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ADVICE

ON THE CARE OF THE

EYES,

WITH REMARKS ON

THE PRESENT STATE OF

OPHTHALMOLOGY.

"Die Natur behauptet mit Nachdruck ihre Recht."—Schiller.

"Nature emphatically asserts her rights."

BY

JOHN HARRISON CURTIS, Esq.

LONDON:

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1845.

ADVICE ON THE CARE OF THE EYES.

THE PRESENT STATE

OF

OPHTHALMOLOGY;

WITH NEW MODES OF

CURING DISEASES OF THE EYE,

AND REMARKS ON

THE CAUSES AND PREVENTION

OF

DEFECTIVE VISION,

AND ON

SPECTACLES, READING GLASSES, &c.

Third Edition.

By JOHN HARRISON CURTIS, Esq.

OCULIST AND AURIST;

DIRECTOR AND SURGEON TO THE ROYAL DISPENSARY FOR DISEASES OF THE EAR.

AUTHOR OF VARIOUS WORKS ON THE EYE, EAR, &c.

London:

WHITTAKER & CO., AVE MARIA LANE.

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TO

PROFESSOR FREDERICK AUGUSTUS VON AMMON, M.D.,

Chief Physician and Privy Councillor to the King of Saxony, Knight of the Order of Civil Merit, Physician to the Dresden Ophthalmic Hospital, Fellow of the Medical Societies of Copenhagen, Moscow, and Paris, and of the Societies of Physicians of Berlin, Bonn, Dresden, Erlangen, Frankfort-on-Maine, Friburg, Heidelberg, Leipsic, Lyons, Marburg, Minden, and Turin.

In dedicating the following humble Work to one so distinguished in the Medical Profession as yourself, I have been actuated by the most sincere feelings of respect and admiration for the talents, perseverance, and industry, by which you have already achieved so much for the Eye, and thus conferred invaluable blessings upon the human race; and also by a personal sentiment of gratitude for the kindness which I experienced from you when visiting Dresden, and for the present of your two well known valuable Works, "De Iritide," and "De Physiologia Tenotomiæ,"—works which establish the fame of their Author on the firmest

basis, and will preserve his memory long after he has himself passed away—a time which I earnestly hope may still be far distant.

With the most profound feelings of respect, I beg you to accept this slight token of my esteem, and to subscribe myself,

Your truly obliged friend,

JOHN HARRISON CURTIS.

2, Soho Square,
November, 1844.

PREFACE.

The care of the Eyes, and the causes and prevention of their diseases, are subjects which have not hitherto received the degree of attention to which they are entitled. It is true there is no lack of voluminous works on the Eye, but these are for the most part devoted wholly to the cure of its diseases—often extremely difficult and doubtful, sometimes impossible—especially when attempted, as of late years has more than ever been the case, by means of surgical operations, which are frequently unsuccessful, and on so delicate an organ as the Eye, often productive of the worst consequences.

Believing that far more good may be effected in reference to the Eye, by a brief and simple explanation of the causes on which its health or disease is dependent, and of the means by which it may be preserved in vigour and soundness, and thus *preventing* disease, than by attempts to cure what has been suffered to arise, I have, in the following pages, addressed myself to this task, and, discarding learned technicalities, have endeavoured to lay before my readers a short and intelligible body of rules, with the principles on which they are founded, by due attention to which I feel confident that very many affections of the Eye might be altogether prevented, and others greatly ameliorated.

In undertaking this Work, I was encouraged by the very favourable manner in which my "Aural Surgery" was received; and, in now publishing a Third Edition, I may state that my expectations in reference to the present work have not been disappointed.

There is no individual who does not possess a greater or less amount of practical knowledge peculiar to himself—much less is there any nation without such knowledge; and hence the most enlightened philosopher, or the most civilized people, may derive valuable accessions to their respective stores of knowledge from intercourse with even the most

ignorant and barbarous nations; but, of course, the benefit of such communication becomes greater and greater as we ascend in the scale of intelligence and civilization; and, accordingly, the various nations of Europe present the inquirer with a wide field of observation and research, which cannot fail to yield a rich harvest of instruction in every branch of art and science.

Impressed with this truth, I have, at various times, felt it to be my duty, as a member of the medical profession, to take a wider view of the state and practice of Medical Science than can be obtained in this country; and have accordingly made extensive tours of observation on the Continent, from which I derived much instruction, and was enabled to take juster views on many branches of my profession.

Having several years ago determined to devote a portion of my attention to diseases of the Eye, to which I was led, from observing the intimate connexion between diseases of the Ear and those of the Eye; and having on a former occasion derived much valuable information respecting diseases of both organs from visiting the hospitals of France, Belgium, and Holland, and experienced the greatest kindness and attention from some of the principal Surgeons of those countries, particularly from M. Deleau, who instructed me in the use of the catheter for obstructions of the Eustachian tubes*, I resolved to take the first opportunity of inspecting the chief Continental hospitals for diseases of the Eye, in order that I might make myself acquainted with the opinions, modes of treatment, and operations now prevalent among those to whom we are indebted for nearly all the improvements in Ophthalmic Surgery that have been lately effected. It was not until about three years ago that I was enabled to accomplish this design, when I visited the principal hospitals at Vienna, Berlin, Prague, Dresden, Munich, Mannheim, Leipsic, Hamburg, and several other cities. In every instance I met with the greatest kindness and readiness to answer all my inquiries, from the medical directors and superintendents of these noble establishments, who afforded me every facility for becoming acquainted with the state of the institutions under their care, and communicated to me much valuable information on all points connected with the diseases of the Eye; and I take this opportunity

* *Vide* the Author's Treatise on "The Phyisiology and Pathology of the Ear," sixth edition; and on "The Present State of Aural Surgery."

of returning my sincere thanks to the following gentlemen in particular:—Baron von Wiegel, Adolphus Otto, C. Kluge, Seuere, Von Ammon, Carus, Clarus, H. Clarus, Pitschaft, Hutton, Théodore Richter, Dieffenbach, O'Grady, Böhm, Gruber, Schrag, Velpeau, Schmalz, Deleau, Polach, Schenkey, Kœpf, R. Verity, Anglestein, Ricord, Peez, A. Fisher, Seagert, Micksick, Hunter, Frike, Miller, Rittenik, Hulke, C. de Schreibers, R. Tuma, R. I. Mézáros, Tobin, Beiard, Dau, Margolin, &c.

Since the publication of the last Edition of this Work, in March last, the whole of which has been disposed of, I have paid another visit to Paris, where I have again gone over all the hospitals, and have had intercourse with most of the principal medical men, by which means I have obtained much useful information on diseases of the Eye, the substance of which has been incorporated in the following pages. Several new remedies will be found described from my own experience of them in practice since my return home.

In the previous edition, several remarks relative to public health, and its connexion with the condition of the Eye, were inserted, and there can be no doubt that the general health exerts great influence upon that of the eye: but as I have now published a separate work on hygiology, I have transferred all observations of the kind from this book into the other, to which they in strictness belong*. I have there shewn the necessity for immediate improvement in the sanatory arrangements of our metropolis and other large towns, if we would escape some wide-spreading calamity; and it is probable enough that unless this is attended to, an epidemical ophthalmia may spring up. Nothing is a more frequent cause of this fearful disease than the want of pure air and cleanliness, arising from living in crowded rooms, an evil more prevalent now than at any former period;—the Bishop of London lately stated, in a speech at a public meeting, held at the Mansion House, that in the parish of St. George, Hanover Square, the wealthiest in the kingdom, there were nine hundred and twenty-nine families who had only one room each in which to reside;—if this is the case, what must be the condition of the still more destitute people who live in St. Giles', Whitechapel, Bethnal Green, and the lower parts of Westminster? Indeed, I am informed

* This work is entitled, "Advice on the Care of the Health, or the present State of Hygiology."

that in St. Giles' as many as seventy persons, mendicants and others, consisting of men, women, and children, are frequently lodged for the night in a single house—most of them being in a filthy condition. If this state of things is suffered to continue, we may expect that ophthalmia will become prevalent, and as it is a highly contagious disease, it would probably extend its ravages to persons who may perhaps consider themselves secure from its assault.

On the subject of spectacles also, much information has been added in the present Edition, as I am every day more and more convinced of the extremely injurious consequences which arise from some prevalent errors in reference to this point—especially the use of small oval spectacles; the ill effects of which may not be discovered in the earlier period of life, but which become very serious as old age approaches. I fear, however, that with many, fashion will preponderate over good sense and utility, and that they will continue to prefer what *looks well* to what is useful, even though the preference should be at the expense of their sight.

This Work, although considerably enlarged, and illustrated by several additional plates, has not been increased in price, as I wish it to be of extensive utility to all classes.

I have herein endeavoured to carry out the principles in reference to the diseases of the Eye, which my Treatise on the Ear applies to that organ. I allude especially to the plan of preferring, as a general rule, constitutional to surgical modes of treatment. I have shewn that it is in the incipient states of disease that most good can be effected; that, for instance, incipient cases of cataract, of fistula lacrymalis, and of strabismus, may be, and have often been by myself, cured without operations; that attention to the sympathetic system of nerves, and their influence on the organs of sense, and, generally, to the first causes of disease, and the principles of hygiology, on which their prevention depends, will, in the majority of cases, enable the oculist to arrest the progress of diseases of the Eye, and to eradicate them without resorting to operations, which, even when performed by the most skilful, often inflict great and permanent injury on the delicate structure of the Eye.

OPHTHALMOLOGY.

Of all the organs of the body, none is more highly prized, and none more liable to disease, than the eye. The eye—the organ of that sense which is the most intellectual in its nature, and most extensive in its scope—has ever been regarded with a feeling altogether peculiar, and is cherished with a care and fond solicitude which has become the type of the most intense affection, as the means by which we are made acquainted with the infinite and beautifully diversified modifications of light and shade, and indirectly with the innumerable forms of loveliness and grandeur spread over the earth. "To love as the apple of the eye," is accordingly the strongest expression of perfect sympathy. It is probable that this feeling derives part of its force from the fact, that the periodical return of night affords us constant opportunities of becoming sensible of the evils which the loss of sight entails, in a manner which scarcely ever occurs in reference to the other senses, a clear perception of the condition of those who are deprived of them being attainable only by a process of abstraction not easily performed. The helplessness also of the blind is manifest and palpable; and since no feeling is more abhorrent to man than that of weakness, so his estimate of that which preserves him from the much-dreaded condition is proportionately high. Poets have always delighted to extol the value of this sense, to which they feel themselves so deeply indebted; but no poet has written more touchingly on this theme than our immortal Milton, who, though he willingly sacrificed his sight in the performance of his important duties as Cromwell's Latin secretary, was far indeed from being insensible to the magnitude of the loss he had sustained.

> "Cyriac, this three years' day these eyes, though clear
> To outward view of blemish or of spot,
> Bereft of light, their seeing have forgot;
> Nor to their idle orbs doth sight appear
> Of sun, or moon, or star, throughout the year,
> Or man or woman."*

* Sonnet to Cyriac Skinner. The affection which deprived Milton of sight was amaurosis, or gutta serena.

But the eye is also one of the most delicate parts of the animal economy; and hence, in spite of the care with which it is generally guarded from the external causes of disease, it is rarely found wholly free from morbid affections after a certain period of life. It seems to be a general law of organised existence, that the more noble powers fall soonest to decay. The intellect and moral feelings in man are last developed, and their impairment mostly precedes the signs of approaching dissolution in the body. In like manner, those organs which more immediately subserve the mind, and have only indirectly to do with the mere preservation of the body, are the first to experience a diminution in their strength and activity. The eye in particular is so complicated in its structure, and the perfect performance of its functions depends upon so many circumstances, most of them liable to frequent disturbance, that it is not to be wondered at that the list of maladies to which it is subject should be long, and of a very diversified character; so much so, that nothing less than the devotion of a large proportion of his time and study to them can enable any one thoroughly to qualify himself to treat them with safety and success.

In the earliest times of which we have any historical record, we find that the diseases of the eye were considered of sufficient importance to be studied and treated by a distinct class of practitioners. Herodotus, the father of history, informs us, that Cyrus sent to Amasis, the king of Egypt, for an oculist; and not a few inscriptions on ancient marbles and seals prove that the Greeks and Romans recognised oculists as a distinct profession.

The Greeks observed and described with unequalled accuracy and precision many of the most important diseases of the eye. Hippocrates, in his Aphorisms, prescribes for ophthalmia; and his prescription is commented upon by Celsus, who also gives an excellent, though brief, description of couching, and judicious directions on the previous preparation and subsequent treatment of the patient.

From the time of the subversion of the Roman empire down to the fifteenth century, the whole science of medicine was at a stand-still, or rather in a state of retrogression; and during this long period, as might be expected, no progress was made in a knowledge of the eye or its diseases, the treatment of which, up to the middle of the eighteenth century, was left to quacks and itinerant mountebanks.

It was not until the period last mentioned that the anatomy of the organ began to be carefully studied, the credit of originating which plan belongs to the Germans; Zinn, professor of anatomy at Gottingen, having then published his truly valuable *Descriptio Anatomica Oculi Humani.*

The Germans, indeed, have done more than any other nation to extend our knowledge of the eye, both anatomical and pathological. The *Icones Oculi Humani* of Soëmmering, consisting of a series of plates, representing the various parts of the organ, and exhibiting even the more minute details of structure with unexampled clearness and fidelity, is a work which reflects the highest credit on its author, and has done much to diffuse an accurate acquaintance with the anatomy of the eye. Richter, professor of surgery at Gottingen, deserves honourable mention for his efforts both in practice and by his writings, to promote the study of the diseases of the eye, with which he was extensively and profoundly acquainted.

Scarpa, the well-known oculist, and professor of anatomy and practical surgery at Pavia, published in 1801 his great work, *Sulle Principali Molattie degli Occhi*, which was soon translated into various languages, our own among the rest. Although not a complete treatise on diseases of the eye, for he expressly states that he makes no remarks on any class of its diseases except such as actually fell under his own observation; yet it is on this very account the more valuable, as we may rest assured that he does not, as is too commonly the practice, merely servilely transcribe what was written by his predecessors, without troubling himself to ascertain its accuracy. On the contrary, all that he has written bears the stamp of genuineness; and but little indeed has been done in this country in the *medical treatment* of the eye since his time: a fact of which any one may satisfy himself, if he will take the trouble to compare his work with any of the bulky tomes that have of late years been published on the subject; which will be found to consist for the most part of mere repetitions of one another, slightly varied in form and expression. It must be admitted, however, that this censure applies more to the medical branch of the subject than to the surgical, in which many improvements have been effected of late years.

But however valuable and meritorious the isolated exertions

of individuals may be, it cannot be concealed that they are insufficient of themselves to produce any very marked progress or improvement in ophthalmology, which especially demands co-operation, and that large field of observation which private practice rarely affords. Accordingly, no event in the history of ophthalmic surgery has produced more important or more valuable consequences than the founding of the Vienna School of Ophthalmic Surgery, the first establishment in Europe expressly appropriated to the advancement of this till then neglected department of the profession. This was effected about 1773, through the exertions of Barth.

