic poisons, such as alcohol, juice of the leaves of aconite, the woorara, essential oil of almonds, and the empyreumatic oil of tobacco, whether applied to wounded surfaces, or taken internally, occasion death, by destroying the functions of the brain, without directly acting on the circulation: and he found that some of these poisons produce symptoms considerably resembling those of apoplexy. With respect to alcohol he observes, "there is a striking analogy between the symptoms arising from spirits taken internally, and those produced from injuries of the brain." It is a curious fact, ascertained by Mr. Brodie, that although the *empyreumatic oil* of tobacco, and the other poisons above mentioned, act upon the brain, and not upon the heart, yet the *infusion* of tobacco, when injected into the intestines, and the *upas antiar*, when applied to a wound, have the power of rendering the heart insensible to the stimulus of the blood, and thus stopping the circulation.*

* From a Paper in the Philos: Transact. 1811. p. 206. quoted by Dr. Cooke, "on Nervous Diseases," p. 243.

there are others which would appear to produce their morbid influence in a more tardy and circuitous manner, through the intervention of a certain condition of the blood-vessels. Portal,* Sauvages,† &c. admit that opium sometimes produces true apoplexy, by causing congestion and pressure upon the brain. That some at least of the class of narcotics operate in this manner seems highly probable, since several articles of this description very commonly occasion giddiness, head-ach, sickness, slow, sometimes intermittent pulse, flushed countenance, and other symptoms and sensations, bespeaking a morbid state in the vessels of the brain; symptoms which are generally relievable by bleeding. I am indeed much disposed to doubt, whether any of the narcotics which, taken into the stomach, are said sometimes to occasion loss of sight, ever produce such a specific ope-

* Portal, p. 294. † Sauvages, vol. 1. p. 847.

ration except in cases evidently connected with an habitually plethoric condition of the vessels of the eye, under which circumstances, a slight additional afflux of blood to that part, in common with the whole brain, may serve to oppress and paralyse the medullary substance of the retina. This suggestion receives some countenance and support from the consideration, that the substances alluded to, do not produce any apparent alteration, or disorganization of the *structure* of the retina. This is manifest from the fact, that the impaired sight consequent upon the use of certain kinds of narcotics has been relieved, and sometimes wholly cured, by topical depletion, rubefacients, and other modes of counter irritation.

I shall conclude what I have further to state on the exciting causes of Amaurosis, by briefly considering that species of the disease supposed to arise from causes

which operate indirectly upon the nerve of vision, by inducing a sudden and very considerable reduction of constitutional vigor, or whose debilitating influence is confined to the eye itself.

This description of Amaurosis may, at first sight, seem to militate against, and even to overturn the whole fabric of the doctrine which I have, in the preceding pages, endeavoured to establish. In the first class of cases, the disease is connected with appearances of general debility of the whole system; in the latter, it manifests itself as a purely *local* complaint. But extremes, it has often been remarked, meet, and every practitioner conversant with the different causes and frequently varying features of this disease must be aware, that very similar symptoms present themselves which arise notwithstanding from diametrically opposite conditions of the organ. A congestive state of the retina may de-

pend upon local relaxation and debility, or it may arise from the actual existence of high arterial action in its capillaries, and produce amaurotic symptoms. Likewise, a positive deficiency of blood in the retina, in consequence of which its medullary substance is imperfectly injected, exhibits, like that from vascular congestion, the phenomena of impaired vision, dilated pupil, deep-seated pain, though of a peculiar kind, occasional muscæ, and vertigo. These different sources of the disease, it is of the highest importance accurately to discriminate, as the mode of treatment required for these respective species must necessarily be the reverse of each other, and bleeding which, in the one kind is most beneficial, would tend to aggravate every symptom in the other.

That an insensibility of the nerve subservient to vision may be the effect of a sudden depletion, and a consequent great

reduction of corporeal energy, cannot reasonably be doubted. I have had opportunities of observing more than one instance of the complaint, the origin of which, if any reliance is to be placed in the circumstance of the sight having been previously unimpaired, could be traced to the sudden loss of blood in habits ill prepared to meet the shock of extraordinary sanguineous evacuations. The defective vision, in one of the cases alluded to, succeeded to a very copious uterine, and in another to an excessive nasal hæmorrhage.

I have known also females of delicate constitutions, who have suffered severely and have lost a great quantity of blood from extraction of the placenta, or from acute diseases, complain, for some time, of impaired sight, accompanied with dilated pupils; symptoms which gradually subsided in proportion to their subsequent recovery of strength.

Richter states, that Gutta Serena has sometimes been the consequence of tedious diarrhœa, sometimes of a cholera morbus, sometimes of great loss of blood, and also of an immoderate ptyalism. He informs us also of an ascitic female, who became blind on the water being suddenly let out of the abdomen.* According to the same author, no general weakening causes operate upon the eyes, and occasion total blindness so frequently, and with so much certainty, as premature and excessive indulgence in venereal pleasures.

It will not, I believe, be questioned, that a certain degree of tension, or fulness of the blood-vessels in the sensorium is indispensable to its vigorous exercise, and to the healthy generation, and subsequent developement of nervous influence. The natu-

* The causes enumerated above by Richter, do not probably produce permanent Gutta Serena; if it ever happens, the predisposition to this disease must be so strong as to wait only for a slight exciting cause.

ral dependance and reciprocal action of the sensitive upon the vascular, and of the latter upon the nervous system, is essential to the due performance of their respective functions.

Purposely passing over any metaphysical enquiry into a subject which is confessedly beyond our means of comprehension, I shall content myself with remarking, that every one must be familiar with the fact of a sudden and profuse discharge of blood being almost invariably productive of syncope, and a temporary suspension of the mental, and voluntary powers. If the blood-vessels of the brain, and consequently of the eye, be rapidly drained of too great a proportion of their contents, the circulation of the brain may be interrupted, a collapse take place, and the medullary lamina of the retina being deprived of its necessary support, may suffer such a change, as to be afterwards rendered incapable of fulfilling its proper office.

It is under such circumstances that the smallest additional loss of blood might be attended with very injurious effects, and that diffusible stimuli, and all those moral causes and passions of the mind which have a tendency to exhilirate the spirits, and produce a general excitement of the vascular system, are found to afford temporary improvement of vision. But whenever Amaurosis is found to accompany such general constitutional debility as have been above referred to, we may presume that the formation of the disease is connected with a strong predisposition in the eye to be affected by causes which, fortunately, are but seldom productive of such serious consequences.

This species of Amaurosis is indeed exceedingly rare, compared with those which are the offspring of a plethoric condition of the vessels of the eye. There are not wanting indeed persons, who are alto-

gether incredulous as to the capability, still less the probability of such general causes as have been narrated above, producing a train of local effects upon the retina. Of this number is the ingenious author of the article Amaurosis in Rees's Cyclopædia. The mere circumstance indeed of the loss of sight coming on at a certain period of, or immediately succeeding to another disease, ought not to be accepted as a proof of its being occasioned by the pre-existing complaint, because such complaint, whilst it may not render the patient unsusceptible of Amaurosis, may be wholly independent of, and have no share in its production.

The continental writers, who are very prolix and comprehensive in their enumeration of the exciting causes of Gutta Serena, make no difficulty in asserting, that it is sometimes the direct consequence of the *matter* of suddenly repelled Gout,

Rheumatism, Lues Venerea, Porrigo, Scabies, and Fevers, being thrown upon the nerves of vision. They also introduce into the list other causes equally improbable. These notions, however visionary, have been doubtless founded on the unexploded doctrine of the humoural pathology, which long prevailed amongst continental practitioners, rather than upon well established, and well ascertained medical facts. That the translation or metastasis of morbid *action* from one organ, or part of the body to that of vision occasionally takes place, called the *conversion* of disease by Drs. Boerhaave, Curry, and Parry, and produces amaurotic symptoms, cannot be doubted, but in these cases it is generally either sympathetic, or vicarious for some cutaneous,* or other affection, and is frequently

* Beer has detailed the particulars of a case of Amaurosis, from which the patient recovered on the appearance of Scabies.

associated with, or favoured by such causes as have an evident tendency to augment the quantity of blood in the vessels of the head; circumstances which should not be overlooked in the treatment of this description of cases.

CURE.

It is a singular circumstance that, though Amaurosis has been generally acknowledged to be a disease of the sentient texture of the eye, scarcely any attempts have hitherto been made to investigate and explain the ratio symptomatum. Writers have, for the most part, contented themselves with decribing it as a morbid affection of the organ, consisting in a weakness, debility, loss of tone, or exhaustion of the optic nerve, or retina.

Little objection need be made to these several terms, were they commonly under-

stood to convey only the abstract idea of an incapacity in the nerve subservient to vision to perform its destined office. But it has unfortunately happened in this instance, as on many similar occasions, that the use of names which do not impress the mind with a just notion of the nature of the disease, has led to mistake, and proved injurious to practice. Accordingly, the belief that Amaurosis depends upon a simply torpid state of the retina, has been deemed a sufficient justification for the indiscriminate employment of powerful, general, and topical stimulants, without regard to the species, the exciting causes, or the existing phenomena of the disease. Should the symptoms be owing to over-excitement, or to a congestive state of the organ, the most mischievous consequences must ensue from such treatment; and it is almost unnecessary to add that, until these symptoms are removed by means of depletion,

such stimulant practice must be productive of serious mischief. The sufferings of the patient cannot fail to be immediately aggravated, and in all probability, an incurable form of the disease becomes the consequence.

In the course of this work I have endeavoured to shew, that many of the admitted causes of Amaurosis, the effect of which has been attributed to a direct loss, or exhaustion of the vital power, must operate by occasioning a greater or less quantity of blood to enter into the minute vessels of the retina; that pressure disturbs, or destroys its function, according to the force and duration of its application, and that a degree of pressure fully adequate to that purpose, may be produced by a plethoric condition of the deep seated blood-vessels of the eye. These facts have been too much overlooked, or not sufficiently understood, in consequence pro-

bably of practitioners not being aware, that a congestive, or even inflamed state of the retina, is not indicated by the same train of symptoms which bespeak a similar condition of the more external textures of the eye. On the contrary, we are led to the suspicion of such states chiefly, and as I have already observed, on some occasions solely, by an alteration or suspension of function. It not unfrequently happens indeed, that in proportion to the absence of the more common phenomena of inflammation, is the necessity of scrutinizing those symptoms which, although obscure, may serve to indicate an increased action, or turgescent state of the vascular texture of the retina.

