A practical treatise on cataract / By John Stevenson.

Fig. 3.

Fig. 4.

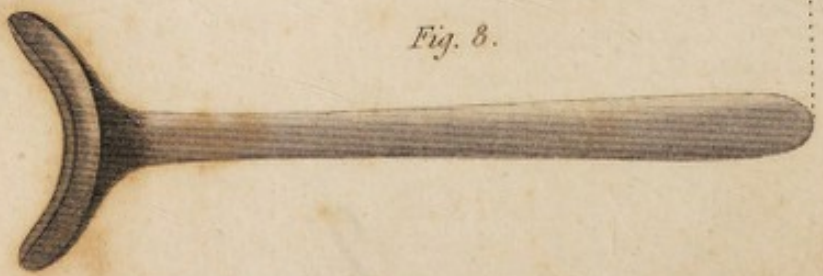
Fig. 5.

Fig. 6.

Fig. 1.

Fig. 7.

Fig. 8.



Drawn & Engraved by S. Porter.

A

PRACTICAL TREATISE

ON

CATARACT.

By JOHN STEVENSON,

OCULIST AND AURIST TO HER ROYAL HIGHNESS THE PRINCESS OF WALES, MEMBER OF THE ROYAL COLLEGE OF SURGEONS, &c. LECTURER ON THE ANATOMY AND DISEASES OF THE EYE AND EAR, AND AUTHOR OF "A PRACTICAL TREATISE ON THE MORBID SENSIBILITY OF THE EYE, COMMONLY CALLED WEAKNESS OF SIGHT."

With the year
Seasons return; but not to me returns
Day, or the sweet approach of ev'n or morn,
Or sight of vernal bloom, or summer's rose,
Or flocks, or herds, or human face divine;
But cloud instead, and ever-during dark
Surrounds me; from the cheerful ways of men
Cut off, and for the book of knowledge fair,
Presented with a universal blank
Of Nature's works, to me expung'd and ras'd,
And wisdom at one entrance quite shut out.

Milton's Paradise Lost, B. 3.

London.

Printed for HIGHLEY and SON, Fleet Street;
Longman and Co. Pater-Noster Row; Cox, St. Thomas's Street, Borough; Callow, Crown Court, Princes Street, Soho; Archibald Constable and Co. Edinburgh; and Gilbert and Hodges, Dublin.

1813.

A PRACTICAL TREATISE ON CATARACT.

WITH EVERY SENTIMENT OF

PROFOUND RESPECT,

AND WITH THE DEEPEST SENSE OF

OBLIGATION AND GRATITUDE,

THIS TREATISE

IS,

BY PERMISSION,

VERY HUMBLY INSCRIBED,

TO HER ROYAL HIGHNESS

THE PRINCESS OF WALES,

BY

HER ROYAL HIGHNESS's

MOST DUTIFUL, FAITHFUL,

AND MOST OBEDIENT SERVANT,

JOHN STEVENSON.

Great Russel Street,
Bloomsbury,
January 7, 1813.

CONTENTS.

ADVERTISEMENT.

THE Work, now offered to the Public, has assumed its present form, in consequence of a communication recently sent to the Medical and Physical Journals. Several Professional Gentlemen expressed a wish, that a subject, in many respects new to them, should be explained more at large, and with greater minuteness. This the Author has endeavoured to do in the following Treatise, with as much brevity as is consistent with such an undertaking.

A

TREATISE, &c.

SECTION I.

ON THE NATURE AND SEAT OF TRUE CATARACT.

THE Disease distinguished by the term Cataract,* has for ages been esteemed, on account of its prevalence, the blindness it