Since that time there has been a succession of distinguished oculists educated at this school, who have spread its fame, in conjunction with their own, over Europe. It is sufficient to mention the names of Schmidt, Beer, Himly, Langenbeck, Ammon, Jüncken, and Jäger, the present eminent oculist of Vienna.

The improvement which has taken place in England in this matter had a similar origin. In 1804 Mr. Saunders founded the London Ophthalmic Infirmary, which was opened to students in 1810. That gentleman himself contributed materially to the improvement of the art, especially by his plan of operating for cataract.

As I have mentioned Mr. Saunders' name, I may add that I had the pleasure of being acquainted with him, and always entertained a high respect for him as an able and talented practitioner, to whom the public and the profession were much indebted. He for some time attended to the ear as well as to the eye: and the Infirmary was originally intended for diseases of both organs; but not meeting with public support in this branch, he after a while gave it up, and confined the Institution to diseases of the eye. On his death a bust was erected to his memory at the Ophthalmic Infirmary, and still bears testimony to the esteem in which his services were held. He was succeeded by his pupil, Sir William Adams, who was certainly the most expert operator for cataract that I have ever seen, and I had frequent opportunities of witnessing his performance of that operation. He did great injury to his reputation by operating too much, and sometimes unsuccessfully; and his almost constant controversies with rivals and opponents did not contribute to his fame: in fact, there cannot be a less profitable employment of time than in

replying to the attacks which are sure to be made upon any medical man who attains to eminence, by his less deserving or less fortunate brethren.

There are now institutions for diseases of the eye in many of the principal towns of Great Britain; and the valuable observations published by some of their medical officers, prove that they are the best means of enlarging our knowledge of the subject.

I am convinced, however, that we have not yet adopted the plan in reference to these institutions which would be productive of the greatest amount of benefit. For the most part their medical officers do not confine themselves to their official duties, but are, at the same time, engaged in private general practice: thus their attention is distracted, and the claims of private interest too often interfere with public welfare. Besides, the sites of the two ophthalmic hospitals in London are objectionable; they are situated in close and densely populated districts, instead of being in situations where the air might be perfectly pure and fresh,—a point of vast importance in diseases of the eye, as well as to the condition of the general health, on which so much depends in every local malady. On the continent great attention is paid to the situation of hospitals, in order that they may enjoy the advantage of pure air; and in reference to the importance of this precaution, I may mention, that the admirable situation of the Queen's Royal Naval Hospital at Haslar contributed greatly to the success of the medical treatment pursued in it, especially that of ophthalmia, of which I saw several hundred cases during my six years' service there.

Nothing would tend more to the rapid progress of ophthalmic surgery than the establishment near the metropolis, and yet sufficiently far from it to be out of its smoke-impregnated atmosphere,* of an ophthalmic hospital on a large scale, having medical attendants whose sole occupation would be the performance of their official duties. I would suggest, as necessary parts of the regulations of such an institution, that all persons dying within it should be dissected, with especial reference, of course, to the pathological anatomy of the eye and the adjoining parts; that full reports should be kept of these dissections, as well as of the circumstances of the case, and the treatment adopted; and that

* A very excellent situation would be in the New Marylebone and Finchley Road, a spot which combines the advantages of sufficient proximity with great openness and purity of air.

from time to time extracts from them should be published for the information of the profession at large, which would thus, in the course of a few years, be put in possession of a body of information on which they might rely, as furnishing data for that extensive classification and generalization which are essential to the scientific treatment of diseases, and which have never yet been applied to those of the eye.*

At the proposed hospital there should also be a complete library of works on ophthalmology, a museum of anatomical preparations connected with the subject, and a collection of all the instruments used in ophthalmic surgery by the surgeons of our own and other countries.

As another proof of the necessity for an additional ophthalmic hospital, it may be added, that those already existing are very limited in their accommodations; although it is evident that there must be a great demand upon them, since there were at both institutions 8,500 *out-door* patients during a single year. And besides these, there are always a vast number of out-door patients at the different hospitals, dispensaries, infirmaries, &c., in London.

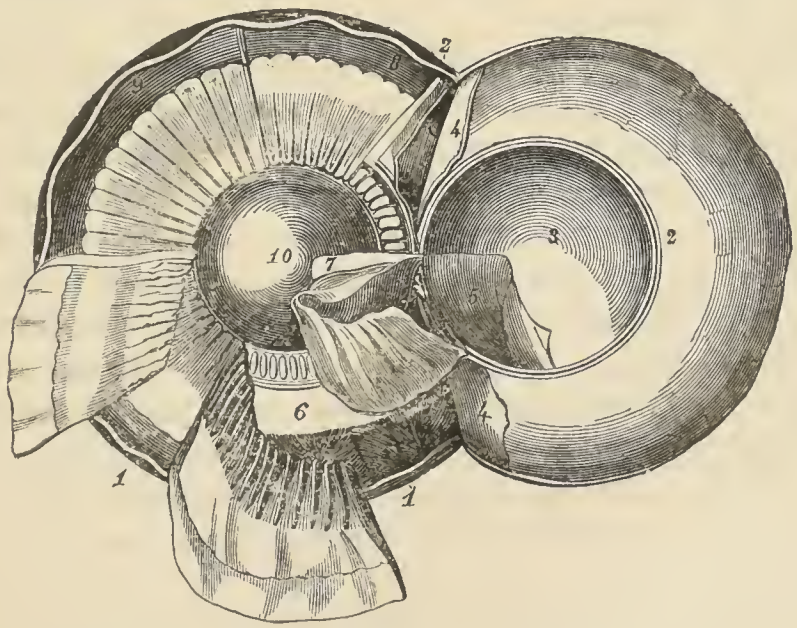
Before I proceed to give a brief account of some of the principal diseases of the eye, it will be necessary concisely to describe the structure and functions of that organ.

The globe or eye-ball consists of a sphere enclosed, except for a small space in front, by a very firm and tough membrane, called the selerotic, or hard membrane, and which is popularly known as the white of the eye, and serves to keep together, and in their proper places, the contents of the eye-ball. The front portion of the eye consists of a transparent horny membrane, called the cornea, through which the light is admitted. Immediately behind the cornea, but separated from it by the aqueous humour by which it is surrounded, is the iris, an exceedingly delicate contractile membrane, of a circular form, with an open space in the centre called the pupil, which is diminished or enlarged by the relaxation or contraction of the iris, so as to regulate the quantity

* In proof of the necessity for some such plan as this being adopted, I may quote the statement of Mr. Lawrence: "As we do not know the exact nature of the inflammatory process, as the pathology of some parts of the eye is yet in an imperfect state, and as we have seldom an opportunity of examining the results of ophthalmic diseases after death, we are unable to present a classification of those diseases, founded on clear and unequivocal principles, and in all respects satisfactory."—*Treatise on the Eye*, p. 71.

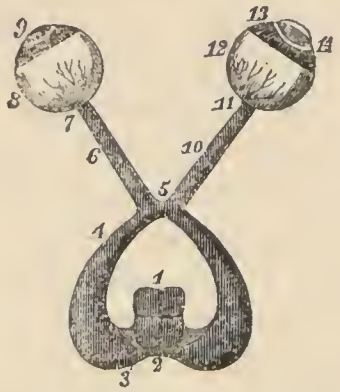
of light admitted. The iris is abundantly furnished with colouring matter, the tints of which are infinitely diversified. Situated exactly behind the pupil is the crystalline lens, which consists of the transparent substance called albumen, enclosed in a highly elastic capsule, on which the preservation of its proper shape chiefly depends. The crystalline lens has the form and function of a double convex lens, its office being to refract the rays of light, and bring them to a focus upon the retina; and its refractive power is greater than that of any other part of the eye. Behind the lens is the vitreous humour, a transparent fluid, constituting about five-sixths of the bulk of the globe. It possesses a high refractive power, and differs in no great degree from water. It is contained in a cellulated structure, named the hyaloid membrane (from ὕαλος, *glass*), on account of its perfect translucency. Encircling the vitreous humour, and resting upon the back and sides of the interior of the eye-ball, is the retina, or expansion of the optic nerve, on which the impressions of light are made, thence to be conveyed by the nerve to the sensorium. The retina (from *rete*, a net) is so called from the innumerable ramifications of the central artery which are spread over it, and give it the appearance of a very delicate vascular web or network.

The following is a representation of a section of the eye, taken from my map of its anatomy.



1. Posterior portion of the Sclerotica. 2. Venous Circle of the Iris. 3. Inner surface of the Cornea. 4. Arachnoid Membrane. 5. Membrane of the Aqueous Humour. 6. The Ciliary Ligament. 7. The Iris. 8. The Retina. 9. The Hyaloid Membrane. 10. The Crystalline Lens.

The following engraving represents the course of the optic nerves, from their origin in the brain to their entrance into the eye.



1. The upper (nates). 2. The lower (testes) tubercula quadrigemina. 3. The optic nerves, as they appear to arise from the lateral parts of these tubercula. 4. Flattened portion of these nerves. 5. Commissure of the optic nerve. 6. Left optic nerve, surrounded by the sheath derived from the dura mater. 7. The same nerve entering the eye. 8. An upper view of the left eye—the sclerotic coat. 9. The cornea. 10. The right optic nerve, invested only by its neurilema. 11. Its contraction as it enters the globe of the eye. 12. The expansion of the retina, with its arteries. 13. The iris. 14. The lens.

I will take this opportunity to lay before my readers some facts connected with the anatomy of the eye, which have recently been ascertained; and to observe, that the comparative anatomy of the organ is of the utmost importance to the complete elucidation of many points connected with its structure that are still doubtful and obscure.

Professor Pappenheim, of Breslau, in Silesia, who has lately written much on the texture of the nerves of the eye, observes that the nerves of the cornea in adults are cerebro-spinal, like the ciliary nerves; but in a child of fourteen weeks old he found no certain traces of the nerves near the cornea of the left eye. He also states that after making various dissections of the eyes of sheep, rabbits, guinea-pigs, &c., he comes to the same result as Hyrtl, viz. that the ganglion ciliare has three normal roots,—one from the ramus naso-ciliaris, one from the nervus oculo-motorius, and one from the nervus sympatheticus. In the former two he found no organic nerves, but he did find them in the ganglion itself; they consequently only proceed from the great sympathetic nerve.*

The Professor, whom I saw a few weeks since when I was last in Paris, communicated to me considerable information on this subject, and further stated that he was about to publish a new work, a copy of which he intends presenting to me.

* Vide Die specielle Gewebelehre des Gehörorganes, &c.

As mentioned in my Treatise on the Eye, the size of the crystalline lens in the mammalia varies in proportion to that of the vitreous humour, and sometimes very considerably. No mammalia have the lens so slightly convex on the surface as man. In the cat, hare, the bisulca, the horse, opossum, and seal, it becomes more and more convex, in the order in which these animals are named. Lastly, in the cetacea it is nearly spherical. It is curious to observe the regularity with which, in some species, the lens, when dried or immersed in acids, divides into certain segments, commencing from its centre.

A lacrymal gland exists in all animals of this class. Several quadrupeds have, indeed, an additional one, besides that which is found in man. Some have no puncta lacrymalia; and the elephant has neither lacrymal sac nor os unguis. The nictitating membrane, of which only a rudiment exists in the quadrumana and the human species, is very large and moveable in some quadrupeds. This is the case in animals of the cat kind, in the opossum, the seal, and particularly in the elephant.

The relative magnitude of the true eyelids varies considerably in animals of this class. The lower, which is very large in elephants, is very small in the horse. In the latter animal, as well as in most quadrupeds, it has no cilia; while in the quadrumana, the elephant, giraffe, and others, both eyelids possess eyelashes.*

By far the greater number of affections of the eye are of an inflammatory kind, and their causes are consequently in a great measure under our own control. It is to general constitutional disturbance, shewing itself in the delicate structure of the eye, that most of its diseases are attributable. Could men but be induced to pay stricter attention to the laws of health, to endeavour to understand the principles of the animal economy, and its relation to external agents, diseases of this organ would soon become as rare as they are now prevalent. I shall therefore briefly point out the chief exciting causes which injure the eye, and the sanatory means by which they may be avoided.

Attention to the eyes is necessary from the time of birth, if we wish them to perform their functions correctly, and to be free from disease. The eye, like all other bodily organs, is, at first,

* For a description of the anatomy of the human eye, and the comparative anatomy of the eye in mammalia, birds, amphibia, fishes, insects, and vermes, vide the last edition of the Author's Treatise on the Diseases of the Eye.

incapable of long-continued or powerful exertion; and if, by the glare of a fire, exposure to too much light, such as the rays of the sun, &c., they are unduly tasked, they may be permanently weakened. Even the position of the cradle—relatively to the light—to which scarcely any attention is ever paid, is a point of considerable importance.

For similar reasons, children should not be allowed, much less compelled, to spend hour after hour every day in poring over books, needle-work, music, or any other similar occupation: variety of objects upon which to employ the eye relieves it greatly, and calls forth all its faculties in the most agreeable and safest manner; whereas, the weariness resulting from long-continued application to the same thing, is likely to become habitual.

The clothing of children also may affect the sight: anything tight about the neck, by impeding the return of blood from the head, is likely to give rise to very unpleasant affections of the eye, and must interfere with distinctness and strength of vision. So any article of dress constantly moving before the face, such as veils, feathers, tassels, &c., &c., by keeping the eye incessantly shifting, is highly injurious, and may occasion strabismus, or squinting.

Children should be allowed to take plenty of sleep; still this may be too long continued: in a healthy child, however, there can be no safer rule, as to its duration, than the inclination to sleep. Too little repose weakens the eye, by over exertion; too much renders it dull and torpid, for want of sufficient exercise.

Comparatively few children are born with diseased or defective eyes, and yet at a very early age these organs frequently become affected, through the mismanagement of mothers and nurses, either as to the general health of their young charges, or as to that of the eyes themselves. For instance, animal food is often given at far too early a period, the consequence of which is to weaken the digestive organs, and to inflame the blood, and by this means the eyes become affected. Medicine, also, is given much too freely to infants and young persons, whose delicate system is easily disturbed by these agents, and whose tender eyes generally sympathise with the rest of the body. In Germany I find that very little medicine is given to children, for the cure of whose complaints the greatest reliance is placed on the regulation of their diet. There is more medicine taken in this

country than in the whole of Germany, in which country they are so little used to large doses, that a physician of Vienna informed me that when he prescribed for a patient four grains of the compound extract of colocynth, the apothecary refused to prepare the prescription, and asked whether it was intended to poison the patient.

Exposure to strong light, or to cold winds, injures many infants' eyes, producing inflammations that often become chronic in their effects. For this reason, the greatest care of the eyes should be taken in infancy, since it is only by guarding them *then* against the causes of disease that we can expect to retain the use of them unimpaired to old age.

