A treatise on artificial pupil, in which is described, a series of improved operations for its formation; with an account of the morbid states of the eye to which such operations are applicable : to this is added, the first annual report, detailing the cases of all pensioners, who, during the last year, have been treated and discharged from the institution founded by government, for the cure of the blind pensioners afflicted with various diseases of the eye; as officially transmitted to the War Office / by Sir W. Adams.

THE INSTITUTE
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Fig. 1.

An Artificial Pupil form'd by a division of the Iris.

Fig. 2.

A Pupil form'd by excision of a portion of the Iris.

Fig. 3.

A portion of the margin of the Iris detach'd from the Ciliary Ligament.

Drawn by H. Thomson.

Engraved by T. Stew

A

TREATISE

ON

ARTIFICIAL PUPIL,

IN WHICH IS DESCRIBED, A

Series of Improved Operations

FOR ITS FORMATION;

WITH AN ACCOUNT OF

THE MORBID STATES OF THE EYE

TO WHICH SUCH OPERATIONS ARE APPLICABLE.

TO THIS IS ADDED,

The First Annual Report,

DETAILING THE CASES OF ALL THE PENSIONERS, WHO, DURING THE LAST YEAR, HAVE BEEN TREATED AND DISCHARGED FROM THE INSTITUTION FOUNDED BY GOVERNMENT, FOR THE CURE OF THE BLIND PENSIONERS AFFLICTED WITH VARIOUS DISEASES OF THE EYE;

AS OFFICIALLY TRANSMITTED TO THE WAR-OFFICE.

BY SIR W. ADAMS,

OPHTHALMIC SURGEON TO THE ABOVE INSTITUTION.

ILLUSTRATED WITH COLOURED ENGRAVINGS.

LONDON:

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1819.

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TO

THE RIGHT HONORABLE

LORD VISCOUNT PALMERSTON

Secretary at War,

&c. &c. &c.

My Lord,

In dedicating the following pages to your Lordship, I feel that the language of panegyric, usually employed on such occasions, would be altogether inappropriate.

The Medical Report, which is annexed to this Treatise, will shew that the Ophthalmic Institution has already been productive of considerable benefit to the blind Soldiery. This Institution, which originated in your Lordship's humanity, which has been matured under your auspices, and supported by your firmness, has also afforded me the opportunity of practically demonstrating to the Profession, the utility of those peculiar operations and modes of practice, which first attracted the benevolent attention of your Lordship.

Nor will the advantages resulting from the

Establishment be confined to those individuals for whose benefit it was, in the first instance, founded. By the publicity which has been uniformly given to the practice employed, it must necessarily follow that the community will participate in these advantages.

To give full efficiency to this Institution has been, and shall be, my most earnest endeavour; for, independently of the zeal which I feel for its welfare, it is my persuasion, that by such conduct, I shall in the most acceptable manner, discharge the deep debt of gratitude I owe your Lordship, for the confidence you have been pleased to repose in me, and the kind protection which I have received at your hand.

I have the honour to be,

My Lord,

Your Lordship's most faithful

and obedient Servant,

WILLIAM ADAMS.

26, Albemarle-Street,
May 16*th*, 1819.

PREFACE.

In this treatise, I have pursued a similar plan to that adopted in my last publication upon Cataract. I have inserted a description of all the operations for the formation of Artificial Pupil deserving of notice, and have minutely investigated their different steps. To effect this with greater regularity, the operations are divided into different classes, according to the principle upon which they are founded, and their respective merits and defects are critically examined, for the purpose of establishing which should be preferred in practice. By this means, every circumstance of moment connected with the subject, is presented to the reader's view;

and, as I trust it will be found that the inquiry has been conducted with candour, an accurate judgment of the comparative value of each operation, may be thereby formed.

Having thus minutely investigated the operations for Cataract and Artificial Pupil, and being persuaded that the plan pursued, is better adapted than any other for conveying instruction, it is my intention to proceed similarly, with the operations and treatment of all the other important diseases of the eye. But as many years must necessarily elapse in the completion of such an undertaking, I propose to deliver annually a regular course of Lectures upon Ophthalmic Surgery.

These Lectures will be constructed upon the above plan; and, as I shall practically illustrate the effects of my peculiar operations and modes of treatment, upon the chronic cases in the Ophthalmic Hospital, and upon the acute ones among the Patients of a Dispensary, which I propose immediately to

found for the treatment of Diseases of the Eye, the united practice of these two establishments, will form a complete school for teaching Ophthalmic Surgery, exceeding in its operative department any institution of the kind in this, or any other country.

A

HISTORY AND DESCRIPTION,

OF THE

MOST IMPORTANT OPERATIONS PRACTISED
FOR THE FORMATION

OF

ARTIFICIAL PUPIL.

Chapter I.—Section I.

No department of Surgery has, in this country, attracted a greater degree of attention within the last few years, than that which relates to the treatment of Diseases of the Eye; and, certainly no branch of the healing art has within that period, received a greater accession of improvement. Various causes have co-operated in producing this valuable addition to our stock of professional information.

The knowledge of this fact, that ophthalmic surgery had been cultivated with superior assiduity and success on the Continent than in Eng-

land, awakened emulation, and created inquiry among individuals; while the introduction of that most painful and dangerous disease, the Egyptian Ophthalmia*, into these kingdoms by our troops in 1801; and its extensive dissemination among all classes of society, through the medium of the blind soldiery dismissed the service, greatly conduced to draw the attention of the profession, in this country, to the nature and treatment of diseases of the eye. But it is to the late Mr. Saunders that we must assign the credit of having placed ophthalmic surgery on its present scientific basis. Having been educated for a general practitioner, and having subsequently distinguished himself as one of the best practical anatomists and physiologists of his day, he was induced, with the concurrence of the surgeons and physicians of Guy's, and St. Thomas's hospitals, to abandon general surgery, and exclusively to confine his attention, to the diseases of the eye and ear. This limitation of his practice it was suggested, would

* It would perhaps have been more correct had this disease been named *Asiatic* Ophthalmia, because it is by no means confined to Egypt; for it is found to exist all over the continent of Asia, more particularly in Persia, as I have been informed by Sir John Malcolm.

enable him to direct the whole force of his mind to the investigation of these maladies, and might thereby conduce most materially to the advancement of science, as well as to the benefit of the Public.

The countenance and support of the body of eminent practitioners and teachers above-mentioned, materially contributed to the establishing a dispensary for the exclusive treatment of the diseases of the organs of vision and hearing; while their conviction of the benefits which were likely to accrue to the healing art, by separating ophthalmic from general surgery, was thereby unequivocally marked.

The high expectations raised by Mr. Saunders thus attaching himself to the study and practice of the diseases of the eye and ear, have not been disappointed. His treatise on the anatomy and diseases of the ear, is unquestionably the best extant; while the extensive field for observation and practice which the London dispensary afforded (since converted into an institution solely for the treatment of diseases of the eye,) enabled him, during the few years which he survived the foundation of the institution, to effect those improve-

ments in ophthalmic surgery, which will transmit his fame to the latest posterity.

Had his valuable life been spared, he, doubtless, would still further have improved the treatment of diseases of the eye ; his correct observation, and sound judgment, conjoined to his eminent professional attainments, peculiarly qualifying him for bringing within the pale of science, a branch of the profession, which previously, had been pursued in this country almost as an art.

But the light elicited by this great and good man, during his short professional life, has not been extinguished. Ophthalmic surgery was taken up where he left it, and has been pursued with ardour and success. Many of the diseases of the eye, which even in his hands, were found incurable, are now treated with as uniform success, as any other important diseases to which the human frame is liable. As one instance, I shall name the operations for the formation of artificial pupil, which have been selected for the subject of the present treatise, from my conviction of their capability, to restore sight to a larger proportion of persons unhappily afflicted with blindness, than any other operations or modes of practice, within the range of ophthalmic surgery.

Previously to my giving a description of the modes of forming an artificial pupil in the different morbid affections to which it is applicable, it may be useful to remind the young surgeon, of the anatomical structure of those parts of the eye-ball which are most concerned in the operation.

This is the more necessary, as, unless he has a perfectly distinct idea of their structure, uses, and relative positions with each other, he will not with sufficient precision, comprehend the steps of the operations which I propose to detail in this publication.

The iris is that membrane suspended within the cavity of the eye-ball, by which persons are distinguished for having dark, hazel, or blue eyes, *&c.* In its centre is an aperture called the pupil, through which the light passes to the retina at the bottom of the eye. The iris is described by the most eminent anatomists, as consisting of two orders of muscular fibres. The one circular, the other radiated. When the former act, they, like all sphincter muscles, diminish the aperture around which they are placed; on the contrary, when the radiated fibres act, the size of the pupil is enlarged. Thus, it is by their alternate action

that the pupil contracts or dilates, whereby a smaller or a greater quantity of light, is admitted to the retina.

The form of the pupil differs in man, and in animals. In man, who requires an extensive field of vision in every direction, the pupil is circular. In graminivorous animals, whose wants chiefly incline their eyes to a downward direction, while the extended field of vision laterally, enables them to protect themselves, by discovering their enemies at a distance, the pupils are transversely oblong. The pupil, in animals of the cat kind, who feed on birds as well as quadrupeds, is, on the contrary, vertically oblong; whereby their sphere of vision is extended upwards, enabling them readily to discover their prey on trees, as well as on the ground. Hence, it is apparent, that the form of the pupil does not influence vision farther, than by rendering its field more or less extended.

It is of material importance that the reader should bear these facts in mind, because the artificial pupil is rarely of a circular form, and varies in size and shape according to the particular mode of performing the operation.

The iris is firmly attached at its greater margin to the ciliary ligament, and is suspended in the aqueous humour.

The transparent cornea forms the anterior segment of the eye-ball, and is destined to collect, and transmit the rays of light through the pupil to the retina. The cornea is of a concavo-convex figure, and is firmly united at its circumference to the sclerotic coat, from which it may be separated by maceration.

The crystalline lens is situated posterior to, and at a small distance from the iris. This acts as a double convex lens, and is destined to refract the rays of light, so that they may meet precisely on the retina.

The crystalline capsule is a membraneous bag, which completely envelopes the lens, and protects it from the solvent action of the aqueous and vitreous humours. We find that there is a canal around the margin of the lens, and exterior to its proper capsule. Without entering into the question, what membrane forms this canal, it is at present sufficient to notice, that the ciliary processes are connected with the membrane which forms the anterior part of this canal. They

are consequently connected with the crystalline capsule, and assist in retaining that body in its proper situation.

The space between the internal concave surface of the transparent cornea and the iris, is called the anterior chamber of the eye. That between the posterior part of the iris and the anterior part of the crystalline capsule and lens, is called the posterior chamber. Hence, it is obvious, that if the cornea be transparent, the pupil open, and the posterior parts of the eye in a state of health, good vision will result. But that, if the portion of the cornea immediately opposite the pupil be indelibly opaque, or the pupil partially or wholly closed, (whether the lens or its capsule be opaque or otherwise,) vision must be in part or wholly destroyed.

There are five forms of disease, to which the eye is subject, where the operations for artificial pupil are capable of restoring vision. The *first* is, where the pupil becomes obliterated, subsequently to the removal of the crystalline lens. *Secondly*, Where a closure of the pupil exists, complicated with an opacity of the lens,

or its capsule, or of both. *Thirdly*, In cases where the pupil is considerably contracted, or nearly closed, in consequence of a large protrusion of the iris through an opening in the cornea, caused by ulceration or puncture, to which the iris still adheres, but where the transparency of the lens and capsule is preserved. *Fourthly*, Indelible opacities of the cornea obscuring the whole of the natural pupil, and thereby preventing the passage of the rays of light to the retina. *Fifthly*, Where the natural pupil is entirely obliterated, and the centre of the cornea indelibly opaque, with merely a transparent margin remaining.

The operation for forming an artificial pupil was invented, and first practised, by our eminent countryman Mr. Cheselden. Of so much importance was the discovery considered by this great surgeon, that he published in the Philosophical Transactions for the year 1735, a description of his operation, the instrument with which it was executed, and also a plate representing the form of the artificial pupil. His mode of performing the operation was as follows: The

eye-lids being held open by a speculum oculi, he introduced a spear-pointed single-edged knife, with its flat surface parallel to the iris, through the sclerotic coat, at the part punctured by the needle in the operation of depression. Having penetrated the coats of the eye, he carried the point of the knife through the iris into the anterior chamber, until it reached the nasal margin of that membrane; he then turned its edge backwards, and, in withdrawing the knife, divided the iris as extensively as he was able. When a closure of the pupil existed, unaccompanied with cataract, he thought it best to make the new pupil in the line of the transverse diameter of the iris; but when the obliterated pupil was complicated with cataract, he made the opening either above or below this line. This variation in the situation of the new pupil, arose from Cheselden's erroneous opinion, that the crystalline lens in cases requiring the formation of an artificial pupil, was of a smaller size than natural; and that, by his deviating from the central line of the iris, in making his section, the opaque lens would form no impediment to the passage of light to the retina. The lens he considered too firmly adherent to the iris,

to admit of separation for the purpose of being depressed.

Cheselden's operation, immediately after its publication, was eagerly adopted by surgeons in every part of Europe; but, as appears from the following quotations, without the expected success.

Sharp writes, when treating of this operation, "I would not mislead any one who shall practise "an operation not yet much known in the world. "I do confess that the danger of the iris sepa- "rating from the ligamentum ciliare, or of the "wound not enlarging sufficiently, do, upon the "whole, make the event very doubtful. I once "performed it with tolerable success, and a few "months after, the orifice I had made contracted, "and brought on blindness again."

Warner remarks, that "however ingenious the "operation of dividing the iris may be thought, "(in cases of an absolute contraction of the pupil, "or of a perfect adhesion of the cataract to the "iris,) which was invented and recommended by "that great operator Mr. Cheselden, I must "confess, I never yet saw a single instance of "success from it; and, therefore, cannot recom- "mend it as an advisable operation under any "circumstances whatsoever."

This operation was also condemned by Messrs. Ware* and Wathen in this country, by Richter in Germany, by Wenzel and Janin in France; and, from the opinion of the latter, was represented by Professor Scarpa, in Italy, as an operation of no utility. Indeed, one French writer even doubted the veracity of Mr. Cheselden, and that he could have succeeded in forming an artificial pupil by the operation which he has published; and Professor Assalini, in a very ingenious work on artificial pupil, replying to this unjustifiable suspicion, took credit to himself, for deeming it possible that Cheselden did succeed by the method he had described.

The unfavourable opinions of these eminent surgeons being promulgated throughout Europe, it cannot be a matter for surprise, that the operation should have fallen into discredit, nay, should have even been altogether abandoned.

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* In the first edition of Mr. Ware's work, published in 1805, he gives a decided preference to the operation for artificial pupil, described by the Baron de Wenzel, over that of Cheselden. But after he had been informed by me, in 1810, of my success in reviving and improving Cheselden's method, he adopted my mode, as appears by the second edition of his work, published in 1811.

The operation of extracting the cataract, which was introduced into practice about the period when Cheselden's operation was so generally condemned, gave rise to another method of forming an artificial pupil, which consisted in making an opening in the cornea, and removing with a pair of scissors, a part of the iris.

Baron Wenzel was one of the first to carry this mode of forming an artificial pupil into effect. He had previously tried Cheselden's operation, but, like Sharp and Warner, found it inefficient and unsuccessful.

I will copy the Baron's description of the operation: "The patient is to be placed in the "same position as if he were to undergo the "operation of having a cataract extracted; and "the cornea knife, described in the former part "of this treatise, (that on extraction of the "cataract,) is to be pierced into the cornea "exactly in the same manner as in that operation. "When the point of the instrument has arrived "at about the distance of half a line from the "centre of the iris, it must be plunged into this "membrane to about the depth of half a line; "and, by a slight motion of the hand backwards,

" it must be brought out again about the distance " of three-fourths of a line from the part in " which it entered ; then pursuing the incision, " as is before described in common cases of " cataract, the section of the iris will be com- " pleted before the section of the cornea, and " will present a small flap nearly a line in dia- " meter. This section of the iris, like that of " the cornea, will be in the form of a semi- " circle.

" A small pair of scissors is then to be intro- " duced under the flap in the cornea, and the " divided portion of the iris is to be cut clear off. " By this method, an artificial pupil will be made, " which, by reason of the sudden and equal con- " traction of the divided fibres, sometimes proves " to be all round ; and, after this operation, we " may rest assured, that the pupil so formed " will never close again.

" It may sometimes happen, in consequence " of the retraction of the fibres of the iris, that it " will be difficult to perceive and cut off the " divided flap of this membrane. With a little " attention and dexterity, a small portion of it, " however, may almost always be engaged be-

" tween the points of the scissors, and this por-
" tion, whatever it be, should be removed*."

M. Pelier de Quinsgy described an operation similar to the Baron's, but did not advise the removal of the flap of the iris.

Plenck recommended an operation for artificial pupil, nearly similar to the Baron's.

Janin made a section of the cornea of the same size, as if he were about to extract the cataract. He then introduced the points of a small pair of scissors under the flap, and made a *vertical* incision in the nasal portion of the iris, which he conceived to be the most certain method of establishing a permanent artificial pupil†.

Professor Beer's operation for artificial pupil, as described by Scarpa, consists in making an opening in the cornea, and drawing the iris towards it by means of a fine hook. He afterwards removes with scissors, a small portion of the iris which he had drawn beyond the opening in the cornea.

The operation preferred by Mr. Gibson, as ap-

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* See Wenzel's Treatise on the Extraction of Cataract, page 242.

† See Mémoires sur l'Œil.

pears by his work, on Artificial Pupil, is pretty similar to that of Professor Beer; with this difference, that he effected a protrusion of the iris by means of pressure made upon the eye-ball, instead of pulling it out through the cornea with a hook.

Mr. Gibson describes his operation in the following words: "The first step of the operation is "to secure the eye-lids, as in the operation for "extracting a cataract. A puncture is then to be "made in the cornea, with a broad cornea-knife, "within a line of the sclerotica to the extent of "about three lines. All pressure is now to be "removed from the eye-ball, and the cornea-"knife gently withdrawn. The consequence of "this is, that a portion of the aqueous humour "escapes, and the iris falls into contact with the "opening in the cornea, and closes it like a valve. "A slight pressure must now be made upon the "superior and nasal part of the eye-ball, with the "fore and middle finger of the left hand, till at "length, by an occasional and gentle increase of "the pressure, or by varying its direction, the "iris gradually protrudes, so as to present a bag "of the size of a *large pin's head*. This protruded "portion must be cut off with a pair of fine

" curved scissors, and all pressure at the same " time withdrawn; the iris will then recede within " the eye, and the portion which has been removed, " will leave an artificial pupil more or less cir- " cular*."

M. Demours, it is stated by Professor Scarpa, has fortunately succeeded in making an artificial pupil, by piercing the cornea and iris with a bistoury near the sclerotic coat, and removing with scissors a portion of the iris, of the size and figure of a sorrel-seed, and that without at all displacing the sound and transparent crystalline †.

The operation, practised and recommended by the celebrated surgeon, Professor Maunoir, of Geneva, seems to have been practised by him with great success. Professor Scarpa, in the last edition of his work, describes Maunoir's scissors and operation in the following words :—

" The blades of the scissors are slightly inclined " to the handle. The upper blade, or that which " is designed to pass through the anterior chamber " of the aqueous humour, between the concavity

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* See Gibson's Treatise on Artificial Pupil. Pages 39 and 40.

† See Professor Scarpa's work on Diseases of the Eye. Page 424.

" of the cornea, and the iris, terminates in a small " button. The lower blade for perforating the " iris, and advancing along the posterior surface " of this membrane, has a very sharp point similar " to that of a lancet. The thickness of the two " blades united does not exceed that of an ordi- " nary sized probe."

These scissors are employed in the following manner :—

" The patient being placed horizontally with " his head a little raised, a position no less com- " modious in the operation for the extraction of " the cataract, than the formation of the pupil, and " supposing the cornea to be perfectly trans- " parent, and the capsule and the lens, in the " case of cataract, to have been completely re- " moved from the axis of vision, an incision is " made in the cornea at its lower or lateral " segment, as may be most convenient, of half " the extent of that which is usually made for the " extraction of the crystalline lens. Through this " small opening in the cornea, the scissors are to " be introduced, closed with the flat part, in a line " parallel to the transverse diameter of the iris ; " and as soon as the point of the instrument has

" advanced near to the great margin of the iris,
" that is, to very nearly opposite the small incision
" made in the cornea, it is gently opened and in-
" clined in such a manner that the inferior
" pointed blade may perforate the iris, and run
" along the posterior surface of that membrane,
" until the small button of the upper blade has
" reached the part where the cornea and sclerotica
" unite. The iris is then to be divided in its
" transverse diameter by a single stroke, passing,
" as nearly as possible, through its centre. This
" incision being executed, another is to be expe-
" ditiously made, so far diverging from the first,
" that the two incisions may form in the centre
" of the iris a triangular flap of the figure of the
" letter V, the apex being precisely in the centre
" of the iris, and the base nearer its greater mar-
" gin. In a few days the portion of iris which
" has been cut, contracts, and leaves an artificial
" pupil, of the form of a parallelogram, sufficiently
" extensive for all the purposes of vision.

The operation, above described, is practised in cases of obliterated pupil, which occur subsequently to the removal of the lens. When the pupil is much contracted, but not obliterated, and

is also obscured by an indelible opacity of the cornea, Professor Maunoir employs a pair of scissors, similar in form to those already described, but with both points blunted. The manner in which these scissors should be used in this description of case, is thus described by Professor Scarpa:—

"One of the blades, by means of the button, "is introduced within the contracted pupil *, "and conducted behind the posterior surface of "the iris, until the other blade, defended in the "same manner, has reached the confines of the "cornea with the sclerotica. The iris is then to "be divided in the form of the letter V, without "at all injuring the capsule or lens, both of "which have preserved their transparency †."

When the obliteration of the pupil arises from an inflammation of the iris, the capsule, and frequently the lens also, become opaque, requiring removal. For this purpose, Professor Maunoir proceeds in the following manner:—

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* This mode of operating is equally applicable to those cases of simple contraction of the pupil, unaccompanied with prolapsus of the iris, and opacity of the capsule and lens.

† See Professor Scarpa's second edition. Page 384.

" An incision of a moderate size should be " made in the cornea, either at the lower part, or a " little inclined towards the nose or temple, if " the partial opacity of the cornea render it neces- " sary ; and, if possible, without making use of a " speculum oculi of any kind. With the sharp- " pointed blade of the scissors, the iris should be " perforated at a small distance from its great mar- " gin, that is, nearly opposite the external wound, " and pressing it further inwards towards the " longitudinal axis and bottom of the eye than " usual, at once pass it beyond the opaque cap- " sule and the crystalline lens, if it is found " there. Both the blades having reached the " side opposite to that which they entered, all " the parts should be divided at one stroke, that " is, the iris, the opaque capsule, and the crys- " talline ; and without delay, after the first in- " cision, a second should be made diverging " from the first, so as to leave a large aperture in " the form of the letter V. Through this large " opening in the iris, are immediately discerned " the broken portions of capsule and opaque " crystalline. If the portions of the lens are " firm, by a slight pressure on the eye-ball, they

" will advance and pass through the new tri-
" angular pupil into the anterior chamber of the
" aqueous humour, from whence they may be
" extracted in the same manner as is practised
" in the cataract.

" For this purpose, where the lens is broken
" into fragments, a smaller incision in the cornea
" is requisite, than where the extraction of the
" crystalline lens is to be made in its entire state.
" If, however, the crystalline is soft or caseous,
" the removal of the divided portions of it may be
" facilitated by means of the small scoop, or of the
" eyed forceps of Maunoir, similar to those used
" for the polypus, but of extreme fineness. In
" the same manner, with regard to the capsule, the
" fragments of it may be detached and extracted
" by means of a very fine hook, or the forceps
" just mentioned. The portion of capsule which
" may have adhered to the small triangular flap
" in the iris, will form no obstacle to vision, as
" in consequence of its adhesion to it, it will re-
" tire with this divided portion from the apex to
" the base of it. Whenever the crystalline, not-
" withstanding the opacity of the capsule, has
" preserved its entire transparency, the extraction

" of the pieces of it will require greater attention " than when it is opaque, in consequence of these " portions of it being confounded with the sub- " stance of the vitreous humour.

" Notwithstanding the utmost care, it is not " uncommon, after the operation now described " is completed, and the consecutive symptoms " have ceased, to find some fragments of the " capsule or crystalline, or of both, concealed in " the posterior chamber, appear opposite the new " pupil. In this case it will be proper to intro- " duce a fine curved needle through the sclerotic " coat into the eye, and by this means completely " detach the particles of capsule, if they are still " adherent to the iris; and, either alone or with " the fragments of the crystalline, press them " through the new pupil into the anterior cham- " ber of the aqueous humour, where, being lique- " fied by the solvent power of this humour, they " finally disappear by absorption."