If any part of the structure of the optic nerve, taken in the enlarged sense already explained, page 3, be altered or destroyed by disorganizing inflammation or its consequences, by medullary fungus, by adven-

titious substances formed within the cranium, the orbitar cavity, or the globe of the eye itself, or be pressed upon by a diseased state of the tunics, or humours, the result is the same, viz. the annihilation of its function. This class has been properly denominated *organic* Amaurosis. And, as we do not possess the means of restoring altered structure, it follows that the greater part of them must be absolutely incurable.

It is therefore of the highest importance as it respects our own character, and of still greater consequence as it affects the welfare of the patient, to ascertain with precision the existence of these various sources of the disease. This object can be accomplished only by a diligent enquiry into its previous history, the nature of the exciting causes, and its simple, or complicated form. These considerations being taken in connection with the external and

visible appearances, and the attendant symptoms disclosed by various morbid affections of the several textures of the organ itself, and of the adjoining parts, will generally enable a practitioner conversant with ophthalmic surgery, to deduce a correct opinion relative to the character and probable issue of the case.

Hopeless as is the greater number of the instances of Gutta Serena proceeding from the causes just alluded to, there is fortunately a considerable list, by way of distinction termed *functional*, which, more frequently than is usually believed, admit of palliation, and on many occasions of complete cure. In the latter description of the complaint, the only *external* sign of impaired sensibility in the retina obtained from inspecting the eye, is derived from a loss of vivacity in the motions of the pupil, the eye in other respects preserving the appearance of health.

The source of these cases, when idiopathic, is usually supposed to be a greater or less exhaustion of sensorial power in the nerve of vision. The mere circumstance however of the sensitive structure of the organ being unable to perform its ordinary function, cannot surely be accepted as affording sufficient ground for the universal and unqualified adoption of that opinion, since its energy may be impaired, suspended, or annihilated by a variety of causes, some of which cannot be suspected even of operating on the alledged principle. The subject not admitting of satisfactory conclusions from demonstrative evidence, we must be directed in the investigation by our knowledge of the *laws* of the nervous system, and by analogy derived from the consideration of the probable mode in which the more obvious causes of the disease may be supposed to produce their effects. In the *organic* species of Gutta

Serena, the structure of some portion of the optic nerve being either primarily affected, or secondarily involved in the diseased states of the adjoining textures, there can be no difficulty in accounting for the morbid phenomena. But when, as in the functional forms of the complaint, there is no *appearance* of *deranged structure* in any part of the eye, the proximate cause of the insensibility of the nerve is less easily developed, and consequently more liable to misapprehension.

Are there, in such instances, clear indications of exhausted energy in the sentient structure of the eye, or is the suspension of its function, combined with, or the effect of, local *pressure* from vascular plethora? We will select, by way of illustration, that description of functional Amaurosis most favorable to the former hypothesis, which is produced by exposure of the eye to extreme degrees of light and temperature,

and by over exertion of the organ in viewing minute and dazzling objects.

We may, with reason, imagine that the medullary lamina of the retina under the circumstances alluded to, is greatly excited, and it is more than probable, from the sympathy existing between the nervous and vascular system, that the latter will be similarly affected. Indeed, in the Albino the fact admits of actual demonstration, the interior of the eye appearing evidently of a more deep pink colour after exposure to vivid light. But there is another important law in the animal economy which must not be overlooked in the present enquiry; namely, that every preternatural excitement is followed by a corresponding depression or collapse. And, as it cannot be doubted that the vigour and momentum of the circulation will be weakened and retarded in proportion to the loss of sensorial power, a congestive state of the

deep-seated blood-vessels of the eye must necessarily take place, and prevent, by a reflex operation on the principle of pressure, the developement of nervous influence. The vascular distention, arising from the combined operation of the foregoing causes, if continued or repeated even at short intervals, will tend ultimately to induce so great a degree of weakness and relaxation of the vessels thus overcharged, as to render them permanently varicose, or disposed readily to yield to a trivial increase in the impulse of the blood, and prove the occasion of a return of symptoms from the slightest irregularity in the circulation. Hence the necessity of guarding against those injurious exertions of the sight, which have, in the first instance, given birth to the disease; for, if persisted in, they will not only counteract the most appropriate treatment, but be liable, eventually, to convert what was originally only

a *functional,* into an irremediable *organic* Amaurosis.

Amaurosis may therefore be *primary* or *idiopathic,* the result of an alteration in the structure of some part of the nerve of vision, or of an actual loss of power from the decay of age; constituting species of the disease which must necessarily be incurable.

It may also arise from an *acute,* or *chronic* inflammation, or a plethoric condition of the proper substance of the retina, or of the vascular lamina on which it rests; *

* The reader will bear in mind that the retina, thin and delicate as it may appear, actually consists of two laminæ, the substance of which is essentially different. The *external* one, or that which is contiguous and adheres slightly to the choroid coat, has a fine cellular, and highly *vascular* structure, and is supplied, like the neurilema of the optic nerve, with nervous filaments from the ophthalmic ganglion; whilst the *internal* lamina, which is so intimately united with the vascular membrane as not to admit of being distinctly separated, lies in contact with the capsule of the vitreous humour, and seems to be almost entirely composed of medullary matter.

which description of cases, though alarming and very serious in their nature, sometimes admit of relief.

Again, it may be *secondary* or *sympathetic,* the effect of apoplexy, or hydrocephalus, of tumours, abscesses, and earthy concretions formed in the brain, or upon the optic nerve, or of change of structure in some of the tunics, or humours of the eye; any one of which, by oppressing or deranging the texture of the thalamus, the tractus opticus, or the retina, accordingly as each respectively may be exposed to their morbid influence, are obviously no less untractable than the first class of exciting causes. As occasional exceptions to this conclusion may, however, be mentioned the paralysis of the sentient texture of the organ, depending upon the displacement of an enucleated lens, or an interstitial deposit between the choroid or retina, in which cases the removal of the former, and

the evacuation of the latter, may sometimes prove available to the restoration of sight. Beer, relates the history of a man who was rendered amaurotic for the period of *eight years,* by the pressure of a depressed crystalline, from which he spontaneously recovered on the return of the lens to its natural situation in consequence of a fall. The late Mr. Ware ascertained, by anatomical examination, the existence of Dropsy between the coats of the eye, and suggested the practicability of occasionally curing it by the early discharge of the accumulated serous effusion.

The function of the retina may also be impaired or destroyed by its sympathy with, or participation in, the acute inflammation of the choroid; of which I have witnessed several examples. Two patients labouring under that form of the disease, are at this moment under my care, one of whom is rapidly recovering his sight,

but the result of the other case is, at present, much more doubtful.

The disposition in the vascular tunics of the eye to *inflammatory excitement,* or *venous congestion,* depends probably upon the particular condition of the minute vessels as being tense or relaxed, and upon the nature of the inflammatory action of the capillaries and large vessels as being active or passive, influenced by the character of the exciting cause, by repletion of the system, obstruction general or local, irregular balance of the circulation, or by irritation, or morbid action reflected or transferred, by metastasis, from some distant organ.

From what has been advanced it may be inferred that Amaurosis, in by far the majority of cases, is *symptomatic,* or formed out of some pre-existing disease; and it is also probable that, although the sources of the *functional* species are very different, it

is more frequently than is commonly suspected caused by, or at least connected with, an inflammatory or congestive state of the vascular texture of the deep-seated parts of the eye; on which principle may be explained the great similarity which obtains between the symptoms originating from diametrically opposite conditions of the organ.

Beer suggests, "that the various cases of Amaurosis admit of being comprised in two classes; one attended with a diminution of the irritability of the whole eye, and where the patient constantly seeks a strong and brilliant light; the other characterized by great tenderness and irritability of the organ, and an aversion to every light which is bright and vivid."

A more practical and useful division of the subject is, I conceive, into *sthenic* or *acute*, and into *asthenic* or *chronic* Amaurosis, the former being the product of high

arterial action either in the retina itself, or in the adjoining parts of the eye, in habits consitutionally strong and vigorous; the latter, the offspring of local congestion, from a relaxed and debilitated state of the system at large, and of the part affected in particular.

If the constitution be vigorous and unbroken, and a due balance does not exist between the larger arterial branches, the capillaries, and the veins; on occasion of any great excitement or determination of blood to the eye, the absorbing veins being incapable of transmitting the blood with the same power and regularity with which it is propelled into them by the accelerated action of the capillary arteries, distention and consequent reaction, and the phenomena of *acute inflammation* ensue, constituting the *sthenic* form of Amaurosis. The *asthenic,* of which many species have been enumerated by systematic writers, founded

upon the difference in its symptoms, and the nature of its exciting causes, but which may be regarded as the varied expressions of the same disease, occurs in *feeble* habits, in which the capillary vessels, from causes of a general or local nature are so much weakened or relaxed, as to be incapable of acting with that vigour, and the absorbing veins of affording that degree of resistance, necessary to constitute *acute* inflammation. Under such circumstances, an increased determination of blood to the eye, the effect of irregular or interrupted circulation, will be apt to occasion a simple engorgement of the vessels.

Thus it appears that the greater number of the two descriptions of functional Amaurosis, is probably connected with a locally accelerated or retarded circulation, occasioning alike a preternatural accumulation of blood in the deep-seated vessels of the eye, and affecting either primarily or se-

condarily its sentient texture, in the form of high arterial excitement, or of chronic venous congestion; facts which should ever be borne in mind in the treatment of the disease.

The above explanation of the pathology of the disease, being however very different from the commonly received notions on the subject, it will be right to examine into the validity of the more prevailing doctrine, which refers it to a derangement of the primæ viæ, affecting the eye secondarily, and by sympathy.