In this country it is almost universally the case, that more is eaten and drunk than is required for the maintenance of the strength of the body. At first this excess may appear to produce no ill consequences; on the contrary, there may be an external appearance of robustness and vigour which leads to the opposite inference: but these signs are in reality symptoms of a state which is scarcely itself to be distinguished from disease, and which may, by very slight influences, become so indeed. There is *plethora*, an unnatural fulness of blood, which may result in the most dangerous inflammation. It is this condition of body which most frequently produces ophthalmic inflammation, a disease which can only be subdued by proper treatment, and which, if left to itself, frequently ends in the great impairment or total loss of vision. If men could but be persuaded to be content with that quantity of food which appetite demands, one of the principal causes of diseases of the eye would be removed.

Indulgence in spirituous and fermented liquors is another cause of disease, which acts in a similar manner to the one just mentioned. The circulation of the blood is quickened by this means; and if the eye be weak, or in any manner predisposed to disease, a greater quantity of blood than is natural will be sent to it, and the same effects be brought upon it as in plethora.

In fact, it is now generally admitted that we can scarcely over-rate the importance of whatever acts upon the stomach as to its influence upon the general health. Mr. Abernethy was the first in this country to call attention to the fact, and to demonstrate the extensive and intimate sympathies which bind the rest of the animal economy to the digestive system. In his Surgical Observations on the Constitutional Origin and Treat-

ment of Local Diseases, he shews that several diseases of the eye and ear may be cured by attending to the digestive functions. He also observes, that "it is well known that ophthalmia frequently arises from constitutional causes, and in such cases the digestive organs are generally deranged. The health will be most speedily restored, and the local disease most effectually diminished, by correcting the disordered state of the abdominal viscera." He mentions some cases of ophthalmia, in all of which he says, "the digestive functions were deranged; and I attribute the comparative well-doing of the patients to the attention which was paid to their correction. In other cases, which I had formerly been witness to, where evacuations by bleeding and purging, &c., were employed, the disorder was extremely obstinate, nay, several patients lost their sight." The stomach has been called the sovereign of the body, and truly its empire is despotic. The cause of the influence of that organ on all the functions of the frame has of late years been satisfactorily shewn. The great sympathetic nerve, whose centres are the semilunar ganglia and solar plexus, situated in immediate proximity to, and closely connected with the stomach, sends off numerous branches to all parts of the body, especially to the organs of sense, and links together the organic and animal functions in the most intimate manner, and thus the sympathy to which I have just adverted is accounted for.* Hence also, whatever injuriously acts upon the digestive organs is liable to affect the eye, when the latter is at all predisposed to disease. We need not, then, be surprised when it is asserted that adulterations of food, or the use of impure water, are frequent causes of diseases of the eye, and that the extent to which adulteration is practised will partly account for the prevalence of some of them. Even if such adulterations do no worse, they give rise to indigestion, which brings in its train many other maladies, and foremost amongst them, those which attack the eye.

Mr. Hawkins read a paper at the last York Meeting of the British Association, entitled, "On the Economy of Artificial Light for Preserving the Sight," in the course of which he

* In a plate published in my Treatise on the Ear, and printed separately on a card, I have exhibited the connexion of the sympathetic nerve with the organs of sight and hearing; and in that work have pointed out the important consequences of this connexion in reference to the treatment of diseases depending on the nervous system.

remarked, that few were aware of the injury inflicted on the sight by too much or too little light, or by a sudden transition from gloom to light. He had tried several experiments with a view to procure a light of a medium description, beginning with two common candles, eight to the pound, alternately snuffing and leaving them unsnuffed, and then measuring the intensity of the light by the shadows on the walls. The result was, that he found that the candle well snuffed gave eight times the light of that which was unsnuffed. He then proceeded to a process of weighing, and found that one pound of the snuffed candles gave as much light as nine pounds of the unsnuffed. With regard to Palmer's and the common dip, he found that a pound and a quarter of the latter, costing $5\frac{1}{2}d.$, when well snuffed, was equal to one pound of Palmer's, costing $6\frac{1}{2}d.$; but when the same candle was not snuffed oftener than about every ten minutes, it took four to be equal to Palmer's; and, when unsnuffed altogether, it required eleven pounds to be equal to one pound. After alluding to further experiments with candles, and also with oils, he concluded by recommending the self-snuffing candles in preference to oil-lamps.

I shall now give a brief account of the principal diseases of the eye, and of the modes of treatment, including in the latter some with which I became acquainted through the kindness and liberality of several distinguished continental practitioners during my tours on the continent. In other respects I shall follow the order adopted in my Treatise on the Diseases of the Eye,* to which I beg to refer those who may desire a fuller acquaintance with the subject.

Purulent Ophthalmia (German, *Augenentzündung;* French, *Ophthalmie purulente*) is a severe inflammation of the conjunctiva, so called because one of its most prominent symptoms is a profuse muco-purulent discharge from that membrane. On account of the marked differences between this disease in infants and adults, it is generally, in works on the eye, treated distinctly in reference to those two periods of life.

As ophthalmia may arise from a great variety of causes, some local, others constitutional, and as the proper treatment must

* This work is published by Longman and Co., Paternoster Row; second edition, with cases and plates, price 7*s.* 6*d.*

necessarily depend, to a considerable extent, upon the causes, these ought to be first carefully ascertained, and the requisite attention paid to both classes of causes. It is often necessary to prevent all use of the eye, and to exclude the light; but if shades are used, they should be so constructed as to allow the free access of air. The eye should be often examined, as the progress of the disease is frequently very rapid, and may, unless closely observed, get beyond the power of treatment to arrest.

Purulent ophthalmia is very common in infancy, and is so violent, that the majority of instances of blindness are caused by it. It begins in the lining of the lids, which soon become much swollen and discolored; a slight mucous discharge follows, and rapidly increases in quantity, assuming, as the disease advances, a purulent appearance. In a few days the inflammation extends to the conjunctiva of the globe, and, if left unchecked, to the cornea, which is frequently rendered opaque, or ulcerates, sloughs, and bursts, followed by prolapsus of the iris, escape of the humours, and total loss of sight. This disease is commonly neglected in its earlier stages, being regarded as a mere cold in the eyes, which will terminate of itself; and thus it too often happens that before medical advice is resorted to the disease has become uncontrollable; if treated early, and before the cornea has sustained any injury, it is readily curable. The remedies which have been found most beneficial are, in the early stages, leeches, nitre, with tartar emetic and prepared chalk in combination; the application of blisters behind the ears, or to the nape of the neck, kept discharging; and as the Meibomian glands are always affected, anointing the eyelids with the mild red precipitate ointment, combined with opium. The strictest attention to diet should be observed, and all bandaging of the eyes prohibited, as it is uniformly injurious. After the inflammatory action has been reduced, the use of astringent lotions is of great service in restoring the tone of the blood-vessels. In this disease there is frequently great constitutional disturbance; aperients should in every case be given, to such an extent as to cleanse the bowels completely. Rhubarb combined with the sulphate of potash I have found in my practice to be the most serviceable.

Purulent ophthalmia in the adult has many synonyms; that best known is Egyptian ophthalmia,—a name given to the disease because it first became known to us subsequently to the contest between England and France for the possession of Egypt

at the beginning of this century. It is essentially the same disease as that which I have just described, and produces effects of the same kind, but runs its course more rapidly. From the fact that, under some circumstances, the disease attacks large numbers at one time, as in Egypt, where two-thirds of the French army were affected with it, it has been assumed to be contagious; but this, again, has been disputed by others, who bring forward isolated cases, in which the most direct and intentional contact of purulent matter with the eye did not produce the disease. But such cases are not of much importance, since it is generally admitted that predisposition, more or less, is necessary for the communication even of those diseases which are indisputably contagious. This question has been much discussed, but it may now be considered to be set at rest by the researches and reasonings of Edmonston, Vetch, Macgregor, Gräef, Müller, Omadei, Rust, Lawrence, and Mackenzie; and the contagious nature of the disease is by them completely established. It is of importance that this fact should be generally known, as it too often happens, that for want of proper precautions being taken, the disease spreads with fearful rapidity. Thus, Mr. Macgregor mentions, that in 1804 nearly 400 cases occurred in eight months at the Royal Military Asylum. About the same time it broke out in a large boys' school in Yorkshire, where it was so violent, that blindness, or serious injury to the sight, took place in about twenty cases.

The French slave ship, *Le Rôdeur*, Captain B, of 200 tons burden, left Hâvre on the 24th of January 1819, for the coast of Africa, reached her destination on the 14th of March, and cast anchor off Bonny. The crew, of twenty-two men, enjoyed good health the whole voyage, and during their stay at Bonny till the 6th of April. No trace of ophthalmia had been observed among the inhabitants of the coast, and it was not till fifteen days after the *Rôdeur* had put to sea, and was nearly on the equator, that the first symptoms of this frightful disease were perceived.

It was observed that the negroes, who were 160 in number, and crowded together in the hold, and between decks, had contracted a considerable redness of the eyes, which spread with rapidity from one to another. At first, however, the crew paid no great attention to this appearance, imagining that it was occasioned merely by want of fresh air in the hold, and by the scarcity of water: for they had already limited the allowance of water to

eight ounces a-day, and some time after they could allow only half a glass a-day. It was thought sufficient to make use of an eye-water, made from an effusion of elder flowers, and following the advice of the person who acted as ship-surgeon, to bring up the negroes in turns upon deck. This salutary measure, however, they were obliged to abandon; for the poor Africans, torn from their native home, and heart-wrung by the horrors of their situation, as well as by the recollections of their lost freedom, embracing each other, threw themselves into the sea.

The disease, which had spread among the negroes in a frightful and rapid manner, now began to threaten even the crew. The first man of the crew attacked was a sailor, who slept under deck, close to the grated partition which communicated with the hold. Next day, a lad was affected with the ophthalmia; and in the course of the next three days, the captain, and almost all the crew, were seized.

In the morning, on awaking, the patients experienced a slight prickling and itching in the edges of the eyelids, which became red and swollen. Next day, the swelling of the eyelids was increased, and attended with sharp pain; in order to lessen which, they applied to the eyes poultices of rice, as hot as they could bear them. On the third day of the disease, a discharge of yellowish matter took place, rather thin at first, but which afterwards became viscid and greenish; and was so abundant, that the patients had only to open their eyes every quarter of an hour, when the matter fell in drops. From the commencement of the disease, there were considerable intolerance of light and discharge of tears. When the rice failed, boiled vermicelli was used for poultices. On the fifth day, blisters were applied to the nape of the neck of some of the patients; but as the cantharides were soon exhausted, they endeavoured to supply their place by the use of pediluvia containing mustard, and by exposing the swollen eyelids to the steam of hot water.

Far from diminishing under this treatment, the pain increased from day to day, as well as the number of those who lost their sight; so that the crew, besides fearing a revolt among the negroes, were struck with terror lest they should not be able to manage the vessel till they should reach the West Indies. One sailor only had escaped the contagion, and upon him their whole hopes depended. The *Rôdeur* had already fallen in with a Spanish ship, the *Leon*, whose whole crew were so affected with

the same disease, that they could no longer manage their ship, but begged the aid of the *Rôdeur*, already almost as helpless as themselves. The seamen of the *Rôdeur*, however, could not abandon their own ship, on account of the negroes ; nor had they room to receive the crew of the *Leon*. The difficulty of nursing so many patients in so narrow a space, and the want of fresh provisions and of medicines, made the survivors envious of those who died ; a fate which seemed to be fast coming upon all, and the thought of which caused general consternation.

Some of the sailors made use of brandy, which they dropped between their eyelids, and from which they experienced some relief ; which might have suggested to the surgeon the propriety of a local stimulating treatment.

On the twelfth day, the sailors who had experienced some relief, came upon deck to relieve the others. Some were thrice attacked with the disease.

The tumefaction of the eyelids having subsided, some phlyctenulæ were observed on the conjunctiva of the eyeball. These the surgeon had the imprudence to open ; a step which proved hurtful in his own case, for he remained blind, without any possibility of recovering his sight.

On reaching Guadaloupe, on the 21st of June, the crew was in a deplorable state ; but very soon after, from the use of fresh provisions, and by simple lotions of spring water and lemon juice, recommended by a negress, they became sensibly better. Three days after coming ashore, the only man who, during the voyage, had escaped the contagion, was in his turn seized with the same symptoms ; the ophthalmia running its course as it had done in the others on board ship.

Of the negroes, thirty-nine remained totally blind, twelve lost each one eye, and fourteen had specks, more or less considerable, of the cornea.

Of the crew, twelve men lost their sight ; one of these was the surgeon. Five lost each one eye, and amongst these was the captain. Four had considerable specks, and adhesions of the iris to the cornea*.

These facts, and others of the same kind in abundance, prove that too much care cannot be taken to isolate those who may be afflicted with the disease, and furnish another argument for

* Bibliothèque Ophthalmologique, par M. Guillié. Tome I. p. 74. Paris, 1820.

an ophthalmic hospital in the open air, where such patients could be accommodated without danger to others.

Among the chief causes of purulent ophthalmia are, exposure to close, impure air, improper or not sufficient food, want of exercise, and pure water, exposure to the direct rays of the sun, the eyes being unprotected, &c.; prisons, ill-regulated hospitals, and convict-ships, being the places where its ravages are most extensive and destructive.

Dr. Mackenzie observes, "that it is a fact particularly worthy of notice, that a patient may remain for many months with the conjunctiva of the eyelids in the granular state, his cornea probably vascular and nebulous, but without any puriform discharge, when after a fit of intoxication, or some other irregularity, the inflammation may suddenly return in its original form, and with its original propagative power. Hence it may happen that a soldier, discharged in the state described, returning home into the country, and then from intoxication becoming affected with a relapse, may give rise to an ophthalmia which shall spread through many families, and present all the symptoms and the severity of the true Egyptian disease."

There are many parts of London without drains, to which the pure air never comes, where dirt and filth of all kinds are allowed to accumulate undisturbed for years, and where numbers of persons are huddled together in small rooms, the windows of which are never opened from one year's end to another:—these are the places which generate infectious and contagious diseases of all kinds; they were the strong-holds of the cholera, which from them spread its devastations into the streets and squares inhabited by the noble and the wealthy: from them also, unless the evil be averted by timely attention to sanatory measures, which will improve the condition of these hideous receptacles of misery and poverty, may proceed another scarcely less dreadful scourge—an infectious ophthalmia—a disease which they are admirably adapted to generate and diffuse. It is well to be aware of what may happen, and it would be prudent to bestow more care on the sanatory condition of the poor, were it only for sake of the health and comfort of the community at large.

Should ophthalmia prevail extensively, it would be necessary to observe precautions similar to those employed in the army, in hospitals, ships, &c., where patients labouring under this disease are separated from all others, and even those who are still free from it are regularly inspected, in order that the first

appearance of the disease may be observed. Excessive crowding of men together, especially in their dormitories, must also be avoided, as this of itself appears very much to promote the contagious power and spread of the disease.