The modes of forming an artificial pupil, founded on a *division* or *excision* of a portion of the iris, were succeeded by a third method, namely, detaching a portion of the iris from the ciliary ligament.

This circumstance, which was noticed by Sharp, as a frequent unfortunate result attending Cheselden's operation, and was enumerated by him as one of the objections to that operation, has been recently recommended as the preferable mode of forming an artificial pupil.

Professor Scarpa was one of the first to carry into effect the detachment of the iris from the ciliary ligament. He describes his method of proceeding in the following words:—

"The patient being seated, and there held, as "in the operation for the cataract, with a straight "couching needle, not the thick one, which is "used by the greater part of surgeons, but a very "fine one, to which I give the preference, the "sclerotic coat is perforated at the external angle "of the eye, about two lines from the union of "the tunica sclerotica with the cornea, and the "point of the needle is made to advance as far "as the upper and internal part of the margin "of the iris, that is, on the side next the nose.

"The instrument is then made to pierce the upper part of the internal margin of the iris, close "to the ciliary ligament, until its point is just "perceptible in the anterior chamber of the

" aqueous humour ; I say, just perceptible, be-
" cause that part of the anterior chamber being
" very narrow, if the point of the needle be made
" to advance ever so little before the iris, it must
" pass into the substance of the cornea. As soon
" as the point of the needle can be seen in the an-
" terior chamber of the aqueous humour, it should
" be pressed upon the iris from above downwards,
" and from the internal towards the external
" angle, as if with a view of carrying the instru-
" ment in a line parallel to the anterior surface
" of the iris, in order that a portion of its margin
" may be separated from the ligamentum ciliare.

" This separation being obtained, the point of
" the needle must be depressed, in order to place
" it upon the inferior angle of the commenced
" fissure, which may be prolonged at pleasure, by
" drawing the iris towards the temple, and by
" carrying the instrument from before backwards,
" in a line parallel to the anterior surface of the
" iris, and the greater axis of the eye.

" Having done this, if the bottom of the eye,
" beyond the artificial pupil, does not appear ob-
" structed by the opaque body, the needle may be
" withdrawn from the eye entirely. If, however,

" any portion of the opaque capsule present itself " behind the new pupil, which has remained after " the depression or extraction of the cataract, this " small opaque membrane, being broken in pieces " with the point of the needle, must be made to " pass before the artificial pupil, and deposited " in the anterior chamber of the aqueous hu- " mour; where, as I have shewn in the preceding " chapter, these membranous fragments and flakes " of the capsule, are gradually dissolved and ab- " sorbed with the aqueous humour, which is in- " cessantly renewed."

Professor Assalini and Dr. Reisinger, of Germany, have also adopted the principle of forming an artificial pupil, by detaching the iris from the ciliary ligament. Their modes of operating are, however, very different from that described by Professor Scarpa, inasmuch as they both make an opening in the cornea, and thereby detach the iris; the former by means of a pair of forceps, and the latter by a double hook, which is so constructed as also to act as a pair of forceps. I have not met with Professor Assalini's work on artificial pupil; but I once saw that eminent surgeon perform his operation in the following manner:

He made a small opening in the margin of the cornea, at the farthest point from the remaining transparent portion of that tunic, through which he introduced a pair of forceps, and having laid hold of the part of the iris which he wished to detach from the ciliary ligament, he made gentle and repeated efforts, until he separated it sufficiently. Having accomplished this object, he withdrew the points of the forceps, which included the separated portion of the iris. This portion he cut off with a fine pair of scissors, close to the flap of the cornea, and thus he finished the operation.

Professor Scarpa describes Dr. Reisinger's operation in the following words:

" Reisinger proposes to form an artificial pupil " by making a small incision in the cornea, and " introducing a small double hook, performing " the office of forceps also; by which, having fixed " it into the iris near its margin, he advises this " membrane to be detached to a certain extent " from the ciliary ligament, and to be drawn out " of the incision in the cornea; where, by forming " an adhesion to the lips of the wound, the re- " traction of the iris, and consequently the

" closure of the new pupil, will be entirely pre-
" vented. Under certain conditions, however,
" as the difficulty of drawing the iris out of the
" cornea, or the doubt that the cicatrix of the
" wound in it might increase the opacity of this
" membrane, in making the artificial procidentia
" he would advise, that, besides the detachment
" of the iris from the ciliary ligament, a portion
" of it should also be removed. On this subject,
" see a more minute detail in the Journal de
" Médecine, par M. Leroux, October1816."

The Professor adds, " This method of ope-
" rating, which combines those of Beer and Assa-
" lini, is too far removed from that simplicity
" which marks the perfection of a surgical ope-
" ration. And it is much to be doubted, whether,
" notwithstanding the modifications proposed by
" the author, this process is entirely applicable
" to all complicated cases of closure of the pupil ;
" especially, that of opacity of the crystalline lens
" and its capsule, with adhesion to the posterior
" surface of the iris. Hitherto the facts are neither
" sufficiently numerous nor successful to prove
" the contrary. Nor will it be easy to persuade
" those who are acquainted with the subject,

" that independently of fixing a hook in the con-
" junctiva, for the purpose of keeping the eye
" steady, the injury done to the iris can be ex-
" empt from consequences most injurious to the
" organ of vision*."

These are the different modes of forming an artificial pupil, deserving of notice. But in this country, after Cheselden's operation had been relinquished, any attempt to make an artificial pupil was very rarely had recourse to. It was accident, in a great measure, which suggested to me the benefit, which might be derived from an operation founded upon Cheselden's principle of dividing the iris, when performed in a different manner, and with a different instrument to that which he described.

One of the first patients admitted into the West of England Infirmary for curing Diseases of the Eye, instituted at Exeter in 1808, was William Pike, of Widworthy, Devon, who had unsuccessfully undergone the operation of extracting the

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* See the last edition of Professor Scarpa's Work on Diseases of the Eye. Page 391.

cataract in the Devon county hospital. His pupils were not only much contracted, but the remaining apertures were entirely occupied by portions of opaque capsule, much thickened, and very firmly adherent to the posterior part of the iris. I commenced an operation on each eye, with the view of detaching the capsule from the iris, by separating the adhesions existing between them; but they were found, upon trial, too firmly established to admit of the proposed separation. It, therefore, rendered another mode of proceeding necessary. This consisted in turning the edge of the needle backwards, and then cutting through the thickened capsule. I succeeded by this means in clearing the pupil of each eye, so that the patient could see sufficiently well by the assistance of proper glasses, and was afterwards enabled to resume his trade as a shoemaker.

This case suggested to me the practicability of dividing the iris in a similar manner, as I had succeeded in dividing the opaque capsule. A favourable opportunity of making the trial, soon presented itself in another patient of the same infirmary, who laboured under a complete closure of the pupil; the consequence of the operation of

extracting the cataract, which had also been unsuccessfully performed in the Devon County Hospital, at Exeter.

For this purpose I got a small cataract needle made to cut as keenly as possible on one edge, with which I effected a large central opening in the iris. A pupil of a proper size, and nearly circular, was thereby made. Very little pain was experienced during the operation, and no inflammation resulted; but my apprehension of the existence of amaurosis in this case, (of which I had previously apprized the patient,) proved too well founded; for he was not benefited by the operation, notwithstanding its perfect execution. The practicability of thus forming an artificial pupil was, however, established.

Soon afterwards a case of closed pupil, complicated with cataract, presented itself at the Infirmary, in which the operation for artificial pupil was attended with perfect success, the vision of the patient being as completely restored as is ever the case after the removal of the crystalline lens. But it was nearly twelve months before I again succeeded, notwithstanding I had frequent opportunities of trying the operation.

One principal cause of these failures appeared to be the imperfect form of my instrument. Having at length obtained that which I now employ, the result of my experience has since established it as an incontrovertible fact; that the operation for artificial pupil, either with or without opaque lens, as rarely fails as any other important operation performed upon the eye.

The form of my present instrument resembles a common dissecting scalpel, the curved edge of which I conceived, was better adapted than any other for cutting with facility. Its length is two-thirds of an inch, and it is nearly a line in width, with a straight back. The edge near the point, which is sharp, is of a curved form, and cuts backwards towards the handle about three lines.

I also found, that if a gentle pressure were made upon the edge of the instrument in withdrawing it out of the eye, the division of the iris, which was thus effected, was usually so small, that it became united by the first intention; while, if a greater degree of pressure were made upon the instrument, in order to effect a more extensive division of the iris, a portion of that membrane became detached from the ciliary ligament.

It, therefore, became necessary for me to abandon Cheselden's operation; and in the two following Sections, I shall describe the modes of practice which I have substituted in its stead.

Chapter I.—Section II.

Simple Contraction or Obliteration of the Pupil.

The first form of disease, according to the arrangement given in page 8, requiring the formation of an artificial pupil, may be termed a simple contraction or obliteration of the pupil; the crystalline lens having been previously removed. This removal may have been effected either by the operations of extraction, of depression, or absorption of the lens. In addition, accidents occurring to the eye from a sharp instrument puncturing the capsule, or by that membrane having been ruptured by a blow, may occasion the absorption of the lens, by exposing it to the solvent action of the aqueous or vitreous humours. A wound inflicted in the iris, while effecting a section of the cornea for the purpose of extracting the cataract, not unfrequently causes a closure of

the pupil. The iris becoming detached from the ciliary ligament to any considerable extent, will also occasion a contracted or obliterated pupil. In any of these cases, an artificial pupil is required, in order to restore the patient's vision. The operation which I prefer in this description of case, I shall now proceed to describe.

The patient being seated as in the operation for cataract, and the eye being steadied, either by the finger of the assistant who supports the upper lid, or by gentle pressure made with my concave speculum, the iris scalpel already described, with its edge turned backwards, must be introduced through the coats of the eye at their external part, about a line behind the iris, and in the transverse diameter of the latter membrane. The point of the instrument should then be made to penetrate through the iris, into the anterior chamber, in a line with its central diameter, and somewhat less than one-third of the width of that membrane, from its ciliary margin. The iris scalpel is then to be carried cautiously through the anterior chamber towards the inner canthus, keeping its edge in contact with the iris (in order to prevent the point from piercing the internal part of the cornea,)

until it has traversed more than two-thirds the width of the iris, when it should with great care, be drawn backwards, almost out of the eye, making the most delicate pressure with the edge of the instrument against the iris, lest it should be detached from the ciliary ligament. If the division of the iris is not effected to a sufficient extent during the first effort, the iris scalpel should be again carried forward, and withdrawn in a similar manner. This is to be repeated as often as may be necessary, to effect a division of the iris, to the extent of a third part of its diameter.

In my work, published in 1812, I directed that two-thirds at least of the extent of the transverse diameter of the iris should be divided, in order to guard against the supposed disposition in that membrane to re-unite; but abundant experience of the favourable results of this operation, which have since occurred in my practice, has convinced me, that no such apprehension need be entertained; and that a division of one-third the extent of the diameter of the iris, is sufficient. Indeed, so far is there from being a disposition in the newly-formed pupil to close again after it has been once established, that the very reverse is the case; for the

radiated fibres subsequently contract in a greater degree from delay, whereby the artificial pupil is proportionably enlarged.

In the species of case now under consideration, an almost immediate contraction of the radiated fibres of the iris, usually takes place, after that membrane has been divided, which produces a new pupil of sufficient size for all the purposes of vision.

A common dressing to the eye is all that is in general required after this operation, as inflammation very rarely supervenes. If, however, any increased action in the vessels of the eye should take place, the usual antiphlogistic treatment must be had recourse to. Convex glasses, such as are used after the operation for cataract, will necessarily be required, in order to enable the patient to see distinctly.

Chapter I.—Section III.

Contracted or Obliterated Pupil, complicated with Capsular or Lenticular Cataract, or with both.

The second morbid state of the eye, requiring the formation of an artificial pupil, is a contraction or obliteration of the natural pupil, complicated with adherent capsular, or lenticular cataract.

This condition of the parts may have been produced, either by a puncture from a sharp instrument, or, as I have frequently known, simply from a thorn wounding the iris, and crystalline lens. The most frequent cause, however, of obliterated pupil, complicated with cataract, is inflammation of the iris. But from whatever cause the disease may arise, the formation of an artificial pupil is necessary, in order to restore the patient's vision. The mode of conducting the operation differs somewhat, in this species of case, from that which has been just described.

The primary steps are exactly similar; but in addition to the division of the iris in the same direction, and to the same extent, the opaque capsule

and crystalline should also be freely divided with the iris scalpel. The larger portion of the fragments of the cataract should then be brought into the anterior chamber, and the remainder left between the edges of the divided iris, so as to prevent their re-uniting by the first intention. These fragments of the cataract, when thus placed, act as a plug or wedge, in keeping apart the divided edges of the iris, until all disposition in them to re-unite by the first intention is removed; and they also tend to promote a contraction of the radiated fibres, whereby the artificial pupil is made to assume a transversely oblong shape.

If, as sometimes happens, the opaque lens disappears very slowly, an operation may be safely performed to expedite its removal, the case being then reduced to one of soft cataract. This should be freely cut in pieces with my small double-edged cataract needle, and the fragments brought into the anterior chamber for solution and absorption.

But if the lens be found too hard to admit of division, or if it should separate from its adhesion to the iris, before the operator is enabled to effect that important object, he should at once bring it through the new pupil into the anterior chamber;

and, after making a sufficient opening in the cornea, extract it with a hook.

It not unfrequently occurs, as I have already observed, that the lens either has been removed by a previous operation for cataract, or has disappeared from the consequences of a blow or puncture, which produced the disease in question. In this case, the capsule alone is found adhering to the posterior part of the iris.

The first steps of the operation, in this description of case, should be conducted in the manner already described; and the capsule, after being divided to an equal extent with the iris, should be freely detached from its adhesions, and such of its fragments as readily admit of separation, be carried through the newly-formed pupil into the anterior chamber, for solution and absorption. If the capsule be not much thickened, it will, be sufficient to lacerate it very freely, and allow it to retain its ciliary attachments, in which case it will gradually contract and disappear from the axis of vision.

When, on the contrary, the capsule is found much thickened, and but slightly adherent to the iris, it is not possible to divide it; for in the at-

tempt, it becomes altogether detached, floats about in the vitreous humour, and frequently intercepts the passage of the light to the retina, so as very materially to obstruct vision.

In this case, the only resource left to the operator, consists in making an opening in the cornea, and extracting the floating portion of capsule. But as this step, when conducted in the usual manner, is sometimes found difficult to accomplish, from the facility with which the floating capsule eludes the point of the instrument employed to remove it, the operator should at once bring it into the anterior chamber with the iris scalpel, and then extract it through a small opening, which should be made in the outer part of the cornea for that purpose. The preferable mode of proceeding in cases of thickened capsule, either with or without a closure of the pupil, is simply to separate its adhesions from above, and then to depress the opaque membrane below the axis of vision. By allowing the ciliary attachment of the lower portion of the capsule to remain, it will thereby become fixed, and consequently be prevented from floating about in the vitreous humour.

Chapter I.—Section IV.

Contracted or obliterated Pupil, with indelible Opacities of the Transparent Cornea.

Ulceration, of the cornea, is a frequent termination of ophthalmia, which either spreads superficially, or, by penetrating deeply, effects an opening through the substance of that firm and compact tunic. In this latter case, the aqueous humour escapes, and is invariably followed by a protrusion of the iris, more or less extensive. If the opening in the cornea be small, and the ulcerative process ceases on the evacuation of the aqueous humour, in a short time the iris spontaneously recedes; and the internal membrane of the cornea having united, the opening closes, and soon heals, leaving only a cicatrix, or an indelible opacity of the cornea, without any adhesion of the iris to that tunic. But it more frequently happens, that the ulcerated opening, through the cornea, becomes sufficiently extensive to permit the passage of a considerable protrusion of the iris, which in all cases will surely occur, when the opening is large enough to admit of it.

The consequence of a protrusion of the iris, is a corresponding alteration in the form, or size of the pupil. If it be small, the pupil will merely become changed in form ; but if large, it will be either much contracted, or wholly obliterated.

The last termination happily bears no proportion in frequency to the former, which very little affects the vision of the patient, provided it is not obscured by an opacity of the cornea.

It is the operation for artificial pupil, adapted to cases where the pupil is nearly, but not entirely, obliterated, which I propose to consider in this section.

In these cases, the cicatrix of the cornea usually covers so much of the remaining portion of the natural pupil, that the capacity of distinct vision is nearly lost.

When the protrusion of the iris has been so large, as to occasion a considerable contraction in the size of the natural pupil, the cicatrix of the cornea is generally extensive.

The artificial pupil, in all cases, should be made opposite the remaining transparent portion of the cornea, the circumference of which is generally transparent in a greater degree than the centre.

It is, therefore, frequently left to the judgment of the operator, in what part of the iris it would be most advantageous to the patient, that he should make an artificial pupil.

As all persons require to see objects placed immediately before them, more frequently than in any other direction, the lower or external parts of the iris, are to be preferred for the situation of an artificial pupil. But should the cornea be found most transparent, either in its internal or upper portions, the new opening in the iris should be made opposite to it. This point being decided, the operator next proceeds to execute the different steps of the operation.

In the species of case under consideration, the crystalline lens and its capsule are usually transparent. It therefore, is an object of great importance to vision that they should be preserved from injury during the operation; for the smallest wound inflicted on either, will almost certainly occasion their opacity. Should this unfortunate accident occur, there is no alternative left, but to remove them.

In order to accomplish this important object, it will be necessary to perform a different operation from those already described; because it is

impossible to introduce any instrument behind the iris, in order to divide that membrane, without at the same time wounding the crystalline capsule and lens.

The puncture should therefore be made in the transparent cornea a little anterior to the iris, whereby the lens and its capsule will be effectually protected from injury, provided the subsequent steps of the operation be conducted in the following manner:—

The patient must be placed in the same position as if he were about to undergo the operation for cataract. An opening, with a lancet-formed knife, or with the knife used in the operation of extraction, should then be made near the circumference of the transparent cornea, one-twelfth of an inch anterior to the iris, and somewhat less than three-twelfths of an inch in extent. This opening should be made, near to the margin of that part of the cornea which still retains its transparency, and opposite to which it is proposed to form the new pupil. On withdrawing the point of the knife, the aqueous humour escapes, and the iris and cornea come into contact with each other.

If the iris does not spontaneously protrude,

which it usually does, the assistant should make a slight degree of pressure upon the eye-ball, for the purpose of occasioning it so to do. The protruded part must then be laid hold of with a pair of blunt-pointed forceps, and drawn out with great delicacy and care, until the margin of the natural pupil is brought beyond the opening of the cornea, when the projecting portion of the iris should be cut off close to the flap of that tunic, with a pair of fine scissors. By this mode of conducting the operation, one large pupil is formed, instead of two small ones, as occurs from the operation which was described and recommended by Mr. Gibson. The superior advantages resulting to the patient's vision from the operation which I have just described, will be particularly explained in the following chapter of this treatise.

The forceps which I employ in this operation, are constructed with a handle attached to the end of the shanks, similar to that of a cataract needle. This enables the operator to hold them far more steadily than would be in his power, were they of a similar construction to those in common use.

Although in most cases the iris by these means

can be made to protrude readily, yet this does not invariably take place. When it happens otherwise, the operator should be very cautious in drawing out the iris, or he will occasion it to separate from the ciliary ligament, which he should anxiously avoid for reasons which will be hereafter given.

If the operator fails, in removing by excision the whole portion of the iris extending from the opening of the cornea, to the pupillary edge of this membrane, he should again endeavour to effect its protrusion, in order to perfect the operation ; but should he also fail in this object, he is then to introduce a small hook through the opening of the cornea, and laying hold of the remaining portion of the iris, either pull it out for excision, or rupture it.

The form of the artificial pupil when the operation is thus executed, is represented in fig. 3, of the plate annexed to this treatise. In those cases, where the contraction of the pupil is occasioned by a slight adhesion of the iris to the cornea, it will be sufficient for the operator to introduce the iris scalpel through this tunic, and divide the adhesion ; by which means the

iris being liberated, the pupil expands beyond the cicatrix of the cornea, and thereby freely admits the passage of light to the retina.

Inflammation very rarely succeeds this operation, and the sight of the patient in many cases is almost perfectly restored. The transparency of the crystalline lens being preserved, the use of a deep convex glass is not generally necessary as in the cases of the division of the iris, already described. But where, from the length of time the patient has been blind, the retina has become to a considerable degree insensible from the want of exercise, a convex glass is at first very useful. By exercise, however, this insensibility diminishes when the glass may be laid aside.

Chapter I.—Section V.

Cases of indelible Opacity of the Cornea obscuring the natural Pupil.

When ulceration of the cornea opposite the natural pupil extends superficially, and does not penetrate through its substance, an indelible

opacity of the cornea takes place, and impedes the passage of light to the retina, without occasioning any change in the form of the pupil. The same consequences may also result, from lymph effused between the layers of the cornea becoming organized, and which does not admit of removal.

In this species of case, the operation is precisely the same as that described in the last section ; the operator bearing in mind, that the new pupil should always be formed in the lower, or outer part of the iris.

As there is here no adhesion of the iris to the cornea, and very rarely to the capsule of the lens, the iris will be found to protrude through the opening made in the cornea, with even greater facility, than in the state of the eye described in the last section ; and may, therefore, be regarded as a still more favourable case for the operation.

Chapter I.—Section VI.

Complete Obliteration of the Pupil, with Adhesion of the Pupillary Margin of the Iris, to the Cornea.

It not unfrequently happens that so large an opening is made through the centre of the cornea by the ulcerative process, that a very large protrusion of the iris ensues. This protrusion usually includes the whole circle of the pupil; and an union taking place between the iris and the ulcerated edges of the cornea, the pupil becomes completely obliterated, leaving a large and dense cicatrix in the centre of the cornea, the circumference only of that tunic remaining transparent. This healthy portion of the cornea is sometimes too narrow, for the formation of any kind of artificial pupil. At other times it is sufficiently extensive to admit of the iris being transversely divided, in order to form the pupil.

But it more frequently happens that the remaining transparency is so limited, as to require that as large an opening through the iris should be made opposite to it, as the operator can effect;

for this purpose the iris must either be divided vertically with the iris scalpel, or be altogether detached from the ciliary ligament. To accomplish the former object, the instrument should be introduced into the eye, and the operation conducted in all respects the same as has been already described, under the head "Obliterated "Pupil, with Opaque Lens," with this exception, that instead of perforating the coats of the eye in a line with the transverse diameter of the iris, the perforation should be made at the superior, or inferior parts of the eye-ball.

If the ball be not too much sunk in the orbit, the upper part of the eye is to be preferred for this method of operating, because in that case the aqueous humour is not so likely to escape; which, when it occurs, renders the coats flaccid, and increases the difficulties attending the operation. It will generally be found, that the temporal margin of the iris is more conveniently situated, for the introduction of the instrument, than the nasal portion; and is, therefore, to be preferred for the operation, unless the remaining transparency of the cornea be more extensive near the inner canthus, than at its external part.

If the transparent portion of the cornea be but very narrow, it becomes necessary that the opening made in the iris should be fully equal to it in extent, otherwise the new pupil will not be of sufficient size for the purposes of vision. This can only be effected by detaching the iris from the ciliary ligament.

There are, as we have already shewn, different modes by which the detachment may be effected. It may be accomplished, either by the needle in the manner described by Professor Scarpa, or as recommended by Professor Assalini, and Dr. Reisinger, by making an opening in the cornea, and introducing the forceps or hook through the aperture made for that purpose. The former would be the preferable mode on account of its occasioning the least degree of injury to the eye, were it not for the fact mentioned by Professor Scarpa, in the last edition of his work on diseases of the eye; namely, that the detached portion of the iris again falls back nearly to its natural position, and thereby closes the newly-formed opening, so as to preclude the passage of light to the retina, almost as completely as before the operation was performed. But by making an

opening in the opposite part of the cornea, to that where the detachment of the iris is intended to be effected, and by introducing through it a hook or forceps, the iris may be detached, and a portion of that membrane drawn through this opening, whereby the danger of the artificial pupil again closing, is wholly prevented. This may be accomplished by the modes recommended by Assalini or Reisinger, to the description of whose operations, page 26, I refer my readers.

Although I have in several instances succeeded in affording good vision to the patient by detaching a portion of the iris with a needle, I have preferred at all times to divide the iris, when the case admitted of my so doing.

The kind of case, suited to the operation of detaching the iris from the ciliary ligament, is that, where the transparency of the cornea admits of the iris being separated at its uppermost part. The consequence of this mode of proceeding, is for the iris to become softened by the humours of the eye, when it shrinks downwards, leaving a new pupil opposite to the upper part of the cornea, sufficiently large for the purposes of vision.

An effusion of blood in a greater or less degree

always follows the detachment of the iris, and inflammation much more frequently results from this system of forming an artificial pupil, than from either of the others.

It, therefore, becomes necessary for the surgeon to be vigilant and prompt, in the adoption of his after treatment, should symptoms arise which require the antiphlogistic treatment.