"By an attentive examination of the nature and causes of the imperfect Amaurosis which admits of a cure, it is found," says Scarpa, "from the careful observations of Schmucker and Richter, that this disease is most frequently derived from a morbid excitement, or irritation in the digestive organs, either alone, or accompanied with general nervous debility, in

which the eyes participate sympathetically." *

Whilst however I can readily subscribe to the probability, founded on the most legitimate principles of reasoning relative to the nature of the disease, of the declared success of those eminent German practitioners, by the methods they have recommended for the cure of the imperfect Amaurosis, I am nevertheless of opinion, that they have taken too confined a view of the subject, in ascribing the efficacy of the depleting plan of treatment, to its direct and exclusive operation upon the digestive organs. Were the theory they advocate as to the cause of the disease correct, namely, "the presence of indigestible aliment, acrid saburræ, or bilious sordes in the stomach, which, by stimulating the nerves of the primæ viæ, are supposed consentaneously

* Scarpa "on Diseases of the Eye," translated by Briggs, page 486.

to affect those of vision," Amaurosis would not only be more frequent in its occurrence, in proportion to the very general prevalence of those causes, but also easily, and it is presumed, certainly remediable by the exhibition of emetic and purgative medicines. That these remedies occasionally prove successful cannot be justly questioned. It may therefore be useful to enquire into the modus operandi by which they are enabled to accomplish such salutary effects. In the first place, emetics not only unload the stomach of its contents, but they likewise, at the same time, powerfully excite the action of the absorbents, and occasion a remora of blood in the vessels and sinuses of the brain, its return by the external jugular veins being interrupted, in consequence chiefly of the temporary suspension of breathing. The head-ache and giddiness, the bloated countenance, and blood-shot or suffused eye, and the

nasal hæmorrhage which occasionally happens during long-continued sea sickness, clearly evince, that the blood is accumulated in that organ in a greater proportion than natural, and that it is propelled into the head with more than ordinary momentum and impetus.

Should the amaurotic symptoms depend, agreeably to the explanation I have ventured to offer, upon a *venous* plethora of the organ of vision, the increased vis a tergo, which the operation of violent vomiting occasions, by rousing the capillary arteries into increased activity, may enable them to propel the blood forward through the almost stagnant and torpid veins, and thus overcome the congestive state of the retina, the presumed immediate cause of the asthenic form of the disease.

That such is the tendency of emetics, I am satisfied from several practical facts and considerations. The Marquis ——,

to whom I was called, on account of an excessively turgid state of the blood-vessels of the conjunctiva of one eye, unaccompanied with pain or inflammation (ophthalmia atonica) not being able to adopt the plan suggested in consequence of a sudden and unexpected excursion to the continent, on his Lordship's arrival at Paris, he was recommended to take a powerful vomit, which had the immediate effect of reducing the morbidly distended and relaxed vessels to their healthy caliber. Another gentleman, a banker in this metropolis, whom I was requested to attend under precisely similar circumstances, having heard of the successful exhibition of an emetic in the case just alluded to, proposed its adoption in his own person, to which I readily consented, and the result was equally speedy and satisfactory.

Are not indeed mercurial, or potent vomits of any kind, peculiarly efficacious in reducing

the congestive and chronically inflamed state of the vessels in hernia humoralis? and do not emetics promote the retarded circulation in the lungs when oppressed with bronchial inflammation, in Peripneumonia notha, or in that congestive state or venous plethora of the pulmonary organs, by French authors not inaptly denominated apoplexy of the lungs?

If, indeed, the use of emetics depended exclusively upon the evacuation of the stomach, it is hardly conceivable that, for this purpose *only*, it would be necessary occasionally to repeat them a third, and even a *fourth* time, as Scarpa candidly confesses is sometimes required for the relief of the imperfect amaurosis, or even a *seventh*, as stated by Ribe.*

I cannot admit, as legitimate reasoning, that the bitter taste in the mouth, the

* Acta Suecin. Tom. i. No.

tension of the præcordia, disagreeable eructations and want of appetite, consequent upon the continued employment of small nauseating doses of emetic tartar for the uninterrupted course of eight or ten days, afford any satisfactory proof that morbific stimuli in the stomach constitute, according to the declaration of the German practitioners, the real cause of the disease. The presence of vitiated bile in the stomach, under the circumstances stated, appears to me wholly referable to the increased secretion of that fluid from the liver, and its subsequent regurgitation into the gastric organ from the duodenum, in consequence of vomiting, or long continued nausea.

Emetic Tartar, given in small doses, and repeated at short intervals, so as to excite only a slight sensation of sickness, tends to repress the vigour of the heart and arteries, promotes insensible perspiration, and generally affects the bowels, by

which joint operations it has a powerful influence in abating inflammatory action. This effect is further assisted by the necessity it imposes upon the patient of reducing the quantity of ingesta, an improper indulgence in which serves not unfrequently to keep up vascular excitement, and to counteract our remedial measures.

Regarding functional amaurosis as the most frequent result of topical inflammation, or local venous congestion of the deep seated vascular texture of the organ of vision, the utility of emetic tartar can be easily understood and fully appreciated. But, surely, on any other principle, or on the supposition that the disease consists in a debilitated state, or actual exhaustion of the nervous energy of the retina, that remedy, so strongly recommended by Scarpa, would be the last article in the Materia Medica which a judicious physician would resort to, in order to obviate that gratuitous

and assumed condition of the sentient structure of the eye. For, who would think of administering such a powerfully debilitating medicine, in the last stage of typhoid fever, with a view to rouse the exhausted state of sensorial energy?

Evacuations from the primæ viæ have, in these cases, been insisted on by almost every ancient and modern writer on the cure of Gutta Serena, however different their opinions relative to the nature and cause of the disease. Numerous examples might be adduced, from the most authentic sources, of incomplete Amaurosis yielding to spontaneous vomiting, or the action of the bowels produced by purgative medicines. Celsus, in the chapter on Mydriasis, observes, "Quidam, sine ulla manifestâ causa, subito obcæcati sunt. Ex quibus nonnulli, cum aliquandiu nihil vidissent, repentina profusione alvi, lumen receperunt."*

* Cels. de Medicina, Lib. 6. Cap. 6. 37.

The employment of purgatives is now, as it always was since medicine became a science, the common practice during the actual inflammation of the eye. Hippocrates says, in one of his aphorisms, "a diarrhœa or flux of the lower belly, cures the ophthalmy," a position, the truth of which cannot be controverted. On this point, I trust I shall be excused for quoting what is stated in another work,* not only on account of its being applicable to the subject under discussion, but because the reviewer of that publication in the Medical and Physical Journal, did me the honor to declare, that the following passage explains the modus operandi of that class of remedies in more concise and forcible language, than he had found it expressed by any other author.

"If we duly consider the great sympathy

† See my Treatise "On Weakness of Sight," 3d. Edit. p. 68—70.

which exists between the eye and the primæ viæ, that in young persons especially, indigestible colluvies, or the presence of worms, is a frequent exciting cause of one species of inflamed eye, the ophthalmia verminosa, that purgatives excite a powerful counter-irritation, at the same time that they deterge the alimentary canal, and diminish the quantity and momentum of the circulating fluids, by preventing the chyle from entering the lacteals, and by emptying the numerous exhalents and excretory ducts which open into the bowels, we cannot doubt their being admirably fitted to relieve congestion upon the organ of vision. Are they not indeed universally and successfully resorted to in all cases in which the blood is impelled with unusual violence towards the head? "Gravem epidemicam ophthalmiam describunt medici Vratislavienses cum vehementi capitis dolore et cæcitatis secuturæ periculo junctam,

adversum quam nil erat utilius quam profluvium alvi sive sponte naturâ motum, sive pharmacis excitatum."

On the admission of the doctrine advocated throughout this Treatise, relative to the nature of the greater number of the functional species of Amaurosis, there can be no difficulty in accounting for the efficacy of purgatives in co-operating with, or in promoting individually their cure, without recurring to the vague and gratuitous assumption, "that they prove beneficial by removing the morbific matter from the intestines, the supposed immediate cause of the sympathetically torpid state of the nerve of vision."

From what has been advanced, the indications of cure must consist in relieving the retina from vascular excitement or oppression, the effect of local inflammation, or simple congestion, by general or topical

depletion, proportioned to the urgency of symptoms and the character of the disease, and by other means calculated to derive from the part affected, by removing obstructions and equalizing the circulation, and finally, by restoring the tone of the vessels and the impaired energy of the nervous texture of the eye.

If the patient be of a robust and plethoric habit, and the amaurosis has arisen from causes disposed to induce, and is attended with symptoms marking the acute form of the disorder, both topical and general bleeding must be resorted to with promptitude and decision, the progress of the disease being, under such circumstances, so exceedingly rapid, as speedily to bring on disorganization if not immediately arrested. And it should not be concealed, that a much larger quantity of blood must be abstracted in the primary retinal, or choroidæal inflammation, than in common cases of ophthalmia,

in order to make such an impression on the morbid state of the deep-seated vessels, as to check the inflammatory action of the larger arterial branches, and enable the overcharged capillaries to recover their power of healthy contraction. Drawing blood from, and afterwards dividing the trunk of the temporal artery, as suggested and successfully practised in cases of iritis by my friend and instructor the late Mr. Saunders, notwithstanding the speculative objections raised against that mode of taking away blood is, I am convinced from very ample observation and experience, the most efficient method of subduing the violent action of the ophthalmic arteries.

When the pulsation of the carotids has appeared unusually strong, accompanied with a sensation of throbbing in them and in the head, the extremities feeling at the same time colder than usual, the compression of that artery has had an immediate effect

in relieving all the symptoms, by interrupting the flow of blood to the brain, and by giving it a new determination. In this manner I have known symptoms threatening apoplexy suddenly arrested. Second, in point of efficacy, to arteriotomy, is bleeding from the jugular vein, the agency of which remedy in immediately appeasing pain and inflammation in the eye has, in many instances, proved most satisfactory, especially in children, in whom the operation is easily performed. But if the former more painful process will not be submitted to, and venesection from the neck cannot be accomplished, cupping-glasses should be applied to the temples, and an adequate quantity of blood taken away by an experienced operator, by cutting the frontal branches of the temporal artery, from which the blood will flow with great freedom. If none of the above methods can be conveniently adopted, blood must be drawn, in quantity propor-

tioned to the urgency of symptoms, from the median cephalic, or the other veins in the arm by a large orifice, and allowed to flow until syncope is induced. It is owing to depletion not having been carried far enough, and at a sufficiently early period of the disease, that I am disposed to ascribe the generally unfortunate termination of the *acute* species of amaurosis. Bleeding in some form, I repeat, is to be esteemed our sheet-anchor in these very formidable cases, and must be repeated at short intervals, until the violence of the symptoms shall have been subdued.

Auxiliary, but subordinate to the lancet, are the various means tending to lessen the quantity of blood sent to the part. This indication may be fulfilled by administering an active dose of hydrarg. submur. with jalap, and subsequently saline aperients with antimonials, so as to keep up a constant slight nauseating and purgative effect.