The treatment must vary with the degree of violence of the disease. In most cases blood must be abstracted. Some writers, as Veitch, Lawrence, and Walker, insist upon the necessity for copious general as well as local bleeding. Others, as Edmonston, Mackenzie, and Jacob, place much less reliance upon this plan, and recommend, *one* full blood-letting, and subsequent local depletions, by cupping on the temples, and by the application of from twenty to thirty leeches over the cheek-bone and temple. As to my own opinion, it is, that both classes of practitioners are too prone to the abstraction of blood. In many cases, no doubt, this must be done to some extent, but its efficacy is much overrated; while constitutional treatment, the use of purgatives and emetics, though not altogether neglected, is not sufficiently relied upon. Astringent applications are of the greatest service when of the right kind, and applied at the proper time; but upon these points, as well as most others connected with the treatment of this disease, there is great diversity of opinion. Astringents should never be applied when they increase the inflammation, but should be reserved until after the disease has been somewhat subdued, for the purpose of giving tone to the distended and weakened vessels.

When at Prague, I visited the two hospitals; that of Misericordia, where I saw several cases of purulent ophthalmia, and observed that *lapis divinus* (a preparation of acetate of copper, alum, and camphor, and occasionally opium,) was used externally in this disease in the form of solution, powder, and ointment; and I was informed by the intelligent physician to the hospital, Dr. Blayina, that it was a very valuable remedy, which I have since practically found it to be, having employed it in many cases with great success. I afterwards visited the general hospital there, where I saw thirty-seven cases of diseases of the eye; and M. R. T. Trovisor, the apothecary, was kind enough to give me the formula for the lapis divinus*. At the hospitals

* ℞ Cupri acetatis, aluminis sulphatis, camphoræ, āā ʒj. Misce, fiat pulvis. There is a preparation in the French Pharmacopœia somewhat similar, but the sulphate of copper is used instead of the acetate.

℞ Lapidis divini gr. xij.; aquæ destillatæ ʒss. Fiat solutio; adde liquoris plumbi diacetatis *m.* viij.; tinct. opii. *m.* xx. M. instillentiæ omni mane guttæ ij. vel iij. inter palpebras.

at Vienna, Munich, and Mannheim, which I also visited, a favorite remedy for ophthalmia appeared to be the *aqua amygdalæ amaræ*. The acetate of lead, so much in use in this country, is but little employed in Germany, where, I may state, that much less reliance is placed upon external than upon internal remedies; and that mild and constitutional modes of treatment are preferred to those more vigorous or rather violent means which were so much in vogue in this country a few years ago, but which, I am happy to say, are going out of fashion even here*. The waters at Wisbaden are used for steaming the eyes in cases of ophthalmia; and this application is much esteemed by some German practitioners, although I cannot say that I should expect any advantage from its use. When at Wisbaden I was shewn an apparatus for this purpose by Baron Von Weigel and Professor Otto. Rust employs an ointment composed as follows, as a topical application to the eyelids; and as these are always involved in the disease, it cannot fail to be useful: viz. Hydrarg. oxydi rubri gr. iv.; olei cacao ʒij.; acetatis plumbi, tincturæ opii, āā ʒss.; misce, fiat unguentum. A soothing collyrium may be prepared by adding two drachms of the mucilage of quince-seeds to two ounces of rose-water†. I have myself found the liquor ammoniæ acetatis diluted with opium an excellent external application‡. It is also very useful in the peculiar ophthalmia with which children of a scrofulous habit of body are affected. The symptoms of this complaint are, considerable swelling and discoloration of the eyelids, with inability to bear exposure to the light, and constant effusion of scalding tears. The membrane lining the eyelids is more frequently the seat of the disease, but it occasionally extends to the eyeball, and produces specks and minute ulcers. The Meibomian glands are almost always affected. It is essentially a constitutional complaint, and is to be cured by remedies which will improve the general health. Iodine, in its various forms, as recommended by M. Lugol, is a most valuable remedy in the treatment of this obstinate disease, both as an internal and

* In reality they carry this plan sometimes too far, for I have observed that in cases of inflammation, which might be cured at once by a moderate abstraction of blood in the neighbourhood of the eye, they content themselves with applying cold lotions, which of course is inadequate to produce the desired effect. Still, there can be little doubt that the contrary extreme, too often practised in this country, is the greater evil, for it not unfrequently occasions total loss of sight.

† This is to be injected with the aid of an eye-syringe.

‡ ℞ Liquoris ammoniæ acetatis ʒss.; vini opii ʒj.-ij.; aquæ rosæ ʒiij.; aquæ destillatæ ʒiij. Misce, fiat collyrium: sæpe in die utendum.

external medicine. It may be administered in the form of mixture, so as to give about one sixth of a grain twice or thrice a day; an anodyne of hyoscyamus at night is occasionally useful. Payan, of Aix, strongly recommends the use of the hydrochloride of barytes. He prescribes two grains (gradually increased to ten), dissolved in half an ounce of syrup and three ounces of distilled water; of this, a table-spoonful to be taken every two or three hours, so that the whole mixture be given in the course of the day.

As an application to the eyelids, the following has been found of service at the Hôpital des Enfans at Paris: ℞ Zinci oxydi gr. xv.; hydrargyri chloridi gr. xij.; camphoræ gr. viij.; butyri recentis ʒ ij.; catechu ʒ ss. Misce. A very small quantity of this is applied to the edges of the eyelids every second or third night at bed-time.

When at Berlin I visited the Charité-Heilanstalt, where Dr. C. Kluge, Physician to the king of Prussia, and director of the hospital, shewed me great civility, and kindly presented me with the daily report, containing the names and number of the patients, the diseases, cases, and treatment. I afterwards visited the General Hospital, in company with Dr. Angelstein, Dr. Böhm (who has paid much attention to diseases of the eye and ear), and M. Sägert, director of the Deaf and Dumb Institution.

Staphyloma (German, *Traubenartiges, Staphylom;* French, *Staphylome*). This disease consists, as the name implies, of a tumour projecting from the eye, of the shape of a grape (σταφυλή). This tumour consists of an enlargement of the cornea, which generally becomes more or less opaque. The affection results from severe inflammation of the globe, involving the iris. When the whole of the cornea is affected, sight is irrecoverably lost; and, if the projection be considerable, its pressure upon the eyelids is apt to give rise to frequent attacks of inflammation, which are only to be prevented by the removal of the tumour, which, by a skilful oculist, is an operation unattended with danger. Sometimes, however, by the use of antiphlogistic treatment, or by puncturing the cornea with a cataract-needle, and thus letting the aqueous humour escape, the tumour is permanently diminished in size*.

* At the General Hospital at Hamburgh I saw a case of staphyloma which had been operated upon a few days before, and was doing well. This

When at Leipsic, on visiting the Ophthalmic Infirmary, I saw several cases of staphyloma, and was shewn a knife, invented by the director of the hospital, Dr. Ritterick, which seemed to be the best adapted for the purpose I ever saw, one of which I procured. Unfortunately for me, Dr. Ritterick was in the country; but every attention and civility were rendered to me by Dr. H. Clarus, Dr. Winter, and Dr. J. G. Wilhelme, who shewed me the cases in the hospital, and gave me every information respecting their treatment. I saw there a variety of new instruments, several of which I afterwards obtained at Berlin. I also became acquainted with Dr. Lincke, who has paid great attention to the diseases of the eye and ear. He kindly presented me with a copy of his work, called "Tractatus de Fungo Medullari Oculi," and gave me much useful information respecting the diseases of the eye, of which I shall avail myself in a forthcoming publication. .

Iritis (German, *Regenbogenhautentzündung;* French, *Inflammation de l'Iris*) is an inflammatory affection of the iris, which was not known until it was described by Schmidt. It may be divided into idiopathic, syphilitic, and arthritic iritis, besides several modifications. The idiopathic is that which occurs as a primary disease; the second is sufficiently distinguished by its name; and the third occurs in persons of a gouty constitution.

The principal symptoms of the first kind of iritis are the contraction and alteration of the form of the pupil, and a change in the colour of the iris, followed by the effusion of lymph into the pupil, which interrupts vision, and sometimes wholly destroys it for a time. This disease frequently succeeds unskilful surgical operations on the eye, particularly those for cataract.

Iritis is to be treated on the same principles as inflammation in general; but it is seldom that any but a very moderate general bleeding is requisite. Four or six ounces of blood should be taken, and this, if necessary, is to be repeated: five or six leeches may be applied to the forehead, and a smart purgative administered. When there has been an effusion of lymph, every means should be resorted to for the purpose of promoting its absorption. The preparations of mercury may be safely relied

was pointed out to me by Dr. Fricke, the principal director of the hospital, with whom I made the morning visit, accompanied by Dr. Calmann and Dr. Hollmann. This hospital, like those of Vienna, Dresden, Munich, Leipsic, &c. is in a most healthy situation.

on for this purpose*. Calomel in small doses, combined with opium, is to be given internally, in conjunction with tonic medicines, as the calamus aromaticus, bark, &c. Frictions once a day, over the eyebrows, with mercurial ointment, containing a portion of opium or belladonna, contribute greatly to the absorption of the lymph.

The earliest symptom of syphilitic iritis is a pale redness all round the cornea; the redness is of a peculiar tint, being brownish, something like the colour of cinnamon. This disease is generally attended with a very severe pain felt in that part of the cranium immediately above the eyebrow, beginning regularly in the evening, and lasting till five or six in the morning. It is in vain to hope to cure this disease unless the constitutional malady be overcome; the chief object in view, as to the local disorder, being to prevent those regular nightly attacks of pain, which are invariably followed by an aggravation of all the symptoms. This is effectually done by rubbing well in over the eyebrow a small quantity of mercurial ointment combined with opium, a short time before the pain is expected to come on. Even when syphilitic iritis terminates in the most favourable manner, the eye for a long time afterwards is peculiarly sensitive of the influence of air and moisture, and must be carefully guarded against all variations of temperature, especially night air.

The arthritic or gouty variety of iritis differs considerably, both in its symptoms and results, from the other two. There is no effusion of lymph; the vitreous humour and the crystalline lens become affected, and lose their transparency. The pain in this disease is often so acute as to make the patient writhe under it. This is the most intractable of all the varieties of iritis; and its proper treatment is still doubtful, arising from our ignorance of the nature and cure of gout itself. My father, Dr. Curtis, used to employ cicuta with the extractum lactuci, combined with hyoscyamus, which I have also used with advantage, requiring at the same time strict attention to dietetic rules†. Bleeding to a moderate extent is generally useful, and

* ℞ Pil. hydrarg. 3j.; opii pulv. gr. iv. M. ft. pil. no. xij.: una omni nocte horâ somni sumenda.

† My friend Dr. Tattersall, considering that gouty iritis often depends upon gastric irritation, has been accustomed to prescribe the following formula, for the purpose of allaying irritation, correcting acidity of stomach, and acting gently on the bowels:

℞ Liq. potassæ 3ss.; infus. rhei 3x.; ammoniæ carbon. gr. iv.; mist. acaciæ 3iss.; tinct. humuli 3j. M. ft. haustus, sextis horis sumend.

the bowels should be kept gently open; but particular attention is to be paid to preventing the attacks of pain. This is best done by friction over the eyebrow and forehead with an anodyne liniment*. All the causes which bring on an attack, such as cold draughts of air, strong heat, violent passions, &c., should be carefully avoided. But it too often happens that, the constitutional disorder being incurable, vision is sooner or later destroyed.

Professor Ammon, of Dresden, who is director to the blind hospital in that city, and was kind enough to conduct me over it, and point out the various interesting cases it contained, has paid great attention to iritis, and has published the results of his researches in a treatise, for which he received a gold medal from the Society of Practical Medicine at Paris; and a copy of which, as well as of his treatise "De Physiologia Tenotomiæ," he kindly presented to me on my visit to Dresden. In that work, speaking of the treatment of arthritic iritis, he recommends, in the first instance, the abstraction of blood, for which, however, must be sometimes substituted the application of leeches or cupping glasses to the nape of the neck; and he specially warns his readers against letting the time for antiphlogistic measures pass by unheeded, as much mischief will ensue. Next to the loss of blood ranks a free administration of the protochloride of mercury: but, in irritable subjects, recourse must be had to gentle diaphoretics in lieu thereof. Alterative medicines, such as antimonials and mercurials, are indicated when the inflammation is decreasing, more especially the bichloride of mercury, aconite, belladonna, cicuta, guaiacum, enega, oil of turpentine, dulcamara, and sarsaparilla in the form of Zittmann's decoction. Von Ammon says he has often cured cases of hypertrophy, accompanied by synezis, with them, more especially with the bichloride of mercury, or Zittmann's decoction. The patient must at the same time abstain from the use of delicacies, from spirits, from acid, farinaceous, and fat articles of diet, and from excesses; he must also avoid the vicissitudes of the weather, should breathe a pure warm air, and take diligent and moderate bodily exercise. Colchicum, combined with an anodyne, as in the following prescription, will be found very service-

* ℞ Sp. ammon. comp., aq. destill. āā ℥j.; tinct. opii ℥ss. M. ft. linimentum, bis die applicandum.

able, but it must be carefully watched, so as not to exhaust the patient's strength: ℞ Extracti aceti colchici gr. $\frac{1}{3}$; sodæ exsiccatæ gr. i.; extracti hyoscyami, extracti conii, āā gr. iv. M. fiat pil. ij.: cap. una quartis vel sextis horis. Occasionally tonics, with or without ammonia, are indicated. ℞ Corticis Peruviani regii contusi, ligni quassiæ concisi, āā ʒ iij.; aquæ fontanæ frigidæ, ℥ xij. Macerentur, sæpius agitando: cola et adde syrupi cort. aurant. ℥ j. Misce. The sixth part to be taken three times a day. If ammonia be required, half a drachm of the carbonate may be added to the above mixture. The last-named remedies are used in the German hospitals.