Chapter II.—Section I

Critical Analysis of the foregoing Operations.

It has been shewn, by the quotations which have been made in the preceding Chapter, that the different operations practised for artificial pupil, are founded upon three distinct principles: First, by a simple transverse or vertical *division* of the fibres of the iris. Secondly, by the removal of a portion of this membrane by *excision*. And, thirdly, by separating a part of the iris, from its attachment to the ciliary ligament.

Having copied the description of the operations pursued by the most eminent authors, who have respectively contended for each of these three different systems of practice, it becomes necessary to analyze each operation, and also to inquire which of them ought to be preferred in practice.

As the latter question can best be determined, after examining which system may be carried

into practice with the greatest probability of success, I propose, in illustration, to annex the Official Reports of the cases of all the Pensioners operated on by me, in York Hospital, which Reports were taken on the admission of each patient, and previously to his discharge from that hospital.

These Reports having been drawn up with the utmost care and attention, previously to their being officially transmitted to the War Office,—and the Directors of Greenwich Hospital having already published the results of a large proportion of my operations, upon the pensioners of their establishment, subsequently to their having themselves inspected the patients, and compared their cases with the Reports of them drawn up by the three principal medical officers of Greenwich Hospital; the Profession will be enabled to form an accurate judgment of those improvements which I have introduced into practice, in cases requiring the formation of an artificial pupil.

The operative part of surgery being a practical art, it should be the surgeon's aim to divest his operations of all complexity, as far as is compatible with their perfectness, and their ultimate success.

For it is the simplicity of an operation, provided it be founded upon a scientific basis, which constitutes one of its chief excellencies, and renders it more extensively useful. This object should, therefore, be kept prominently in view by him who ventures to deviate from the beaten track, and endeavours to render his art less imperfect than he may have found it.

Such has been my object, and in which, I trust that I have not altogether failed; while the Official Reports, in the Appendix, will shew what have been the practical results of the operations which I have ventured to represent in this Treatise, as being preferable to those in general use.

With these prefaratory remarks, I shall proceed to investigate the comparative merits of the different operations which have been described in the last chapter.

Chapter II.—Section II.

Operations for Artificial Pupil by a transverse Division of the Iris.

It will be recollected, that our eminent countryman, Mr. Cheselden, was the first person who

attempted the formation of an artificial pupil. His operation consisted in making a transverse division of a portion of the iris. To accomplish this, he introduced his spear-pointed needle or knife (one edge of which was made to cut) through the sclerotic coat, at a short distance behind the iris: and, piercing that membrane near the temporal margin, in a line with its transverse diameter, carried his instrument through the anterior chamber, almost to the nasal margin of the iris; when, turning the edge backwards, he at once withdrew the instrument out of the eye, and, in so doing, divided as much of the iris as he was able.

Whoever reflects upon the distensible structure of the iris, and the nature of its attachment to the ciliary ligament, will perceive that this operation must have very frequently failed, even when the crystalline lens and its capsule had been already removed, and that it could scarcely ever be expected to succeed, when they remained. Hence it was found, if a slight degree of pressure upon the instrument was employed while withdrawing it out of the eye, so small a division of the iris was made, that the opening closed again, and

united by the first intention; while, if a greater degree of pressure was attempted, in order to effect a larger opening in the iris, this membrane became detached wholly or in part, from the ciliary ligament. In either case the operation failed. It was the occurrence of one or other of these unfavourable results, to most of the eminent surgeons and oculists who gave Cheselden's operation a trial, which chiefly occasioned the degree of discredit into which it had fallen throughout Europe.

Accident, as I have already explained, first suggested to me the practicability of restoring Cheselden's principle, of effecting a transverse division of the iris, for the purpose of forming an artificial pupil. But, in order to render it a useful operation, experience convinced me that it was necessary to alter the steps very considerably, and also to employ a different instrument from that described by Cheselden; for I found it quite impossible, with his spear-pointed knife, to make a division of the iris of sufficient extent, to prevent the re-union of its edges by the first intention, without employing so great a degree of pressure, as to separate that membrane from the ciliary

ligament; after which, any further attempt to increase the division occasioned a still greater degree of separation.

It would have been criminal to have persisted in practising an operation, the steps of which experience had proved to be so defective; yet, to remedy these defects, I found to be a work of considerable difficulty.

For nearly a year, the improvement of this operation engrossed a large portion of my attention; and, by reflecting on the causes of the failures which occurred to me during this period, I became convinced that they might, in most instances, be avoided, by obtaining a better formed instrument than that of Cheselden, and by employing it so as to produce the least possible pressure upon the iris, while effecting its division.

My expectations have not been disappointed. The curved edge of the iris scalpel is unquestionably better suited than any other form to cut keenly; and by repeating the efforts to divide the iris, (taking care, in so doing, to make as slight a degree of pressure as possible upon the instrument, instead of withdrawing it out of the

eye at once, as recommended by Cheselden,) a division of that membrane may, in almost all cases, be effected, of a requisite size to establish a permanent artificial pupil.

It was necessary to make another deviation from Cheselden's operation, in order to render it generally successful. Cheselden introduced his instrument through the coats of the eye with its flat surface parallel to the plane of the iris, which rendered it necessary for him to turn its edge backwards, after he had pierced the iris, and carried the point of the instrument through the anterior chamber, near to its nasal margin. The consequence of this change of position was to leave an opening in the coats of the eye, by the side of the instrument, through which the aqueous, and frequently the semi-dissolved vitreous humours made their escape so abundantly, as to occasion a flaccidity of the whole eye-ball. By this accident, a sufficient degree of counter-resistance was not afforded to the instrument, to enable the operator to divide the iris; the elasticity and toughness of which, render its division at all times an operation requiring both expertness and delicacy of hand.

To obviate this objection, the iris scalpel should be introduced at once through the coats of the eye, in the direction in which it is to be employed, namely, with its edge turned backwards ; whereby a very small opening is left for the humours to escape, as the instrument nearly fills up the aperture made during its introduction. Hence, then, although Cheselden and myself had the same object in view,—a transverse division of the fibres of the iris,—yet it is evident, that our instruments and modes of proceeding to effect this object are very different.

But if I have shewn that Cheselden's operation and mine differ very considerably in the simple closure of the pupil, where the crystalline and its capsule have been already removed, it will be seen, that in cases of obliterated pupil complicated with cataract, the difference is still greater.

Cheselden supposed, in this species of case, that the crystalline lens was of a smaller size than natural; and he, therefore, made a division of the iris either above or below its transverse diameter, with the expectation of altogether avoiding that opaque body.

His opinion, with respect to the altered size of the lens was, however, incorrect; for a closure of the pupil, in these cases, most commonly arises from inflammation of the iris, and not from any disease of the crystalline lens. Now, as the lens, in its healthy state, is, in most cases, nearly of an equal size with the iris, he could not make an aperture in any part of this membrane, which would not be obstructed by the opaque lens.

The great solvent powers of the humours of the eye, and the existence of the absorbents having been ascertained since Cheselden's time, and it being his opinion that the adhesions existing between the iris and the cataract were too intimate to admit of separation, which he, therefore, did not attempt; it is apparent, that this description of case, (by far the most frequent requiring an operation for artificial pupil, by a division of the iris,) must, almost always, have been found incurable by those who pursued his method of operating. But so far from the opaque lens being an impediment to the success of the operation which I have described, as applicable to this species of case, it is, on the contrary, very useful,

by enabling the operator to place portions of it between the edges of the divided iris, which act as a plug or wedge, in preventing their re-union by the first intention. By the period that these portions are dissolved and absorbed, all disposition to a reclosure of the opening in the iris has ceased, the radiated fibres having become permanently contracted; whereby an artificial pupil is established, which can never again become closed, unless the eye be subsequently attacked with acute deep-seated inflammation.

It is necessary for the operator to bear in mind, that in all cases of contraction or obliteration of the pupil, from inflammation of the iris, the capsule of the lens is firmly adherent throughout its whole extent to the posterior part of that membrane. A mere division of the iris, without, at the same time, dividing the opaque capsule and lens, is therefore useless; as the radiated fibres of the iris being necessarily prevented from contracting, the division which has been made of that membrane, re-unites, and heals by the first intention, and the operation altogether fails.

For the foregoing reasons, I may venture to

conclude, that in this species of case, Cheselden's operation, however adroitly executed, could very rarely, if ever, succeed; while, on the contrary, when the operation which has been just described, is properly performed, it will as rarely fail.

Even in cases where the lens has been already removed, but where an opaque and tough capsule still adheres to the posterior part of the iris, a permanent artificial pupil may, with great certainty, be formed, provided the division of the iris be made sufficiently extensive.

The manner in which a permanent artificial pupil is thus established, when formed upon Cheselden's principle, appears to be by effecting a division of the circular fibres of the iris, by which the radiated fibres are left without antagonists; consequently, the latter become permanently contracted, leaving an opening in the iris of sufficient size for all the purposes of vision.

In my recent publication on Cataract, I availed myself of the opportunity, to shew the incorrectness of Professor Scarpa's opinions respecting my operations for the artificial pupil, as contained in a Critique, written on them in 1812, by that

eminent surgeon, and addressed in the form of Letters, to Professor Maunoir, of Geneva, by whom they were published, in the Bibliothèque Britannique.

One objection made by the Professor to my operation I shall quote in his own words, to shew something of the spirit in which his criticism is written. After inquiring whether my "remarkable "success*" in dividing the iris, arose from the transverse section having penetrated through a contracted natural pupil, instead of dividing that membrane above or below its centre as other operators had done, he adds, "This is what ap- "pears to me worthy of inquiry, reckoning *for* "*nothing* what Mr. Adams places *great confidence* "in, the interposition of a fragment of the cry- "stalline between the edges of the transverse "incision of the iris, as a means of preventing a "return of the disease. Since, however slow "may be the absorption and disappearance of "this kind of wedge, made with a fragment of

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* It appears extraordinary, that the Professor should admit the "remarkable success" of my operations for artificial pupil, almost in the very sentence in which he not only deprecates, but pronounces them to be of no permanent utility.

" the crystalline, in proportion as its dissolution " takes place, *the pupil will re-unite in the same* " *manner as in other wounds*, when they begin to " heal, in proportion as the foreign body, which " separates their edges, is dispersed and removed " by degrees."

It may be proper to observe, that at the time this Critique was written, Professor Scarpa had not seen my work, but formed his opinion of my operations from a translation of my description of them, published by Professor Maunoir, who withheld both the observations and explanations which accompanied them. Now, it so happened, that anticipating the objections which might probably be urged against my operations, I had, in the Section of my work, entitled " General Ob- " servations," proved by facts, as well as arguments, the futility of all those which have been since advanced by the Professor; and had very particularly dwelt on the necessity of that step of the operation, which he " reckons for nothing," as being one essentially necessary to its general success. His statement, indeed, that an obliteration of the new pupil will take place, in proportion as the paque lens becomes absorbed, " analogous to

" other wounds when they begin to heal, in " proportion as the foreign body which separates " their edges is dispersed and removed by de- " grees," is obviously at variance with every sound pathological principle; for the iris being composed of two orders of muscular fibres, which act as antagonists to each other, and one of these orders being divided by the knife, and its action thereby destroyed; an extraneous body introduced into a wound made in a part differently organized, can bear no analogy to the fragments of the crystalline introduced between the edges of the divided iris, the structure of which differs so widely from that of any other membrane in the human frame.

The Professor, however, seems determined not to approve my practice, for in the second edition of his work on Diseases of the Eye, recently published, (having then perused my work of 1812,) he, in a great measure, loses sight of his former objections, yet without acknowledging he had done so; and advances a new series, varying very considerably from those whose fallacy had been already shewn. It is the inaccuracy, as well as the want of candour, in the latter set

of objections, which I shall now proceed to notice.

The Professor sets out, by most unaccountably confounding my peculiar modes of forming an artificial pupil, with Cheselden's method of executing this operation; and says, "Sir William "Adams has lately undertaken to demonstrate, "not only the practicability, but the advantage, "of forming an artificial pupil, *after the manner* "*of Cheselden*, which, for a long time, has "been regarded by the best practitioners as "ineffectual, and of uncertain issue."

Now in the work which Professor Scarpa criticises, far from "undertaking to demonstrate "the practicability of Cheselden's operation," I had, (equally as in the present Treatise,) most strongly deprecated it, pointing out the various objections to which it is liable, as well as the impracticability of its general success; and, also, had very minutely demonstrated the difference in the steps of my operation, from that described by Cheselden, more particularly when obliterated pupil is complicated with capsular or lenticular cataract.

The Professor next remarks, that he is unable

to perceive any material difference between Cheselden's "large lancet-shaped needle," and the small curved-edged iris scalpel which I employ. The difference in their *form* I have already described; and I shall now point out the difference in their action and *efficiency*.

When Cheselden's instrument is used in the manner recommended by him, its extreme point is the part applied to the iris, in order to effect its division, which scratches or tears rather than cuts; whereas, the curved edge of my iris scalpel, being that part which acts upon the iris, a sufficient surface of the instrument is applied to this membrane, to effect its division with facility and success.

I repeatedly tried Cheselden's instrument without success, but with my iris scalpel I very rarely fail to accomplish my object.

The Professor gives it as his opinion, that the point of the straight needle or knife will become entangled in the internal part of the cornea, in its passage through the anterior chamber. Admitting for the sake of argument, that it were so to do, it would be of no injury to the patient, as, by withdrawing the instrument a little, its

point would be instantly extricated, and the surgeon would then be enabled to complete the operation in the manner I have described. But the fact is this, that it is quite unnecessary to give the needle the curved direction described by the Professor; and should the anterior chamber be of its natural depth, there is even a superabundance of room for the passage of the iris scalpel, without touching either the cornea or iris. It is, therefore, only when the anterior chamber is unusually small, (unless, indeed, there be a palpable defect of dexterity in the operator,) that such an accident could happen as that apprehended by Professor Scarpa; and even here it may be avoided by pressing the iris back with the scalpel, immediately on the passage of its point through that membrane, and during the attempt to carry it on towards the nose.

In some very rare instances, the iris and cornea are absolutely adherent, when the anterior chamber is of course obliterated. I have, however, seen but one case of this kind, which occurred in one of the Greenwich pensioners. But even in this unfavourable state of the eye, I succeeded in making a well-formed artificial pupil, by first

detaching the adhesion between the cornea and iris, with a crooked needle, and at a subsequent period, when the eye had recovered itself, performing the operation for artificial pupil.

Professor Scarpa advances, as another objection to my operation, the repetition of the cuts, in order to make a sufficiently-extensive division of the iris, which he conceives to be very difficult to effect precisely in the same line of direction; and he quotes my own statement, that unless this division extends full two-thirds of the diameter of the iris, the opening will again close.

The necessity of caution in repeating the cuts, I had myself pointed out in a particular manner, and my reason for so doing, originated in my wish to deter any person from undertaking this operation, to whom nature had not given a steady hand and a delicate touch; being then, as now, persuaded, that without these endowments the operation in question will frequently fail; but to those who possess them, there will be no difficulty; for surely no expert operator would vary the direction of his knife when the eye is kept steady by a speculum oculi. I have, in the preceding part of this treatise, stated that it is not necessary

to divide the iris to the extent which I recommended in my work of 1812. At which time, from the unfavourable opinions given by so many authors, being strongly impressed with the liability of the artificial pupil again to become closed, when formed according to Cheselden's principle, I conceived that this free division was the most likely means of preventing an unfavourable termination; but the extensive opportunities which I have since had of performing this operation, have convinced me, that no such apprehension need be entertained.

Professor Scarpa farther states, that, as appears from my work, owing to the great softness and extensibility of the iris, the knife occasionally makes two small punctures in that membrane without dividing the intermediate portion; and that the capsule of the lens, when thickened, cannot be readily cut through at the same time with the iris scalpel. I have performed the operation for artificial pupil by division of the iris in nearly a hundred instances, and in the whole extent of my practice this occurrence has never happened but once. This case, which I published in 1812, the Professor cites as an objection

to my operation; but he has omitted to give the whole of its history; namely, that the closure of the pupil arose from the operation for extracting the cataract, performed by the Baron de Wenzel thirteen years before; and that, notwithstanding, (as is also stated in my work), I was unable at the first operation to divide the intermediate portion of the iris, yet, at the end of eight days, the patient, with the assistance of convex glasses, saw to read distinctly; and that by a second operation this band was divided, and a large artificial pupil formed, by which the patient, in the words of a most respectable clergyman, on whom I had also successfully operated for artificial pupil about the same time, was enabled "to see as well as I "(the author) did myself." Surely, then, in candour, *this case* ought not to have been employed as an argument against my operation!!

With respect to the impracticability of cutting through the crystalline capsule with the iris scalpel when it is much thickened, Professor Scarpa's statement is quite correct. But here I have an alternative, namely, by placing it below the inferior edge of the artificial pupil, and, consequently, out of the axis of vision. I have given

the case of the clergyman just alluded to, on whom I succeeded by this means in restoring almost *perfect sight*, although the operation for the extraction of the cataract had failed twenty years before. These important facts, the Professor has also withheld from the knowledge of his readers.

Professor Scarpa dwells at some length on what I had myself very particularly mentioned, namely, the impossibility of making a transverse division of the iris after it has become detached from the ciliary ligament. But surely this circumstance should have induced him to approve rather than to condemn, a repetition of the stroke of the knife in making the division of the iris, by which *alone* can the accident, in many instances, be avoided; and if the operation be performed by an expert operator, this detachment will very rarely occur.

The Professor further says: "The separation "of the iris from the ciliary ligament must hap- "pen the more easily in attempting to form a "*lateral pupil* by a *vertical* incision in the iris "near its great circumference, by passing the "knife from the upper to the lower part of the

" eye, as Sir William Adams proposes; an opera-
" tion *very easy in theory*, but of *very difficult*
" *execution in practice.*"

I had stated in my work, that the iris, in some instances, had become detached from the ciliary ligament in my endeavour to divide it; when, I added, the new pupil " becomes similar to that " of Scarpa." Now, although in these instances I had failed in my proposed object, yet having formed a new pupil in the manner which at that period was *exclusively recommended* by the Professor, I certainly did not expect his censure for having done so; while, as to the accuracy of his opinion, that the vertical division of the iris may be considered as an operation more of a " *theo-*
" *retical*" than of a " *practical nature*," I shall only observe, that had I proposed the operation without having practised it, I should have freely stated the fact; but I have practised it with success, both before, and since the appearance of the publication, in which I recommended the operation in question. There are at the present moment two cases of this kind in York Hospital, upon which I operated in the presence of a very considerable number of professional gentlemen. In

one case the new pupil is well formed, and affords the patient useful vision; in the other, the lens is not yet absorbed, but the pupil is of a good size.

Of the "permanency of the artificial pupil," made by a simple transverse incision of the iris, the Professor says that "I myself appear to enter-" tain some doubts" on it; having laid it down as a good maxim to be followed, that the operation should be completed by introducing between the lips of the wound in the iris some of the fragments of the capsule or opaque lens. That the introduction of some of the fragments of the lens between the edges of the divided iris is necessary to prevent their immediate re-closure, experience had fully convinced me, and strongly impressed with the importance of this step of the operation, I pointed it out to the particular notice of my readers in the work which the Professor criticises*. But my

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* In proof of the necessity of employing this wedge, in order to prevent a re-closure of the divided iris by the first intention, two of the cases at York Hospital may be cited; and they are the only instances in which a re-closure of the divided iris has taken place. In each, from my having omitted this precaution, the new pupil, which had been formed of a full size, became completely closed, thereby rendering a repetition of the operation necessary.

language and intentions have been equally misunderstood or misrepresented by him; for the caution which I gave related *solely* to the prevention of a *re-union of the divided iris by the first intention*, but in no respect to the *permanency* of the new pupil *after it had been established.*

The assertion, that I have expressed doubts of the permanency of the new pupil, is completely gratuitous, as indeed will be evident to the reader on a perusal of the following quotation taken from my work of 1812. " It is proba-
" ble there are some persons, notwithstanding
" all the caution with which these operations (by
" a transverse division of the iris,) have been
" performed, and the success which has attended
" them, who may apprehend, that at some sub-
" sequent period, the artificial pupil, when thus
" made, may again become closed. Three years
" have elapsed since I operated on Bligh (Case
" 11), and there has been no disposition to a
" re-union of the fibres of the iris in his case,
" nor have I heard of any of my other patients
" to whom it has happened. Indeed, the manner
" in which a closure of the pupil takes place,
" renders it impossible such an event can ever

" occur, unless an adventitious membrane be " formed by a subsequent inflammatory attack of " the eye, of which formation I have never seen " but one instance *."

The Professor concludes his Criticism by saying, that when there has been a protrusion of the iris through the cornea, and an adhesion has formed between these two parts, he is not unwilling to believe, that the iris may, in this case, afford a sufficient degree of resistance to the action of the knife, to admit of its being readily and *cleanly* divided; and that in consequence of the attachment of one of the lips of the wounded iris to the puncture of the cornea, a simple transverse division of that membrane may be sufficient to form a permanent artificial pupil. He adds, " And what more particularly confirms me in " this opinion is, that of the successful operations " of this kind, executed by Sir William Adams, " nearly half of them were on patients who were " affected with protrusion of the iris†."

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* See my work on Diseases of the Eye, page 53 and 54, Case 14, to which the above observation refers, when vision was perfectly restored by a second operation.

† See the last edition of Professor Scarpa's work. Page 374.

In my work of 1812, I published six cases, to which I presume these observations of the Professor are directed, as in them the cataract with its capsule had been previously removed; but I have also given five other cases where these bodies remained. In none of the latter was there any adhesion of the iris to the cornea; notwithstanding which circumstance, the iris was divided in each case with equal success, as in those where the iris adhered to the cornea. Now, if success attended my operations in five cases, where no adhesion between the iris and cornea existed, the same favourable results might reasonably be expected in as many hundred instances, provided the operations were similarly executed. These cases are sufficient to prove that an adhesion between the iris and cornea is *not* necessary, in order to obtain a transverse division of the iris. Indeed, when we consider that the iris is attached to the ciliary ligament, that it is supported behind by the adherent capsule, containing the opaque crystalline, which is also supported posteriorly by the vitreous humour; it will be obvious, that a sufficient counter-resistance is afforded to the action of the iris scalpel, to effect the proposed division, provided it be employed with the requisite dexterity.

With regard to the necessity of the existence of adhesion of the iris to the cornea, in order to ensure a permanent artificial pupil, after it has been thus formed, the hypothesis is disproved both by facts and argument; for I have never known a single instance of the new pupil becoming closed, after having been once established. On the contrary, in all the cases where I have had an opportunity of seeing my patients at a remote period of time from the operation, I have invariably found that the radiated fibres had become contracted in a greater degree than immediately afterwards, thereby increasing the size of the new pupil*. Indeed, from the circular order of fibres being completely divided during the operation, and, from the capsule of the lens being altogether removed, (both of which are absolutely necessary to a closure of the pupil, resulting from inflammation of the iris,) this event can never occur; unless, as I have already

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* Fig. 2, in the Plate at the beginning of this Treatise, is copied from a drawing made of the present state of the artificial pupil in John Mercer's eye. A representation of this pupil was, together with his case, published in my work of 1812. By comparing the two figures, which have been drawn at an interval of nearly seven years, it will be seen, that the artificial pupil has considerably increased in size.

observed, it be caused by an attack of acute inflammation.

The Professor's assertion, that *one-half of my successful operations of this kind*, were performed upon patients affected with protrusion of the iris, is rather extraordinary; for it may be asked, by what means has Professor Scarpa been informed, either of the number of my operations for the artificial pupil, or the circumstances of the several cases?—having certainly never given to the Public a list of either?

The few cases in my work of 1812, illustrative of the nature of my practice, were even then, but a small portion of those upon which I had successfully operated; since which period, I have very extensively practised this operation, and I can affirm, that but a small proportion of the cases requiring a division of the iris, have been attended with any kind of adhesion between the iris and cornea.

Since the formation of the ophthalmic establishment at York Hospital, there have been several instances of this operation, performed in the presence of a considerable number of professional gentlemen, where no adhesion existed, and where the division of the iris was effected with the most

complete success. Many of these cases, as also of those at Greenwich Hospital, were minutely examined by Professor Maunoir, who fully admitted to me, the inaccuracy of Professor Scarpa's opinion upon this point, and who also assured me, that he would convey to him his sentiments upon the subject.

The Professor says, " No one, perhaps, more " ardently wished than myself the discovery of " some mode of forming an artificial pupil, *with-* " *out the necessity of recurring to the division of* " *the cornea;* from which, on account of the ex- " tent of it, compared with the circumference of " the cornea, I have always apprehended serious " consequences; but, after repeated attempts, " and a more mature examination of this im- " portant subject, *reason* and *experience* have " fully convinced me, that on account of the soft " texture and great extensibility of the iris and " its want of sufficient support on both its sides, " an *accurate* and *safe* division of it *can only* be " made in the precise degree and direction which " the variety or complexity of the case demands, " *by means of the scissors.* And experience has " also proved, that in order to obtain with the

" most absolute certainty, a permanent artificial " pupil, it is necessary to make two incisions in " the iris, so as to form a triangular flap in this " membrane: all which, it is obvious, cannot be " executed, without previously to the division " of the iris, by means of the scissors, an inci- " sion being made in the cornea, of requisite " proportion, but of as small an extent as pos- " sible*."