Should the circulation be greatly accelerated, it may be beneficially repressed by the exhibition of digitalis. When topical congestion has been relieved, cold evaporating lotions, or ice, applied to the temples and forehead, will be found very powerful in repelling the blood from the affected organ. The regimen should be strictly antiphlogistic, and liquids even of the mildest description taken very sparingly, agreeably to the diæta sicca of the ancients. The feet should be preserved of a due temperature: the head of the patient when in bed, ought to be more than usually elevated; and both by night and by day, it must be kept cool with regard to covering, and the pressure of a tight neck-cloth strictly avoided.

As soon as the more urgent symptoms of the acute stage have subsided, the remaining congestive state of the vessels may be safely confided to the application of leeches

to the neighbourhood of the eye, and blisters to the temples, behind the ears, or between the shoulders.

Mercury, in some of its various forms, may be exhibited advantageously during the active state of the disease, so as to produce an early constitutional effect, for it will tend not only to alter the morbid action of the vessels, but will serve likewise, after the inflammatory symptoms have subsided, to promote the absorption of any lymph that may have been effused during the preceding violent vascular excitement.

Should the pupil, as very commonly results from choroidæal inflammation extending to the iris, shew a disposition to contract, or have actually formed an adhesion with the capsule of the lens, the application to the eye of a filtered solution of equal parts of the extracts of belladonna and stramonium must, on no account be omitted; or a liniment of the former, with ungt. hydrarg. fort. united

together by means of the yolk of egg, be freely rubbed upon the superior palpebra and eyebrow, with a view to prevent a synizesis, or permanent contraction, or obliteration of the pupil. Whilst it is of importance to exclude strong light, every kind of compress or bandage to the eye itself should be studiously withheld; as they never fail to exasperate the symptoms. And with regard to local applications, it is very doubtful whether they afford any real benefit in this stage of the disease; at all events stimulants are decidedly improper.

Should the symptoms have succeeded to the suppression, or disappearance of some habitual discharge, or cutaneous eruption, the sudden abatement of gouty, or rheumatic inflammation, or cessation of gonorrhæal discharge, it is incumbent in us to consider, how far it is desirable to exert the best known means of re-producing the more general constitutional action of the

two first diseases; and of reviving the discharge from the urethra in the last stated example. It may also be important, on many occasions, to substitute a vicarious artificial excitement or discharge in some other part, or at all events, increase the natural secretions, as a succedaneum, from the different emunctories.

About two months since, Mrs. D. aged 53, came from the country to consult me on account of a violent inflammation of the left eye, brought on by cold when her body was much heated. The pain in the ball of the eye was of a lancinating kind, and so intense in degree, darting occasionally to the temples, forehead, and occiput, as wholly to deprive her of rest. The pupillary aperture was muddy, and the iris somewhat contracted and fixed, and vision so nearly extinguished, that she was capable only of distinguishing day from night. She was exceedingly distressed by imagin-

ary flashes of light, and the morbid perception of ignited bodies. The tongue was white, the pulse quick and wiry, and the bowels obstinately constipated. The external appearance of the eye, and the aggregation and zonular arrangement of the blood-vessels around the circumference of the cornea, clearly bespoke the existence of choroiditis. The loss of sight being much greater than could reasonably be accounted for from the degree of opacity in the humours, added to the meteoric flashes, afforded sufficient ground for suspicion that the retina was involved in the inflammatory state of the choroid coat.

By pursuing the plan of treatment detailed above with vigour proportioned to the urgency of the case, and the strength of her constitution, the whole train of formidable symptoms subsided, and in the space of three weeks from their commencement, she returned home completely re-

stored to sight, and with the pupil in a perfectly active state.

A genuine uncombined acute inflammation of the retina, distinguished from that of the choroid chiefly by the violence and suddenness of its invasion, by less disposition to turbidness in the humours, by the early period at which the pupil becomes dilated and immovable, and by the perception of meteoric flashes in the eye, is a very rare disease. When it does occur, the treatment must be conducted on the principles already laid down, but with an activity commensurate with the great danger of the case, and the rapidity with which the symptoms advance, and threaten the destruction of sight.

With regard to the *asthenic* or *chronic* form of Amaurosis, connected with a relaxed and congestive state of the vessels of the internal membranes of the eye, a very different mode of practice must be adopted.

The constitutional and local debility, the pre-disposing cause of the disorder, would be augmented by the active measures recommended for the *acute* species of the complaint.

The object in taking away blood in this description of the disorder, it cannot be too strongly impressed, is simply to relieve topical congestion, not to subdue arterial excitement. With this intention, a small quantity only of blood should be abstracted at a single operation, to be repeated if necessary, in order to enable the enfeebled vessels to contract, and thus gradually to bring them back to their natural and healthy caliber, when the vascular pressure upon the sentient texture of the retina, the presumed cause of the amaurotic symptoms, will be obviated and removed. Either topical bleeding, by cupping from the temples, or, in delicate habits by the application of leeches to the vicinity of the eye, or to

the septum nasi, will be found sufficient for the intended purpose. Blisters also, and rubefacients applied to the neighbourhood of the orbit, by deriving to the surface, and by exciting a counter-irritation, will be found eminently serviceable, on such occasions.

With similar views, powerful errhines, as suggested by some of the ancients,* and by the late Mr. Ware,† will have the double effect of lessening local congestion, by the direct and copious discharge they elicit from the mucous membrane of the nose, and by the irritation they excite in the immediate vicinity of the affected organ.

Even the external application of stimu-

* "Post sanguinis missionem, sternutationes movendæ sunt."

Actuar: de Method: medendi L. 4. c. 11.

"Cum prolongatur status morbi provocentur sternutationes."

Rhazes de ægritud: oculor: cap. 4.

† Chirurgical observations relative to the Eye, vol. 2, p. 437.

lants to the eye itself which tend to promote an increased secretion of tears, such as the vin. opii, infusion of capsicum, ungt. hydrarg. nitrat. and the vapour of aq. ammon. pur. admitted to the cornea, are remedies which will be found to co-operate with bleeding and purging in fulfilling the general indications of cure.

Exposure of the affected organ to the full glare of the meridian sun, has been recommended by some continental practitioners, as a very powerful and useful stimulus in cases of Gutta Serena. Although I have not, in my own practice, hitherto ventured to suggest its employment, I think it incumbent on me to add, that a very intelligent patient has just assured me, that he knew one instance of a poor man who had laboured under blindness for many years, from which he suddenly and unexpectedly recovered, by exposing his eyes, for some minutes, to the vivid rays of the sun during its greatest splendour.

I must now introduce to the notice of my readers a mechanical remedy which has not, I suspect, been adopted for the cure of Amaurosis: namely, *dry-cupping* applied to the ball of the eye, and its appendages. By carefully fixing a well-adapted strong glass fitted with an exhausting syringe upon the edges of the orbit, the instrument may be made capable of exerting a more or less powerful influence upon the organ of vision, in proportion to the extent to which the atmospheric air contained in the cupping-glass is exhausted. The effect of its application is to occasion a great redness and tumefaction of the eye-lids, an immediate distention of the vessels of the conjunctiva, and a bulging forward, or protrusion of the whole globe of the eye; the obvious tendency of which must be to relieve the deep-seated vessels by attracting the blood to the superficial order, and thus to produce a manifest and rapid alteration

in the whole circulating system of the organ. I am informed by the gentleman who first named the remedy to me, that in one instance it was had recourse to with the happiest success, the patient being perfectly restored to sight, although a variety of means had been previously adopted without the smallest perceptible benefit.

A pauper, twelve months deprived of sight by an attack of Amaurosis, lately called to solicit my advice and assistance. The case appearing a fair object for experiment, I determined to try the effect of dry-cupping. The patient complained of a sense of uneasiness in the eye and around the orbit, vision was completely extinguished, and the pupil remained fully and immovably dilated, when exposed even to the strongest light. A nobleman who happened to be with me witnessed the result of the operation. To our mutual surprise, immediately after the apparatus was

removed, when the organ exhibited the appearances above described, the poor man exclaimed with delight, 'Sir, I can *now* see your fingers moving!' The pupil instantly recovered its power of contraction, and the pain, of which he had before complained, wholly subsided. The extraordinary and very decided effects of the remedy just alluded to in the instance under consideration, added to what I have heard on the subject, are sufficient to convince me, that dry-cupping, used in the manner directed, constitutes a very efficient agent in the treatment of Amaurosis; and as such I do not hesitate to recommend it to my professional brethren, as fully entitled to their serious attention and future trials.

Instead of introducing Electricity at the end of the foregoing list of local remedies, it might he expected that I should have placed it at the head of the class. Whilst the agency of this active and diffusible

stimulus has been declared by some highly respectable authors to have proved, in a few instances, decidedly beneficial, my own experience, notwithstanding the plausible arguments adduced in its favour, coincides with that of many distinguished practitioners, not only as regards its general inutility, but as respects also its occasional injurious effects. If I am correct in the view I have offered relative to the nature of functional Amaurosis, viz. that the majority of the cases of that disease which admit of relief, arise from an inflammatory or congestive state of the deep-seated vessels of the eye, the local application of a stimulus so confessedly active and powerful as that of the electric fluid, must necessarily have a tendency to increase rather than to remove the effects of the alleged exciting causes. For, though the *primary* operation of electricity is doubtless upon the nervous system, its more palpable in-

fluence is upon the vascular texture of the human body; as may be inferred from the occasional supervention of uterine hæmorrhage on an electric shock being directed upon the hypogastric and lumbar regions in Amenorrhœa, or suppressed menses. The pain too which frequently renders the administration of the electric and galvanic influence exceedingly distressing and irksome to delicate patients, especially if applied to a part labouring under inflammatory excitement, added to the *florid* colour of the cutaneous surface to which it is immediately applied, are strong arguments in confirmation of the above supposition.

Having many years since met with a most severe contusion of my right knee, I had recourse to a variety of topical applications without experiencing any material relief. At length, after much suffering, a friend of mine, a physician in the country, recommended and obligingly administered gal-

vanism to the afflicted joint, which had the almost immediate effect of enabling me to use the limb, but I well recollect that the pain produced by the application of that potent stimulus was of a burning pungent description, and so acute that it required the greatest fortitude to endure it. The skin, which before it was applied, was exceedingly pale, assumed a deep pink colour. Were the nerves indeed, under the application of these agents, solely and individually affected, instead of a discoloration of the skin, should we not find a pallid and shrunk appearance of the common integuments, the consequence of a slackened and retarded circulation, from exhausted sensorial power?