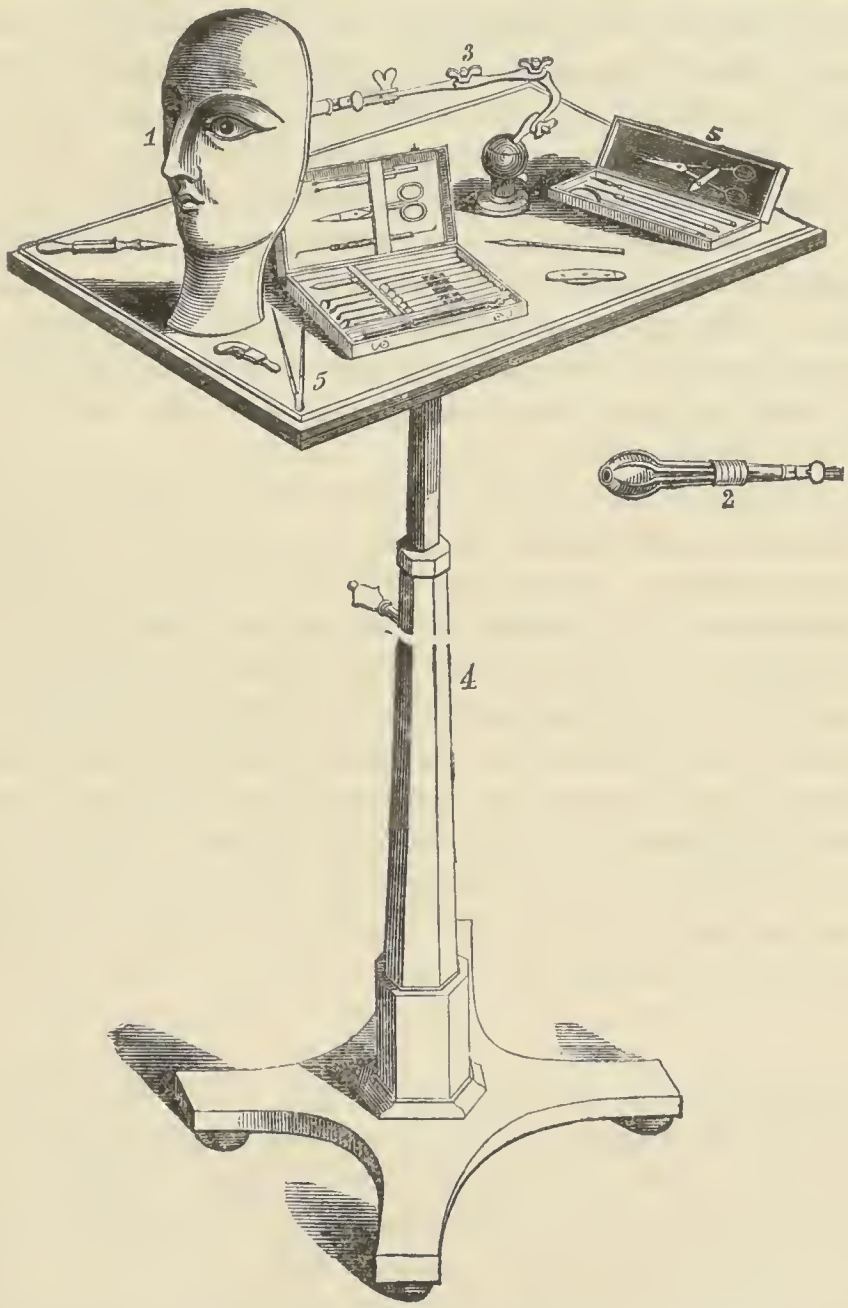
Cataract (German, *der graue Staar;* French, *Cataracte*) is a disease which affects either the crystalline lens, the fluid surrounding it, or the membrane containing it, and consists in opacity or cloudiness of those parts of the eye. Such defects are not uncommon even in infancy; but they are most common in workmen exposed to much heat, as forgemen, glass-blowers, and blacksmiths: they occur, also, in persons addicted to strong liquors. Cataract is sometimes occasioned by a violent blow near or upon the eye. The most common causes of cataract may, therefore, be summed up as follows: old age, external injuries, hereditary predisposition, exposure to intense heat, intemperance, indigestion, gout, sudden exposure to cold, and imprudences of various descriptions.

The only mode of treatment that has hitherto been extensively adopted is by an operation, *i. e.* either by extraction, couching, or breaking up the lens and pushing the divided pieces into the anterior chamber, where they are dissolved in the course of time. These operations are fully described in my last Treatise on Diseases of the Eye, as well as the means for curing incipient cataract without an operation, several cases of which will be found in that work. The use of the knife, though sometimes successful and necessary, has, nevertheless, prevailed far too much, to the exclusion of those means which have, in my experience, been proved capable of dissipating the opacity without resorting to an operation, which, even under the most favourable circumstances, is dangerous, and apt to give rise to a high state of inflammation. To such a degree has this been carried, that some practitioners have recommended, that when a cataract is forming, we should wait *until it is fit to be operated upon*,

instead of at once adopting every means in our power to prevent it ever becoming necessary to operate at all. In all cases of incipient cataract I recommend an occasional moderate abstraction of blood from behind the ears, and the application of a small blister to the nape of the neck or behind the ears, which should be kept open by means of the savine cerate. Alteratives and aperients may be given, and sedative lotions, together with warm fomentations of poppies applied to the eye. Attempts have been made at various times by medical men, both in England and on the Continent, to cure incipient cataract without an operation, with varying success. The means I have already indicated are those by which the low degree of inflammation producing the opacity may be best combated; but when the disease is rather more advanced, more active measures are occasionally to be had recourse to. Counteraction, by dry cupping between the shoulders, or on parts of the body further removed from the seat of the disease, and the application of a strong ammoniacal liniment to the sinciput, so as to cause a small blister or ulcer, which must be kept open for some time by the continued use of the same stimulants, have been tried very extensively, and with advantage. Internal remedies for improving the general health, with strict attention to diet, are likewise very necessary. The following is the formula for the ammoniacal liniment, which is inserted in the French Pharmacopœia, and is much used in France: ℞ Axungiæ porcini ʒ viiss.; olei amygdalæ dulcis ʒ iss.; liquoris ammoniæ caustici ʒ v. M. fiat linimentum, fronti africandum. Or the following, prescribed by Hufeland, may be used: ℞ Unguenti althææ ℥ ss.; fellis tauri recentis, saponis medicati, āā ʒ iss.; petrolei ammonii carboniei pyro-oleosi, āā ʒ j.; camphoræ ʒ ss. M. fiat unguentum. By these means much good may be done, and a cure effected in incipient cases of cataract; but when the disease is confirmed, and the patient is old and weak, neither this nor any other plan can be expected to do much good; and in these cases an operation should always be avoided, especially if the cataract affects only one eye.

During my last visit to Paris, I attended the clinique of M. Velpeau, to whom I was introduced. I saw two cases of cataract in the wards, which had been operated on, and were going on very successfully. I was particularly pleased at the very early hour at which the visit is paid—about eight in the morning—a very desirable thing both for patients and pupils.

M. Jäger, of Vienna, the celebrated oculist, has recently invented a very admirable instrument, called by him the Phantom, one of which I obtained when at Berlin of M. Kittell, the well-known surgical instrument maker, and an engraving of which I subjoin. The object of it is to enable the student and



The Plate shews a fixed mask (1) with a vacant space representing the orbit, against which the eye of a dead subject, or one obtained from any animal, can be applied, secured within the blades of the spring-holder (2), and so placed that any operation can be performed in the same manner as on a living patient. The joints, ball-and-socket (3), and the table and pillars (4), enable the eye to be presented in the proper direction, and the Phantom to be adjusted to a convenient height. 5, 5, are cases of instruments.

medical practitioner, to acquire the habit of operating readily on the human eye, not only for the removal of cataract, but for all other operations which may be rendered necessary by disease, and require manual dexterity. M. Jäger has thus reduced operations upon the eye to a system as sure and as accurate as any employed in acquiring any other accomplishment in which manual dexterity is required; the pupils thus trained gain a degree of confidence which of itself almost precludes the possibility of failure in the merely operative department. I regret that I did not see Dr. Jäger when I was in Vienna, having a letter of introduction to him: he was then gone to Hanover, to perform an operation on the Crown Prince.

I have lately made an improvement in this instrument, by which two eyes can be presented at once. They are held *in situ* by a double spring apparatus, doing away with the necessity for the ball-and-socket joint.

When visiting the Ophthalmic Hospital at Leipsic, which is in a most airy and healthy situation, Dr. Hillman Clarus and Dr. Winter shewed me this instrument.

The Phantom is there used for the purpose already indicated, being employed in teaching the students the mode of operating on the eye, in which it is found a most valuable aid; and I have no doubt it will ultimately be used at all the ophthalmic hospitals in Great Britain and on the Continent, and will render inapplicable the remark formerly made by Wenzel, a well-known German oculist, that a tyro must take out a hatful of eyes before he can put one in; or, in other words, must destroy a hundred eyes before he can cure one.

Amaurosis (German, *Schwarzer Staar;* French, *Amaurose*) is a functional disorder of the eye, which is sometimes called gutta serena. Among the most frequent known causes are, the pressure of tumours upon the optic nerve; over-exertion of the sight, and exposure of it to a bright light, as is often the case with naval officers and astronomers; contusions of the head; long-continued occupations by candlelight; errors in diet, giving rise to indigestion; the too free use of tobacco and spirituous liquors; strong mental emotions of any kind; and all other causes which predispose to nervous and paralytic affections, the same as in nervous deafness.

In slight or incipient cases of amaurosis, specks are seen flitting before the eyes during the day, and luminous spots or flashes of light are perceived in the dark: in other cases the nerves of the eye become quite insensible, and total blindness ensues.

In the treatment of amaurosis, we must take into account the exciting causes of the disease, and adapt our remedies accordingly. If the disease attacks the old and infirm, it is rare that a cure can be effected. If it arise from plethora, or any derangement of the digestive functions, the complaint is generally curable, and always admits of alleviation by the applications known to be efficacious in such states of the system. Bleeding is often serviceable, but copious abstractions of blood have sometimes caused total deprivation of sight, and have even occasioned death. A case of this kind occurred at the Dispensary, in the person of a poor woman, who applied for relief for deafness, occasioned by excessive bleeding, which had also destroyed her eyesight. This is analogous to the amaurosis caused by long suckling, of which Dr. Ramsbotham used to mention an instance when I attended his lectures on midwifery many years ago.

As in nervous deafness, so in amaurosis, much depends upon the patient himself, who ought particularly to attend to his general health, breathe a pure air, take much out-door exercise, live on plain but nutritious food, and be cautious in using the affected organ. Especially he should attend to the state of his bowels, with which the organs of sight are so intimately connected.

Amaurosis is frequently connected with deafness. Dr. Carus of Dresden, physician to the King of Saxony, and Dr. Böhm of Berlin, informed me that they had often met with such cases. Mr. Saunders also mentions the same fact, and states that he had sometimes cured amaurosis by the remedies which he employed for nervous deafness, a circumstance which has repeatedly occurred in my own practice; in two cases of deafness which I attended at Vienna, and one at Berlin, amaurosis also was present, which was the fact also in two cases of deafness which I lately attended at Paris. When at the General Hospital at Prague, I was shewn a case of amaurosis, attended with paralysis of the left side; the patient was a young woman, who expressed a great desire to live, but both the physicians seemed to think her case was hopeless: I, however, recommended that they should try the warm bath and stimulants.

I have usefully employed dry cupping on the nape of the neck, and between the shoulders, when combined with other

remedies. Some Freneh surgeons apply the glasses on the hips and thighs, when, as a symptom of the disease, the eatamenia are not in a healthy state.

The internal administration of *arnica montana*, of *imperatoria*, and of *cesarum nigrarum*, is had reeourse to in the treatment of this disease at several of the foreign hospitals; and mueh advantage is found to result from their employment*.

As an external rubefacient and eounter-irritant, the ammoniaeal liniment mentioned in page 26, rubbed on the forehead until a small ulcer is produeed, may be employed oeeasionally with advantage in those cases of amaurosis whieh have been eaused by over-exertion of the eye, exposure to an intense light, or by nervous exhaustion; but it eannot be of any service where the amaurosis is eaused by organie disease.

Cancer of the Eye (German, *Krebs des Augen;* French, *Cancer de l'Œil*). The nature of caneer is still unknown, and hence all means short of the total extirpation of the affected part hitherto employed have failed to arrest its slow yet steady, and

* ℞ Florum arnicæ ʒij.: infunde aquæ fervidæ q. s. ad colat. ℥vj.: adde gummi mimosæ ʒij.; syrupi aurantii ℥j. Misce, fiat mistura. Sumat cochl. iij. bis die.

℞ Florum arnicæ ℥ss.: infunde aquæ fervidæ q. s. ad colat ℥vj.: refrigerat: adde liquoris ammonii succinici ʒij.; ætheris sulphurici ʒj. Misce, fiat mistura.

℞ Radicis arnicæ, radicis calumbo, āā ʒij.: corticis cascarillæ ʒiij.: infunde aquæ fervidæ q. s. ad colat ℥vij.: adde syrupi cort. aurant. ℥j. Misce, fiat mistura.

℞ Radicis arnicæ ℥ss.: infunde aquæ fervidæ q. s. ad colat ℥viij.: digera per horam quadrantem: adde pulveris radicis salep. ʒj.; tinct. opii crocat. ♏j.; syrupi cort. aurant. ℥j. Misce.

℞ Pulveris radicis imperatoriæ, pulv. sennæ, pulv. corticis ligni sassafras., pulv. bacc. junip. ℥ss.; pulv. seminis anisi ʒij.; mellis despumati q. s. Misce, fiat electuarium.

℞ Strychniæ gr. j.; tinct. aurantii ℥j. Solve.

℞ Strychniæ gr. ij.; aceti ʒij.; aquæ destillatæ ℥iss. Solve, fiat collyrium.

℞ Pil. galbani comp. ʒiss.; pil. aloes cum myrrhâ ʒss. Contunde bene, et divide in pil. xxiv.: capiat æger iij. omni nocte.

℞ Valeriani radicis ℥ss.; aquæ fervid. ℥viij. Fiat infusum et cola.

℞ Infusi valeriani, ut supra, ℥viij.; tinct. cinchonæ comp., tinct. calumbæ, āā ℥ss.; syrupi aurantii ℥ss. Capiat coch. magn. iij. bis die.

℞ Liq. ammon. caust., tinct. castor. æthereæ, āā ʒij. To be used externally, in frictions on the upper eyelid and eyebrow.

℞ Spiritûs rorismarini ʒviij.; spiritûs fioraventi ʒij.; ætheris acetici ʒj. M. fiat embrocatio, fronti africandum.

too often fatal progress. Accordingly, when cancer once attacks the eyeball, the loss of the eye is inevitable, and all that the oculist can do is to prevent the spreading of the disease to still more vital parts; death has repeatedly been averted by extirpating the eyeball, together with the lachrymal gland, where indeed the malady often originates; and this measure should therefore never be delayed after it is once certain that the eyeball is involved in the disease, since, by so doing, and losing time in the application of remedies which have repeatedly failed, we may perhaps allow the malady to extend its ravages so far as to render the preservation even of life impossible.

Unlike other cases of cancer, which seldom occur till middle age, cancer of the eye, or at least a disease closely resembling it, is most common under the age of twelve. Its causes are seldom assignable, but it not unfrequently commences in the form of a wart upon or near the eyelids, which, being picked off or lacerated, leaves a raw surface exposed to the irritation of the tears, and apt to spread by ulceration. It slowly consumes the skin and muscles, destroying the lid, and even great part of the cheek, and finally entering the orbit, it seizes upon the eye itself.