It must appear extraordinary, that when the " ardent wish" which is here expressed by Professor Scarpa, for the discovery of a method of forming an artificial pupil, *without opening the cornea*, has been realized in the operations which I have described, by effecting a transverse division of the iris; yet, that these should be the operations which he has so decidedly condemned.

A very extensive experience of these operations completely disproves the assertion, that " an " accurate and safe division of the iris can *only* " be made in the precise degree and direction

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* See the Translation of Professor Scarpa's last edition of his work on Diseases of the Eye, by Briggs. Pages 374 and 375.

" which the variety and complexity of the case " demands, by means of the scissors," and I can appeal to great numbers of the Profession, and particularly to Professor Maunoir, whether more perfect cases of artificial pupil can be desired, than those which I have permanently effected upon the pensioners at Greenwich and York Hospitals, by a transverse division of the iris; and which were accomplished without any opening of the cornea, or the employment of the scissors.

Chapter II.—Section III.

Analysis of the Operations by Excision.

The operation for artificial pupil, which succeeded that described by Cheselden, was introduced by the Baron de Wenzel. It consists, as the reader will recollect, in making a section of the cornea full one-half the extent of its circumference; and, in carrying the knife across the anterior chamber, its point is passed through the iris, a short distance from the centre of that membrane, and is again brought out a little

beyond it; by which means, a small flap is formed somewhat similar in shape to that of the cornea. A pair of small scissors are then introduced within the cavity of the cornea, and this flap of the iris, or as much of it as possible, is removed.

As the Baron de Wenzel makes no mention of cataract complicated with a closure of the pupil, I conclude that he did not consider his operation as being applicable to this, a very frequent form of the disease.

The Baron's operation is equally inapplicable to those cases of indelible opacity of the cornea, requiring the formation of an artificial pupil; for it is impossible to carry the point of the knife through the iris, as recommended by him, without also wounding the crystalline lens, from which its opacity will certainly follow. Hence, the passage of light to the retina, will be impeded in a still greater degree than by the opacity of the cornea.

From these circumstances, it may be concluded, that the Baron intended to confine the practice of his operation, to those cases where closure of the pupil occurred after the lens had been removed.

But I strongly object to the principle, of making so extensive an opening in the cornea as he recommends, under any circumstance; the danger of doing which I shall hereafter more particularly explain.

Another objection to this operation is admitted by the Baron himself; namely, that it sometimes happened in consequence of the retraction of the fibres of the iris, that it was very difficult to perceive and cut off the flap of this membrane. A further objection, is the facility with which the vitreous humour may escape through the opening of the cornea, which, being frequently in part or wholly disorganized, in cases requiring the formation of an artificial pupil, must then necessarily do so in such abundance, as to endanger the very existence of the eye; there being nothing to retard this escape, after the iris and cornea have been divided, in cases where no lens or capsule remain.

In consequence of the difficulty experienced in removing the flap of the iris, M. Pelier de Quinsgy recommended a division of the cornea and iris, as described by the Baron, without attempting to remove the flap. But the same objections, in respect to opening the cornea, exist

in this case, as in the Baron's operation ; while, it is probable, in consequence of the flap being suffered to remain, that the artificial pupil may re-unite by the first intention.

Plenck's operation being very similar to that of the Baron de Wenzel, is, consequently, liable to the same objections.

Janin's proposal to make a vertical division of the fibres of the iris in its nasal portion with scissors, after a large section of the cornea had been effected, is liable to a similar objection as the plan of Pelier de Quinsgy, and would, probably, be found more difficult of execution. Indeed, Professor Scarpa affirms, that the opening thus made, from being oval, afterwards becomes filiform ; consequently, it is altogether useless for the purposes of vision.

Professor Beer's method of introducing a small hook within the opening made in the cornea, to draw out the iris, preparatory to its removal by excision, is also liable to objections ; for, in the only species of case to which this operation is applicable, namely, where the lens and its capsule are still transparent, the hook, from any motion of the eye, which motion is frequently involuntary,

would certainly occasion a wound of the capsule and lens, in which case, their opacity will be a necessary consequence. While in those cases where obliterated pupil, complicated with cataract, results from inflammation of the iris, a protrusion can very rarely, if ever, be effected in the manner proposed by Professor Beer; unless, indeed, he were to detach a portion of the iris from the ciliary ligament, an operation, which, as will hereafter be shewn, should, if possible, be avoided. But, admitting that the iris could be made to protrude, and that a well-formed artificial pupil could be accomplished, no benefit to vision would thereby accrue, unless the opaque lens were also removed; respecting which, no mention is made by Professor Scarpa, from whose work I have taken my description of this operation.

Mr. Gibson's operation, consisting in the removal of a portion of the protruded part of the iris, is exposed to the objection of causing the patient to have two small pupils; namely, the remaining portion of the natural pupil, and that which has been newly formed.

It is necessary to explain, that in the species of case in which Mr. Gibson recommended this ope-

ration, an ulcerated opening in the cornea had occurred, through which a large portion of the iris had protruded. The consequence of such a protrusion is to contract the dimensions of the natural pupil, in proportion to the bulk of the protruded part of the iris; and most commonly even the remaining portion of the pupil is obscured in part or wholly by the cicatrix of the cornea, which remains after the healing of the ulcer.

The effects produced on vision by the existence of two small pupils, are very embarrassing to the patient; for not only does the remaining intersection of the iris, at all times cause a great confusion of sight, but the dilatation and contraction of the remaining portion of the natural pupil affects the artificial pupil, the very *reverse* of that which is required, and causing still more imperfect vision. Thus, when the eye is exposed to a strong light, the natural pupil contracts, and, consequently, enlarges the artificial pupil, whereby a greater, instead of a less, portion of light is admitted to the retina; on the contrary, at night, when the pupil requires to be of the largest size, for the purpose of admitting as much light as possible, the natural pupil dilates, and proportionably diminishes the artificial pupil.

By the alterations I have made in this operation, which operation, thus improved, has been extensively practised on the pensioners in York Hospital, the objections I have adduced, militating against Beer's and Gibson's modes of practice, are altogether avoided. For, by drawing out so much of the protruded portion of the iris with forceps, beyond the opening of the cornea, as to allow of the excision of the iris being carried into the aperture of the pupil, not only all danger of wounding the crystalline capsule or lens is avoided, to which Beer's method is liable, but also the formation of two pupils, which is the result, when Gibson's operation is performed*.

The opening which I make in the cornea is as small as is compatible with the object of the operation; and certainly of a less size than is required for the execution either of Beer's or Gibson's operations, since, by the aid of the forceps, I can command the necessary degree of protrusion of

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* It is proper for me to state, that Mr. Gibson in his Treatise says, it sometimes happens that the iris, from pressure upon the ball, protrudes so much, that the operator removes a portion of it, extending from the ciliary to the pupillary margin; but this appeared to be the effect of accident, as he recommends the operation already described.

the iris. Hence, it is apparent, that my operation is more easily executed than that of Beer, and inflicts less injury on the organ than that of Gibson, for even to make pressure on the ball, in order to occasion a protrusion of the iris, is rarely necessary. It possesses likewise the advantages of both, without being exposed to the objections of either; one large pupil being established which can never again become closed, except from a subsequent attack of acute inflammation of the iris. The success of this operation, has fully corresponded with the favourable description I have given of it, as may be seen by referring to the official reports contained in the Appendix.

Professor Maunoir's modes of operating for the different species of artificial pupil are unquestionably highly ingenious; and I have no hesitation in offering a decided opinion, that they are superior to all other methods of forming an artificial pupil by effecting an opening of the cornea, which had preceded them.

But highly as I appreciate the talents which devised, and the success which has attended, his skilful operations; and, however painful it is to me to differ in opinion, from a gentleman for whom I

entertain great personal esteem, and for whose eminent professional attainments, I also feel a high degree of respect; yet I deem it a duty, while examining the relative merits of the different operations for artificial pupil, minutely to investigate the steps of his operations; lest from the authority attached to his opinions, as well as the exclusive approbation bestowed on them by Professor Scarpa, those defects which I have to point out might escape general observation. The imperfections to which I allude will, I fear, render Professor Maunoir's operations far less successful in other hands, than they have proved in those of that eminently skilful operator.

When the closure of the pupil results from the operation for cataract, it frequently happens that the vitreous humour is so morbidly fluid, that the entire discharge of it would certainly ensue, were Professor Maunoir's method of making a double incision of the iris, commonly practised.

This diseased change of the vitreous humour, has frequently occasioned its escape so abundantly through the puncture of the coats of the eye, by the side of my smallest sized iris scalpel, as completely to occasion their collapse. Now, although

this fluid will generally be re-produced, yet, if atmospheric air be admitted into the posterior cavity of the eye-ball, it will generally give rise to violent inflammation and suppuration, terminating in a total destruction of the organ.

Every surgeon, at all conversant with ophthalmic surgery, must be aware, that these accidents are far more likely to occur, when the cornea has been opened, and a large artificial pupil formed in the manner recommended by Professor Maunoir, than when the iris scalpel is employed, in the manner I have described, and recommended.

The permanency of the new pupil, formed by either of these two methods, may be considered as equal; for I trust it has been satisfactorily established, that a re-closure cannot occur when an artificial pupil has been executed according to the mode I have laid down; while its form, size, and situation, must be admitted as superior to that of Professor Maunoir's, on comparing figure 2 in the Plate contained in this treatise, with figures 11, 12, and 13 in the last edition of Professor Scarpa's work on Diseases of the Eye, in which are represented the different forms of an artificial pupil, when executed by Professor Maunoir's operation.

When obliterated pupil exists with an opacity of the capsule or crystalline, or with both, the removal of these, is equally necessary with the formation of an artificial pupil, in order to restore sight to the patient.

Professor Maunoir's plan of including these opaque bodies and the iris within the same stroke of the scissors, although admirably conceived, must yet, I fear, frequently be found difficult of execution. For, in addition to the objections I have just stated, and which apply with still greater force to this species of case, may be added the difficulty of dividing a large and solid lens, with such delicately-constructed scissors as those employed by Professor Maunoir.

Indeed, I question its practicability in many cases of indurated capsule and lens, especially where ossification has taken place in those bodies, which I have repeatedly found to exist with obliterated pupil*. In this case they must be extracted whole and entire, which will occasion not only a considerable degree of injury to the

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* I was present at an operation for artificial pupil, when Mr. Saunders extracted a lens which was completely ossified; and I have frequently seen in my own practice, depositions of calcareous matter in the capsule.

iris by the separation of the adhesions existing between them, and by forcing the lens through the newly-formed pupil; but the cornea likewise will require to be opened full one half of its circumference, as in the common operation for extraction of the cataract, in order to admit of their free passage. Now it must be obvious that the danger of a copious escape of the vitreous humour, even should it be in a healthy state, is here very great, while, if it be in any degree disorganized, its total discharge, and a consequent loss of the organ is inevitable. But, even when the lens and capsule are soft, and admit of division in the most favourable manner, their extraction by means of pressure, or by the assistance of a scoop, not only renders the operation still more complicated, but must also in a great degree, tend to produce the accidents just enumerated.

That species of case in which Professor Maunoir's method of operating appears to be most applicable, is where, from indelible opacities of the cornea, an artificial pupil is required, the crystalline lens and capsule being transparent. The reader will recollect, that the Professor's operation consists in the introduction of one of

the blades of a pair of blunt-pointed scissors through the remaining portion of the pupil; and after passing it between the lens and iris, effecting a double section of the latter membrane in the form of the letter V. But even in this case it is not entirely exempt from objections, for it frequently happens, a small part only of the cornea remains transparent; and that portion of the iris which forms the base of the new pupil not being removed, occupies so large a portion of the space opposite to the remaining transparency, that the artificial pupil cannot be considered sufficiently large for the purposes of vision *. On the contrary, by making a considerably-smaller opening in the cornea than is necessary to admit of the blades of the scissors being opened within its cavity in the manner recommended by Professor Maunoir, and by effecting a protrusion and excision of a portion of the iris in the manner already described, the artificial pupil must obviously be of a considerably larger size, as it will extend from the pupillary to the ciliary margin of that membrane. The fa-

* See Plate 2, Fig. xi., in the last edition of Professor Scarpa's work on Diseases of the Eye, translated by Briggs.

cility of executing my operation is also much greater, than when it is necessary to introduce scissors within the cavity of the cornea.

When the natural pupil is entirely closed, from a large protrusion of the iris through an ulcerated opening in the centre of the cornea, Professor Maunoir recommends the iris to be pierced with the sharp-pointed blade of his scissors, in order to effect the double incision. But in doing this, the crystalline capsule and lens must necessarily be wounded, when their opacity will as certainly result, as if the iris had been perpendicularly divided with the iris scalpel in the manner I have recommended; by which method the pupil might be formed of a larger size, and the greater risk of inflammation, by opening the cornea, be avoided; while the capsule and lens would be removed by absorption with greater safety than if the attempt were made to remove them with a scoop.

Chapter II.—Section IV.

Analysis of the Operations for the Formation of artificial Pupil, by detaching a Portion of the Iris from the ciliary Ligament.

The first operation which I have described, for effecting an artificial pupil by detaching a portion of the iris from the ciliary ligament, is that recommended by Professor Scarpa. It will be in the recollection of my readers, that it consists in separating a small part of that membrane from the ciliary ligament with a curved pointed needle, which is introduced through the coats of the eye, as in the operation of couching. This is afterwards passed through the iris near to its nasal margin, which membrane is there separated to some extent from its ciliary attachment. The pain attending this operation, I can positively affirm from repeated observation, to be very much greater! than that experienced from the performance of either of the operations, founded on a division or excision of the iris. It also occasions a considerable effusion of blood, from the rupture of those vessels which are situated near the greater

margin of the iris. The inflammation which usually follows this operation, is also much greater, than commonly results from those accomplished by a division, or excision of the iris.

But what renders this operation still more objectionable, is the fact candidly admitted by Professor Scarpa himself, in the last edition of his work; namely, that after the patient has undergone the severe pain usually attendant on the operation, and should he even be so fortunate as to preserve his eye from the destruction which not unfrequently results from the consecutive inflammation; in other words, even if the operation succeeds, it is, nevertheless, of no permanent benefit; for the oval aperture, which is formed by the operation, in process of time closes so much, as to be of little or no utility to the patient. Professor Scarpa, therefore, abandons this operation as useless. But while, by the Professor's own admission, he prematurely recommended to the Profession this operation for exclusive adoption, he appears to me to have also rejected it without sufficient consideration; for although by detaching the iris at its *nasal margin* in the manner recommended by the Professor, it will again become so much contracted as to obstruct the passage of

the rays of light to the retina, yet I can affirm, that by detaching a portion of that membrane at its *upper* margin, no such accident will occur. The success derived from this mode of operating, may be ascribed to the increased flaccidity, acquired by the separated portion of the iris from the agency of the aqueous humour; in consequence of which it descends, leaving a new pupil, sufficiently large for all the purposes of vision *. I have repeatedly performed this latter operation with perfect success; and I have seen cases where it has been executed by others. The results in all have been equally favourable. Indeed, I cannot see how it is possible for the iris, after it has been rendered thus flaccid by the humours of the eye, to reascend in opposition to its gravity, so as to occasion the closure of the artificial pupil.

Professor Assalini's method of making an opening in the cornea, detaching a part of the iris from the ciliary ligament, and cutting off with scissors the portion of that membrane which he draws out of the eye by means of his forceps, certainly protects the crystalline lens from injury, and

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* See Fig. 3, in the Plate at the beginning of this Treatise.

prevents the pupil from again becoming contracted, in the manner described by Professor Scarpa; but it appears to me, that the consecutive inflammation will be greater. I have, however, never performed Professor Assalini's operation, but I have drawn these conclusions from a careful consideration of the several steps of the operation; conceiving, that whether the iris be partially detached from the ciliary ligament by means of the needle from behind, or the forceps be passed through an opening of the cornea in front of that membrane, the degree of pain will be pretty much the same, while the tendency to inflammation will be certainly increased by the incision in the cornea.

Dr. Reisinger makes a small opening in the cornea, and then introduces a double hook which also acts as a pair of forceps. Having fixed this hook in the iris, he presses the two blades together, thereby imitating the action of a pair of forceps, with which conjoint power he detaches a part of the iris from the ciliary ligament.

It would appear from the description of this operation which I have copied from the work of Professor Scarpa, that Dr. Reisinger makes no dis-

tinction between the different forms of disease which may require the formation of an artificial pupil, but uniformly detaches a portion of the iris from the ciliary ligament, whether the lens be already removed or not, or whether it be transparent or otherwise. I have not seen Dr. Reisinger's work, but if Professor Scarpa's description of his practice be correct, it appears to me to be highly injudicious; for, independently of that degree of indistinct vision which must always result from the new pupil being made at the circumference, instead of the centre of the iris, it is evident that when the crystalline lens or capsule, or both, are opaque, the formation of an artificial pupil can be of no use to the patient, unless they be also removed, of which Professor Scarpa makes no mention; while, on the other hand, should the lens be transparent, it must necessarily be wounded by the double hook, in consequence of which it will speedily become opaque.

These objections apply in an equal degree to Professor Assalini's operation, in cases where the lens or capsule are already opaque; but his forceps will not, like the double hook of Reisinger,

produce an opacity of the lens and its capsule, in cases where they have retained their transparency.

The probability of inflammation, from detaching a portion of the iris from the ciliary ligament is, I conceive, pretty much the same, whether it be effected by the double hook or the forceps; and since the cornea must be opened in both operations, I can approve neither the one nor the other.

For the reasons which have been given in this section, I conceive it has been satisfactorily shewn, that the formation of an artificial pupil, by detaching a portion of the iris from the ciliary ligament, in whatever manner it may be executed, cannot be regarded as an eligible operation; unless, indeed, when the case admits of the separation being made at its upper part, or when so small a portion of the cornea remains transparent, that the dimensions of this, and of the artificial pupil must be equal.

Chapter III.—Section I.

General Observations.

HAVING so fully considered the relative merits and defects of the different operations for artificial pupil deserving notice, it will not be necessary for me to occupy much more of my reader's attention respecting them. In addition, however, to what has been already said upon the subject, it is proper to mention, that whenever the case will admit of it, the operations by division or excision of the iris, should be preferred to the detachment of this membrane from the ciliary ligament, the attendant pain and consecutive inflammation being usually much greater in the latter, than in the two former operations. Indeed, when they are properly executed, the trifling degree of pain attending them would scarcely be believed, by those unaccustomed to witness operations upon the eye. This fact is the more re-

markable, because the iris has been generally supposed to possess acute sensibility. Experience, however, has convinced me, that unless it be in a state of disease, this is not the case. The iris, likewise, suffers much less from puncture, division, or excision, than from rupture, detachment, or pressure.

The morbid effects produced by pressure, are strongly exemplified, when a solid cataract is allowed to press for any length of time upon the posterior or anterior surfaces of the iris; or when a portion of it, having protruded through a section or puncture of the cornea, has become strangulated. In either case, the pain and inflammation of the ball are very acute, sometimes terminating in its total destruction.

There is danger at all times to be apprehended from a large opening in the cornea, whether that opening be made in consequence of this, or any other operation upon the eye. For, independently of those accidents which are generally known to attend this step, there is sometimes a degree of inflammation, and general excitement produced, which cannot be referred simply to the mechanical injury sustained by the organ, in consequence of

the operation ; and I am, therefore, inclined to believe, that from the cornea forming one portion of the parietes of a cavity, some peculiar effects are produced from its being opened, not unlike what occurs in exposing other natural cavities. To this opinion I am the more inclined, from a consideration of the natural insensibility of that tunic when in a state of health, a mere division of which cannot, I conceive, of itself account for the extraordinary excitement which sometimes takes place, even after the patient has been prepared for the operation in the most cautious manner *.

Of the morbid consequences attendant on opening the cornea, no person appears more strongly impressed than Professor Scarpa.

How inconsistent then is it, that he should deprecate, as he has done, those operations which *alone* are capable of effecting a permanent well-

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* I have recently seen a case, where the usual operation of extracting the cataract had been performed in the most satisfactory manner, after the patient (an elderly man) had been very carefully prepared for undergoing it; yet inflammatory action ran so high as to occasion ymptoms of phrenitis, and his life even was considered to have been saved, by the copious bleedings, both general and local, which were adopted.

formed artificial pupil, without resorting to this dangerous step!

But the Professor is not consistent, even with regard to his opinions respecting his own operations. In the preface to the former edition of his work on diseases of the eye, he says, "that whoever "will exactly follow the plan of cure which he has "laid down in the treatment of this class of dis-"eases, both with respect to the remedies and "operations, will not only easily understand what "he has advanced, but will also find that the event "will *generally*, if not *always*, *accord with what* "*he has asserted**."

The Professor, in *that* edition of his work, *exclusively* recommends the operation for artificial pupil, by detaching a portion of the iris from the ciliary ligament. Yet this very operation, in the *recent* edition, he pronounces to be "*useless*." His words are, "*Experience*, to which all *theory* "is subordinate, has convinced me, that inde-"pendently of the mode of operating which I "proposed being inapplicable, of which I was

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* See preface in the former edition of Professor Scarpa's work on Diseases of the Eye, page 14.

" aware, to the greater number of complicated " cases of closure of the pupil, I was also mis- " taken with regard to the most material point " in the operation, that is, the *permanency of its* " *success;* as I have since found that the mar- " ginal pupil, an opening which is formed by " the detachment of the greater circumference of " the iris from the ciliary ligament, from being " oval, becomes in process of time filiform, and " *consequently useless* ! !*"

Again, in page 489 of the former edition, he says, " In the small number of cases of contrac- " tion of the pupil which has fallen within my " observation and practice, supervening to the " operation for the cataract by extraction or de- " pression, I could never persuade myself to " open the cornea, in order to make the perpen- " dicular division of the iris, with the scissors " proposed by Janin, or any other by means of " the knife, being aware of the frequent serious " accidents which accompany the opening of the " cornea, in cases where the eyes have been af-

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* See Professor Scarpa's last edition on Diseases of the Eye, pages 368 and 369.

" fected after the first operation, with violent " internal ophthalmia, spasm, or a morbidly- " increased sensibility of the immediate organ of " vision. Nor could I ever induce myself to di- " vide the cornea again, upon which, after the " extraction of the cataract, there had remained " an irregular cicatrix ; *and I have been still less* " *inclined to do it, knowing, that it is not so easy* " *a matter as some may perhaps imagine, to* " *divide the iris with the scissors, when it has become* " *flaccid from the discharge of the aqueous hu-* " *mour.*"

The Professor's *objection* to the employment of the scissors for dividing the iris is here unequivocally expressed.

In the last edition of his work, on the contrary, he *strongly recommends* their employment, and says, " After repeated attempts, and more mature " examination of this important subject, (a di- " vision of the cornea,) *reason* and *experience have* " *fully convinced me*, that, on account of the soft " texture, and great extensibility of the iris, and " its want of sufficient support on both its sides, " *an accurate and safe division of it can only be* " *made in the precise degree and direction which*

" *the variety or complexness of the case demands,*
" *by means of the scissors ;* and *experience has also*
" *proved,* that in order to obtain, with the most
" absolute certainty, a permanent artificial pupil,
" it is necessary to make two incisions in the
" iris, so as to form a triangular flap in this
" membrane ; all which, it is obvious, can-
" not be executed, without previously to the
" division of the iris, *by means of the scissors,* an
" incision being made in the cornea, of requi-
" site proportion, but of as small an extent as
" possible*."

These extracts sufficiently demonstrate the mutable character of the Professor's *practical opinions*, even in respect to his own operations and practice.

The *theoretical opinions*, therefore, which he has advanced in matters where the result of *experience alone ought to have weight*, would not, I should imagine, be regarded with much attention, even had I not, as I trust it will be admitted I have done in the preceding Chapter of this

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* See the recent edition of Professor Scarpa's work on Diseases of the Eye. Page 375.

Treatise, proved them to be erroneous, as respects my operations for artificial pupil.

It has been a subject of much regret to me, that I have been thus obliged to call in question the judgment and candour, of this eminent surgeon. But his successive attempts to depreciate, as far as lay in his power, the value and utility of operations which he had never himself tried, but which I extensively and successfully practised,—also, his laying down as axioms, *mere theoretical speculations*, in contradiction *to my facts*, has left me no alternative, but to defend the reputation of my practice, or to hazard its falling into discredit, in the opinion of the Profession.

Had the learned Professor borne in mind, that when I first made the attempt to form an artificial pupil, it was an operation, almost practically unknown in England, for the preceding fifty years,—that I have not only revived the principle of Cheselden's operation, which had been *universally condemned*, and, indeed, become almost obsolete throughout Europe, but have also rendered it a highly successful operation, his candour surely would have deterred him from

condemning it in the hasty manner he has done; and that too, without possessing any practical knowledge whatever of its merits or defects.