* By the antient Greeks, Cataract (an epithet derived from Καταράσσω, to confound, because it confuses the sight) was called Ὑποχυσις and Ὑπύχομα. "Suffusio quoque, quam Græci ὑποχύσιν nominant, interdum oculi pupillæ, quâ cernit, se opponit." Cels. de Suff. lib. vii. cap. 7.— "Suffusio Latinis, ὑποχύμα Græcis, vulgò Cataracta dicitur, sumptâ uti opinor, denominatione ab illis portis, quæ in oppidis et castris, supernà deorsum cadunt, et omnem prohibent transitum." Fabric. ab Aquapendent. Opera Chirurg. de Suffus. p. 57. It was likewise denominated by some, Glaucoma; "Glaucoma et suffusionem veteres unum eundemque morbum esse existimarunt, &c." Oribasii Synops. cap. 47, lib. 8. Also Gutta obscura vel caliginosa, and sometimes Imaginatio, by the Arabians; and Suffusio only by the Latins. Vide Galen de usu part. lib. x. cap. 1. Avicennæ Opera a Plempio, fol. 1658. Lommius Obs. Med. 12mo. 1560, de Suffusione. Heister de Cataract. Gendron Traité des Maladies des Yeux, tom. ii. c. 22, p. 244. Maître-Jan Traité des Maladies d'Œil, prim. part. chap. 1, p. 111, &c.

occasions, and its susceptibility of relief by an operation, one of the most important among the interesting series of ocular derangements, that tend more or less to impair, or wholly to destroy sight. The inestimable value and extreme delicacy of the Eye, added to the lively gratification and professional celebrity consequent upon the restoration of its functions, have concurred to render this malady an object of the highest attention to Practitioners, the most eminent for their surgical attainments. And the progress of improvement in its treatment, has been commensurate with the talents and industry bestowed upon the investigation, and with the more accurate knowledge acquired relative to the anatomical structure of the organ affected. The disorder we are now considering, as it is visible, when fully formed, on the slightest inspection, has been from the earliest periods of medical science, universally ascribed to some opake substance situated within, and occupying the whole or a part of the pupillary aperture, by the presence of which, the rays of light are intercepted in their passage to the retina, the esteemed seat of vision.

But in regard to the real character, pre-

cise situation, and original formation of the opake substance, very vague and erroneous opinions have at different times prevailed. Of these the most remarkable and important, because it materially influenced practice for many succeeding centuries, was the doctrine of Galen,* who having imbibed the visionary and false notion, that the lens is the essential organ of sight, "crystallinus humor primum videndi organum,"† maintained, that the cataract, is not as was com-

* That his predecessor, Celsus, the Latin Hippocrates, who flourished under the reigns of Augustus and Tiberius, had long before entertained the same sentiment with respect to the lens, is sufficiently manifest from the following quotation: "Sub his gutta humoris est, ovi albo similis; *a quâ videndi facultas* proficiscitur; Κρυσταλλοειδὴς a Græcis nominatur." Cels. de Re Medic. l. vii. c. 7, p. 432, edit. 12mo. Amstel. 1687. But as Celsus simply states, without attempting to vindicate and substantiate the doctrine by any satisfactory arguments or experiments on the subject, it probably was not admitted as a dogma, until adopted and promulgated by Galen, a celebrated Greek physician, and cotemporary with Antoninus Pius, the 16th Emperor, whose equally voluminous and excellent writings were for many ages appealed to, with almost oracular veneration, as the standards of medical literature. Indeed, such is the extent and universality of medical, and particularly anatomical knowledge, contained in his Works, that the late Dr. Monro of Edinburgh used to say, "that nobody ought to assume the honour of a discovery, till he was sure Galen had not mentioned it." MSS. History of Anatomy, in the Museum.

† Galen de usu part. lib. x. cap. 1. This opinion of Galen was warmly espoused and as obstinately defended by

monly supposed, an opacity of the crystalline, but is produced by a congeries of superfluous humours coagulated into a white skin or pellicle, formed before it, in the posterior chamber of the aqueous humour. In vindication of this hypothesis he argued, (and with reason, had his idea relative to the use and function of the lens been correct) that on the supposition only of the displacement of some intervening opake substance situated in front of the crystalline, could sight be restored by the process of depression. For it were absurd to expect that the faculty of vision, which he believed was inherent in that transparent body, could be regained by an operation, obviously calculated to remove it from its natural situation. Others, not being able to comprehend how this compact substance could be spontaneously generated in the aqueous humour, a phenomenon so perfectly contrary to all known laws of the

several distinguished modern authors and practitioners, even after the true nature of Cataract had been fully developed. See Oribas. Synops. lib. viii. cap. 47, edit. 1734. Ambrose Paré, lib. xviii. cap. 19, p. 456, edit. 1623. Mery Mem. de l'Acad. des Sciences, 4to. p. 497, 1707. Woolhouse in Diario erud. mens. Nov. 1720. Hovius de circul. Humor. in Ocul. Mot. 1740. De la Hire, jun. Mem. de l'Acad. des Sciences, p. 553, 1707.