In other cases, the origin of the disease may be an encysted tumour, which, being left to burst on the inside, or even on the outside of the eyelid, becomes irritated, and assumes, after a time, the ulcerous or cancerous action. Such a tumour immediately under the skin, picked with the finger, sometimes a mere scratch on the edge of the eyelid, a blow, or the irritation of an old cicatrix, such as that which results from small-pox, may one and all give rise to this fearful disease; and all these things, which are generally considered too unimportant to deserve a moment's attention, are really worthy of instant and serious consideration.

It is probable, that were proper means taken in the incipient stages of this disease to extirpate the affected parts, its progress might be stopped at the expense of a slight disfigurement, although the operation might even then, from the peculiar situation of the parts, be difficult and hazardous. But, as the disease is almost imperceptible in its origin, exceedingly gradual in its advance, and at first accompanied with scarcely any pain, it is generally left to take its own course, or treated probably by the unskilful in such a way as to aggravate it; and hence the

majority of cases that come under medical treatment are of long standing and considerable extent.

Fistula Lacrymalis.—Fistula lacrymalis is a very common and troublesome disease among persons of a strumous habit of body. It is caused by a chronic inflammation of the sac in which the tears are contained, by which the lining membrane becomes swollen, and the duct leading into the nose is blocked up. A higher degree of inflammation necessarily follows; the eye sympathises, and the conjunctiva partakes of the inflammation; the skin over the sac becomes inflamed, ulcerates, and its contents are discharged upon the cheek. I have frequently cured incipient cases by means of a solution of opium in vinegar dropped into the eye, and an astringent collyrium; but when the nasal duct is completely closed, the disease can seldom be removed without an operation, which may be thus performed. Draw the eyelids outwards, so as to stretch the tendon of the orbicularis, beneath which the lacrymal sac will be found. A fair incision should be made into this, and a probe passed through the nasal duct into the nose. If, however, that cannot be effected, a passage must be made through the os unguis, and a style passed through, and retained in its place for a considerable time, until the edges of the passage thus made become indurated, and remain open.

Dupuytren, whose museum I saw when last in Paris, recommended the revival of the old plan of passing a gold or silver tube, of a proper shape and size to fit the lacrymal duct, so that it shall neither fall through into the nose, nor, by its being too large, excite inflammation, and require to be removed. Cases are on record where such a tube has been worn for years, apparently with beneficial results, all the annoying symptoms subsiding, and the tears flowing either through it, or by its side into the nose.

Dr. Mackenzie states, that in scrofulous cases the constitutional treatment consists, in a great measure, in regulating the patient's diet and manner of life. In weakly persons, whether scrofulous or not, the employment of the preparations of iron and cinchona will be found highly beneficial. When the prolongation of the disease depends on derangement of the digestive organs, it will be necessary to begin by restoring these to a healthy state. This will be best effected by small doses of pil. hydrarg. at bed-time, followed by a laxative in the morning, as has been recommended by Mr. Abernethy. I have known a smart dose of calomel and

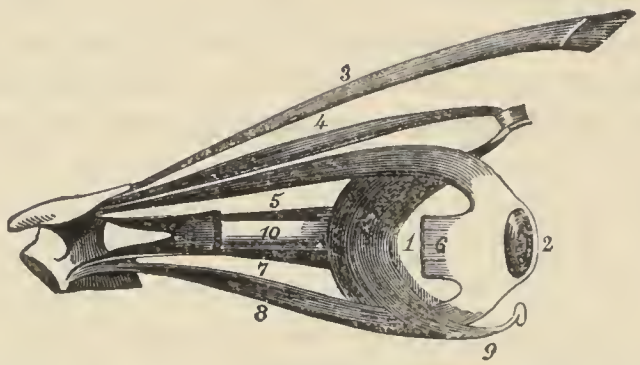
jalap remove all the symptoms, even when the sac was filled with matter; and in almost every case advantage will be reaped from country air and exercise. I have frequently found good effects produced by the use of the pulv. asarabaccæ compositus, used as snuff.

Mr. Cline, whose lectures on surgery I attended, and who was very successful in treating this complaint, used to recommend great caution on the part of the surgeon, and advised that he should fully satisfy himself of the nature of the malady before he attempted an operation.

Mrs. S., residing in the City, had for the last two years been troubled with fistula lacrymalis, which disturbed her rest, and in other ways caused her much annoyance. She had likewise an external tumour on the side of the nose, near the eye, which disfigured her very much. By means of the ung. potassi iiodidi, I succeeded in removing the tumour, and by the use of alteratives in diminishing the obstruction, but still the tears trickled over the cheek. Acting under the advice of a medical relation, she wished to have the operation performed, being assured by him that she would never get well without it. I appointed a day for this purpose, in consultation with my friend, Mr. Erasmus Wilson, of the Middlesex Hospital; but the lady was then so much better that the operation was deferred for a few days. She continued, however, to improve, and eventually a complete cure was effected without

having recourse to any other than constitutional treatment, to the great satisfaction of herself and family. I occasionally dropped tinct. opii between the eyelids, and gave her pulv. asari compositus, to use in the form of snuff. The foregoing engraving represents the appearance of my patient.

Strabismus, or Squint.—The eye is furnished with six muscles, which are attached to the sclerotic coat, and whose function is to move the eye-ball in various directions, and thus adjust the axis of vision, as circumstances may require. From various causes, which I will presently briefly enumerate, the relations of these muscles to one another are frequently disarranged, and they no longer act together in harmony; so that the eyeball is moved out of its natural position, giving rise to a repulsive appearance, and almost invariably, if of long standing, injurious to the functions of sight. In order to enable my readers to understand more clearly the nature of this affection, I subjoin an engraving, shewing the relative position of the various muscles which move the eye: the cut presents a temple-view of the right eye.



1. Globe of the Eye. 2. Cornea. 3. The levator palpebræ muscle. 4. The superior oblique muscle. 5. The superior rectus. 6. Part of the external rectus, exhibiting its two heads of origin. 7. The internal rectus, nearly hidden by 10. The optic nerve. 8. The inferior rectus. 9. The inferior oblique muscle.

Strabismus is either convergent, in which one or both of the eyes are drawn towards the inner canthus, and which is by far the most common species, or divergent, wherein the eyes are drawn in contrary directions. The muscles, on affections of which both of these kinds of strabismus chiefly depend, are the internal and external recti, but wherein they depart from the healthy state is still much disputed, almost every writer advancing a

different theory on the subject. There can be little doubt, however, that strabismus may arise from paralysis, atrophy, or hypertrophy of any one or more of the motor muscles; the power of which, thus becoming disproportioned to that of the antagonist muscles, they either overcome the latter, and draw the eye out of the natural position, or suffer the others to do so.

In a large class of cases strabismus can be distinctly referred to derangements of the sympathetic nervous system, more especially as connected with the digestive organs and dentition; and a great number are dependent on affections of the brain.

Many diseases of the eye itself induce strabismus. External violence of various descriptions often gives rise to temporary or permanent strabismus; which is sometimes also the result of a series of voluntary acts, which at last become habitual.

Strabismus may, in some cases, be traced to worms, strumous tubercles in the brain, and occasionally to fear, as well as to a vicious direction of the eyes. Painful affections of the mind sometimes give rise to squinting. A child has been known to squint for months after a violent fit of crying. A little boy awoke in the middle of the night on board a steam-boat; he was greatly alarmed, and soon after was observed to squint. In another boy, this affection appeared in consequence of forcibly bathing him in the sea, which was persevered in for some time, notwithstanding violent screams and other expressions of terror. I have recently heard of a singular corroboration of this statement in the person of a lady who had been operated on, and on the second day, having received some bad news, the squint returned.

Strabismus is very prevalent among all classes of society; and one reason of this is the circumstance that in general no attempts have been made to cure it when commencing, and when it might in most cases be easily removed.

This deformity has been recently made the subject of a surgical operation by Professor Dieffenbach of Berlin, who has since been followed by many surgeons, both on the Continent and in England. The mode of operating adopted by almost every surgeon differs in some particulars from that preferred by others, but the operation itself consists in dividing the tendon of the muscle, on the contraction of which the affection depends, close to its insertion in the sclerotic, and thus removing the stricture by which the eye is bound either inwards or outwards. When at Vienna, I saw M. Dieffenbach operate in three cases, when Dr. Zinc,

professor of the Orthopedie Institution, Dr. Hassinger, physieian to the Hungarian Guards at Vienna, and Dr. Fiseher, were also present. Each operation occupied but a very short time in its performanee. I met with great civility in this city from Dr. Charles de Schreibers, also from Dr. Gruber, the inventor of the illuminated auriscope, and Dr. Humel, with whom I visited the principal hospitals, where I saw several cases of ophthalmia. I afterwards went to the apotheke and laboratory, as I did at all the hospitals I visited, and was pleased to find that all the chemical preparations were made at the hospital, so that every reliance could be placed on their purity. I found there several new remedies in use, as well as others which have been long since expunged from our Pharmacopœia. At these hospitals, as well as at most of the others I saw in Germany, the visits of the medical officers are made much earlier in the day than is the case in this country ;—in this, their practice resembles that of the French.

Professor Dieffenbach informed me that he had performed the operation on four hundred cases in Berlin, and on twenty during his short stay at Vienna. I was much amused at the way in which he set about his operation : he took off his coat, and set to work in earnest. The patients walked home just the same as if they had had a tooth taken out. The after-treatment is completely antiphlogistic ; they go to bed for a few days ; the parts are kept wet with linen and cold water. I understand that Professor Dieffenbach intends visiting this country shortly, for the purpose of performing operations of various kinds. I hope he will meet with as much encouragement here as I did when I was on the Continent.

As Mr. Duffin truly remarks, " such, unfortunately, is the mania for this operation, that all who squint are deemed proper subjects for the test of surgical skill," and, as might be expected from such a state of things, it is often performed without any beneficial result whatever, and not unfrequently even aggravates the evils it was intended to remove, and induces others of a still more formidable character. Thus we read the candid confession of Mr. Calder, who gives us a long account of the case of a man who squinted with both eyes, but in whom the vision of the eye most affected " was *much better* than is generally met with in a squinting eye." In this case the internal and external recti museles of both eyes were divided one after another, and the final result is given by Mr. Calder as follows :—" When he looks at

me with his right eye, the left one becomes everted, so far as to be quite out of the axis of vision; and when he fixes his left eye upon me, the same thing takes place with the right eye; it likewise becomes improperly everted. The eyes, however, do not become so much turned outwards as they did before the external recti were divided; but if he attempts to fix both eyes on any object, he still *sees double!*"* Well might Mr. Calder say, "this is altogether a sad case."

I entirely concur with Mr. Bennet Lucas's judicious remarks, that "before proceeding to adopt any method of treatment, it is of the first importance that the causes upon which the strabismus depends be anxiously inquired into, and this more especially in children;" and that "the new operation is not applicable to every form of strabismus; innumerable cases present themselves where it is inadmissible, or which can be cured by milder measures."

The same writer gives us an illustration of the evils that may result from hastily and rashly performing the operation—the case of a person who applied to him to be operated upon for convergent strabismus, occasioned by opacities of the cornea. Mr. Lucas, with the concurrence of several professional men, refused to perform the operation, seeing that to do so would be to interfere with the wise provision of nature, which, by means of the deformity, secured the enjoyment of vision; but he adds, "the patient has since been operated upon elsewhere, and I had an opportunity some days since of seeing his eye straight and *useless.*"†

We have only to read the works of those who advocate the operation, to be convinced, that although it is in some cases productive of permanently beneficial results, yet that these are comparatively rare; and it is to be feared that the rage for the operation will divert attention from those constitutional remedies which in many cases afford the only means of effecting a cure. Mechanical means, such as strabismus-spectacles, are frequently efficacious in removing the deformity; and, as it has been truly observed, the operation, when really necessary, can be performed, at any time, so that there need be no hurry in attempting it. In fact, every means should first be tried; and as it is impossible in most cases of strabismus in early life, to ascertain *à priori*, with certainty, the causes of the affection, I therefore should not

* Practical Hints on Cure of Squinting by Operation, p. 95.

† Practical Treatise on the Cure of Squint, p. 55.

recommend the operation to be performed before the age of fifteen, nor upon old persons. The skill of the oculist will be best shewn in discriminating the cases fit for operating, and in curing the disease without resorting to the operation, as I have repeatedly succeeded in doing.

One reason why strabismus-spectacles are so little used and relied upon, is the fact that sufficient care has not hitherto been exercised in their manufacture: the holes are generally too large, and the spectacles rarely properly adjusted; in fact, they require much nicety and exactness in their formation, and adaptation to individual peculiarities. Some years ago I invented strabismus-spectacles, which are free from these defects, and have proved of great service in many cases which have come under my care.

When strabismus is occasioned by worms in young persons, I have found the following very efficacious:—℞ Fol. spigel. ʒ ss.; ferri sulphat. gr. viij.; aquæ fervid. q. s. ad colat. ʒ viij. A small teacupful to be taken every morning, fasting.

In other cases, in young persons, I have found it disappear under a generous diet, change of air, and small doses of quinine and bark. The following mixture I have found highly serviceable:—℞ Dec. cascar. ʒ vj.; quininæ gr. v.; sy. aur. ʒ ss. M. ft. mist.: sum. cochl. iij. bis. die.

In strabismus arising from cerebro-spinal and ganglionic affections, attended with abdominal irritation, I have given an active purgative, such as the pulv. jalapii comp., with success, afterwards administering gentle aperients, and attending to the dietetic regimen. I occasionally employ the following mixture:—℞ Ext. tarax. ʒ j.; inf. rhei ʒ ij.; mannæ opt. ʒ ij; tinct. sennæ c., tinct. rhei, āā ʒ ij. M. ft. mist.: sumat cochl. iij. pro re natâ. Or, ℞ Magnes. sulphat. ʒ ss.; potassæ sulphat. ʒ ij.; inf. sennæ tart. ʒ iv.; tinct. sen. ʒ ss. M. ft. mist.: sumat cochl. iiij. pro re natâ.

In the sixty-eighth volume of the Philosophical Transactions, Dr. Darwin has given an account of a very curious and confirmed case of squinting, with the method used for curing it. An extract of it, with the particulars of the case, may be found in Mr. George Adams's Essay on Vision.*

* The celebrated Dr. William Hunter, in his Lectures, observes that squinting may be cured, where only one eye is affected, by tying up the good eye till the patient has got the habit of directing the other properly. Buffon,

In cases of amaurosis complicated with strabismus, I do not think the operation can prove of any service, as there can be little doubt that the deformity is a consequence of the disease, which, being a spino-cerebral affection, must be treated as a nervous, not a surgical case. Nor should I venture to advise it when the defect occurs in a strumous constitution, or where there is reason to suspect a relaxation of the muscles of the eye.