I very much doubt, if the Professor has been more successful, in the performance of any operation within the whole range of surgery, than this has proved in my hands. Upon the pensioners of Greenwich Hospital, I performed thirteen operations for artificial pupil by a transverse division of the iris. Not an eye was lost; the success being, with one exception, complete in all; and even in this case, I should have sufficiently enlarged the new pupil by a subsequent operation, had not the patient become consumptive, of which disease he ultimately died, but he enjoyed useful vision for some time before that event took place*.

In private practice, my success has been nearly equal; while the annexed Official Reports will shew, what have been the results of those opera-

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* After his death, I dissected this man's eye, and found that the whole of the capsule and lens had been removed by absorption; and that the division of the iris, which had in part re-closed, might have been again separated by the slightest effort of the instrument.

tions upon the pensioners in the institution, which has been founded by Government, for the exclusive treatment of diseases of the eye.

Having invited the Profession at large to witness my operations and practice there, they have had an opportunity of ascertaining these results. I, therefore, feel no anxiety with regard to any unfavourable impression which can be made on the mind of the English surgeon, by the too hasty assumptions of the Professor; and, should the weight attached to them on the continent, prevent my practice from being as generally adopted there, as it has been in this country, humanity and science will be the sufferers, rather than myself. I have now fulfilled my duty, in laying before the Profession the whole of the operations which I practise for the artificial pupil. This will enable them to determine, by whose authority they will be guided in practice, whether by that of Professor Scarpa, who has never performed these operations, nor seen them executed, or by that of the author, who, for nearly ten years past, has very extensively and successfully practised them.

From the explanations which I have offered,

with regard to the operation for artificial pupil, by a transverse division of the iris, I conclude, that no apprehension can any longer be entertained, that the new pupil, when once established, will ever again become closed.

Should acute inflammation, however, result from the performance of the operation, a *contraction* of the pupil is very likely to ensue; but success may, with equal certainty, be obtained, by a repetition of the operation, at a subsequent period, as if no contraction had taken place.

In one case, I saw an adventitious membrane, produced by inflammation, subsequently to the formation of the artificial pupil, which membrane adhered to the posterior part of the iris, and obstructed the passage of light to the retina. But it was easily lacerated and detached; when the patient, Colonel ———, was enabled to see with perfect distinctness, although he had been blind for thirty years, and many of the most eminent characters in the Profession had pronounced his disease to be gutta serena*.

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* I published this gentleman's case, (Case 14,) in my work of 1812. He called on me about a year since, when I found

When the operation for artificial pupil is performed by the *excision* of a portion of the iris, inflammation may also result; but, instead of occasioning a contraction of the new pupil, as in the former case when the iris is divided, lymph is effused, which, being deposited upon the capsule of the lens, occasions an opacity of this membrane, and the necessity of removing both it and the lens, by a subsequent operation. In one instance only have I known it occasion the loss of an eye. This was in the case of a very old man, (Case 32 in the Appendix,) who saw surrounding objects with perfect distinctness, immediately after the operation, but was afterwards attacked with such severe ophthalmia, as to resist every effort which could be employed to prevent suppuration, and a total destruction of the organ.

The operation of *detaching* a portion of the iris, has proved by no means satisfactory upon the

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the artificial pupil considerably enlarged, by an increased contraction of the radiated fibres of the iris. He could read with great facility print of the smallest type, and see the most distant objects with the eye upon which I had operated, when assisted by a proper glass.

pensioners; for in two out of three instances, in which it has been performed, the eyes suppurated, notwithstanding the most powerful means were used to arrest the progress of the inflammation.

In one of these unsuccessful cases, the detachment was effected with the needle. But the operation was followed by an equal degree of inflammation, as when the cornea was opened, and the iris detached with a hook.

The iris is sometimes found altered in its structure, so as to admit of the opaque lens being visible through it. This morbid change appears to be produced, by the pressure of the lens upon the posterior part of the iris. In such cases, a considerable portion of this membrane separates with the opaque lens during the operation, whereby a new pupil is formed, of a very large size, and nearly of a circular form.

The vitreous humour, also, is liable to diseased changes. It is frequently found in part or wholly disorganized. Sometimes, it is discoloured*;

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* In three cases which I have seen, it was in one of a pea-green colour; in another, of a yellowish hue resembling amber;

at other times, partly absorbed. In the latter case, the eye-ball is soft to the touch, and of a smaller size than usual.

When the vitreous humour is transparent, its partial or total disorganization does not appear materially to affect vision. For after the cataract has been removed, or an artificial pupil formed, vision appears to be equally good as if no such morbid change had taken place.

It has been stated to me, that the opinion entertained on this point, by a most distinguished oculist in Germany, differs materially from mine: the eminent Professor in question, conceiving that the retina, in such a state of the vitreous humour, must either be diseased, or that it will certainly become so.

Now, I can affirm, that in several cases, where, from the fluidity of the vitreous humour, it has escaped so abundantly during the operation, through the puncture made by the needle, as to occasion almost an entire collapse of the coats of the eye; yet, after its regeneration, the patient's

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and, in the third, of a dark brown colour like porter. In all, the vitreous humour was as fluid as water.

vision has been restored as perfectly, as is usual after the operation for cataract.

In my recent work on Cataract, I have published the case of a gentleman, where the vitreous humour was completely disorganized, and escaped in great quantity during the operation. Each opaque lens sunk to the bottom of the eye immediately on being detached. Ever since the operation, they have continued to roll about according to the position of the head, entirely obstructing the pupils when it is held forwards, or downwards, as in the act of tying a shoe. Within a few days of committing these observations to paper, I have examined this patient's eyes, (as has also a surgeon and teacher of anatomy of great eminence,) by kneeling, while the patient stooped forwards, which enabled us to see with perfect distinctness the opaque lenses, surrounded by their capsules, blocking up the pupils, and undiminished in size, notwithstanding the operation was performed nearly five years since. This gentleman, who is more than sixty years of age, sees much better since the operation than he had ever been previously capable of doing, having been afflicted with cataracts from his

birth; and up to the present period the retina has sustained no injury, either from the disorganized state of the vitreous humour, or from the rolling about of the opaque crystallines.

Even when so much of the vitreous humour is absorbed, as to occasion a flaccid and diminished condition of the eye, I have in several instances operated with perfect success, both in the removal of cataract, and in the formation of an artificial pupil. Indeed the success which has attended the operations for artificial pupil in these morbid states of the eye, has frequently excited my surprise. For in several cases, which have scarcely offered a sufficiently-favourable prospect to justify the performance of an operation, but which, at the urgent importunity of the patient, I have executed almost contrary to my judgment, the happiest results have, nevertheless, been obtained. In the case of a young lady, who had been for many years a patient of the late Mr. Ware, I actually refused, from the soft state of her eye, to operate upon it. But encouraged by my success upon cases of a similar kind, I again sent for her to town to undergo the operation for artificial pupil, which in one eye terminated in the most

favourable manner, the patient being enabled to see the minutest objects. An artificial pupil was formed with equal success in the other eye, but the retina had lost its sensibility.

In determining upon the part of the iris best adapted to the formation of an artificial pupil, the centre should be fixed upon, when the transparency of the cornea admits of so doing; for as the cornea possesses considerable refractive power*, the rays of light are naturally converged towards the centre of the iris. Any considerable deviation, therefore, from the natural situation of the pupil, will occasion a proportionate decrease of vision.

The opacities of the cornea frequently render it necessary, that the artificial pupil should be made near to the circumference of the iris. In this situation, although the artificial pupil is not

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* This refractive power is very remarkable in the disease called conical cornea, in which, from the morbid thickening of that tunic, it deviates from its natural form, the segment of a sphere, and becomes conical, by which the rays of light are so much refracted, that the patients can only see near objects, vision being similarly confused as if a deep convex glass were placed before the healthy eye. By removing the crystalline lens, I have in three cases of this kind, restored good and almost perfect vision.

so useful as if it were more central, yet it proves very advantageous to the patient. In such cases, from the rays of light falling upon a part of the retina, which was not destined by nature to receive them, the power of perception is so feeble, from never having been called into action, that as deep a convex glass is at first necessary, although the crystalline lens and its investing capsule are retained in a healthy state, as when these are removed, in cases where a central artificial pupil has been made, and the retina possesses its natural sensibility. In process of time, however, from exercising the eye, the retina acquires the requisite sensibility, so as to render a convex glass no longer necessary. It is also frequently found in those cases of obliterated pupil resulting from inflammation of the iris, that the retina is in a considerable degree insensible after an artificial pupil has been formed. This appears to arise from some morbid effects which are produced on the retina during the continuation of the inflammation. But even here its sensibility may, from exercise, be restored sufficiently to afford useful sight.

This favourable result occurred to several of the pensioners at Greenwich Hospital, who, pre-

viously to my seeing them, had been pronounced by the highest professional authorities, to labour under gutta serena.

These cases, and many similar ones, have led me to conclude, that the operation for artificial pupil should be performed whenever the patient is capable of perceiving light from darkness, and the motion of an opaque body interposed between the eye and the light. For, although in some instances, the patient's vision has not been benefited, notwithstanding the operation has been successfully accomplished; yet, in by far the greater number of instances, a very valuable degree of sight has resulted from it.

In forming either a central or lateral artificial pupil, it is of the greatest importance to the patient, that it be made of a sufficiently large size. It is in the power of the surgeon, when operating for a central artificial pupil, by a division of the iris, to make the opening in it of as large an extent as he may think proper, which is not the case when forming the lateral artificial pupil.

This arises from the indelible opacity of the cornea, which renders it necessary to form the new pupil opposite to the remaining clear portion

of that tunic. Now, as it frequently happens that this transparent part is but of a small size, it is of great importance to vision that the new pupil should be made fully equal to it. On this account the mode of forming an artificial pupil by the excision of a portion of the iris, which I have recommended, is preferable to all others, because the pupil may with greater certainty be formed of the requisite size, than by any other mode of conducting the operation.

The vitreous humour, in cases of closed pupil resulting from inflammation of the iris, is found to be in a state of disorganization much more frequently than in any other morbid state of the eye *. In cases where this organization has occurred, the patient, from the want of a due refraction of the rays of light subsequently to the

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* The vitreous humour was in a state of total disorganization in three eyes, upon which I recently operated in succession for artificial pupil, by a division of the iris, at the Ophthalmic Institution. In each case the aqueous fluid escaped so abundantly by the side of the iris scalpel, that the coats collapsed and became nearly drained. This occurred in the presence of a numerous class of students and medical practitioners, whose attention I directed to the fact in a very particular manner, shewing them the flaccid and collapsed state of the eyes after the operations had been completed.

removal of the lens, is unable to see any object with distinctness, unless assisted by an appropriate convex glass. Luminous objects especially are represented in a very peculiar manner; for the flame of a candle, instead of preserving its natural appearance, is seen by the patient like a *stream of light*, as wide as a riband.

These are the observations which I have to offer to the Profession with regard to the formation of artificial pupil; and the Public may, I trust, be materially benefited by their communication; experience having already demonstrated that they are capable of restoring sight to numbers of persons unhappily afflicted with blindness, whose cases have hitherto been considered hopeless and incurable.

FINIS.

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POSTSCRIPT.

SINCE this Treatise has been prepared for the press, a *third* criticism upon my writings has been published by Professor Scarpa.

This critique professes to be a reply to the observations which, in my recent work on Cataract, I felt it necessary to make on his *first* criticism.

It will, I trust, be admitted, that I have demonstrated in this Treatise, not only that Professor Scarpa has specified, as if emanating from himself, those unfavourable circumstances in the formation of artificial pupil by a division of the iris, which in the work he criticises, I had very particularly cautioned the operator to avoid, in order to obtain general success; but that, he has also thought proper to keep out of his reader's view, the means I had also there described, by which those unfavourable circumstances might be, in part, or wholly, prevented from occurring.

In his recent criticism he has gone further; for

he describes, as my operations, modes of practice utterly unknown to me,—and imputes to me language which I have no where employed, but which he makes to appear as if quoted from my work, even specifying a particular page where it might be found.

Of the truth of these statements, any person may be convinced, who will take the trouble to compare my work on Cataract with those parts of the Professor's critique, published in the two last numbers of the Edinburgh Journal.

It would be trespassing too much on the patience of the reader, to enter into an examination of all the numerous mis-statements contained in this publication. I shall, therefore, confine myself to such extracts from it, as will enable them to form some judgment of its general character, and clearly evince, how little credit is to be attached to Professor Scarpa's critical productions.

Professor Scarpa, in his *first* criticism, *positively denied* that a solid cataract ever reascended, after having been depressed. Mr. Adams, he says, "is afraid that the lens may again re-"ascend after it has been depressed; but let him

" be easy, for it is inexperienced oculists only, " who have mistaken a secondary membranous " cataract for a reascended lens *."

To prove that others, besides " inexperienced " oculists," were of opinion, that a lens was liable to reascend, after having been depressed, I made quotations in my recent work on Cataract, from the writings of Celsus, St. Ives, Janin, Mr. Hey, Richter, Warner, Benjamin Bell, and Heister, all of whom mention instances where the lens *had reascended,* and, in some cases, had even passed into the anterior chamber *several years after having been depressed*, from whence they were extracted through an opening made in the cornea.

But how does the Professor, in his recent criticism, attempt to overturn such authorities, and to refute the *facts* which those eminent Surgeons have related? Why, by the simple assertion, that " he considers them as *mere fables* † *!!* "

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* See a criticism of my work of 1812, published in the Bibliothèque Britannique, at Geneva, contained in letters addressed to Professor Maunoir, by Professor Scarpa.

† See the Edinburgh Medical and Surgical Journal, No. 58, page 139.

Again—In a private letter to Mr. Wishart of Edinburgh, who has been a pupil of Professor Scarpa's, he says, "You will have remarked in the "recent work of Sir William Adams, upon Cata- "ract, *that he criticises me* in several places. *This* "*has induced me* to write several letters to Pro- "fessor Maunoir, of Geneva, which have been "published in the Journal of Milan*. In regard "to SOLID cataract, I do not believe there will "be found any one who, if he is able to depress "it with facility, and by that means speedily to "restore sight to the patient, would have re- "course to *two operations*, both of them *laborious* "and *dangerous*; the one to divide it into pieces, "the other to extract it by opening the cornea †."

No person, on perusing this letter, could suppose that it is *two distinct operations*, published at an interval of five years, which Professor Scarpa has here confounded together, and described

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* It appears from the above passages, that the Professor has not been actuated in the present instance by the love of science, or the desire to improve his art; but that he has written and published the letters in question, *because I had criticised him.*

† See Edinburgh Medical and Surgical Journal, No. 58, page 129.

to be one and the same—much less, as will be seen by the following quotation, that I had expressly stated in the very work on Cataract, which he professes to criticise, my having *wholly abandoned* one of them, and substituted the other in its stead.

In the preface to that work I say, " all the " operations described in the present publication " have appeared in my work on diseases of the " eye, published in 1812, excepting the *new* " *method of extraction*, which has been matured " since that book was written. I there described " *a particular mode of operating for the solid cata-* " *ract of old persons, which I have now entirely laid* " *aside in favour of my more recent discovery.*"

Notwithstanding this declaration, Professor Scarpa has copied the description of this operation, given in my work of 1812, as if I continued to practise, and to recommend it; and immediately proceeds to say, " Sir William " Adams, in his recent work on this subject, *adds*, " (page 268), that when the cataract is of such " a degree of hardness, that *it cannot be sliced* " *with the needle nor with the small knife*, it is " proper to push it entire through the pupil into

" the anterior chamber, (provided, he says, " that the pupil be sufficiently dilated), to " be then extracted by means of an opening of " the cornea, proportioned to the size of the " lens. Considering attentively this description, " it follows, in the first place, that it is incum- " bent on Sir William Adams, and all those " who would wish to follow his practice of curing " *solid* cataract, by breaking it into pieces, and " pushing the fragments into the anterior cham- " ber, to know, previous to the operation, the " degree of hardness of the opaque lens ; not to " be obliged, if it were too hard, to withdraw " the double-edged needle, and introduce the " small knife, similar to that used for the division " of the iris *."

From these passages it would appear, that I still prefer my former operation of slicing in pieces the *solid cataract* of old persons, in order to effect its removal by absorption, whenever I am able so to do; and that it is only when the lens is too hard to admit of accomplishing this " with

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* See Edinburgh Medical and Surgical Journal, No. 59, page 304.

" the needle or small knife" that I have recourse to another step, namely, that of pushing the lens *entire* into the anterior chamber, for immediate extraction ;—further, that when the lens resists division by means of the double-edged needle, I withdraw it, and introduce in its stead the iris scalpel, with the hope of being thereby enabled to effect the proposed object.

But what are the facts ? The quotation just given from the preface of my recent work, proves my having there expressly stated, that I had *wholly abandoned* the operation of slicing into fragments with the small knife the solid cataract of old persons, (to which species of case the operation, quoted by the Professor, was confined,) and that I had substituted my new operation of extraction in its stead.—And *no where* have I recommended the withdrawing of the double-edged needle, to introduce in its stead the small knife, similar to that used for the division of the iris.

But, the Professor has still further misrepresented me ; for, in page 268, to which he refers, I treat of " *adherent lenticular cataract*," and not of the " *solid cataract in old persons*," as he would

have it appear,—while the small knife, which he represents to be used in dividing the cataract, I there recommended to be employed for the formation of artificial pupil by a division of the iris, and for placing the *solid cataract* in the anterior chamber *for extraction, without any attempt to divide it* ! !*

Now if one operation be described for another, and one form of disease substituted for another, no author can guard against such misrepresentation—the very principle of criticism is thereby destroyed, and science, instead of advancing, will necessarily be made to retrograde.

If the criticisms of Professor Scarpa, as published in the last numbers of the Edinburgh Journal, be really his, it will be painful to every

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* "When the lens is hard and solid, and the pupil sufficiently large to admit of its free passage, I at once carry the lens forwards into the anterior chamber, with the two-edged needle, ready for extraction; but more commonly the pupil requires enlargement before this can be effected. The iris scalpel should, in this case, be employed, *at first*, with which the iris should be divided transversely full two-thirds of its extent, and the lens afterwards carried through this new opening into the anterior chamber with the point of the same instrument." See my recent work on Cataract, pages 267-268.

liberal surgeon, to witness the detection of fallacies, such as are now exhibited, connected with so respectable a name. It might have been expected from the high reputation of the Professor, that, in examining the progress of a science he has himself so zealously pursued, he would have been more ready to promote, than to repress the exertions of others. He might, no doubt, have considered it a paramount duty to correct error, but the means employed for such an end in his different criticisms upon my works, are quite unworthy of Professor Scarpa.

The omission or perversion of a single fact, once detected, invalidates the force of the most ingenious criticism. In the present instance, that omission, and that perversion, have been fully proved; and whether the fault lie with the Professor himself, or be attributable to an inaccurate translation, it is to be hoped, that in either case, due atonement will be made for such a violation of justice.

In conclusion, I must beg permission, from personal considerations, to observe, how unfair it is towards, and how inconvenient for, any medical man to be thus frequently called upon

to repel misrepresentation. I have zealously laboured to improve my Profession, and have candidly imparted to others the knowledge I have acquired. My time is much too valuable to waste in further controversy. It, therefore, becomes an imperative duty on me, to declare my determination to notice such productions no longer. Whatever construction may be put on this silence, by those who have their views in their attempts to provoke discussion, I flatter myself I may now be secure of the good opinion, of the candid and well-intentioned part of the Profession. To the opinion of the rest, I am indifferent.

FINIS.

London: W. CLOWES, Northumberland-court.

MEDICAL REPORT.

Results of Operations for the Formation of Artificial Pupil, by *Excision* of a Portion of the Iris.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease.	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
1	32nd.	Peter Dellicott	20	16 June	*Left* eye lost. *Right* eye, cicatrix of the cornea; the pupil not so large as a pin's head, and obscured by the cicatrix. *State of Vision.*—Can scarcely see the shadow of his hand when placed between him and the light.	Years. 9	24 August 1818	An artificial pupil formed in the right eye. *State of Vision.*—Does not know how to read, but is able to point out the smallest letters in a newspaper, and can see the time by a watch, without a glass, and also to walk any where without a guide.	Was led up by a guide. This case was marked in the return on admission as being "very unfavourable for treatment."
2	78th.	Hugh M'Kay	42	1 Dec. 1817.	*Left* eye lost. *Right* eye, cornea opaque opposite the axis of vision. Pupil closed. *Vision.*—Nearly blind.	10	24 March	An artificial pupil formed in the right eye. *Vision.*—Can read small print, and tell the time by a watch; in fact, he sees sufficiently well for all the common purposes of life.	A very bad case.

3	79th.	John Fraser	32	1 Dec. 1817.	Cicatrices on both corneæ obscuring the pupils. *Vision.*—Is unable to walk in a strange place.	7	24 Mar.	An artificial pupil formed in each eye. *Vision.*—Is able to distinguish small print, and tell the hour by a watch with each eye, but he sees best with the left. His vision is sufficiently good to enable him to return to his labour.	
4	9th Vet. Bat.	John Kirkwood	37	Ditto	*Right* eye lost. *Left* pupil obliterated, and upper segment of the cornea opaque from a cicatrix. *Vision.*—Blind.	11	Ditto	An artificial pupil made in the right eye. *Vision.*—Can see very well to walk any where, and with a glass to distinguish large print, and the hours on a watch-dial.	This man acted for several weeks as a servant in the hospital subsequently to his receiving sight by the operation.
5	94th.	Adam Gardner	36	Ditto	*Left* eye lost. *Right* eye, rupture of the cornea, and the pupil almost closed. *Vision.*—Can make his way alone only in places with which he is acquainted. Does not know one person from another, but can make out objects when placed very close to the eye. Has been unable to do any kind of labour since his discharge.	2	7 Oct.	*Right* eye, an artificial pupil formed. *Vision.*—Is able to walk any where alone, read the smallest print of a newspaper with fluency, unassisted by a glass, and tell the hour by a watch.	This man declared to the Right Hon. the Secretary at War that most of the patients who had undergone operations for artificial pupil could see near as well as himself, but were deterred from acknowledging the full extent of the benefit they had received, lest any part of their pensions should be withdrawn.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
6	94th.	James Wilson	22	24 July	*Left* eye lost. *Right* eye, rupture of the cornea, and pupil almost obliterated. *State of Vision.*—Can see to find his way alone in places with which he is acquainted; and can see objects, if placed near him, with tolerable distinctness, but cannot see to read, or contribute towards his maintenance by labour.	Years. 1½	7 Oct.	An artificial pupil formed in the *right* eye and a protusion of the membrane of the aqueous humour removed. *State of Vision.*—Is able to walk any where without a guide, read the smallest print of a newspaper fluently, and tell the time by a watch.	
7	89th.	John Silver	48	16 June	*Right* eye lost. *Left* eye, cicatrix of the cornea obscuring the pupil. *Vision.*—Can only see light from darkness, or in the evening in a dark room, he can distinguish a person if clothed in white or red.	17	7 Oct.	An artificial pupil formed in the *left* eye. *Vision.*—Can walk any where alone, and by the assistance of a glass can tell the hour by a watch.	Was led up by a guide. There was a doubt expressed with regard to the benefit obtained by this patient from the operation. He was subsequently examined by the Secretary at War, before whom he fully proved the accuracy of the above report.

8	94th.	Wm. M'Intosh	40	1 June	*Left* eye, cicatrix of the cornea opposite the axis of vision. *Right* eye ulcer of the cornea. *State of Vision.*—*Left* eye, can discern no object whatever. *Right* eye ; vision very weak after using it for some time.	Months. 10	7 Oct.	*Left* eye ; an artificial pupil formed. *Right* eye, ulcer of the cornea healed. *State of Vision.*—Is able to walk any where without a guide, and by the assistance of a glass to read the large sized print of a newspaper. *Right* eye ; much stronger and clearer, being able to read the smallest print of a newspaper fluently.	This man has worked at his trade as a shoemaker ever since his discharge from the Hospital.
9	81st.	John Hill	31	18 Mar.	Granular lids, with opacity, vascularity and rupture of both corneæ. Protrusion of the right iris, and contracted or obliterated pupil of the *left* eye. *Vision.*—Cannot walk any where without a guide, or distinguish any object ; is barely able to discern light from darkness.	Years. 2	2 Sept.	The granulations, and all disease of the eye-lids completely removed. The opacity and vascularity also removed. An artificial pupil formed in each eye. *Vision.*—Is able to walk any where alone, and with glasses can read moderate-sized print with the *left* eye. He cannot, he says, clearly distinguish objects with the *right* eye. His vision will improve considerably by exercising his eyes.	An extreme bad case.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
10	26th.	Geo. Gavine	25	1 Dec. 1817	*Left* eye, lost from rupture of the cornea. *Right* eye, pupil obliterated with cicatrix of the cornea opposite the axis of vision. Granular lids and some appearance of acute inflammation. *State of Vision.*—*Right* eye, can barely make his way with it.	Years. 4	30 Jan.	*Left* eye, as on admission, but less inflamed. *Right* eye, an artificial pupil formed, and the granulations of the lids nearly removed. *State of Vision.*—*Right* eye, can read the smallest print of a newspaper with glasses, and moderate sized print without them. Can walk any where with perfect ease and security unassisted by a guide.	
11	61st.	Duncan M'Cullum	32	24 July	*Right* eye lost. *Left* eye highly granular lids with rupture, and vascularity of the cornea. The pupil contracted and obscured by the cicatrix. *Vision.*—Cannot walk without a guide, or distinguish any object whatever.	2	Ditto	*Left* eye, granulations of the lids, and vascularity of the cornea removed, and an artificial pupil formed. *Vision.*—Is able to walk without a guide, tell the hour by a watch, and read moderate sized print by the assistance of glasses.	Fig. 3, in the Plate at the beginning of this Treatise is the representation of the artificial pupil in this man's case.