animal œconomy, with a greater degree of plausibility, attributed it to a film or lamen, which they fancied might, by disease, be detached from the external convexity of the lens, and which having lost its pellucidity, spread itself like a thick web, veil, or membrane, before the sight; constituting what they conceived to be the true cataract. A more accurate acquaintance with the mechanism of these parts furnished, however, an easy and complete refutation of that antient theory. For the lens itself being inclosed within a tense smooth capsule, is not in contact with the aqueous humour, and consequently, is incapable of throwing off any layer; and its enveloping tunic is not of a character to admit of such a separation. The event which first led to the rational developement of the true nature and seat of cataract, may with justice be referred to the important discovery of Kepler,* who in the

* Vide Kepler Paralipomena ad Vitellionem.—Plempius also, a celebrated physician of Amsterdam, in his Ophthalmographia, published 1639, refuting the commonly received opinion of the lens being the immediate seat of vision, says, lib. iii. cap. 14. "Dicamne vero etiam omnibus inopinatum quidpiam? Aio enim vero crystallinum non nobiliori in oculo fungi officio, quam aqueum. Et exempto crystallino, oppletoque loco ab humore vitreo, visionem nihilhominus ce-

year 1604, proved by experiments, illustrated by sound reasoning, that the crystalline being a perfectly diaphanous body, was unfit to retain or reflect light, and that this humour, so far from possessing, as Celsus and Galen asserted, the attribute of vision, is in fact to be regarded only as a double convex lens, or powerfully refracting medium, admirably adapted by its position in the Eye, and by its beautiful transparency and peculiarly dense structure, to converge the rays of light in their progress through it to a focus upon the sensible retina. This momentous fact, having been fully and unequivocally ascertained by the sole genius and indefatigable researches of the above-named celebrated mathematician, more rational sentiments on the subject began once more to revive, and gradually to triumph over errors which for many ages had been univer-

lebratum iri: verum non tàm distinctè, quàm nunc: confusa enim esset in retiformî pictura, nisi alio situ, quam quem nunc obtinet, retiformis locaretur." As, however, this learned author embraced the antient doctrine relative to Cataract, and had not any practical experience in the operation of couching, he must have derived his surprisingly accurate knowledge of the subject from his mathematical researches, and from his profound acquaintance with both the theoretical and practical part of the science of Optics.

sally adopted with unsuspecting credulity. But the progress of improvement in science is generally slow, and still more tardy in becoming widely diffused among mankind. Hence, notwithstanding the true nature of Cataract was inculcated in Lectures, and afterwards published by Lasnier,* Rohault,† Borelli,‡ Gassendi,§ and others, yet, as it does not appear, that they confirmed what they ventured to suggest, by any direct and satisfactory experiments; their speculations, although correct, had little or no influence in practice, and accordingly, as might under such circumstances be naturally expected, were soon consigned to oblivion. Such indeed was the overwhelming authority of the first promulgators of the doctrine, and so wedded were persons to the long established opinion of the Cataract being a pellicle in the aqueous humour, (a notion still en-

* Recherches sur la Chirurgie, p. 404. Lasnier was a celebrated surgeon of Paris, who died in 1690, and who, according to Sabatier, received the information from Mr. Quarre, and communicated it to the College of Surgeons before 1651, which was subsequently published by Gassendi, Rohault, and Rolfincius.

† Rohault Tractat. Physic, tom. i.

‡ Borelli Histor. Medic. Physicæ, 8vo.

§ Gassendi Oper. Physic. tom. ii. p. 331.

tertained by the vulgar) that a few only of the more unprejudiced and well-informed, believed the disease to be absolutely situated in the crystalline lens, until the beginning of the 17th century.* About that period, the several interesting publications of Maitrê-Jan,† in 1707, Brisseau‡ in 1709, Heister§ particularly in 1711, &c. and St. Ives‖ in 1721, &c. added to the removal by the latter in 1707, and by M. Petit¶ in 1708, through an incision in the cornea of some opake crystallines which, after depression, had emerged again, and passed through the pupil into the anterior chamber, supported as they were by repeated dissections of cataractous eyes, and subsequently by the ope-

* "Cette verité n'etoit pourtant encore connue que d'un petit nombre de personnes au commencement de ce siècle," &c. Sabatier de la Med. Operat. tom. ii. 8vo. 1796.