Although the application of the operation for dividing muscles has been made but very recently to strabismus, yet it was previously employed for the removal of deformities affecting other parts of the body, resulting from a similar cause. Roonhuysen, Meekren, Tulpius, Blasius, and Ten Haaf, were among the first who divided the sterno-cleido-mastoideus muscle for the cure of wry-neck; but notwithstanding they were successful, the operation afterwards fell into desuetude. Thilenius again brought it into notice, and towards the end of the last century extended it to the division of the tendo Achillis, for the cure of talipes, in which he was followed by Michaelis and Delpech. Strohmeyer, a Hanoverian physician, afterwards performed these operations, having first informed himself, by repeated experiments on animals, of the laws which regulate the reunion of divided tendons. His example was followed by Professor Dieffenbach, of Berlin, who was the first who carried the operation a step further, and divided the muscles of the eye for the cure of strabismus. Professor Ammon instituted a series of experiments on horses, with respect to the division of tendons, and has published the result in a work entitled "De Tenotomiæ Physiologiâ," which I have already mentioned. His experiments were six in number; and from them we gather, that the first effect is the formation of a coagulum of blood closely covering the ends of the divided tendons, and adhering to them. In the course of a couple of days some appearances of coagulable lymph were observed, principally at the lower extremity of the tendon; these, in a day or two more, were much more evident, and the lymph adhering to either end of the tendon, had become conical and organized. The space between the divided parts was filled up by lymph. One of the horses was killed a month after the operation,

Reid, and Darwin, concur in recommending the patient to cover the good eye, as the more effectual and natural method of cure, as, by frequent use, the sight of the weak eye is strengthened, and acquires a habit of turning to the objects which the patient wishes to see, and the better eye, by losing something in this respect, facilitates greatly the cure.

when the eicatrix was found to be perfect, and there were no signs of adjacent inflammation; but the edges of the new tendinous mass, which was above an inch long, could be readily distinguished.

The limits of this work preclude the citation of numerous cases; but those who take an interest in the subject will find a large collection of them in my Treatise on the Eye, being cases which have been successfully treated by myself. I will, however, give a brief account of a few remarkable cases which have very recently come under my care, and in which the treatment was attended with success.

I was consulted a short time since by a young man, a banker's clerk, who was labouring under purulent ophthalmia, for the occurrence of which he could not assign any direct cause, unless it were that he caught it from a fellow clerk. Both eyes were affected, but the left one, in which the disease began, was the worse. The eyelids were very much swollen, and discoloured externally, and although the patient could separate them a little, yet there was much difficulty in doing so. The discharge was very abundant and offensive; the tears were hot and scalding, and there were other indications of high inflammatory excitement.

I advised him to withdraw from the duties of his office for the present, with the double view of relieving him from the stimulus of business, and of preventing the extension of infection among his brother *employés*. I then prescribed some aperient medicine, combined with a mild alterative, applied blisters behind the ears, and afterwards used a collyrium made with a solution of the lapis divinus, and a small quantity of the liquor opii sedativus. The good effects of this treatment were soon manifest—the swelling of the eyelids gradually diminished, the discharge was lessened daily, and he was enabled to resume his duties in the course of a few weeks.

Major N., a cavalry officer in the Bengal Army, was invalided, and came home from India with incipient cataract of both eyes. He was advised to wait until the cataracts were sufficiently ripe to be operated upon; but having consulted me, I determined to endeavour to prevent the necessity for operating at all. Accordingly, I directed a moderate abstraction of blood by leeches from behind the ears, and the application of a small blister to the nape of the neck. Alteratives and aperients were given; and as external applications, sedative lotions, and occasionally warm fomentations of poppies, were employed. After the chronic inflammation had

by these means been subdued, finding that he was in a very debilitated condition, I prescribed quinine, valerian, lactate of iron, and a generous diet, with moderate exercise in the open air.

Under this plan of treatment, his sight and strength improved rapidly; and having, in pursuance of my advice, gone into the country, where he lived quietly, and took horse exercise, he returned in a few months quite well—so much so, that, although when he first came to me he was scarcely able to see at all, and had to be guided, he was then capable of reading the smallest print. He had been very anxious about his own case, because both his mother and sister had had cataracts, and his mother had been operated upon, without receiving any relief.

Mr. E., a merchant, from intense application to business, such as much reading and writing, sitting up late at night, and taking little exercise, was attacked with amaurosis, affecting both eyes, and accompanied with all the usual symptoms, such as pain in the orbit, head-ache, indigestion, muscæ volitantes, objects indistinctly or partially seen, the irides somewhat contracted and sluggish, the pupils dull and the eyes heavy, the cornea wanting its brilliancy, &c. Previously to consulting me, he had lost a great deal of blood, and was very much lowered by antiphlogistic treatment, which, in such cases, is generally the reverse of advantageous. I prescribed for him arnica, combined with imperatorium, and citrate of iron. He adopted a more nourishing diet by my advice, went into the country, took plenty of exercise, and left off reading—his wife undertaking the task of reading to him. By these means he was, in a few months, restored to perfect sight and health.

Miss L., aged 32, in consequence of exposure to cold, when returning home from the Opera one night, in an open carriage, early last season, was attacked with severe ophthalmia, and before I saw her, had been under medical treatment for two months. The cornea and conjunctiva were much inflamed, the eyelids were tumefied, and vision was greatly impaired—there was also a profuse and very fetid discharge. As there was also great pain at night, I prescribed a fomentation of poppy-heads. As this did not relieve her, I scarified the conjunctiva of the eyelids with a lancet, and thus lessened the tumefaction. The ung. hydrarg. nit. dil. was applied to the palpebræ, and the eyes were kept moistened with aqua amygdal. amar. The lady got well in a few weeks, and her sight was perfectly restored.

Lady E., aged 42, who had had a large family, and had caught

cold after her last confinement, was troubled with great dimness of sight, so that she was unable to distinguish small objects. At the time she applied to me she was getting worse, and was greatly depressed in spirits, being fearful of losing her sight altogether; but what seemed to annoy her most, was that she was much troubled with muscæ volitantes,—a complaint which frequently attacks ladies of her age. I ordered a fomentation of camomile flowers, which was applied to the eyelids, and spirit of rosemary was rubbed on the forehead—the German oculists recommend Eau-de-Cologne. The digestive functions were also deranged, but by the use of the ordinary means they were restored to a healthy condition. Arnica and imperatorium, combined with valerianate of zinc, were given in this case with advantage, as the muscæ volitantes proceeded from debility: when they are occasioned by plethora and sanguineous congestion, I adopt the opposite plan of treatment—bleeding and the antiphlogistic regimen.

Her ladyship got quite well in a fortnight: when she first came to me I at once assured her that she would recover, which revived her spirits, and thus, as she herself said, half effected the cure.

I have thus, as far as my narrow limits will allow, given a brief description of the principal forms of disease to which the eye is liable, and of the best modes of treatment. But this is not a work of detail: those who wish to acquire a more accurate and minute acquaintance with the subject, will find what they need in my Treatise on the Eye; in my Map of its anatomy, and Chart of its diseases, with their seat, symptoms, causes, and treatment.

It will be seen from the foregoing remarks, that affections of the eye are seldom primary diseases, but the result of other maladies, and frequently of deeply seated constitutional derangements. Hence the intractable nature of not a few of the diseases of the eye, which we cannot expect to cure by merely local remedies, while the real seat of the disease is unknown or overlooked, or while that disease defies all the means hitherto employed to subdue it. In diseases of the eye, then, the point to which our attention should be first directed, is the *cause*, not the *cure*, of the affection: the latter cannot be attempted with safety until the former is known. The same fact points out the great importance of the adoption of sanatory measures, and of obedience to the laws of health, for the purpose of *preventing* these fearful diseases, and of

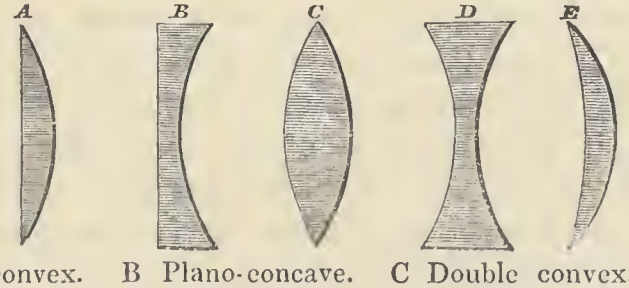
preserving the eye, as well as the rest of the organs of sense, in possession of all its functions unimpaired to old age. Especially it behoves parents, and the guardians of the young, to watch over the health of their charges, and to communicate to them, at an early period, as much knowledge of the laws of health, as may suffice to keep them from the continual infractions of those laws which they may unwittingly commit, and which are the cause of the greater part of the ill health which ruins the constitutions of so large a proportion of our population, and sends them to premature graves.

We now come to the subject of those artificial means which science has invented for the use of persons whose vision is defective or decayed.

Although the science of optics attracted the attention of philosophers at a very early period, having been written upon by Aristotle more than two thousand years ago,* and having been practically applied by the great geometer, Archimedes, not long after, yet the invention of spectacles is comparatively modern.

The earliest mention of artificial aid to sight occurs in the writings of Roger Bacon, who speaks of an instrument "useful to old men, and to those who have weak eyes; for they may see the smallest letters sufficiently magnified." M. Spoon, in his "Recherches Curieuses," fixes the date of the invention of spectacles between 1280 and 1311. This seems to be satisfactorily made out from a number of references to them in the writings of persons in the early part of the fourteenth century.

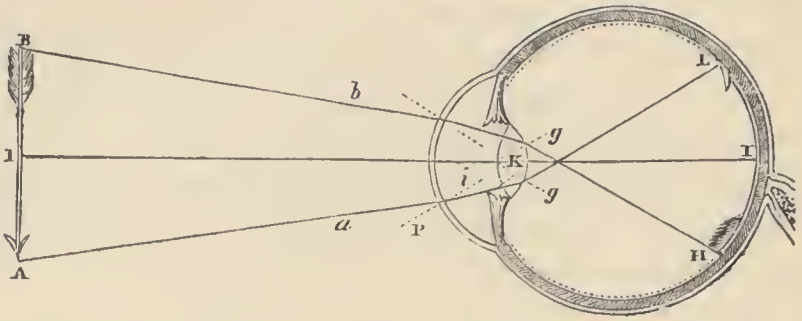
Glasses, or as they are technically called lenses, are of various kinds: the following are the chief varieties:—



A Plano-convex. B Plano-concave. C Double convex. D Double concave. F May be either concavo-convex when the concavity is greater than the convexity: or a meniscus, when the reverse is the case.

* Among the more celebrated subsequent writers on optics may be mentioned, Ptolemy, Roger Bacon, Kepler, Boyle, Harriot, Leibnitz, and lastly, Newton, whose grand discovery of the composition of white light has been the key to most subsequent discoveries in the science.

Before the reader can understand the mode in which spectacles correct the defects of vision, it will be necessary to explain how images are represented upon the retina in the healthy eye.



In this plate, which represents the figure and parts of the eye, an arrow is the object viewed; the lines shew in what direction its figure reflects itself on the organ of vision.

The ray A *a* that darts from the points of the arrow A B in passing from air to the transparent cornea and aqueous humour, passes from a less dense medium to one that is more dense: it must, therefore, be refracted in approaching the perpendicular; the superior ray B *b* does the same. The rays approach one another, and are collected in a less space in order to pass through the pupil.

In piercing the crystalline lens K, the rays are still more compacted by the same law. In going from the crystalline lens the rays pass to the vitreous humour, which is a less dense medium, and there ought to be refracted on receding from the perpendicular *g g*, but receding from these perpendiculars, which have a direction opposite to the former directions, the rays continue to approach each other, and are collected towards the axis of the eye, to the bottom of which they go to convey their impression, H I L. This impression is made in a reverse direction. The ray A *a* falls in L on the opposite side, and the B *b* passes on the other side H, because these cross one another conformably to what is seen in the experiment of the dark chamber. There is only the direct ray I K I which regularly follows the visual axis, and is not at all refracted, because it is perpendicular to the cornea and to the whole globe.

I will now explain those defective conditions of the eye, which, being permanent, require artificial aid. The most common of these are myopia, or short-sightedness; and presbyopia, or far-sightedness; both of which arise from defects in the refractive power of the eye.

In myopia, the cornea, or some other of the transparent media

of the eye, is too convex, and thus the rays of light, being too much refracted, are collected too soon, and brought together before they reach the retina, on which an indistinct image is impressed ; in order to remedy this evil, persons who are short-sighted, and do not use spectacles, are compelled to go nearer to any object they may wish to examine than is necessary for those whose eyes are more perfect. But by the use of a concave lens (B), which causes the rays to diverge before they reach the eye, this effect is counteracted ; and when the spectacles are properly suited to the eyes, the degree of concavity is exactly equal to the excess of convexity in the eye ; in which case the rays of light will come to a focus exactly upon the surface of the retina.

Presbyopia (so called from πρέσβυς, *an old man*, because this defect is observed in advancing years, and becomes greater as age increases,) arises from a condition of the eye, the reverse of that just explained as the cause of myopia : the refractive power of the eye is diminished, and consequently the rays of light are not sufficiently refracted, so that a focus is formed behind the retina ; and thus, while the presbyopic can see minute objects at a distance with great distinctness, they are unable to distinguish those which are near to them ; hence we see such persons holding a book at arm's-length in order to be able to read it, while those who are myopic, on the contrary, hold it close to the face.

This defect is remedied by spectacles formed of convex lenses (A) which increase the deficient refracting power of the eye, and thus bring the rays of light to a focus sooner than would otherwise be the case.

It is evident, however, that as the degrees of short or long-sightedness are very numerous, so the degree of concavity or convexity in spectacles must also vary ; and it can only be ascertained by trial what particular kind of spectacles will suit the sight in each instance. Those spectacles should be selected which enable the person to see distinctly at the proper distance, about ten or twelve inches, without fatiguing the eye on being worn for a considerable time ; this restriction would probably compel him to choose a pair which would not enable him to see so clearly as others of higher power, which, however, could not be long worn without fatiguing the eyes, and would, therefore, if frequently used, greatly injure them. Spectacles, even when best adapted to the sight, should not be worn constantly, or even generally, but only when needed for some particular purpose. If

this rule be adhered to, it will generally be found that the eye does not gradually require glasses of greater power, but remains in nearly the same state for a very long time.