But, what will perhaps be accepted as a still stronger confirmation of my ideas on this point is the practical fact, that in all the instances in which I have known either the electric, or galvanic stimulus resorted to

in cases of Gutta Serena connected with a marked determination of blood to the head, the symptoms have invariably become so immediately and decidedly aggravated, as to call for more active means of depletion afterwards than would otherwise, in all probability, have been required; and in a few instances, I felt justified in imputing the failure of my subsequent treatment to the previous adoption of these highly hazardous expedients.*

With a view to relieve the affected organ, aperients of a nature suited to the habit of the individual, cannot fail to be eminently serviceable. Should the patient be of a weak and relaxed habit, the warm stimulant class of purgatives will be found preferable to the refrigerant neutral salts; and in some instances of great general debility, they may altogether supersede the

* Vide Appendix.

necessity of sanguineous evacuations; for, as Mr. Hunter observes, "Purgatives seem to act like bleeding, without producing weakness."

I must now advert to a medicine which, from having been already recommended in *acute* or *sthenic* Amaurosis, and from its tendency to reduce the energy both of the nervous and muscular system, might be deemed altogether inappropriate to the *chronic* species of that disease. I allude to Mercury.

From what has been advanced relative to the supposed nature of *asthenic* Amaurosis, p. 191, and to its treatment by continental practitioners, p. 192, it is highly probable that it is not unfrequently connected with more or less obstruction of some of the chylopoietic viscera, the real primary source of the congestive state of the vascular apparatus of the brain and retina. For, no fact in pathology is better

established, than that an interrupted circulation through the system of the vena portarum is productive of cerebral plethora, occasionally terminating in that species of apoplexy which, in reference to its origin, has by Nosologists been termed Apoplexia hepatica. In some of these cases, the disturbed function of the liver cannot be made to yield to the combined operation of purgatives and alteratives, until the brain itself is released from oppression, indicated by head-ache, drowsiness, giddiness, pulsation, tinnitus aurium, and a defect of mental energy. And, although the obstructed state of the liver may be the real cause of morbid determination of blood to the head and eyes, at the same time that the radical treatment consists in removing such obstruction, the vessels of the brain must be relieved by the topical abstraction of blood, by which evacuation the sensorium, whose functions

had, in consequence of vascular pressure, become greatly impaired, again resumes its former aptitude and vigour, and communicates new life and activity to the whole of the circulating and secreting organs.

The utility of mercury in such cases may be ascribed, partly to its tendency to remove obstructions in the hepatic system, the frequent cause of cerebral congestion; and partly to its effect of increasing the action not only of the arterial capillaries, but also of the absorbents; a property evinced by the disappearance of tumours and extravasations under its use, and by the fact, that secondary symptoms of lues venerea are apt to supervene from the slight and insufficient administration of that remedy serving to promote the absorption of the virus, in cases of syphilitic chancres, without subsequently destroying the constitutional morbid action. By virtue of its general stimulant quality, the various

functions of life are made to proceed with increased force and activity. From hence arises its efficacy in diseases accompanied with congestion from venous remora, which it overcomes, by calling into general action the vascular and absorbent systems, and restoring the lost balance of the circulation.

The extremities of the veins being excited to act in accordance with the increased action of the arterial capillaries, the circulation in the part affected becomes equalized, the natural secretions are promoted, and the necessity of unloading themselves by effusion is not only effectually guarded against and obviated, but any fluid which may have escaped during the obstructed or inflamed state of the vessels, will be readily taken up by that series of absorbents which Mr. Hunter emphatically denominates, "the scavengers of the human body."

From the foregoing explanation of the

manner in which mercurials probably act, we may understand the principles by which they are adapted to exercise an equally beneficial influence in amaurotic cases, proceeding either from an inflammatory disposition, or from a simply congestive state of the deep-seated vessels of the eye.

It is well known that instances of the chronic disease are sometimes sympathetic of, or associated with more or less gastric derangement. At the same time therefore that mercury is exhibited in a form calculated to produce the desired and specific effect without raising mercurial fever, the healthy condition of the chylopoietic functions should be restored by regulating the quantity and quality of the ingesta, and by correcting the morbid secretions of the alimentary canal, by means which, since the respective valuable publications of Mr. Abernethy, Doctors Hamilton, Johnson, Scudamore, and other modern authors, are

too well understood to require elucidation in this place. In co-operation with the medical and dietetical treatment, the exciting cause should in future be studiously avoided, and the mind of the patient be preserved in a tranquil and cheerful state, by holding out as confident hopes of recovery as the nature of the case will warrant. With the same view, agreeable society, interesting conversation calculated to amuse and divert the thoughts from the distressing subject of contemplation, exercise in the open air, and gestation on horseback, should be strongly recommended.

If the disease arise from, or be connected with symptoms of great constitutional exhaustion, the effect of profuse uterine, or other discharges; chalybeate preparations may be advantageously combined with other tonic remedies. The following will be found an equally elegant and efficacious formula for that purpose;

℞ Infus. Rosæ ʒxi.
Vin. Ferri ʒi ad ʒij.
vel Ferri Sulphat. gr. v.
Tinct: Aurant ʒi.
M. fiat Haust. bis vel ter quotidie exhibendus.

Or, decoction of cinchona, infusion of cascarilla or columba, with sulphuric acid and some aromatic tincture, and rhubarb as an aperient may be substituted, according to the nature and indication of the symptoms. But, as every practitioner possessing a competent knowledge of pharmacy, and of the principles and practice of physic, must be deemed capable of combining and adapting medicines, so as to render them suitable to the age and constitution of his patient, it is superfluous to point out particular formulæ or prescriptions.

The several remedies and different modes of treatment suggested in the preceding pages, and which must be modified according to the character of the respective symp-

toms, and the constitution of the individual, are the result of much reflection upon the nature, and of no small share of experience in the management of the various species of Amaurosis. Indiscriminately to attempt to relieve symptoms arising frequently from diametrically opposite causes, and under different constitutional susceptibilities, by one unvaried method of procedure, would be no less empirical, than unscientific and detrimental.

Whilst little or no value is to be attached, according to my own experience, to several internal medicines, such as arnica montana, valerian, euphrasia, camphor, &c. supposed by some to possess almost specific virtues in this complaint, I am by no means disposed to concur with a late author not only in proscribing, but actually ridiculing the whole catalogue of *local* remedies. "The faith yielded to such applications," says Mr. Travers, "is a relic of

the not very remote superstition which ascribed miraculous powers to the hand of a living king, or a dead culprit." *

Are the instances of amaurotic blindness which the late Mr. Ware, and others assert, with apparent fidelity, to have been accomplished by means of mercurial snuff, to be deemed mere delusions, and unworthy of public credit? Why, in cases of this description are "*Blisters*, if managed as the case directs," declared by Mr. Travers, "to be a remedy of great value, in some as temporary irritants only; in others, as irritants and drains?" Is there not a close analogy between the operation of epispastics, and errhines which he has represented to be altogether useless?

If the doctrine I have endeavoured to establish be correct, we can readily account for the efficacy of those agents

* Synopsis of Diseases of the Eye, p. 300.

which not only excite counter-irritation, but likewise provoke a discharge from the vicinity of the affected organ. These effects may easily be produced by the application of certain stimulants to the schneiderian membrane, a derivation from which is calculated to relieve a congestive state of the contiguous vessels. In confirmation of this statement I may observe, that a spontaneous hæmorrhage from the nose, has often been found immediately to alleviate the most distressing headache arising from a turgescency of the vessels in the brain. Again, inflammation of the eye is much less under the control of leeches applied to the temples, than to the septum nasi; a situation from which, on account of the vascularity of its mucous lining, a very considerable quantity of blood can be abstracted, and without incurring the inconvenience of subsequent ecchymosis, erysipelas, or visible marks being left after the bites shall have been healed.

In short, my own observation and experience lead me to conclude that the advantages which may be derived from the auxiliary and judicious use of topical applications, in the incipient stage of some of the curable species of functional Amaurosis, are neither trivial nor equivocal.

In conducting the treatment of a disease arising from various causes, and exhibiting an equal diversity of phenomena, it is highly expedient to be provided with numerous resources, some of which will be found best suited to one description, and others to a different assemblage of symptoms and peculiar idiosyncracies. On these grounds, therefore, I do not think it advisable to confine, as Mr. Travers does, the number and kind of remedies in Amaurosis "to blisters, mercurials, gentle aperients, and medicines intended simply to improve the derangements of the digestive organs."

The doctrine which I have ventured to

promulgate in this Treatise respecting the nature of a disease, confessedly the most obscure and difficult of all those to which the organ of vision is incident, will not, I trust, be found, on a candid examination, inconsistent with rational pathology.

I do not pretend to offer to the public, a boasted specific, capable not only of controling, but of subduing the complaint, with infallible certainty, whatever may be its character or origin. Such pretensions would deservedly be considered as the distinguishing attributes of empiricism.

My only object is to point out under what circumstances Amaurosis may be deemed incurable, and when we may entertain the hope of being able to afford relief, by regarding the case not as the offspring of exhausted nervous energy, but as the result either of inflammatory action, or of a congestive state of the deep-seated vessels of the eye, and consequent pressure and sus-

pension of the function of its sentient texture. This view of amaurósis may, at all events, challenge the merit of suggesting a rational and intelligible theory, instead of those vague and undefined principles that have hitherto prevailed on the subject: a theory which certainly is not repugnant to common sense, and moreover receives no small support from the success of the practice founded upon it.

APPENDIX.

Having, in the course of the preceding Treatise, occasionally related cases, in order to illustrate certain points of doctrine, or which were deemed worthy of being preserved on account of their anomalous character, or the practical instruction they seemed calculated to convey, I shall forbear unnecessarily to swell the size of the present volume, by the indiscriminate communication of the various instances of the different species of Amaurosis that have fallen under my care or observation during the period of my professional career. For these reasons I propose to dedicate the remaining part of the work, in the form of an Appendix, to the statement of a very

few cases, which, from the absence of the more ordinary symptoms of topical congestion, or of those which bespeak a plethoric habit of body, would appear alike to favour the prevailing doctrine that exhaustion of the nerve subservient to vision constitutes the proximate cause of functional Amaurosis, and likewise to militate against the theory promulgated in the foregoing pages.

If, under such circumstances, and in addition to the arguments and analogical reasoning above adduced, the efficacy of depletion can be clearly established by the most satisfactory and incontrovertible facts, it will, I trust, be admitted that I am fully warranted in believing the truth of the doctrine which I have, from conviction, adopted and ventured to publish, relative to the nature and mode of treating the disease under consideration.