12	72nd.	Wm. Mackay	39	24 July	*Left* eye, rupture, opacity and vascularity of the cornea, the pupil much contracted and obscured by a cicatrix. The eye-lids much granulated. *Right* eye, slight opacity of the cornea. *Vision.*—*Left* eye, can only perceive light from darkness. *Right* eye, is unable to work at his trade, and sees every object double, which renders him unable either to read, or to discern a person's features three yards from him.	6	30 Jan.	*Right* eye, opacity of the cornea much diminished. *Left* eye, granulations of the lids, and vascularity of the cornea removed; an artificial pupil formed. *Right* eye, is now able to work at his trade of a gold-smith and jeweller, to read the smallest print, and to discern distant objects. He now no longer sees objects double. *Vision.*—*Left* eye, is able to read the smallest print of a newspaper and tell the hour by a watch.	
13	90th.	James James	33	Ditto	Cicatrix of the *left* cornea obscuring the pupil. Total obliteration of the *right* pupil with a cicatrix of the cornea. *Vision.*—Cannot perceive objects.	7	Ditto	An artificial pupil formed in the right eye. *Vision.*—Is able to tell the time by a watch with perfect accuracy; can distinguish small print, but does not know the letters. He sees sufficiently well for labour.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
14	92nd.	Jas. Mengies	44	16 June	*Right* eye, cicatrix of the cornea opposite the pupil, which is wholly obliterated from a rupture of the cornea. *Left* eye, cicatrix of the cornea, extending nearly over the whole of the pupil. *State of Vision.*—*Right* eye, can distinguish the shadow of a person when standing before him. *Left* eye, can walk about, but not safely, in a strange place. Is able to perceive objects indistinctly, but does not know one person from another; is unable to do any kind of labour.	Years. 9	24 Aug. 1818	*Right* eye, has not been treated. *Left* eye, an artificial pupil formed. *State of Vision.*—He can read the smallest print of a newspaper, and can now walk any where without a guide, being able to see objects at a very considerable distance from him.	Was led up by a guide.
15	4th Gar. Bat.	Wm. Hastie	28	16 June	Rupture and cicatrix of both corneæ, with adherent iris. The cicatrix of the left cornea covering the pupil. *Vision.*—*Right* eye, can read and write. *Left* eye, is able to discern large objects when the pupil is dilated by shading the eye with the hand.	8	Ditto	*Right* eye, underwent no treatment. *Left* eye, an artificial pupil formed. *Vision.*—*Left* eye, is able to read the smallest print of a newspaper fluently without the assistance of a glass.	

16	21st.	Wm. M'Neill	36	16 June	*Right* eye enlarged, cornea opaque, and the eye completely amaurotic. *Left* eye, cicatrix of the cornea, and contracted pupil behind the cicatrix. *Vision.*—In an obscure light, and when he closes the eye-lids he can distinguish with the left eye the features of a person, and can walk about in strange places with spectacles.	11	24 Aug.	*Right* eye underwent no treatment. *Left* eye, an artificial pupil formed. *Vision.*—Is able to read the smallest print of a newspaper.	Was led up by a guide. This man employed spectacles very peculiarly contrived. The pupil being very little larger than the eye of a needle, he effected its dilatation by wearing spectacles of very dark green glass, and in its margin opposite the pupil was a hole, through which he saw objects.
17	79th.	Jas. Graham	30	Ditto	*Right* eye, cicatrix of the cornea, and contracted pupil. *Left* eye, opacity and vascularity of the cornea, lids slightly granulated. *Vision.*—*Right* eye, can see large objects at some distance. *Left* eye, can occasionally read the print of a large bible.	10	7 Oct.	*Right* eye, an artificial pupil formed, and the granulations of the lids removed. *Left* eye, vascularity of the cornea removed, and the opacity nearly so. *Vision.*—*Right* eye, is able to read the smallest print of a newspaper with the assistance of a glass. *Left* eye, is able to read the smallest print of a newspaper without a glass.	Was led up by a guide.

Case.	Regiment.	NAME	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
18	94th.	Wm. Stull	25	24 July	*Right* eye lost. *Left* eye, rupture and cicatrix of the cornea. The pupil contracted and obscured in a great degree by the cicatrix. *State of Vision.*—Cannot make his way in a strange place alone. By placing a watch close to his eye he can see the hands, but not tell the hour. Is unable to do any kind of labour.	Years. 2	30 Jan.	*Left* eye, an artificial pupil formed. *State of Vision.*—Is able to walk any where without a guide, tell the hour by a watch, and with glasses read large print.	Was led up by a guide.
19	21st.	James Allan	41	16 June	*Right* eye lost from organic disease. *Left* eye, rupture of the cornea, and a cicatrix opposite the pupil. *Vision.*—*Left* eye, can distinguish a man from a woman in an oblique direction when close to them, but says he could not walk in a strange place.	11	24 Aug.	*Left* eye, an artificial pupil formed. *Vision.*—Is able to tell the time accurately by a watch, and to walk with great comfort and security to himself.	Was led up by a guide.

20	Royal Artil.	Geo. Watson	29	16 June	*Right* eye, rupture and cicatrix of the cornea, the pupil nearly obliterated and obscured by the cicatrix. *Left* eye, an opacity of the cornea. *Vision.*—*Right* eye, can discern some objects with it, but could not walk in a strange place. *Left* eye but slightly impaired.	7¾	24 Aug.	*Right* eye, an artificial pupil formed. *Left* eye, opacity of the cornea much diminished. *Vision.*—*Right* eye, can read the small print of a newspaper fluently. *Left* eye, clearer.	
21	1st.	Wm. Hamilton	32	24 July	*Right* eye lost. *Left* eye, rupture of the cornea with a cicatrix and contracted pupil. *Vision.*—Cannot walk in a strange place without a guide, and does not know one person from another, but can distinguish a man from a woman.	9	7 Oct.	*Left* eye, an artificial pupil formed. *Vision.*—Is able to walk any where without a guide, and tell the hour by a watch with the assistance of a glass. The retina has not yet recovered from the insensibility caused by its long quiescence.	
22	71st.	Jas. Strathern	43	1 Dec. 1817	*Left* eye, contracted pupil and protruded iris. *Right* eye, slight opacity of the cornea and lids slightly inflamed. *Vision.*—*Left* eye useless.	7½	24 Mar.	*Left* eye, an artificial pupil formed. *Right* eye, as on admission, underwent no treatment. *Vision.*—*Left* eye, can see the time by a watch, and read large print. The nerve is daily recovering its sensibility, by using the eye.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
23	42nd.	Alex. Mackay	42	10 Dec.	A cicatrix on both corneæ, blind of *right* eye. *Left*, capsule opaque. *State of Vision.*—Sufficient to walk about.	Years. 10	24 Mar.	*Right* eye, an artificial pupil formed. *Left* eye, as on admission. He labours under incipient cataract of this eye, but not sufficiently advanced to render the performance of an operation advisable. *State of Vision.*—*Right* eye, can readily distinguish large objects. Is able to read small print, and tell the hour by a watch.	
24	1st Foot	Charles Abercrombie	28	Ditto	*Left* eye, cicatrix covering the pupil with opaque cornea. *Right* eye, granular lids, with some inflammation. *Vision.*—In clear weather can walk without a guide.	3	27 Apr.	*Left* eye, an artificial pupil formed. *Right* eye, the opacity diminished, and lids sound. *Vision.*—*Left* eye, he can now distinguish objects, read large print, tell the hour by a watch, and his sight is still improving. *Right* eye, states that he feels the sight of this eye much improved, and the eye much stronger than on admission, being able to tell the time by a watch without the assistance of a glass.	

25	79th.	Alex. Smith	47	16 June	*Right* eye lost. *Left* eye, contracted pupil, and a cicatrix of the cornea. *Vision.*—Can see to walk about, and to distinguish objects, but is unable to labour.	17	24 Aug.	*Left* eye, an artificial pupil formed. *Vision.*—*Left* eye, can see to read the smallest print of a newspaper fluently, and sees objects much more distinctly than before the operation.	
26	94th.	Dan. Morrison	44	Ditto	*Left* eye lost. *Right* eye, rupture and cicatrix of the cornea engaging the upper edge of the pupil. *Vision.*—Can walk very well without a guide, and tell the hour by a watch, but is unable to labour, or to see above a few yards from him.	2½	Ditto	*Right* eye, an artificial pupil formed. *Vision.*—Is able to tell the time accurately by a watch unassisted by a glass, and to point to the smallest letter of a newspaper; but does not know how to read. He sees at a much greater distance than before the operation, and every thing much more distinctly.	
27	79th.	Wm. M'Kay	43	1 Dec.	Cicatrix of both corneæ covering the pupils. *Vision.*—With the *left* eye he can only make his way in places with which he is acquainted.	15	1 July	*Right* eye, an artificial pupil formed, and the lens cut up and absorbed. *Vision.*—*Right* eye, is able to walk any where without a guide, can see to read, and tell the hour by a watch. *Left* eye, somewhat improved.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
28	48th.	John Ure	58	24 July 1818	*Left* eye destroyed. *Right* eye, rupture and cicatrix of the cornea, with contracted pupil, nearly obscured by the cicatrix. *State of Vision.*—Is unable to walk without a guide.	Years. 11	30 Jan.	*Right* eye, an artificial pupil formed. *State of Vision.*—With the assistance of a glass can tell the time by a watch to a minute, but cannot read. Can make his way in known places, or avoid chairs, tables or large objects in a room.	Was led up by a guide. This man prevaricated when examined by the Board, appointed by Government to inspect the patients before and after treatment, to whom he declared, that he had not been benefited; but the day following, he was examined by my three assistants, when the above trial of his vision took place. The cause of this man's prevarication has been ascertained.
29	79th.	Duncan M'Laran	52	1 Dec. 1817	*Left* eye, pupil closed. *Right* eye, cicatrix of the cornea opposite the pupil. *Vision.—Left* eye, entirely blind. *Right* eye, can see to avoid carriages and people in the street.	9	1 July 1818	*Left* eye, an artificial pupil formed, and the lens removed. *Right* eye, opacity of the cornea greatly diminished. *Vision.—Left* eye, no improvement. *Right* eye, vision considerably improved. Can now see to read ordinary sized print.	The operation for artificial pupil was perfectly accomplished, in the *left* eye; but it was afterwards necessary to remove the lens, in consequence of lymph having been deposited on its capsule, from acute inflammation.

30	71st.	John Smith	29	16 June 1818	*Left* eye, cornea opaque and vascular, and the eye enlarged. *Right* eye, pupil nearly closed with opacity of the cornea. Chronic inflammation of the palpebræ and eye-balls. *Vision.*—In an obscure light he can distinguish large objects with the *left* eye, but very indistinctly with the *right*; cannot labour or walk in a strange place.		15 Sept.	*Left* eye, vascularity and opacity of the cornea considerably diminished, and was daily improving. An artificial pupil was formed in the *right* eye, which in consequence of very great inflammation succeeding, was not attended with immediate benefit; but the eye and vision were in a progressive state of amendment for the three weeks previous to his desertion from the Hospital. *Vision.*—*Left* eye, could discern small objects distinctly and walk any where without a guide, and was frequently observed in the act of writing. *Right* eye daily improving.	Was led up by a guide. This man deserted from the Hospital, before his cure was completed.
31	Ross Militia.	Geo. Campbell	36	1 Dec.	*Left* eye, rupture of the cornea, protrusion of the iris, and the pupil dragged to one side. *Right* eye, rupture of the cornea, and cicatrix opposite to the pupil. *Vision.*—*Left* eye, can see to walk without a guide. *Right* eye, can only distinguish light from darkness.	4	27 April	*Left* eye, underwent no treatment. *Right* eye, an artificial pupil formed, which was succeeded by a high degree of inflammation.	This man's sight was not improved by the operation, although the artificial pupil was perfectly formed; it being in this case necessary to remove the crystalline lens, in consequence of lymph having become deposited upon its capsule.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
32	10th.	A. M'Cullum	52	1 Dec. 1817	*Right* eye lost. *Left* eye the pupil nearly obliterated, and a cicatrix of the cornea. *State of Vision.*—With difficulty he can walk in a place with which he is acquainted, but requires a guide in a strange one.	Years. 15	2 Oct. 1818	*Left* eye, the operation for artificial pupil was successfully performed, and he saw objects immediately afterwards; but it was succeeded by violent internal inflammation, which terminated in suppuration and the wasting of the organ.	

Results of Operations for the Formation of Artificial Pupil by *Division* of the Iris, in cases of obliterated Pupil, complicated with capsular or lenticular Cataract.

33	11th Vet. Bat.	Kirkwood Renny	33	1 Dec.	*Right* eye lost. *Left* eye, the pupil contracted, and adherent, with opacity of the capsule. State of the retina doubtful. *Vision.*—Quite blind for four years.	Years. 9	27 April	*Left* eye, an artificial pupil formed. The capsule and lens removed. *State of Vision.*—Is able to tell the hours by a watch, and to walk about with great ease and comfort to himself.	Was led up by a guide. Sensibility of the retina increasing.

34	21st.	Wm. Gamble	29	10 Jan.	*Right* eye lost. *Left* eye, rupture of the cornea, with a cicatrix extending over more than half of it, and completely obliterating the pupil. *Vision.*—Can barely distinguish the glare of a strong light.	10	24 Mar.	An artificial pupil formed in the *left* eye. *Vision.*—He is able to tell the time by a watch, to make out large letters, and to walk about very well by himself. His sight is improving weekly, in proportion as the optic nerve recovers its sensibility, and it will be eventually very good.	Was led up by a guide. This case was considered so very unfavourable for treatment, that a certificate was forwarded to the War Office by a professional gentleman of eminence and respectability stating, " that he did not think it possible for medicine or surgery to do him any good."
35	1st Foot.	Wm. Howat	54	1 Dec.	*Right* eye, contracted pupil and cataract, *Left* eye, incipient cataract. *Vision.*—*Right* eye, can only distinguish light from darkness. *Left* eye, only sufficient to walk without a guide.	8	27 April	*Right* eye, an artificial pupil formed, and the lens absorbed. *Left* eye, ditto, ditto, ditto. *Vision.*—Is now able to read moderate sized print with each eye, and tell the time by a watch.	
36	83rd.	Alex. Robertson	45	Ditto	*Right* eye lost. *Left* eye, contracted pupil, and opaque capsule. *Vision.*—Only sufficient to walk without a guide.	21	Ditto	*Left* eye, an artificial pupil formed, and the opaque capsule removed. *Vision.*—Is able to read the small print of a newspaper, and tell the hour by a watch. He finds his sight daily increase and get stronger.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
37	28th.	John Fraser	42	16 June	*Left* eye lost. *Right* eye, opacity of the cornea, opposite the pupil. *State of Vision.*—Can see colours, and with great difficulty, make out some objects by placing them close to the outer part of his eye. Cannot walk any where without a guide.	Years. 9	31 Oct.	*Right* eye, an artificial pupil formed and the lens absorbed. The pupil requires to be somewhat enlarged. *State of Vision.*—Is able to tell the hour by a watch, and to make his way without a guide.	Was led up by a guide. This man was dismissed the Hospital in consequence of his refusing to submit to a repetition of the operation, for the purpose of enlarging the pupil.
38	1st Foot	Daniel M'Cullum	47	24 July 1818	*Left* eye, closed pupil and cataract. *Right* eye, morbidly irritable. *Vision.*—*Left* eye, can only see light from darkness. *Right* eye, in a moderate light can sometimes see to read for a few minutes, and can walk without a guide, but cannot distinguish a person a yard from him. Has not been able to work at his trade for five years.	7	30 Jan.	*Left* eye, an artificial pupil formed, and the cataract removed. *Right* eye, underwent no treatment. *Vision.*—*Left* eye, can read moderate sized print with an appropriate glass, and tell the hour by a watch.	

39	21st Foot.	Hugh Baird	30	16 June	*Left* eye, completely amaurotic. *Right* eye, staphyloma of the cornea with an entire closure of the pupil, the iris being in contact with the cornea. *Vision.*—At the outer corner of the *right* eye he can discern the shadow of his hand waving between him and the light.	11	7 Oct.	*Right* eye, an artificial pupil formed with perfect success. *Vision.*—Not improved, the optic nerve being found to be totally insensible.	Was led up by a guide. This case was marked in the return on admission, as being "very unfavourable for treatment."
40	6th Vet. Bat.	John Honeyman	33	Ditto	*Right* eye disorganized, and vision lost. *Left* eye, contracted or obliterated pupil, and the capsule opaque. *Vision.*—Can only perceive his hand when waved between him and the light.	8	Ditto	*Left* eye, an artificial pupil was formed with perfect success, but violent inflammation and suppuration resulted from a subsequent operation performed to remove the opaque lens.	Was led up by a guide.
41	23rd	David Graham	27	16 June	*Right* eye lost. *Left* eye, cicatrix of the cornea, the pupil obliterated, and the eyeball partly wasted. *Vision.*—*Left* eye, can scarcely distinguish light from darkness.	11	30 Jan.	*Left* eye, an artificial pupil formed, the vitreous humour was found discoloured and fluid and the eye became violently inflamed, and altogether sunk.	Was led up by a guide. This case was marked on admission as "very unfavourable for treatment."

Results of Operations for the Formation of Artificial Pupil by *detaching* a part of the Iris from the Ciliary Ligament.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
42	Rifle Brigade	Jas. Gibson	36	16 June	*Left* eye, rupture and cicatrix of the cornea, with complete obliteration of the pupil. *Right* eye, cicatrix of the cornea, with opacity of the capsule of the lens. *State of Vision.*—*Left* eye, can just distinguish light from darkness. *Right* eye, is able to read.	Years. 12	7 Oct.	*Left* eye, an artificial pupil formed. *Right* eye, the cornea somewhat clearer. *State of Vision.*—*Left* eye, is able to guide himself with perfect safety, tell the hour by a watch, and by the assistance of a glass, he can read the smallest print of a newspaper with fluency. *Right* eye, is able to distinguish objects much clearer, and to read a smaller sized print than on admission.	
43	43rd.	George Smith	44	Ditto	*Right* eye, rupture and cicatrix of the cornea, and the pupil obliterated. *Left* eye, cicatrix of the cornea, opposite the pupil, and the eye amaurotic. *Vision.*—*Right* eye, can perceive light from darkness	10	Ditto	*Right* eye, an artificial pupil formed, which was succeeded by very high inflammation and suppuration, and the eye sunk.	Was led up by a guide. This case was marked on admission, "very unfavourable for treatment."

44	94th.	Jas. Williamson		24 July	*Left* eye lost. *Right* eye, rupture of the cornea, and a total closure of the pupil, with a cicatrix, occupying the whole centre of the cornea. *Vision.*—Can make his way without a guide in places with which he is acquainted, and can perceive objects, but very indistinctly.	1½	30 Jan.	*Right* eye, an artificial pupil formed, which was succeeded by high inflammation, and the eye suppurated and sunk.	An operation for artificial pupil by detaching a part of the iris, had been performed previously to his admission into the Hospital. This case also was marked on admission into Hospital as being "very unfavourable for treatment."

Cases of Cataract.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
45	21st.	John Brown	37	1 Dec. 1817	*Right* eye, gutta serena. *Left* eye, secondary cataract. Has been operated on without success. *State of Vision.*—Unable to walk by himself in a strange place.	Years. 12	24 Mar.	*Left* eye, the capsular cataract removed, and the pupil perfectly clear. *State of Vision.*—He can read a newspaper with fluency, and perceive the minute and seconds' marks on a watch-dial.	
46	Fife Militia	Edw. Syme	41	Ditto	Cataract in both eyes. The *left* eye has been operated on without success. *Vision.*—Blind of *left* eye. Can only discern light from darkness with the *right*.		Ditto	The lenses and capsules removed. *Vision.*—Can read the smallest print of a newspaper, and perceive the minute and seconds' marks with the greatest accuracy.	
47	6th Vet. Bat.	Alexander M'Cullum	42	Ditto	*Right* eye, gutta serena. *Left* eye, cataract. *Vision.*—Blind of *right* eye. *Left* eye, can see to walk alone in places to which he is accustomed.	17	Ditto	The lens and capsule removed. *Vision.*—Can read the smallest print, and perceive the minute and seconds' marks on a watch-dial with great accuracy.	

48	3rd Royal Vet. Bat.	Wm. Monteith	43	18Nov. 1818	*Left* eye, capsular or secondary cataract. *Right* eye, membrane of the lids vascular and inflamed. *Vision.*—*Left* eye, can only discern the shadow of objects when interposed between him and the light.	15½	30 Jan. 1819	*Left* eye, the cataract removed by operation. *Right* eye, inflammation of the lids subsided. *Vision.*—*Left* eye, is able to see the small letter of a newspaper (but does not know them) and the minute and seconds' marks on a watch-dial.	Had been twice operated upon for cataract previously to his admission into York Hospital.
49	36th.	Fleming Calder	46	1 Dec. 1817	Cataract in both eyes. The *left* eye has been operated on without success. *Vision.*—Nearly blind, being unable to walk by himself in a strange place.		27 Apr.	Both cataracts removed, some portions of capsule remaining. *Vision.*—Can distinguish large print, tell the hour by a watch, and walk with ease in a strange place.	The portions of capsule were removed by a subsequent operation.
50	67th.	Patrick Maher	20	20Apr	*Left* eye, cataract. *Right* eye, incipient gutta serena. *Vision.*—*Left* eye, cannot discern any object and scarcely light from darkness. *Right* very indistinct.	Months. 3		*Left* eye, the cataract removed, a small portion of capsule remains, but it is not in the axis of vision. *Right* eye, the sensibility of the optic nerve restored. *Vision.*—*Left* eye, not improved, the optic nerve being insensible. *Right* eye, nearly as good as it ever was.	

Cases of Ectropium, or Eversion of the Eyelids.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
51	26th.	Geo. Sutherland	39	1 Dec. 1817	*Left* eye, free from disease. Ectropium of *right* under lid. *Vision* of *right* eye slightly defective.	Years. 8	24 Mar.	*Right* eye, the lid perfectly restored to its natural position. *State of Vision.*—He feels the eye as strong, and the vision as good as in the *left* eye.	
52	18th.	Thos. Barry		21 Mar. 1818	Violent acute inflammation of both eyes, with a profuse discharge of puriform matter. The upper lids much swollen and the inferior ones everted, with a high degree of chemosis. Cornea of the *left* ruptured, and eye lost. *Vision.*—*Left* eye lost. *Right* eye not impaired, except being weakened by inflammation.		29 June	All inflammation in both eyes removed, the ectropium in both eye-lids cured. Granulation of the lids removed. *Vision* of *right* eye perfect.	This man had passed Chelsea Board about two months before he experienced the relapse of acute inflammation for which he became a patient. He is the only man who has been admitted into Hospital in an infectious state.