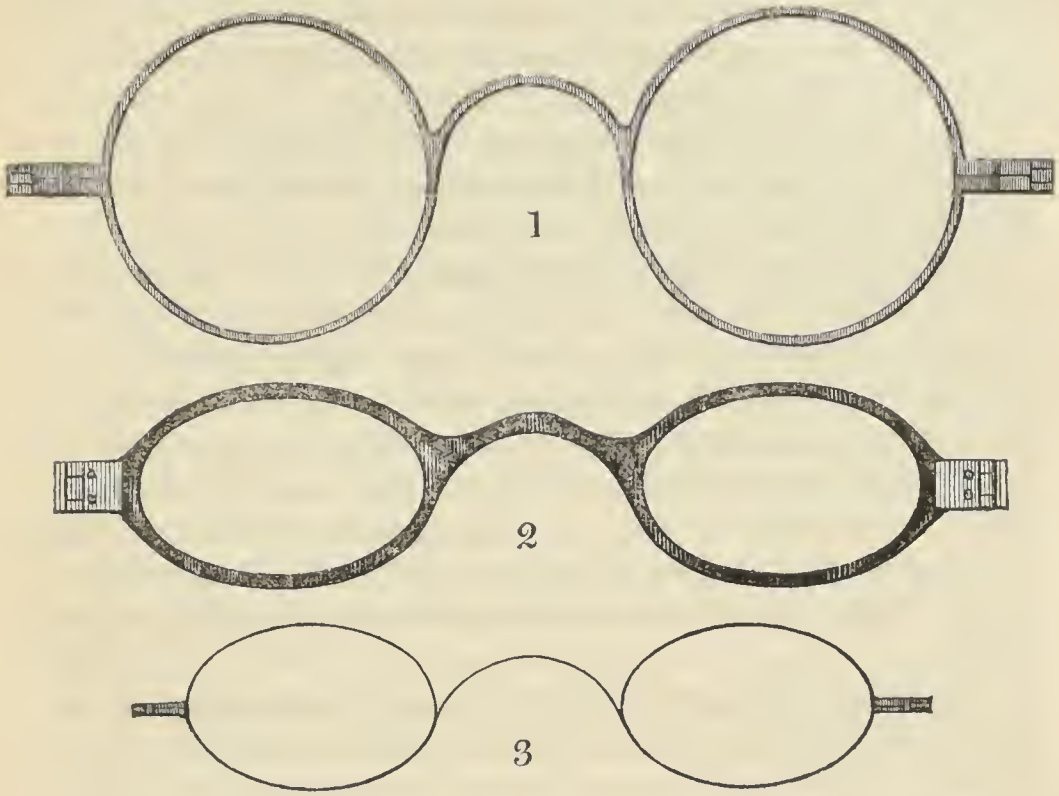
In general, persons begin to require artificial aid to sight between the ages of thirty-five and forty-five. This, however, is greatly influenced by the constitution, habits, and general health of each individual, and especially by the *degree of care which has been taken of the eyes*—some persons retaining the power of reading even the smallest print without glasses until a very advanced age, while others need them much earlier.

Even the shape and size of spectacles are matters of great importance; they should, as I several years ago stated in my work on the eye, be round and large, so that there may be no possibility of the eye looking against the frames, which is apt to produce muscæ volitantes, and other affections of the organ. There has been of late years a foolish practice of wearing spectacles merely for the sake of the supposed becoming appearance which they have, and not because the eyes need such assistance; and it is not surprising, therefore, that the *neatness* of the spectacles has become a matter of greater importance than any of their other qualities. Accordingly, oval spectacles, and of late, very small ones, have been all the rage, although this construction is the worst that can be imagined; a fact more appreciated in Germany than in this country. I noticed that the spectacles worn there were almost invariably large and round, in particular those used by medical and scientific persons.* Those who object to such spectacles on account of their appearance in the streets, might have one pair of serviceable glasses for use in-doors, and another for show when out of doors, as they would not then do the eyes so much harm as when reading, writing, &c. with them.

As might, perhaps, be expected, the ladies are the most determinedly opposed to large spectacles, which they seem to think makes them look old before their time, bestowing upon them the

* Mr. Dollond agrees with me in thinking that round spectacles are preferable to the oval-shaped, but says that they should not be too large, in which he is doubtless correct. Clergymen, barristers, editors of newspapers, clerks, and all who read or write much, who object to the round glasses, might easily put to the proof their superiority over the others, by putting on a pair of them after having been fatigued with their oval ones. It is a fact, that tailors, and other persons following similar occupations, cannot use small oval spectacles—a plain proof of the greater ease attending the use of round ones.

appearance of "grandmothers" before they can in reality claim the venerable title.



The above engraving represents—Figure 1. The large round spectacles. 2. The oval spectacles in general use. 3. The small oval spectacles.

One cause of the prevalence of small spectacles is to be found in the supposed interest of some opticians to prevent the use of any other kind. The reasons they allege for so doing would really be laughable, were not the injury thereby done rather too serious to be treated as a joke. Some of these gentlemen object to the large spectacles, because, forsooth, they would "cut into too much shell;"—others wish to know "what is to become of their old stock;"—and others, again, assert that far more small spectacles are sold than ever would be were larger ones worn. The shopman of one of them always recommends the small ones, but the master himself wears the large round ones, because "he finds them much more serviceable, and can see better with them." Whether the opticians are right or wrong as to their own interests in this matter I will not undertake to say, but certainly none of these reasons are likely to have much weight with the party chiefly concerned—the public.

Nearly all the celebrated writers on optics have strongly

advocated the use of large spectacles—it will be sufficient to mention Dr. Woollaston, who invented the round periscopic glasses. From personal communication with them, I know that these are the sentiments of the following distinguished medical gentlemen—Baron von Viegel, of Stockholm; Professor Otto, of Breslau; Dr. Böhm and Professor Dieffenbach, of Berlin; Dr. Clarus, of Leipzig; as well as of many eminent physicians and the principal opticians of London and Paris.

His late Majesty George the Fourth was always particularly careful of his eyes: and it is by no means improbable that the afflicting blindness of his revered father during several of the closing years of his life, was often present to his mind, and was a main cause of his care in this respect. The spectacles he used for viewing distant objects were No. 6; for nearer objects, No. 2; but it is very singular that, for reading, he wore only preservers of 36 inches focus; and in this he certainly acted with prudence, as it is very injurious to use reading glasses of a high magnifying power.

In proof of the injury done to the eyes by looking against the frames of spectacles, I may mention that, it is said, in France, during the time of Napoleon, young men, in order to exempt themselves from the conscription, used sometimes to render their sight defective by simply wearing small bars of iron before their eyes for a short time.

The selection of glasses, says Sir D. Brewster, is a point of much deeper importance than is generally believed. An oculist who is acquainted only with the diseases of the human eye, without possessing any knowledge of it as an optical instrument, is often led to recommend glasses when they ought not to be used, and to fix on focal lengths unfit for the purposes to which they are applied; and the mere vender of lenses and spectacles is still more in the habit of proffering his deleterious counsel.

Those who purchase and use the trash vended for spectacles by hawkers and others, made of common window-glass, ground on one side only, and sold for the merest trifle, can surely not be sufficiently alive to the value and delicacy of the organ which they thus expose to imminent danger. It is unsafe to procure spectacles of any but respectable opticians, in whose skill and honesty confidence may be reposed. A single eye-glass should never be used, as it is apt to produce strabismus.

Opticians are not altogether agreed as to the best materials for

spectacles. The general opinion, however, seems to be, that of all substances employed for this purpose, crystallized quartz, or Brazil pebble, combines the greatest number of advantages—the chief of which is extreme hardness, which secures the glasses from being injured by scratching. I must say, however, that there is one great drawback, which is, that on account of the dearness of the quartz spectacles, people are apt to use them long after they have become unfit for the eye; so that I am of opinion, that, for all ordinary purposes, colourless plate-glass spectacles are to be preferred.

Coloured glasses of any kind are not to be recommended, as when they are taken off the glare of light cannot fail to be hurtful to the eyes: nothing, in fact, being more likely to do harm than the constant variations in the degree of light, which cause rapid contractions of the iris.

When I was in Paris the past Autumn, I was introduced to M. Chevallier, the experienced optician to His Majesty the King of the French, who kindly communicated to me much information. He perfectly agreed with me as to the advantage of the large round glasses over the small oval, as being more beneficial, and less fatiguing to the eye.

His work, entitled "*Le Conservateur de la Vue*," a copy of which he presented to me, contains many useful hints, and I have made the following extracts from it:—"Among those men who find it necessary to strengthen their sight by means of preservers, or glasses, must be placed in the first rank, astronomers, miniature-painters, engravers, watch-makers, instrument-makers, and many other workmen, savans, or artists. As in these different professions, the extreme smallness of the objects with which they are occupied very much fatigues the eyes, they have need of preservers of a deep focus; for example, for the first sight, preservers are required of No. 72, or of a six-feet focus, that is to say, which enable one to see an object at a distance of six feet. If these preservers are not sufficiently powerful, glasses of a shorter focus must be provided, as No. 60, or No. 48, that is to say, of from five to four feet focus.

"It is very important in all cases to begin well, for if the true point of vision is not obtained in the first instance, it will be physically impossible to return to it afterwards, because the eye will gradually accustom itself to the focus of the glass, whereas it should be the point of vision itself which should determine the

focus. Those persons who wear too strong glasses very early, when they have reached a more advanced age cannot find any strong enough for them, from not having sufficiently attended to the different degrees of sight, passing insensibly from preservers to glasses.

"It is evident, therefore, that using glasses too early is not always a certain mode of preserving the sight; on the other hand, there are many persons who, giving in to the contrary abuse, blush to wear them, even at an age when they are really needed; delaying to a period when the sight has been too much forced for glasses to be of any service, and when they may be even prejudicial.

"The necessity for the use of preservers is first felt at candle-light; persons who have reached a certain age find that their eyes require some assistance when using artificial light, while others, not far advanced in age, experience an equal necessity from the nature of their temperaments, the lens drying in them much earlier than in other persons. I have sometimes been obliged to give the same kind of glasses to a person of forty years of age, as to another of eighty, thus shewing that with these matters age has nothing to do.

"As, however, there are persons who have not a facility in choosing glasses for themselves, the following is, according to my experience, a correct explanation of the different numbers suited for different sights:—

"From 25 years to 35, I give the numbers of the following foci: $6\frac{1}{2}$ feet, 6, $5\frac{1}{2}$, 5, $4\frac{1}{2}$, 4, 3, and $2\frac{1}{2}$.

"From 35 to 45, the numbers—24 inches, $22\frac{1}{2}$, 22, $20\frac{1}{2}$, 20, $18\frac{1}{2}$, 18, and 16.

"From 45 to 55, the numbers—$14\frac{1}{2}$ inches, 14, $12\frac{1}{2}$, 12, $10\frac{1}{2}$, 10, $9\frac{1}{2}$, 9, $8\frac{1}{2}$, and 8.

"From 55 to 70, the numbers—$12\frac{1}{2}$ inches, 12, $10\frac{1}{2}$, 10, $9\frac{1}{2}$, 9, $8\frac{1}{2}$, 8, $7\frac{1}{2}$, and 7.

"From 70 to 90, the numbers—$8\frac{1}{2}$ inches, 8, $7\frac{1}{2}$, 7, $6\frac{1}{2}$, 6, $5\frac{1}{2}$, 5, $4\frac{1}{2}$, and sometimes even 4.

"From 90 to 100, and more, the numbers—$3\frac{3}{4}$ inches, $3\frac{1}{2}$, and 3. There is no rule, however general, without an exception. Many individuals at 60, wear glasses of 12-inch focus; and many others at 35, 40, and 45, are obliged to use the same focus.

"To return to the indications announcing a necessity for the use of preservers or glasses. As soon as one perceives that at candle-

light he is obliged to bring an object nearer, or place it at a greater distance from his eye than usual; that it escapes from him, is lost, and becomes confused; that when he reads, the letters and lines appear to pass into one another, and that the eyes become tired of receiving reflections from any object, and require to be closed to relieve them, or to distract the sight by looking at another object, by way of refreshing them, it may be regarded as the commencement of the indications that the use of preservers has become necessary. In fact, they have become indispensable to support and assist the sight, by reuniting the rays of light nearer than the object, and to restore to the eyes the natural distance at which they saw previously. Whence it may be concluded that when one is obliged to bring an object nearer, or withdraw it further from the eyes than ordinary, it is a convincing proof that preservers are needed, and if they are not then used, the sight will become so myopic that preservers will no longer be of use, and concaves of more or less focus, according to the condition of the eye, must be had recourse to."

I also saw M. Lerebours and several other scientific opticians in Paris, who all agreed with me as to the superiority of the large round glasses over the small oval ones. M. Lerebours proposes to translate into French, and publish this edition of my work at his own expense, for the information of his customers.

When at Berlin, I was shewn an instrument for the use of the oculist, and was so well pleased with it, that I have had one made in this country. It is merely a large magnifying glass, mounted so as to be fixed to my operating chair. By this means I can see the eye, and whatever extraneous substance may have got into it, considerably magnified; and having both hands at liberty, great facilities are afforded for removing any foreign bodies, such as insects, dirt, sand, &c., or hairs growing inwards, which are very common, and occasion great irritation and annoyance, and, indeed, if not quickly got rid of, may cause serious evils*. In fact this instrument is of the sameuse to the oculist as the illuminated auriscope is to the aurist.

* Foreign bodies may be in the eye for a considerable time, and the closest examination by the unaided sight may fail to detect them: as in the case related by Baron Graefe, and quoted by Professor Beer, of a louse getting into the eye and remaining there, causing the greatest inconvenience and annoyance for several days, and occasioning a state of great excitement. In such instances, this instrument would be very valuable.

Myopia is very prevalent in Russia among the nobility; and the attention of the profession there has been directed to discover a mode of treatment by which it could be cured. When a child is found to be short-sighted, it is removed from its usual pursuits, and obliged to read and write with a book placed exactly at that distance from the eye at which it can be read without pain or fatigue. In a few days the book is removed to a rather greater distance, and this is again and again increased, until, finally, the child has acquired perfect vision. Perseverance in this plan in childhood will be generally sufficient for the removal of this very annoying defect. When in Germany, I saw an instrument constructed on this plan, called the myopodiorthoticon, invented by Dr. Berthold, professor at the University of Göttingen; and Dr. Franz has shewn me a similar one now in his possession; I have availed myself of Dr. Franz's kind offer, to have one constructed for the use of my own patients; as, if it can cure the complaint, and thus obviate the necessity for glasses, it is certainly to be preferred*.

I have thus accomplished what I purposed to do in penning these pages, which was briefly to touch upon the points of the greatest importance and interest in ophthalmology; and if I should, by this work, succeed in drawing the attention of any portion of the profession more closely to the subject, or should furnish suggestions by which any portion of the public may be enabled to take better care of their eyes, my object will be attained. The admitted incomplete state of this branch of the medical art, in spite of the researches and writings of so many of my distinguished predecessors, shews that there must have been something wrong in the method pursued; and the inestimable importance of the subject should induce exertions in a different direction. It remains to be seen whether the undivided attention of talented and zealous men, exerted upon an extensive range of observation and experiment, would not speedily bring within our power those diseases of the eye which now defy all the skill and resources of the practitioner, and terminate in loss of sight or death. That the experiment may be fully and fairly tried, at no distant period, is the author's earnest wish and expectation.

* A full account is given of this instrument by Dr. Franz, in a communication printed in the "London Medical Gazette."

FINIS.

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