CASE I.

The particulars of the Case which I shall first present to my readers, are detailed in a sensible unaffected style by the patient himself, and will be found highly interesting; the disease, without exhibiting any of the more common symptoms of cerebral plethora, or of a congestive state of the blood-vessels of the eye, having repeatedly recurred, and as often yielded to topical and general depletion.

The subject of this communication is about forty years of age, rather low in stature, of dark complexion, and of remarkably temperate and industrious habits. Previously to his first experiencing an amaurotic attack, in the spring of 1816, he had never been afflicted with any disorder in his eye; nor was he prepared to assign any other cause for its invasion at that period, but the exposure of the left side of

his face to the cold air of an open window, when he happened to be very much heated.

On the several occasions on which he consulted me, I found the pupil invariably dilated, and incapable of contraction on the admission even of the strongest rays of light to the affected organ, to the impression of which it was scarcely sensible. His vision was so greatly impaired, that he could not distinguish with any degree of accuracy the largest object, nor decypher the features of his nearest friend.

As however he was, in every other respect, in perfectly good health; as the pupil preserved its natural jet-like colour; and the defect of sight was not preceded by, nor accompanied with giddiness, or pain in the head or eye, and the conjunction remained free from inflammation or even preternatural redness, I did not hesitate to impute the origin of the complaint to the sudden repulsion of blood from the

superficial to the deep-seated vessels of the organ, the consequence of the partial application of cold when the temperature of the body was subsiding after it had been much raised by violent exercise. The blood by its accumulation in the vascular, and subsequent pressure upon the medullary lamina of the retina, occasioned probably a temporary paralysis of its sentient texture. This view of the pathology of the case seems to me satisfactorily to account for the immediately salutary effect of topical and general depletion.

Sir,

With feelings of gratitude I beg to inform you, as correctly as my memory will enable me, of the origin and progress of the complaint in my eye, which, under Providence, you have so often, and so completely removed.

In the last week in March, or early in April, 1816, I first discovered the defect in my sight on rising in the morning; without any previous intimation or disease. It was the *left* eye only that was affected with a sense of dimness, which continued gradually to increase for some days. After trying several simple remedies without benefit, I applied to Mr. ***** within one week after its commencement. He appeared to treat my complaint with great indifference, and merely ordered me two or three leeches, and a weak opening draught. I attended him only one week, feeling confident from his manner, that he did not understand the nature of my case. At that time the eye was so nearly dark, that I was unable to distinguish the features of a face within the distance of only two feet from me. On the recommendation of my apothecary, I then applied for your assistance;

and the first interview convinced me that you were perfectly familiar with the symptoms and character of my complaint. You directed me to confine myself to a spare cooling diet, to avoid spirituous and fermented liquors of every description, to keep my head cool and my feet warm, to foment my eye night and morning with warm water and a little vinegar, not to exercise even my sound eye in reading or writing, or on any fine work, and to apply several leeches to my left temple. In a day or two afterwards the leeches were applied again to the same temple, with very perceptible relief. A pill, which I understood contained calomel, was also prescribed to be taken at bed-time, and a brisk purgative next morning, which operated very powerfully, and produced a still further improvement in my sight. After a few days more, the pill and draught were re-

peated, I was cupped on the temple, and had a blister placed behind my left ear. The eye continued gradually to get better, when you prescribed some drops * to be put into my eye three times a day. By the above plan, in a fortnight from my first calling upon you, the sight of my eye became quite free from any imperfection.

About the corresponding period in the following year, my eye was again affected in a similar manner. The treatment was nearly the same as before, except that on the latter occasion, the application of leeches was less, and of cupping more frequent. Although the attack did not appear to my apprehension so bad as the former, it was

* ℞ Vin. Opii
Aq: Rosæ
Mucil. Acasiæ. g. āā ʒij
Hydrarg. submur. ℈j Misce. fiant Guttæ Ophthalmic: ter de Die applicandæ.

not entirely removed until I had been your patient for about three weeks.

The next year, on account of a different description of illness, I was under the care of Sir Henry Halford for nearly a fortnight, who thought it right to order me, besides some medicines, to lose blood from the arm. That operation I could not help believing prevented a return of the complaint in my eye, as I wholly escaped the periodical attack during the whole of that season.

The Spring of 1819 being remarkably forward, and not having used any preventive means, my disorder came on so early as the latter end of February. You directed me to be first cupped on the back, and afterwards on my temple, and to take the pill and draught, and in short to adopt the whole of the plan at first laid down. Notwithstanding the dimness was not so great as on the former occasion, it conti-

nued somewhat longer before it was completely removed.

In March, 1820, under the apprehension of a speedy return of my blindness, and from a conviction that bleeding had a powerful effect not only in preventing, but also in remedying the disease when formed, I determined of my own accord to be cupped on the neck. The recurrence of my complaint was prevented in consequence, I suppose, of that operation, until the following September, on the 17th of which I went to bed as well as usual, and on getting up the next morning, discovered a great degree of dimness in my sight. As you were gone into the country, I ventured in your absence, taught by the experience I had gained by observing your management of my case, to apply two leeches to my left temple, and on the following morning made personal application for your further instructions. You desired me imme-

diately to be cupped, and to take the pill and draught as before. On that occasion I was cupped twice in the temple, and once on the back of my neck. The symptoms appearing to gain ground in point of obstinacy, in proportion to the frequency of their recurrence, you found it necessary to direct, in addition to the former treatment, a saline opening mixture, and some volatile drops, the vapour of which was admitted to the eye until it excited a painful pricking sensation, and some pungent snuff, which applications produced a very plentiful flow of tears, and discharge from my nose, with very perceptible and immediate relief. Notwithstanding these active measures, I did not obtain a perfect cure until I had been nearly a month under your care.

One circumstance has always appeared to me very extraordinary, namely, that the *left eye* only should have been the sub-

ject of these repeated attacks; and the more so, because I never could assign any satisfactory cause for the origin of the several returns of the complaint, nor for the constant escape of the other organ. When free from the disease, my sight is so remarkably perfect as to enable me to read the smallest print without spectacles, and to distinguish the minutest object with the greatest readiness and accuracy.

The above I believe to be a correct statement of my case.

I cannot close this letter without expressing my gratitude for the kind attention I never failed to experience whilst under your care, and beg to subscribe myself,

Sir,

Your greatly obliged

and humble Servant,

JOSEPH REYNOLDS,

Oct. 16, 1820. Frith-street, Soho.

To John Stevenson Esq.

The particulars of the case just detailed afford a very striking example of functional Amaurosis, and of the suddenness with which it occasionally discovers itself. That the defect of sight in question was the result of topical congestion cannot, I think, be doubted, if we reflect upon the result of the evacuating mode of treatment which was adopted. The case under consideration also shews, that local plethora may prevail to an extent capable of impairing the function of vision, although the existence of such a state is not indicated by any well-marked symptoms, or by constitutional fulness, nor can be clearly deduced from the nature of the exciting cause.

The greatest and most decisive benefit was invariably derived from topical bleeding, which seemed to exert an immediate control over the disease, and more particularly when effected by cupping on the temple. Leeches had indeed a simi-

lar, but a much more tardy and less distinct influence upon the symptoms. Purgatives were exhibited chiefly as auxiliary means of relief; for alone they did not appear to be sufficient to produce much alteration in the complaint.

If, in this instance, from a misapprehension of the nature of the disorder, instead of depletion, the more common mode of treatment by external stimulants and internal cordial and tonic remedies had been adopted, it is highly probable that the certain consequence would have been a permanent loss of sight.

I will only add, that I have had several opportunities of observing that the partial application of cold air to the side of the face, when the heat of the body, after having been raised considerably above the natural standard by violent preceding exercise, is in a state of rapid expenditure by the supervention of profuse general perspi-

ration, has occasioned temporary amaurotic symptoms. In the cases alluded to, my patients obtained complete relief by having recourse to means similar to those already enumerated.

CASE 2.

In the year ———, the Daughter of Lady ——, who was upwards of 30 years of age, hurried up to town from their country seat at ———, under very serious alarm on finding, when she arose at the usual hour, that she had entirely lost the sight of the left eye, without any previous notice of the approaching attack.

Upon examining the affected organ, I found the pupil widely dilated, and wholly disobedient to the impression of the strongest light. She complained only of a sense of weight and tension in the eye-ball, with

some degree of stiffness or rigidity in its appendages; but there was not any visible turgescency of the vessels of the conjunctiva, or tendency to adhesion of the lids during sleep. The humours retained their natural limpidity; and the fundus of the eye was free from apparent opacity. Although her general health was, for the most part, good, yet she possessed a highly nervous temperament, and felt extreme anxiety and agitation lest she should not recover her sight.

In the present, as in several other similar instances, I was enabled to trace the origin of the disease to the imprudent exposure of the left side of her face to a current of cold air from a window when she was very much heated by dancing.

Regarding the symptoms as the effect of the sudden suppression of cutaneous discharge, and the retropulsion of the blood from the surface to the interior of the eye-

ball, I felt justified in holding out sanguine hopes of a favorable termination of her case. My prediction was fully and speedily fulfilled by the topical application of leeches to the temple, two active doses of aperient medicines, the use of a sternutatory powder, and subsequently a stimulant application to the eye.

Had the case described been treated on the supposition that the nerve of vision was rendered torpid by the sedative influence of cold, and in consequence of that idea had attempts been made to rouse it into activity by the agency of powerful stimulants, the amaurotic symptoms would, in all probability, have been confirmed and perpetuated.

CASE 3.

The following history affords no inconsiderable testimony in support of the doctrine maintained in the foregoing pages; namely, that a congestive state of the deep-seated vessels of the eye is a very frequent cause of functional Amaurosis, even in persons by no means disposed to a plethoric habit of body.

Sir,

I shall endeavour, as well as the recollection of my own feelings and sensations at the time will enable me, to give you a faithful account of my late distressing malady, for your removal of which, upon several occasions, I cannot feel sufficiently thankful.

The complaint in my eyes came on about fifteen months since, when I lived with

Miss Howard, niece to the Duke of Norfolk; and it began when I was closely engaged, for many successive days, and to a very late hour each evening by candle-light, in making fine dresses and mourning for the death of the late king. I first found my sight weak and considerably shortened, not being able to see, as formerly, any distant object: near ones then became obscured, in consequence of their appearing to be covered with black gauze. I next perceived showers, or a countless multitude of blacks floating before my eyes, so that frequently I could not distinguish what I was doing, nor help running against Miss Howard, when walking with her in the street, which caused her to observe that she was sure I must be going blind. My sight grew gradually worse and worse; but as I could look steadily for any time at the sun when it shone brightly without making my eyes water, and as I had not at any former pe-

riod been subject to complaints in my eyes, which were even then too, free from pain or redness, I paid but little attention to the remark, hoping that they would recover as soon as I could give them rest.