Cases of Entropion, or Inversion of the Eyelids.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
53	42nd.	Duncan M'Millan	45	1 Dec. 1817	Granular lids, entropion of both under lids, vascularity and opacity of both corneæ. *State of Vision.*—Unable to walk without a guide.	Years. 10	27 Apr.	Both under lids restored to their natural position. Granulations removed, and the opacity of the cornea almost removed in the *right* eye. *State of Vision.*—*Left* eye incurable. *Right* eye, can distinguish large letters, tell the hour by a watch, and walk about with perfect ease. Feels the eyes very strong and comfortable. His sight may be perfectly restored in the *right* eye by a continuation of the applications.	An extreme bad case. The *right* eye is in a state of irritation, owing to a flash of lightning last night. My assistant, Mr. Melin, examined this man some months after his return to Edinburgh, and reports the state of his eyes and vision to have much improved since his discharge from Hospital.
54	42nd.	James M'Kay	40	Ditto	*Right* eye and lids healthy. *Left* eye, entropion of the upper eye-lid. The lids also diseased with slight opacity and vascularity of cornea. *Vision.*—*Right* eye good. *Left* eye, from being unable to lift up the lid, cannot use the eye.	9	24Mar.	*Left* eye, the opacity and vascularity of cornea removed, and he sees as well with this eye as with the other. He states, he was not able to lift up the upper eye-lid for two years previously to the operation.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
55	74th.	Alexander Anderson	36	24 July 1818	*Right* eye, opaque and vascular cornea, with slight disease of the linings of the eyelids. Inversion of both lids of the *left* eye. *State of Vision.*—Cannot walk any where without a guide, or perceive any object with either eye.	Years. 5	30 Jan. 1819	*Left* eye, inversion of the lids cured. The vascularity of both corneæ removed, and the opacity very nearly so. *State of Vision.*—Is able to walk any where without a guide, and to see objects at a considerable distance. Can tell the hour by a watch.	This man's eyes are very near their natural state.
56	42nd.	Andrew Blair	47	Ditto	*Left* eye, a disposition to entropion of the superior lid, slightly ditto, thickening and inflammation of the inferior. *Right* eye, ditto of the superior lid with thickening and inflammation of the inferior one. *Vision.*—Has been unable to do any work for the last five years from the constant irritation and lachrymation with which his eyes have been affected.	16	7 Oct. 1818	The disease of the lids considerably relieved, and the lachrymation entirely subsided. *Vision.*—Says he finds his sight much clearer and stronger than on admission.	

57	42nd.	Wm. Marshall	64	1 Dec. 1817	Entropion of both under lids. *Vision.*—Unimpaired.	34	24 Mar.	Both under lids completely restored to their natural situation. Eyes quite sound.	This man previously to his admission found it necessary to have his eye-lashes extracted very often in consequence of the irritation excited by their friction against the eye-balls.

Cases of Granular Lids, with Opaque and Vascular Cornea, the Effects of the Egyptian Ophthalmia.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
58	9th Vet. Bat.	David Mairns.	36	1 Dec. 1817	Opacity and vascularity of both corneæ, with highly diseased lids. *State of Vision.*—Totally blind.	8	24 Mar.	The disease of the lids removed, opacity and vascularity of the cornea of each eye greatly diminished. *State of Vision.*—He can now read moderate sized print with tolerable fluency, although he had been so blind for five years as to have been unable to see any of his family. His eyes admit of much greater improvement, but in consequence of his health declining under the confinement of an Hospital, it is thought advisable, that he should return home, but still to remain under treatment.	This man has been inspected since his return home, by my assistant, Mr. Melin, who reports that his eyes have entirely recovered their natural appearance, and that his vision has in consequence very much improved.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease.	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
59	9th Vet. Bat.	James Clark	36	5 Feb. 1818	*Right* eye lost. Vascularity and opacity of *left* cornea with a villous and thickened state of the lining of the eye-lids. *State of Vision.*—Can only distinguish large objects when placed between him and the light, and is unable to walk in a strange place.	Years.	27 Apr.	All disease of the lids removed, opacity and vascularity of cornea entirely removed. *State of Vision.*—Can read the smallest print of a newspaper, and tell the time accurately by a watch.	
60	21st.	Charles Smith	24	16 June	Opacity and vascularity of both corneæ with granular lids. *Vision.*—At arm's length he cannot see his fingers. Cannot walk in a strange place without a guide, and is unable to do any work.	$2\frac{3}{4}$	30 Jan. 1819	Granulations of the lids, and the opacity and vascularity of the corneæ removed. *Vision.*—Can read the smallest print of a newspaper, write, tell the hour by a watch, and work at his trade of a shoemaker. Says he can see near objects as well as he ever did.	This man worked at his trade for several weeks previously to his discharge from Hospital.
61	52nd.	John Tennicliffe	31	1 Dec. 1817	Opacity of both corneæ with vascularity and granular lids. *Vision.*—Unable to walk without a guide.	9	9 Oct.	Vascularity of both corneæ and the granulations of the lids removed. Opacity of the *right* cornea entirely removed, and of the *left* nearly so. *Vision.*—Can read the smallest print with the greatest facility, and sees nearly as well as he ever did.	This was an extreme bad case, when the treatment was first begun. He left the Hospital before he obtained permission so to do.

62	63rd.	Wm. Hill	35	24 July	Villous lids with opacity and vascularity of both corneæ. *Vision.*—Is unable to walk in a strange place without a guide, or to distinguish one person's countenance from another.	5	30 Jan. 1819	Villosity of the lids, and vascularity and opacity of the *right* cornea removed. The opacity of the *left* cornea nearly so. *Vision.*—*Right* eye, can read the smallest print of a newspaper fluently. *Left* eye, can read moderate sized print, tell the minute and seconds' marks on a watch-dial, and says he can, on a clear day, discern large objects at the distance of a mile.	
63	12th Foot.	Wm. Arms	24	1 Dec. 1817	Acute inflammation, with total opacity and vascularity of both cornea, and highly granular lids. *Vision.*—Totally blind.		4 Mar.	The opacity of *left* cornea was nearly removed, and that of the *right* considerably diminished. That which remained appeared to be a cicatrix, situated opposite the pupil. The lids nearly sound, and no vascularity of cornea. *Vision.*—*Left* eye, nearly restored, and that of the *right* considerably improved. Could read small print, and tell the hour by a watch.	This man's conduct during the whole period of his treatment was extremely irregular, and he at length deserted before his eyes had recovered sufficiently for him to be dismissed from Hospital.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
64	Renf. Militia	Gavine Young	41	24 July 1818	*Left* eye, rupture of the cornea with contracted pupil, and villous lids. *Right* eye, opaque and vascular cornea with granulations of the lids. *State of Vision.*—*Left* eye, can tell the hour by a watch. *Right* eye, is only able to perceive the shadow of objects. Cannot make his way alone in strange places, or do any kind of labour.	Years. 3	30 Jan. 1819	*Left* eye, villosity of lids removed. *Right* eye, granulations of the lids, and vascularity of the cornea removed, and the opacity nearly so. *State of Vision.*—*Left* eye, much clearer. Can read small print. *Right* eye, can walk any where with perfect ease and security, read small print, and tell the hour by a watch.	
65	5th Garrison Bat.	Joseph M'Laran	53	Ditto	Opacity and vascularity of both corneæ, with granular lids. *Vision.*—Can only see to walk alone, in places known to him, but sees objects tolerably distinct near him. Has not been able to do any kind of work for the last three years.	6	Ditto	Granulations of the lids, and the opacity and vascularity of the corneæ removed. *Vision.*—Is able to walk any where with perfect ease and security, to read small print, and to perceive the minute and seconds' marks on a watch-dial with perfect distinctness, says he is certain he could now weave coarse linen.	

66	85th.	James Stirling	33	1 Dec. 1817	Granular lids and opaque and vascular corneæ. *Vision.*—Only sufficient to walk without a guide.		27 Apr.	Granulations of lids removed, opacity of cornea nearly gone. *Vision.*—Can now read large print, and tell the hour by a watch with the naked eye; and with glasses can read the small print of a newspaper.	By continuing the applications with which he will be supplied, his sight may be made perfect.
67	9th Light Drag.	Edw. Joyce	38	Ditto	Opacity and vascularity of both corneæ, and granular lids. *Vision.*—Can distinguish large print with the *right* eye, but only light from darkness with the *left*.		Ditto	Granulations of lids in both eyes entirely removed. The cornea of both eyes nearly free of vascularity, except on the margin of the *left* cornea, from which a pterygium has been removed. *Vision.*—Can perceive the seconds' and minute marks, and the time accurately by a watch, and nearly as well with the *left* as the *right* eye.	The remaining opacity may be removed by continuing the applications.
68	Royal Artil.	Jas. Mathewson	49	24 July 1818	Diseased lids with slight granulations, and opacity and vascularity of both corneæ. *Vision.*—*Left* eye, can read print of a large type. *Right* eye, vision not useful, cannot work at his trade of a gardener.	9	30 Jan. 1819	Granulations of the lids, and vascularity of the cornea removed, and the opacity nearly so. Some thickening of the conjunctiva palpebræ remaining. *Vision.*—*Left* eye, can read the smallest print of a newspaper. *Right* eye, can also read the same sized print by the assistance of a glass, and tell the hour by a watch.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
						Years.			
69	Staff Corps.	James Smith	42	1 Dec. 1817	Vascularity and opacity of *right* cornea with a membranous band extending from the upper part of the globe, over the superior half of the cornea. *State of Vision.*—Unable to work at his trade of a mason.		27 Apr.	The membranous band removed, by which his vision has been greatly improved. Can now distinguish objects much more distinctly, and at a greater distance than on admission. Is able to read the smallest print of a newspaper.	
70	18th.	James Kenny	45	23 July	Slight opacity, with vascularity of both corneæ, and villous lids. *Vision.*—Can see to read in a moderate light, but strong light occasions much watering and irritation, and thereby prevents better vision.	1¼	9 Oct.	Opacity and vascularity of the cornea entirely removed, and the lids natural. *Vision.*—Can read the smallest type of a newspaper in any light, and says he feels his eyes as strong as they ever were.	
71	13th Drag.	John Willson	37	1 Dec. 1817	Granular lids, opaque and vascular cornea. *Vision.*—Can read large print with the *left* eye, nearly blind with *right*.	2	24 Mar.	Granulation of lids removed, lids sound, opacity and vascularity of cornea removed. *Vision* of both eyes considerably improved, can now read the smallest print with fluency.	

72	2nd Drag.	Alex. Marshall	26	1 Dec. 1817	*Right* eye lost. Slight opacity of the *left* cornea, with villous and vascular lids. *Vision.*—Impaired, cannot see objects at a distance clearly.	6	24 Mar.	*Left* eye, opacity of cornea removed. Lids sound. *Vision.*—Can now see objects with perfect distinctness, and feels the eye as strong and comfortable as it ever was.	
73	1st Foot.	Donald Munroe	58	Ditto	Contracted pupil and protrusion of *left* iris, with cicatrix of cornea. *Right* cornea opaque. *Vision.*—Unable to work at his trade.	9	Ditto	The granulations of the lids, removed, (under which he laboured on admission, but which were omitted to be mentioned in the first report on his case.) Opacities of the cornea somewhat diminished. *Vision.*—Is able to read moderate sized print with a glass, and on the whole finds his vision much clearer and more distinct than on admission.	
74	64th.	Corporal John Phillips	31	7 Dec.	Slight opacity of both corneæ, with villous and vascular lids. *Vision.*—Can readily distinguish small print.	1½	29 July	All disease of the conjunctiva palpebræ removed, as also the inflammation of the ball. Opacity of the cornea diminished. *Vision.*—Can read the smallest print of a newspaper with fluency; he says his eyes are as capable of bearing the light as they ever were.	Was examined by a staff surgeon, and reported fit for duty. This and the three following patients had not been dismissed the service when admitted into the Ophthalmic Hospital.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
75	64th.	James Pike	31	7 Dec. 1817	Opacity of both corneæ, vascularity of the *left*, and granular lids. *State of Vision.*—Can read large print with the *right* eye. Vision of left very imperfect.	Years. 1½	29 July	All disease of the conjunctivæ palpebræ removed, as also the vascularity of the cornea; a slight cicatrix remains in the *right* eye, and some degree of opacity in the *left*. *State of Vision.*—Can read the smallest print of a newspaper with the *right* eye, and the ordinary sized print with the *left*; says his eyes are as capable of bearing the light as they ever were.	Was examined by a staff surgeon, and reported fit for duty.
76	64th.	Patrick Macaully	37	Ditto	Opacity and vascularity of both corneæ, with granulations of the lids. *Vision.*—Can only discern light with the *left* eye, and to make his way with the *right*.	Months. 17	Ditto	All disease of the conjunctivæ palpebræ removed, as also all inflammation and vascularity. A small cicatrix of the cornea remains opposite the axis of vision in each eye. *Vision.*—Can see to walk any where alone, and tell the time by a watch. His vision and state of eyes is greatly improved.	This man received only threepence a day pension on account of impaired vision.

77	64th.	Patrick Dugan	35	7 Dec. 1817	Vascularity of both corneæ, with slight vascularity and villosity of lids. *Vision.*—Very indistinct, cannot read even large print.	1½	29 July	All disease of the conjunctivæ palpebræ removed, as also the vascularity and opacity of the *left* cornea. Some remains of opacity in the *right* cornea, with a vessel running to it. *Vision.*—Can distinguish with the *left* eye, the minute and seconds' marks on a watch-dial, and can perceive the letters in a newspaper, but does not know how to read. Can see the hands and hour marks with the *right* eye. Says he sees sufficiently well for the common purposes of life.	Was granted a pension for his services, but none on account of his eyes.
78	66th.	John Hinds	32	27 Feb. 1818	Opacity and vascularity of both corneæ with highly granular lids. *Vision.*—Can barely see to make his way alone in known places.	Months. 11	16 June	Granulations of the lids, and vascularity of the cornea completely removed, and the opacity very nearly so. *Vision.*—Is able to read the smallest print, tell the time accurately by a watch, and to see objects at a considerable distance.	Discharged for drunkenness, and other ill conduct.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
79	66th.	Edw. Bathorn	55	3 Mar.	Opacity and vascularity of both corneæ with highly granular lids. *State of Vision.*—Can distinguish large objects, and walk about without difficulty, but is unable to read the largest print.	Months. 6	1 Aug.	This man was attacked with acute inflammation while in Hospital, which caused ulceration in the cornea of each eye, opposite to the pupil. *State of Vision.*—Could see to walk any where without a guide.	This man deserted from Hospital before his eyes had recovered sufficiently for him to quit it with safety.
80	1st Foot	Duncan Campbell	45	1 Dec. 1817	Granular lids. *Vision.*—Not affected.	Years. 9	24 Mar.	Granulations removed, lids healthy. *Vision.*—Can read the smallest print of a newspaper.	
81	21st.	Alex. Ross	19	Ditto	*Right* eye, contracted pupil and protrusion of the iris. *Left* pupil obliterated, with cicatrix and vascularity of cornea opposite to the axis of vision. Granular lids. *Vision.*—Blind of *left* eye.	2½	27 Apr.	Granulation of lids removed. The only part of his disease which was treated, or admitted of relief.	

82	Rifle Brigade	Hugh Porteous	39	16 June	Ulcer of right cornea, with vascularity and a membranous band extending from it to the superior eye-lids, slight vascularity of left cornea. Conjunctiva palpebræ, vascular and granular in both eyes. *Vision.*—*Left* eye useful, being able to read with tolerable fluency, that of the *right* obscured as by a thick mist. Has not been able to labour since his discharge.	11	7 Oct.	Ulcer of *right* cornea healed. Vascularity of the *left* cornea, and the granulations of the lids removed, opacity of both corneæ considerably diminished. *Vision.*—With the *right* eye he can now read the small print of a newspaper, and tell the hour by a watch. The vision of the *left* eye, he says, is stronger and clearer than on admission.	
83	92nd.	Hector M'Lean	55	18 Nov. 1818	*Left* eye, granulations of the lids, and very slight opacity of the cornea. *Right* eye, granulations of the lids and very slight opacity and vascularity of the cornea. *Vision.*—*Left* eye, nearly as good as in persons of his age. *Right* eye, not so clear as the *left*.	12	30 Jan. 1819	*Left* eye, opacity of the cornea removed and granulations subsided without treatment. *Right* eye, opacity and vascularity of the cornea removed, and the granulations of the lids also subsided without any treatment. *Vision.*—As strong as it ever was in both eyes.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
84	8th Foot	Geo. Lyons	50	16 June	Opacity and vascularity of both corneæ with a deep ulcer in the *left*. Conjunctiva palpebræ much thickened and vascular. Acute inflammation of the *left* eye. *State of Vision.*—Totally blind of *left* eye. *Right* eye can distinguish colours, but no objects. Is unable to see with it sufficiently well to walk by himself.	Years. 17	31 Oct. 1818	*Left* eye, ulcer healed. Inflammation subsided, and vascularity of cornea nearly removed. *Right* eye, opacity and vascularity diminished. The conjunctiva palpebræ improved. *State of Vision.*—*Left* eye, can distinguish objects. *Right* eye, he sees much clearer, being able to walk any where without a guide.	Discharged for having refused to submit to the requisite treatment.
85	71st.	Thomas Fife	29	1 Dec. 1817	Total opacity and vascularity of *left* cornea, with acute inflammation and granular lids. *Right* eye sound. *Vision.*—Blind of *left* eye.	6	27 Apr.	Granulations of lids removed, opacity and vascularity of cornea considerably diminished. *Vision.*—Can tell the hour accurately by a watch, and see large letters with the *left* eye.	Suffered much from fever since his admission. Health very bad, on which account he was dismissed much sooner than he otherwise would have been.

86	79th.	John Trimmer	34	1 Dec. 1817	Opacity and vascularity of *right* cornea, with granular and vascular lids. Slight opacity of *left* cornea. *Vision.*—Unable to see with the *right* eye.	11	27 Apr.	Granulations of lids removed, opacity and vascularity diminished. Perceives more light with the *right* eye, but the cicatrix lying opposite the pupil prevents his distinguishing objects, feels the eye considerably stronger and more comfortable.	He has been attacked with acute inflammation since his admission into Hospital, to which previously to the two last years he had been subject for eight years in succession.
87	92nd.	John Nish	52	Ditto	Cicatrix opposite the *left* pupil. Slight opacity of *right* cornea and granular lids. *Vision.*—Nearly blind of the *left* eye, sees to walk with the *right*.	9	Ditto	Granulations of lids removed. Vascularity and opacity of cornea diminished. Cicatrix remaining. *Vision.*—*Left* eye, can tell the time with perfect accuracy by a watch.	
88	68th.	Brian Smith	51	Ditto	Opacity and vascularity of both corneæ, with granular lids. *Vision.*—Tolerably good at times, particularly in dry weather.	6	7 Oct.	The granulations of the lids and the state of the eyes somewhat better than on admission. This man's eyes did not bear any kind of application without great inflammation being thereby excited. His health has been very bad ever since.	Discharged in consequence of his being unable to bear any of that class of applications which were requisite for his cure.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
89	92nd.	David Renny	44	1 Dec. 1817	Granular lids with opaque and vascular cornea. *State of Vision.*—Sufficiently good to labour.	Years. 13	27 Apr.	Granulations of the lids nearly removed, opacity and vascularity of the cornea somewhat diminished. *State of Vision.*—Feels his sight improved, being able to see the minute and seconds' marks on a watch-dial.	This man has suffered most severely since his admission from inflammation of the lungs which required very large bleedings, and which gave rise to irritative inflammation of the eyes of the most severe kind. He is now recovering and improves daily, but is not cured. His anxiety to return home is extreme.
90	1st Life Guards	John Towers	38	Ditto	*Right* eye destroyed. Opacity and vascularity of *left* cornea. Conjunctiva palpebrarum highly diseased and granular. *Vision.*—Blind.		29 Apr.	As on admission, having refused to submit to the requisite treatment for the removal of his disease.	

91	92nd.	John Garrity	23	24 July 1818	*Left* eye, lids villous. *Right* eye, opaque and vascular cornea, with granular lids, and a considerable degree of inflammation. *Vision.*—*Left* eye, can distinguish objects. *Right* eye, can see objects but indistinctly, is unable to discern any one's features.	7	6 Nov. 1818	*Left* eye, lids villous. *Right* eye, vascularity of cornea removed, and the opacity very nearly so. Granulations of lids removed some villosity remaining, all inflammation entirely subsided. *Vision.*—*Left* eye, as on admission. *Right* eye, considerably improved. Can now discern minute objects and tell the hour accurately by a watch.	Discharged for highly irregular and improper conduct.

Cases of Opaque Cornea.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
92	9th.	Jas. Russel	50	1 Dec. 1817	*Left* eye lost. *Right* eye, cornea opaque. *State of Vision.*—Only sufficient to walk without a guide.	Years. 8	27 Mar.	*Right* eye, opacity of cornea nearly gone. *State of Vision.*—Considerably improved, being able to read the print of a newspaper, by the assistance of a glass, and can see without it, the minute and seconds' marks on a watch-dial. He had not been able to read, for eight years previously to his admission.	
93	Renfrew Militia	Thos. Connel	34	Ditto	Opacity of *right* cornea. Cicatrix of the *left*, and protrusion of the iris. *Vision.*—Unable to read.		Ditto	*Right* eye, opacity of the cornea diminished. Cicatrix of the left stationary. *Vision.*—Is now able to read small print fluently with the *right* eye.	

94	8th Foot	Malcolm Lyons	47	16 June 1818	Great opacity from ulceration of the *right* cornea, completely obstructing the pupil. Incurable. Opacity of the *left* cornea opposite the pupil. *Vision.*—Blind of the *right* eye. Unable to read with the *left*, except with a glass of great magnifying power.	17	24 Aug.	The opacity of the *left* cornea considerably diminished. *Vision.*—Can read the smallest print of a newspaper, and sees objects at a distance, much clearer. Has not seen so well for the last 17 years, and his sight is daily improving.	This case was marked in the return of admission as being "very unfavourable for treatment."
95	94th Foot	John Brash	41	1 Dec. 1817	Slight opacity of both corneæ. *Vision.*—But slightly impaired. Can read with the assistance of glasses.	7	27 Mar.	Opacity removed. *Vision.*—He can read the smallest print of a newspaper with fluency, and appears to enjoy perfect sight.	
96	71st.	John Hunt	33	Ditto	*Left* eye destroyed. Slight opacity of the *right* cornea. *Vision.*—Can read large print, when applied close to the eye.	7	Ditto	Opacity of the *right* cornea nearly removed. *Vision.*—Can now read the small print of a newspaper, and sees every object much clearer and more distinctly than on admission.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
97	52nd.	John Reynolds	46	1 Dec. 1817	Slight opacity of both corneæ. *State of Vision.*—Able to read large print when placed close to the eyes.	Years. 13	27Mar.	Opacity of corneæ entirely removed. *State of Vision.*—Can read the print of a newspaper with fluency.	
98	27th.	William Rutherford	37	Ditto	Slight opacity of both corneæ. *Vision.*—Can read with the *right*, but not with the *left* eye.	9	Ditto	*Right* eye, opacity of cornea diminished. *Vision.*—He states his vision to be much clearer than on admission, and that with the assistance of a glass, he can read with the *left* eye.	
99	21st Foot	William Montgomery	36	Ditto	Slight opacity of both corneæ. *Vision.*—*Left* eye good. *Right* very defective.	2	Ditto	Opacity of corneæ diminished. States his vision to be stronger, and that he can see more clearly than on admission. The *right* cornea is nearly clear, but says he cannot see as well with this eye as with the *left*, and that vision was defective in it before he was attacked with ophthalmia.	

100	7th.	Matt. Wilson	37	Ditto	Slight opacity of both corneæ. *Vision.*—Able to read small print.	11	24 Mar.	Opacity of corneæ diminished. *Vision.*—Can distinguish objects a great deal clearer and better than on admission. Says he feels his sight greatly improved. Reads the small print of a newspaper.	
101	9th.	John Taylor	57	Ditto	Slight opacity and vascularity of both corneæ with incipient pterygii. *Vision.*—With the *left* eye he can see to walk, but is unable to read small print with it.		Ditto	The pterygii removed. The conjunctiva adheres to the side of the pterygii, and continues vascular. *Vision.*—Much improved, can see much farther and clearer than on admission.	
102	91st.	Thos. Ayton	31	Ditto	Slight opacity of both corneæ. Apprehended to be cicatrices. *Vision.*—Indistinct.	3		Opacity diminished. *Vision.*—Much more distinct, and the eyes considerably stronger than on admission.	
103	9th Vet. Bat.	A. M'Donald	46	Ditto	*Left* eye, gutta serena. *Right* eye, cicatrix of the cornea opposite the pupil, with protrusion of the iris. *Vision.*—*Left* eye, blind. *Right* eye, can see to walk with it.	16	Ditto	*Right* eye, cicatrix of cornea nearly as on admission. *Vision.*—Thinks that his vision is slightly improved.	

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
104	75th Foot.	Alex. Gardner	37	1 Dec. 1817	*Right* eye, cataract and amaurosis. *Left* eye, opacity of the cornea opposite the pupil. *State of Vision.*—*Left* eye, useful. Blind of *right* eye.	Years.	24Mar. 1818	Opacity of *left* cornea removed, and he now sees with this eye as well as he ever did. *Right* eye, has undergone no treatment.	
105	9th Vet. Bat.	Michael Anderson	50	Ditto	Cicatrix of both corneæ. *Vision.*—Imperfect, can see to read middle-sized print.	8	Ditto	Cicatrices as on admission, but the opacity of corneæ, diminished. *Vision.*—Is able to distinguish small print, and the minute and seconds' marks on a watch-dial.	
106	25th Foot	Hugh Ross	42	Ditto	Cicatrix of *left* cornea opposite the pupil, protrusion of the *right* iris. *Vision.*—*Right* eye good.	16	Ditto	Cicatrix of cornea as on admission. *Vision.*—The same.	
107	78th.	Hugh M'Donald	30	Ditto	*Left* eye lost. *Right* eye, cicatrix of the cornea opposite the pupil. *Vision.*—Able to walk without a guide.	9		*Right* eye, opacity of cornea diminished. *Vision.*—Can distinguish objects much clearer. Can read the print of a newspaper with a glass, and tell the hour by a watch without one.	