My general health had for many years been very indifferent, and I was very nervous and low-spirited, which I thought partly owing to my living in London, the air and confinement of which never agreed with me, but particularly to fretting on account of the loss of my little boy. I was subject likewise to occasional sickness and shiverings, to night-mare with sudden startings from sleep, and great pain in my head, which felt, after my eyes became bad, as if it were corded, or fixed in a vice. I had long been under the care of medical gentlemen, and Sir Christopher Pegge, the last physician whom I consulted, finding my eye-sight failing, advised me to apply to you in March last year. You directed

year. You directed me to take some opening pills, and to be cupped, to keep my feet warm, to wash my head and forehead with cold water night and morning, to leave off needle-work, and to avoid every thing that was likely to heat or agitate me. Two ounces of blood were taken from each temple, an operation which brought on fainting: afterwards I experienced palpitation at my heart, and throbbing in my head, with a noise in my ears like the roaring of the sea, and the rolling of shingles on the beach; every sound creating additional distress. These feelings were accompanied with extreme languor, so that I could scarcely either speak or sit up for several days, apparently from the great weakness which the bleeding, the opening medicine, and spare diet, occasioned. The *cupping* however *gave immediate relief to the head and eyes,* and my sight became perfectly clear, but what

appeared to me *very* singular, *strong light* was *exceedingly* painful *to me*. You then directed a lotion for my eyes, and some medicines and strengthening diet, which soon restored my health and spirits to a better state than they had been in for a great length of time. In about six or eight weeks afterwards I had a relapse occasioned by my undertaking some fine needle-work; you ordered me to be cupped again, and to pursue the same means as before. The *bleeding*, which brought on a slight degree of weakness, *immediately relieved my sight*, and I speedily recovered from the effects of that attack. My sight and general health remained good, by carefully attending to my bowels, and wholly avoiding to work by candle-light, until the beginning of March (1821); when, in consequence of imprudently overstraining my eyes, the pain in my head and dimness of sight returned. These were, however, again removed by having recourse to cupping, and

the means at first prescribed. I have only to add, that I fainted away at the close of the cupping, and felt some debility for several days afterwards; but my sight, as on the former occasions, became perfectly clear almost before the operation of bleeding was finished, and the dreadful pain in my head at the same time ceased. Strengthening medicines and generous diet soon restored my strength, and I have since continued remarkably well in every respect. I feel the necessity however of carefully attending to my bowels, by the almost daily use of a small tea-spoonful of Epsom salts in chamomile tea, with twenty vitriol drops in it as you directed; and of abstaining from very considerable exertions of my eyes, especially in fine needle-work, and by candle-light; a neglect of such precautions, I am convinced would speedily bring back all my former complaints. I beg once more to return my

most grateful acknowledgments for the inestimable benefit I have derived from your skill and liberality, and remain,

Sir,

Your most obedient

and humble Servant,

May 20, 1821. ANN HEMMING.

To John Stevenson, Esq.

Never was there an instance perhaps in which a practitioner would have been more fully justified in attributing the amaurotic symptoms to an exhaustion of nervous influence in the sentient texture of the retina, than in the case under consideration. The dilated and immovable state of the pupil—the general constitutional weakness and nervous excitability—the severe effects produced by a comparatively small loss of blood from the temples—the action of the exciting causes, and the character of the

symptoms—all concurred to favour such a conclusion. Nothing but the most cautious inductive reasoning, founded upon large experience, would have warranted me, under such circumstances, in pursuing the depleting mode of treatment.

Notwithstanding however the aggregate of phenomena loudly proclaimed an evident deficiency of blood in the system (ad molem), its topical accumulation (ad spatium) appearing to me morbidly great, and the cause indeed of the amaurotic symptoms; I entertained a confident hope that the removal of the congestive state of the brain, and of the organ of vision, would prove at once salutary and efficacious. My expectations in this respect having been fully realized, I had only to combat symptoms of depressed energy, the decided result not of actual disease, but of debility induced by topical and general evacuations. This object was

soon accomplished by cordial and stimulant, and afterwards by chalybeate remedies.

The contents of the foregoing communication seem also to illustrate and confirm another very important fact in pathology, to which I adverted in a former publication in the following terms, as a ground for explaining the cause of the greater frequency of weakness of sight, amongst delicately formed and nervous subjects; namely, "that an irregular and partial distribution of blood is more especially apt to take place in weakly constitutions."

This local *determination,* * or, more correctly, *congestion* of blood, is the frequent result probably of a connate or acquired want

* Although I have in this place, and on several other occasions, used the word *determination* in a sense synonymous with *congestion*, I think it right to state my full concurrence in the sentiment so well expressed by Dr. Johnson, in the following passage: "If the term is meant to imply a determination of blood to any part

of tone in the vessels of the part affected; in consequence of which they are rendered incapable of contracting with due energy upon, and of propelling forward their contents with the same force and rapidity with which, from some cause of local irritation, or of irregular balance in the circulating system, blood is thrown upon them. If, under such circumstances, the organ of vision be inordinately exercised, and the mind likewise be harassed by anxiety, a disproportionate quantity of the circulating fluids will be accumulated in the sensorium, and deep-seated vessels of the eye, and produce, with or without cerebral dederangement, either the phenomena of

from an impulse, a tergo, it is a doctrine quite untenable. The heart can have no elective power to distribute an undue proportion of blood to any particular viscus. The determination of blood must depend upon the state of the vessels themselves where it is accumulated."—*Medico-Chirurgical Journal & Review, for June*, 1820, *p.* 10.

weakness of sight, or symptoms of Amaurosis, accordingly as the irritation of distension and vascular excitement, or excessive topical congestion, and consequent pressure and paralysis of its nervous texture may respectively predominate.

This view of the subject seems fully borne out by the report of the patient's feelings. So long as the vessels of the retina remained in a state of engorgement, she could endure the vivid rays of the sun without uneasiness. On the contrary, *after* a portion of the superabundant blood had been removed by cupping, the admission to the eyes of a merely ordinary degree of light, excited in them the most painful impression; the vessels being reduced, by the depleting process, to that state of distention in which the organic sensibility is considerably increased.

This transition from a preternatural torpidity to a morbidly increased sensibility,

evinces the close connexion and analogy that subsist between the disease termed weakness of sight, and functional Amaurosis; the one appearing to constitute the first, and the other the last link in the chain of causation.

It may be proper to add, in reference to the circumstance just alluded to, and which I have known to occur in several similar instances, that this renewed developement of the suspended sensorial faculty in the organ of vision, ought to be hailed as a highly favourable omen. When the morbid irritability does not spontaneously subside, I have found that the further topical abstraction of a *small* quantity of blood, has invariably succeeded in bringing the parts back to their healthful condition; a proof of the correctness of the theory I have offered as to the cause of that symptom.

CASE 4.

Seven weeks ago I was requested to visit a young lady, about fourteen years of age, residing a few miles from London, for the purpose principally of ascertaining, whether spectacles would be likely to remove a recent imperfection in her eyes, her friends not being aware of the existence of any serious or alarming disease in them. Although her constitution was delicate, she had in every respect enjoyed good health, and was of a sanguineous temperament.

On enquiring into the particulars of her case, I learnt that several weeks previously to her present complaint, she had been overtaken by a violent shower of rain, and had imprudently neglected to exchange her wet for dry shoes after her arrival at home. The consequences of this imprudence were cold chills, succeeded by general febrile excitement, and accompanied

with considerable headache. By using certain means prescribed by her physician, the more urgent symptoms speedily subsided, with the exception of a sense of weight and oppression about the forehead, and a manifest failing in her sight. In fact, she found herself incapable of distinguishing the largest letters of a book, between which, as well as every other object and her eyes, a thick black gauze seemed to be interposed. If she stooped, or attempted to walk fast, or dance, she became so excessively giddy, as to be compelled immediately to desist and sit down.

The pupils were very large and immovable, and she felt drowsiness and heat about the forehead, and throbbing of the temples. Her pulse was quick and feeble, and she complained of great depression of spirits and diminution of strength; symptoms attributable to the antiphlogistic regimen

and medicines which had been deemed necessary on account of her catarrh. Her face was considerably flushed, her feet cold, and her bowels constipated.

From a review of all the phenomena of the case, I was convinced that the congestive state of the blood-vessels in the brain and organ of vision, constituted the cause of her present sufferings; and that speedy relief would be obtained by abating the topical determination to the head, and equalizing the lost balance of the circulation. With these views she was directed to lose blood topically, by means of leeches applied to the temples, to take a pill composed of Hydrarg. submur. pulv. antimon. et rhabarb, and afterwards a saline aperient draught at such intervals as might be found requisite to keep up a constantly moderate action upon the alimentary tube. A cold evaporating lotion was ordered to be applied to the forehead and head, after

the hair had been much thinned and shortened, and a very spare diet was strictly enjoined. She was also particularly requested to preserve the feet of a due temperature in the day, and to immerse them at bed-time for twenty minutes in water, with some mustard and salt in it, made as hot as could be comfortably borne; to avoid a heated room, and to keep herself in a nearly upright posture on retiring to rest. By rigidly adopting the plan just pointed out, the symptoms speedily began to disappear. The leeches were repeated, a stimulating snuff was prescribed to be used once or twice a day (and her pulse being still quick), a saline draught with digitalis to be taken once in six hours; and a grain of submuriate of mercury with antimonial powder, every night. A blister was subsequently placed between the shoulders. By persevering in this mode of treatment, the pulse became natural, the

vertigo and cephalalgia speedily subsided, the pupils regained their power of action, and at the same time her sight returned. In the space of ten days from my first visit, I had the satisfaction to pronounce my patient to be in every respect well.

CASE 5.

The last case I propose to describe is of a most interesting character. Formidable as was the disease in all its features, and unlikely to be relieved by the depleting mode of treatment, yet every symptom gave way to topical bleeding and general evacuations.

The subject of the following particulars is about thirty-six years of age, somewhat above the middle stature, and constitutionally of a delicate nervous habit of body. Two summers ago, he was under the necessity of undertaking a hasty journey into

a distant part of the country, and to ride on horseback for several successive days, exposed to the full influence of the meridian sun. The fatigue he had undergone, and the beguiling influence of agreeable society, induced him to indulge, very freely, in the luxuries of the dinner table, and to drink more than his usual quantity of wine.

In the course of a week, he found himself suddenly attacked by a most violent headache, accompanied with giddiness and sickness. An apothecary, unfortunately mistaking these symptoms for the first stage of typhus, (a form of fever at that time prevalent in the neighbourhood), di-directed him to take bark, wine, and the most stimulating and nutritious food. Under such treatment he rapidly grew worse, and in a short time became delirious and convulsed. Recourse was then had to the lancet, blisters, and purgatives, by which means the more urgent and alarming symptoms were subdued.

As soon as he was able to travel, he returned to his house in London, and sent for his medical friend, who prescribed leeches to be applied to the temples, and some mild aperient draughts. The pain and oppression in his head, though greatly relieved, did not wholly subside. His bowels continued obstinately constipated, his mental faculties began to fail, he gradually lost all power of recollection, and was so truly hypochondriacal, that the most trifling incident caused him involuntarily to shed tears. He had scarcely any appetite, and though torpid and lethargic in the day-time, he enjoyed little repose during the night. The want of a sufficient quantity of rest and food, reduced both his appearance and strength very rapidly. His sense of hearing became dull, and his sight so imperfect, that he could not distinguish the largest object before him.

Thus circumstanced, he was brought to me. I do not recollect to have seen a

patient in an apparently more forlorn, or unpromising state, both of mind and body. He could not stand without assistance, and when he attempted to advance, he was supported by two assistants, not having any command over the motions of his lower extremities.

It was with difficulty I could make him comprehend the plainest question, to which he answered only by monosyllables, and after much hesitation and interruption in his articulation. His whole physiognomy conveyed the idea of idiotcy; his pulse was exceedingly feeble and rapid, and his tongue furred.

Upon asking him whether he suffered any pain, he wept piteously, and placed his hand upon his head. The pupils were considerably dilated, and scarcely moveable in the strongest light; and having lost the control over his eye-balls, he could not keep his eyes fixed upon any object.

Having carefully considered all the circumstances of the case, I was persuaded that the amaurotic blindness constituted only a part of the alarming train of symptoms arising, unquestionably, from cerebral pressure. Whether this state of the brain depended upon an engorgement, or a turgid condition alone of the sanguineous capillaries; or whether the exhalent vessels of the membrane lining the lateral ventricles, had relieved themselves by pouring out an increased habitus in the form of serous effusion into their cavities—were questions not easy to be answered. The method of cure however was, in either case, the same; namely, *moderate depletion.*

With this view, two leeches were applied to each temple, and an opening powder consisting of three grains of Hydarg: submur. 10 grains of rhubarb, and 1 grain of capsicum, was directed to be taken as soon as the bleeding had ceased. The leeches

drew away a considerable quantity of highly carbonated black blood; and the purgative medicine procured several copious discharges of very offensive feculent matter. The good effects of this mode of treatment soon became visible. Afterwards a grain of Hydrarg: submur: and the same quantity of capsicum, were made into a pill with opiate confection, and prescribed to be taken every night and morning. At the same time a camphor draught with ammonia was ordered to be exhibited twice or three times a day, in order to support the tone of the vascular system, whilst means were employed to relieve topical congestion by moderate topical bleeding. A pinch of mercurial snuff was likewise taken every evening, which occasioned sneezing, and a great subsequent discharge from the mucous membrane of the nose, and relieved the oppression in his head. In order to prevent excessive determination

of blood to that organ, his feet and legs were immersed in very warm water, rendered more stimulant by the addition of mustard and bay-salt, and afterwards were rubbed dry and wrapped in flannel before he retired to rest. His head was shaved, and washed frequently with a lotion of vinegar, spirit, and water.

After an interval of two days, the leeches and opening powder were repeated, and a blister was applied behind each ear. A change for the better was soon apparent; his pulse acquired greater firmness and beat more slowly; the pain in his head and vertigo were much diminished; he felt a desire for food, became more tranquil and cheerful during the day, and obtained natural and refreshing sleep in the night. A manifest improvement took place likewise in the faculty of speech and of memory, and of the sense of sight and hearing. The strabismus was less observable; his eye-

balls were more steady and under the control of the will; and he could see and point out many objects, of the very existence of which he was lately ignorant.

By persevering in this plan, modified according to circumstances, for the space of six weeks, his disorder was entirely subdued; he gradually recovered his former good health, and resumed his mercantile pursuits.

FINIS.

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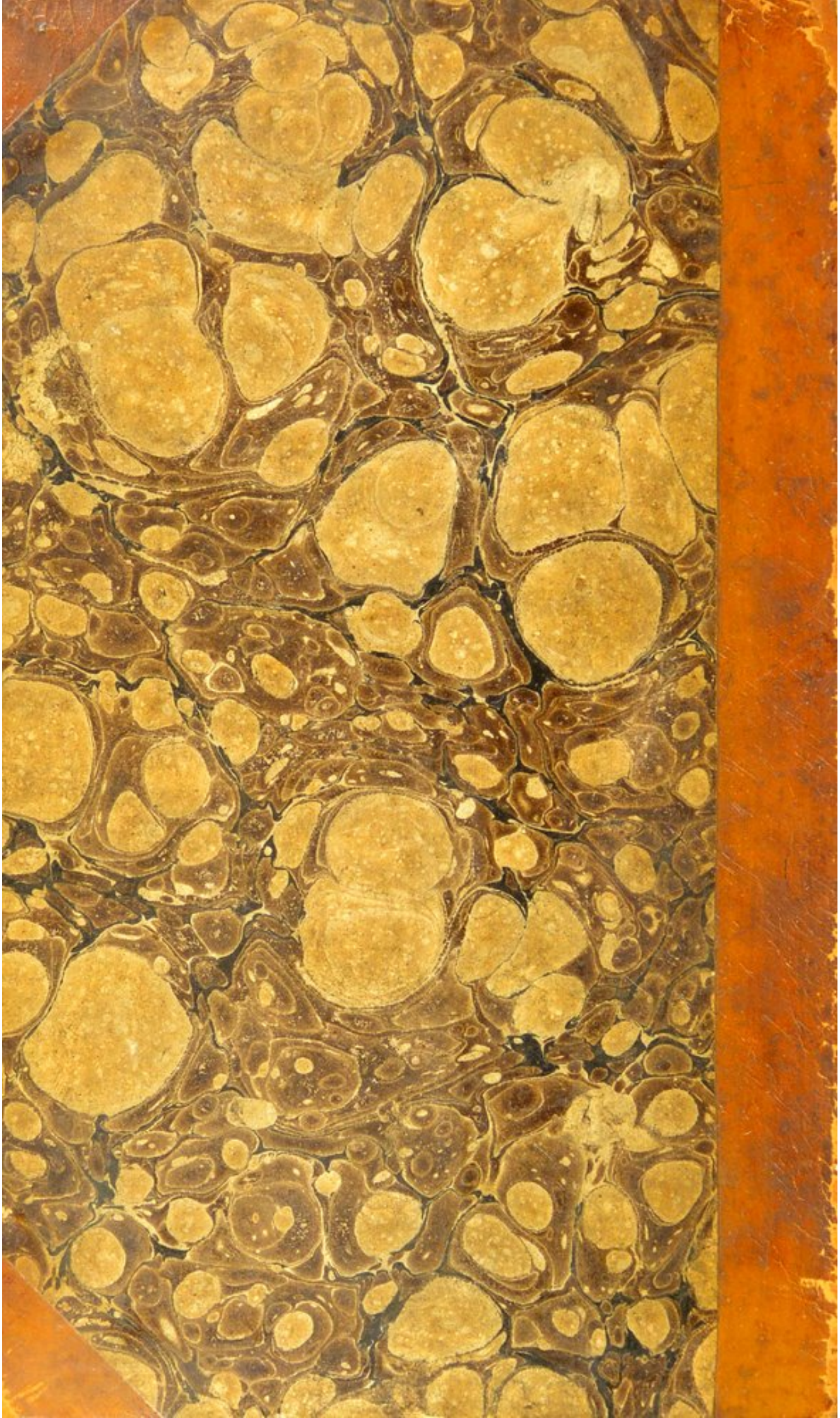
CORRIGENDA.

PAGE	LINE	
54	1	—after *observe* insert *further*
65	1	—instead of *experience* read *expansion*
66	18	—dele *that*
99	12	—instead of *above* read *foregoing*
105	19	—instead of *framed* read *formed*
—	21	—after *office* insert *which*
120	3	—instead of *by* read *to be*
134	12	—intead of *shew* read *declare*
145	16, 17	—instead of *as being liable to affect persons of studious habits*, read *by which persons of studious habits are liable to be affected*
156	8	—instead of *liable* read *apt*
	14	—dele *take on*
	18	—after *fourth* insert *to that*
257	10	—instead of *even* read *ever*
	17 to 22	—after *any* read *one of the more important viscera has suffered considerably from preceding attacks, it seldom entirely recovers its former healthy powers, but often becomes permanently injured in its structure*
158	2	—instead of *some* read *more*
	20	—after *inexplicable* insert *may be*
161	15	—instead of *tractable* read *curable*
164	1	—dele *would*
	17	—instead of *are generally relievable* read *may, generally, be removed*
168	16	—dele *have*
171	11	—instead of *have* read *hath*
174	7	—read *Method of Cure*
189	9	—instead of *does* read *do*

CORRIGENDA.

PAGE	LINE
24	1—after above insert further
85	1—instead of repression read repression
90	18—delete that
99	12—instead of above read foregoing
102	19—instead of power read formal
—	21—after office insert school
130	8—instead of by read to by
134	19—instead of above read nature
143	16, 17—instead of in doing little to effect person of station
	Sahin, read by making persons of station Sahib, are
	little to effected
150	8—instead of limit read apt
	14—delete take on
	18—after fourth insert to that
157	10—instead of ever read ever
	17 to 22—after any read-on of the more important others, his
	motives remaining from personal attack, it rather
	unlikely recovery in former healthy pressure, but after
	Assam personally spread in its structure
158	2—instead of ever read ever
	20—after complicate insert only to
161	18—instead of transfer read usually
164	4—delete would
	17—instead of are generally reliable read only generally
	to remove
169	16—delete have
171	11—instead of have read had
174	7—read Sahib of Gaur
183	9—instead of his read to



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