108	90th.	Robert Smith	45	3 Dec. 1817	*Right* eye, perfect. Cicatrix of *left* cornea opposite the pupil. *Vision.*—Unable to discern objects with the *left* eye.	5½	24Mar.	*Left* eye, the opacity considerably diminished. *Vision.*—Can now read the smallest print of a newspaper fluently by the assistance of a glass, and tell the hour by a watch.	
109	9th Vet. Bat.	James Strang	44	Ditto	*Right* eye lost. Cicatrix of *left* cornea. *Vision.*—Able to walk without a guide.	8	Ditto	*Left* eye, opacity greatly diminished. *Vision.*—He can see the minute and seconds' marks on a watch-dial, and read the smallest print of a newspaper.	
110	8th.	James Carthy	51	24 July	Slight opacity of both corneæ. *Vision.*—Can read with the assistance of glasses.	17	24Aug.	The opacity considerably diminished, the eyes much stronger, and the morbid sensibility to light subsided. *Vision.*—Can read the smallest print of a newspaper fluently.	
111	Dun. Fenc.	Donald M'Call	50	16 June	*Right* eye lost. Opacity of the *left* cornea supposed from the adherence of lead. Lids slightly vascular. *Vision.*—Unable to walk in a strange place or do any kind of labour.	20	Ditto	The opacity of the *left* cornea diminished. *Vision.*—Is able to tell the hour by a watch accurately, and can walk any where without a guide.	This case was marked in the return on admission as being "very unfavourable for treatment."

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic Hospital.	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
112	94th Foot	William Murehead	26	24 July	*Left* eye, cornea projecting considerably beyond the eyelid. *Right* eye, cornea ruptured and very opaque. An artificial pupil has been formed. *State of Vision.*—Cannot see to walk alone, or at all times to avoid objects in a house.	Years. 1½		Granulations of the lids entirely removed, and the opacity of the cornea opposite the artificial pupil is daily diminishing. *State of Vision.*—Can distinguish large objects more clearly, and feels the eye much more comfortable.	Discharged for having absented himself from Hospital without leave.
113	Royal Artil.	Peter M'Nie	31	Ditto	*Left* eye lost. *Right* eye, capsular cataract, and cicatrix occupying the cornea opposite the axis of vision. *Vision.*—Cannot make his way in a strange place alone, but can tell the time by a watch when placed close to his eye. Has not been able to do any kind of labour since his discharge.	3	24Aug.	He considers his vision slightly improved from the opacity being somewhat lessened; but it is not considered prudent to risk an operation, as he is willing to return to Hospital whenever he finds his sight decay.	

114	91st.	John Ogilvie	26	24 July	*Left* eye unimpaired. *Right* eye, tinea of the superior lid and lippitudo of the inferior, with diffused opacity of the cornea. *Vision.*—Is unable to read with the *right* eye. Every object appears as through a mist.	5½	7 Oct.	Tinea of the superior lid of the *right* eye, and lippitudo of the inferior removed, and the opacity of the cornea considerably diminished. *Vision.*—Can read the smallest print of a newspaper with the *right* eye.	The remaining opacity of the cornea may be removed by continuing the applications with which he has been supplied.
115	Royal Artil.	Geo. Willson	33	Ditto	Opacity of both corneæ. *Vision.*—*Left* eye, can tell the hour by a watch. *Right* eye, can see to read, and can sometimes work at his trade as a gardener; but the stooping at his work, or being exposed to a strong light occasions inflammation, and increases the opacity.	6	Ditto	Opacity of the cornea of each eye considerably diminished. *Vision.*—Can now read the smallest type of a newspaper with great fluency with both eyes, and he can look at the strongest light without any inconvenience.	
116	8th Royal Vet. Bat.	Wm. Danks	60	11Sept.	Opacity and vascularity of both corneæ, and an ulcer in the *left*, with some degree of acute inflammation. *Vision.*—*Left* eye, cannot guide himself by it, nor see any object distinctly. *Right* eye, sufficient to walk without a guide, or to distinguish one person from another when close to them.	Months. 9	30 Jan. 1819	Opacity and vascularity of both corneæ removed, and the ulcer of the *left* healed. Inflammation gone. *Vision.*—Is able to see as well as ever he did with both eyes.	

Contracted Pupil with Capsular Cataract.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
117	Dumfries Fencibles.	Arthur Henderson	45	16 June	The anterior chamber of the *right* eye obliterated, and cornea opaque, with amaurosis. Capsule of *left* lens opaque, and pupil much contracted. *State of Vision.*—With the *left* eye is able to distinguish objects, and to walk alone, particularly in the evening, but is unable to labour. For twenty years has had an annual attack of inflammation.	Years. 20	7 Oct.	*Right* eye, as on admission. *Left* eye, the capsule of the lens less opaque. *State of Vision.*—Considerably improved, being able to read moderate-sized print, and tell the hour by a watch with a glass. He says he can now see as well as he has been able, for ten or twelve years.	This man has expressed a desire to return to Hospital, in order to undergo an operation for artificial pupil, should it become necessary at any future period.

ABSTRACT.

Operations.

Artificial pupil.	Perfectly successful*	38
	Artificial pupil formed, but vision not improved	5
	Unsuccessful	4
Cataract.	Successful	8
Inversion of the eye-lids.	Successful	5
Eversion of the eye-lids.	Ditto	3
	Total number of operations, seven men having been operated upon in both eyes	63

* Six of these were complicated with cataract.

Treatment.

Granular state of the lids, with opaque cornea.	Cured, or benefited	30
	Not benefited	4
Opaque cornea.	Cured, or benefited	23
	Not benefited	3
Contracted pupil with an opaque capsule	Benefited	1
	Total number of patients who have undergone treatment	61

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114	91st.	John Ogilvie	26	24 July	*Left* eye unimpaired. *Right* eye, tinea of the superior lid and lippitudo of the inferior, with diffused opacity of the cornea. *Vision.*—Is unable to read with the *right* eye. Every object appears as through a mist.	5½	7 Oct.	Tinea of the superior lid of the *right* eye, and lippitudo of the inferior removed, and the opacity of the cornea considerably diminished. *Vision.*—Can read the smallest print of a newspaper with the *right* eye.	The remaining opacity of the cornea may be removed by continuing the applications with which he has been supplied.
115	Royal Artil.	Geo. Willson	33	Ditto	Opacity of both corneæ. *Vision.*—*Left* eye, can tell the hour by a watch. *Right* eye, can see to read, and can sometimes work at his trade as a gardener; but the stooping at his work, or being exposed to a strong light occasions inflammation, and increases the opacity.	6	Ditto	Opacity of the cornea of each eye considerably diminished. *Vision.*—Can now read the smallest type of a newspaper with great fluency with both eyes, and he can look at the strongest light without any inconvenience.	
116	8th Royal Vet. Bat.	Wm. Danks	60	11Sept.	Opacity and vascularity of both corneæ, and an ulcer in the *left*, with some degree of acute inflammation. *Vision.*—*Left* eye, cannot guide himself by it, nor see any object distinctly. *Right* eye, sufficient to walk without a guide, or to distinguish one person from another when close to them.	Months. 9	30 Jan. 1819	Opacity and vascularity of both corneæ removed, and the ulcer of the *left* healed. Inflammation gone. *Vision.*—Is able to see as well as ever he did with both eyes.	

Contracted Pupil with Capsular Cataract.

Case.	Regiment.	NAME.	Age.	Date of Admission into Ophthalmic	State of Disease and Vision on Admission.	Duration of Disease	When discharged from Ophthalmic Hospital.	State of Eyes and Vision on Discharge.	REMARKS.
117	Dumfries Fencibles.	Arthur Henderson	45	16 June	The anterior chamber of the *right* eye obliterated, and cornea opaque, with amaurosis. Capsule of *left* lens opaque, and pupil much contracted. *State of Vision.*—With the *left* eye is able to distinguish objects, and to walk alone, particularly in the evening, but is unable to labour. For twenty years has had an annual attack of inflammation.	Years. 20	7 Oct.	*Right* eye, as on admission. *Left* eye, the capsule of the lens less opaque. *State of Vision.*—Considerably improved, being able to read moderate-sized print, and tell the hour by a watch with a glass. He says he can now see as well as he has been able, for ten or twelve years.	This man has expressed a desire to return to Hospital, in order to undergo an operation for artificial pupil, should it become necessary at any future period.

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Contracted pupil with an opaque capsule	Benefited	1
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APPENDIX.

PREVIOUSLY to my inserting the Medical Report of the cases of the pensioners who have been treated in the Ophthalmic Establishment, York Hospital, Chelsea; it may be proper to give a brief account of the origin of that establishment,—of the directions which have been given for the selection of the patients,—and of the manner in which their cases are taken down on admission into, and previously to their discharge from, hospital.

In 1810, I had the honour to propose to Sir David Dundas, the late Commander-in-Chief, the formation of an institution for the exclusive treatment of pensioners dismissed the army, blind from the Egyptian ophthalmia; asserting, that many men might thereby be restored to the service, and large sums of money annually expended in pensions might be saved to the country.

For a considerable time after I made this proposal, it was denied that the malady admitted of radical cure. The fact, however, having been established by repeated public trials

of my practice, that the disease was curable, His Majesty's Government was pleased, in conformity with my proposal to found, in 1817, an institution exclusively for the treatment of the blind pensioners belonging to the army, navy, and artillery.

Printed Orders to all the blind out-pensioners belonging to the three departments of the public service were issued. The following is that from the War-Office:—

War-Office, 13th March, 1819.

NEW and successful methods of treating disorders of the eyes, more particularly those arising from Egyptian ophthalmia, having been discovered, and it being the wish of His Majesty's Government to extend the advantages of these discoveries to the out-pensioners of Chelsea and Kilmainham Hospitals, who are afflicted with ophthalmia and other disorders of the eyes, the Secretary at War informs ————, that if he labours under a malady of the above description, he may submit himself to an examination by one of the military medical officers, appointed assistants to Sir William Adams; in order, that if his case be found susceptible of relief, he may proceed to London, for the purpose of being placed under the care of the latter gentleman.

The out-pensioner will be allowed the usual rate of marching-money, (being one shilling and ten-pence a day,) from the place of his residence, or the station where he shall be inspected, (as the case may be,) reckoning ten miles for a day's march; and the same allowances will be made to him on his return home.

Particular arrangements will be made in cases in which it may be thought proper that the men should be conveyed by waggons or canals.

If the inspecting medical officer shall deem it absolutely necessary, that a guide should accompany the out-pensioner, the same rate of marching money will be granted for the guide, upon the man's producing a certificate from such inspecting medical officer, of the necessity for the attendance of the guide.

If the out-pensioner should be desirous of returning to his home, after being inspected, he will notify his desire to the inspecting medical

officer, who will arrange with him the time when he will be required to set off for London, and the manner of his proceeding.

It may be proper to explain to the out-pensioner, that he will be paid and subsisted as a soldier during the time he is under treatment in York Hospital; and that, the object of Government being solely to extend to men who have suffered in the service, the benefits of the improvements lately made in the method of treating disorders of the eye, there is no intention of making any alteration in the amount of his out-pension, which will accordingly recommence, at the former rate, from the day on which he is again discharged from hospital.

The out-pensioner may be assured of receiving every comfort and attention requisite to the cure of his malady; but it will, of course, be proper that he should take with him such articles of clothing and personal necessaries, as he may want, whilst absent from his home.

By command of His Royal Highness the Prince Regent,
in the name and on the behalf of His Majesty.
PALMERSTON.

With the view to ascertain the general applicability of the new modes of treating the most important diseases of the eye, a part of York Hospital, Chelsea, was appointed for the reception of the blind pensioners, to which an appropriate number of military medical assistants was attached.

One of these gentlemen was sent to Scotland, to examine and select for treatment, all cases among the pensioners which admitted of relief.

The Right Hon. the Secretary at War having judged it expedient to alter his directions, in regard to the selection of one class of patients, who had been inspected at the first five stations in Scotland, the following Letter of Instructions to my assistant, was transmitted by me, previously to his commencing his tour of examination through the remaining part of North Britain.

26, *Albemarle-Street, April* 16, 1818.

Sir,

"As you are about to proceed to Scotland, for the examination of the remainder of the ophthalmic pensioners, I have the honour to request, by desire of Lord Palmerston, that you will select for treatment, all those belonging to Chelsea and Kilmainham Hospitals, whose cases admit of being cured, or materially benefited, keeping in view, as far as you can, the *comfort* and *benefit* intended the pensioner by this order of Government. In making the selection, you will, therefore, exercise your judgment and discretion, conformably to those intentions; at the same time, bearing in mind, that the prevention of the further dissemination of the contagion of the Egyptian ophthalmia, is another object of Government.

The following forms of disease should more particularly be selected for treatment:—

First, Granular lids and opaque cornea.

Secondly, Cases for artificial pupil, whether arising from ulceration of the cornea, inflammation of the iris, accidents, or the unsuccessful termination of previous operations.

Thirdly, Opacities of the cornea, with or without vascularity.

Fourthly and lastly, Cataract, conical cornea, accidents, and, in short, *every species of disease which admits of material relief, should be selected.*"

In conformity with these instructions, my assistant noted down for treatment, every case which he conceived held out in any degree a prospect of being benefited.

But in the hurry which necessarily attended many of his examinations, when travelling long distances over the mountainous parts of Scotland, within limited periods, some men were selected and sent to York Hospital, whose cases were found, upon examination, to be absolutely incurable, and who were, therefore, immediately sent back without treatment.

Some of the other cases sent up, were also of so unfavourable a nature, as to be considered scarcely admissible for the trial of any practice: but I was induced to make an

effort to relieve the men, in consequence of their having been brought so far from home, and their being exceedingly anxious that I should do so.

I, however, felt it due to the reputation of the institution, officially to report these cases to the War-Office, on their admission into hospital, as being "*very unfavourable for* "*treatment*," and it will be seen, by referring to the annexed Medical Report, that more than one-half of the operations which have failed, were thus noted.

These circumstances are stated, and the Letter of Instructions to my assistant is inserted, lest it may be imagined, that in the contemplation of publishing annual Reports, those pensioners only were selected for treatment, whose cases were of a favourable description. The fact, however, is, that I had not thought of publishing these Reports until I found, that in consequence of incorrect statements of my practice having been promulgated, such a measure became expedient, in order to obviate misrepresentation.

It is now proposed, therefore, to lay before the Profession and the Public the cases of all the men who have been dismissed from the Ophthalmic Institution, since its establishment, as well of those who have *not* been benefited, as of those who have; and to furnish thereby the means of forming a fair comparative estimate of the value of the peculiar operations and modes of practice employed in their treatment.

It being the wish of Government, that an authentic Record should be kept, of the results of the treatment of the pensioners at the Ophthalmic Hospital, a Board, consisting of the superior medical officers of Chelsea Hospital, and those of the Army Medical Board, was formed, to examine the patients on their admission into, and on their discharge from thence.

At the first meeting of the Board, for the discharge of patients, the men were very minutely examined, and a Report was drawn up of every man's case, which Report was submitted to the inspection of all present, myself included. But this plan has not been since continued either on the admission or discharge of the patients. On the contrary, the three superior members of the Board, aided by their respective assistants, have taken private notes, which notes have not been offered to the inspection of the other members of the Board, or to myself, and, consequently, no General Report has been made. Now, as five or six different individuals can scarcely be expected to take the same view of any subject, much less of complex diseases,—it may be doubted, whether the intention of Government, in the formation of this Board, has been fulfilled *.

* In a recent instance, when it was the wish of the Right Hon. the Secretary at War, that the Commissioners of Chelsea Hospital, should *themselves* inspect some of the blind pensioners who had been successfully treated, and some of whom had thereby been enabled to work at their respective trades, the Commissioners declined so to do, from having no record of their previous state, on which to found an opinion of the degree of benefit the men had obtained.

Feeling, however, that the reputation of the institution, as well as of my operations and practice, required, that in conformity with the intentions of Government, an authentic Record of the cases should be kept, it became necessary for me to adopt the best means within my power to obtain such a Record.

For this purpose, one of my assistants has been directed to draw up the particulars of every man's case, on his admission into the hospital, and previously to his discharge from thence. His Report is repeatedly compared by myself and my two other assistants with the state of the men's eyes and vision, in order to ascertain its correctness. It is then submitted for the same purpose to all the students and practitioners, civil and military, attending my lectures and operations at York Hospital*.

The Reports, after having been thus scrutinized, are laid upon the table for the inspection of the members of the Board, appointed by Government, to examine the pensioners, who make such use of them as they judge proper, in taking their private notes. They are afterwards transmitted to the War-Office, and the annexed Annual Medical Report is a copy of these Official Returns.

Placed as I was at the head of this institution, I considered it due to the confidence reposed in me by Government,

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* Upon some occasions, from twenty to fifty medical students and practitioners, have been present at these examinations.

that every thing connected with the treatment of the pensioners should have the most complete publicity; and that the Profession at large should, therefore, be invited to inspect, and estimate, the practice which was to justify that confidence. This invitation, of which the following is a copy, was issued to the Profession, and it has been answered by the attendance of several hundreds of professional gentlemen, both civil and military.

SIR WILLIAM ADAMS having had the honour to be nominated by His Majesty's government, to superintend that part of York Hospital, Chelsea, which has been appropriated to the reception of the blind pensioners belonging to the army, navy, and artillery, feels it a duty to lay open to the profession at large his new modes of treating them. This duty is suggested, as well by the peculiar confidence which has been reposed in him, as by the high sanction thus conferred upon his improvements in ophthalmic surgery. He therefore freely invites all medical practitioners and students, who are interested in the advancement of this branch of surgery, to attend his operations at York Hospital; which, for their convenience, will be performed in future, on Tuesdays and Fridays, between the hours of seven and nine in the morning.

To remove all doubt or misconception, with regard to Sir William Adams's practice, he proposes, on each of these days, to give a description of the nature of one of the diseases to be operated upon—the general modes of performing the operation—his peculiar mode—and his reasons for deviating from the usual practice, where such deviation has been found necessary.

The records kept of each case, from the patient's admission into the hospital to his final discharge, will be open at the periods already mentioned, for the inspection of such gentlemen as attend; so that the profession will be enabled fairly to appreciate the character of the *new*, as compared with the *old* modes of practice.

It is expected, that from *fifteen hundred* to *two thousand patients* will successively be placed under the care of Sir William Adams, in this institution.

26, Albemarle-Street,
March 10, 1818.

There have been *one hundred and seventeen patients* discharged from the Ophthalmic Institution between the period of its establishment, December 1st, 1817, and January 30th 1819. Their diseases are classed in the annual Medical report under separate heads. It will be seen that of *forty-seven* operations for artificial pupil—*thirty-eight* have perfectly succeeded—in *five* cases, notwithstanding the artificial pupils were perfectly formed, the patients have derived no accession to vision, in consequence either of the insensibility of the retina, or from other causes—in *four* cases only has the operation altogether failed, and *three* of these were marked on their admission into Hospital as being " very unfavourable for treatment."

Eight cases of cataract have been operated upon. Not one failure of the operation has occurred; and the success has been complete in all, with one exception, (Case 50), in which the removal of the cataract was as perfectly effected as in the other instances, and the patient had not an unfavourable symptom, either at the operation, or subsequently to it. But the optic nerve was found to be totally insensible.

It is worthy of remark, that one half of those cases, in which vision was perfectly restored, had been operated upon without success previously to their admission into hospital.

In *seven* other cases of cataract (complicated with a closure of the pupil) the cataract in six instances was successfully removed, as well as the artificial pupil formed.

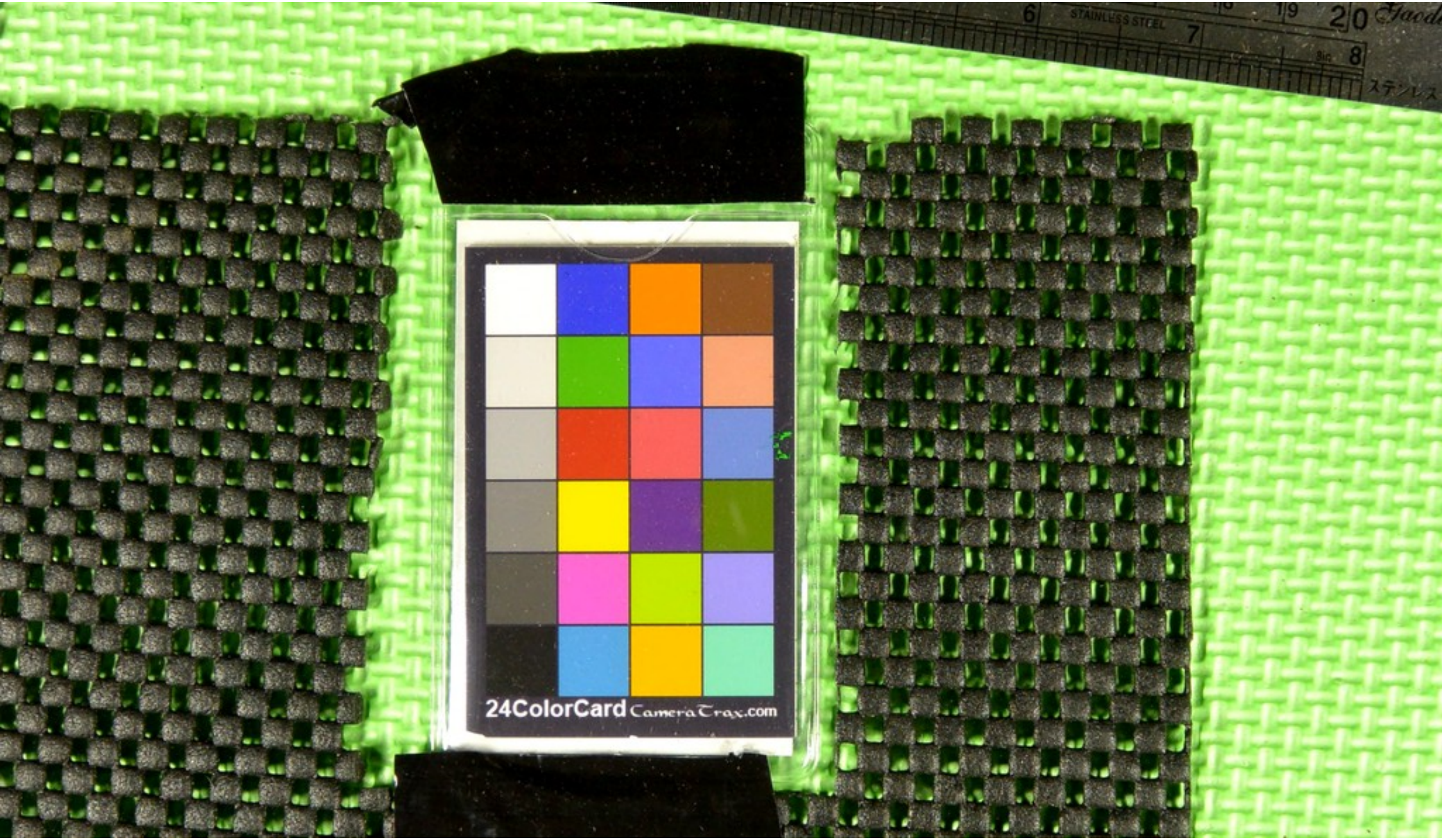
There has not been one failure, in the operations for the cure of inversion or eversion of the eyelids.

The result of the *treatment* upon the pensioners will, I trust, on referring to the cases, be considered scarcely less successful than the *operations* have proved, when the number of years, during which many of them have laboured under their diseases, and the great variety of treatment which they had undergone previously to their admission into hospital, is taken into account.

It may be proper also to mention, that the vision of a considerable number of the patients might have been still further improved, had they been longer detained in hospital, more particularly those who underwent the operation for artificial pupil by *excision*, and those labouring under opacity of the cornea. In the former class of patients, from the rays of light falling upon a part of the retina not destined by nature to receive them, it requires a certain degree of exercise before the organ can be brought into healthy action. In the latter, the entire removal of the opacity would have required their detention also from their families, a considerably longer time than they remained in hospital. Therefore, such patients on their dismissal have been supplied with the requisite applications, and I have learnt from one of my assistants, that on his second journey to Scotland, having examined some of the worst cases of this kind which had been treated in the Ophthalmic Institution, he found that

the continued employment of these applications, conjoined with pure air, had restored their eyes to a state of perfect health.

The subjoined Medical Report will, I trust, satisfy His Majesty's government and the Public, that considerable benefit has been already effected by the measure, which originated in the humanity of the Right Hon. the Secretary at War; and that no exertion upon my part has been wanting, to realize to their fullest extent, those expectations, which induced his Lordship to attend to the suggestions, which I had the honour to propose.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