† Ant. Maître-Jan. Traite des Malad. de l'Œil. in 12mo. 1722.

‡ Brisseau Traité de la Cataracte et du Glaucoma, Tournay, 1706.

§ Heister Tract. de Cataract in lente crystall. 1711. De Glaucome et Amaurosi, 1713; and his Vindiciæ against Woolhouse, 1779, by which admirable productions he may be said to have obtained a complete victory over the advocates for the doctrine of Galen, and his followers.

‖ St. Ives Malad. des Yeux, in 12mo.

¶ Petit. Mem. de l'Acad. des Sciences, 1708, p. 242.

ration of extraction, tended effectually to supersede the mistaken ideas of the antients, and satisfactorily to evince, that the disease in question is exclusively owing to an opacity of the crystalline, or its capsule. The morbid affection of the former, which occurs most frequently, is denominated *lenticular*; and that of the latter, a less common form the complaint, *capsular* or *membranous*; and when it follows upon an operation, *secondary* Cataract. The latter species was not perfectly known until the removal of the opake lens, through a section of the cornea; a process invented and published by Daviel in 1745, who accurately described and successfully operated upon it. I must add likewise, that sometimes, though very rarely, the humor Morgagni becomes opake, constituting what has been called *interstitial* Cataract, respecting which Richter,* who had only seen one instance, gives the following interesting statement: "No sooner had I punctured the capsule, by means of La Faye's instrument, than two or three drops of a

* Richter's Treatise on the Extraction of the Cataract, translated from the German, p. 4. in 8vo, 1791.

whitish fluid flowed out, and the same moment the pupil became clear, and the patient saw. Three months afterwards, a Cataract took place in the same Eye, which in all probability was seated in the body of the lens itself. On this account, I think a surgeon would act prudently, in all similar cases, were he always to extract the lens, although it should not be opake at the time of the operation; for it is always to be dreaded, that it may become so in consequence of the injury done to the capsule, and to the lens itself during the operation." Occasionally, all the above-named parts are at the same time affected; a complicated state of the disease, which has received the appellation of *mixed Cataract.* When this opacity is partial only, the sight is simply vitiated and depraved; but when it is uniformly diffused throughout the entire substance of the lens, or its enveloping membrane, there is in that case a total extinction of all useful vision.

SECTION II.

ON THE SYMPTOMS OF CATARACT.

In regard to the Symptoms of Cataract, they may with propriety be divided into external or visible, and into internal or occult, of which the patient only is conscious. Its commencement, except in unfavourable cases, or in such as are the effect of accident, is seldom marked by any preceding pain, or accompanying uneasiness. Sometimes, however, I have known it attended with a great degree of intolerance of light, or morbid sensibility of the organ; a symptom which is independent of cataract, and implies, I conceive, an affection of the deep-seated membranes of the eye, (a full decription of which complaint, with the proper mode of treatment, may be found in my former publication on the Eye;*) and which ought, unquestionably, to be relieved before any operation can with safety

* Practical Treatise on the Morbid Sensibility of the Eye, commonly called Weakness of Sight. 8vo. Highley, 5s.

be undertaken. The earliest *internal* symptoms of the incipient disease, occuring without an assignable cause, and which are experienced by the patient, antecedently to any opacity being perceptible in the pupil, are a slight sense of weakness or imperfection of sight, together with a *settled mist* before the eyes, which incessantly obscures all objects, and confuses those that are minute. The constancy and fixedness of this mist serve to distinguish the complaint from many occasional and transient obumbrations of vision, arising from hysteria, and sympathy of the eye with a disordered stomach; as well as from those ocular hallucinations, the result of a derangement in the functions of the optic nerve, or its medullary expansion, viz. the delusive appearance of dust, cobwebs, flies, and other fantastic imaginary objects, floating in the air. These suffusions, Maître-Jan,* St. Ives,† Baron de Werzel,‡ &c. have represented as equally characteristic of the *first* stage, both of Cataract and Gutta Serena. To this opinion I cannot, however, implicitly subscribe, since

* Maître-Jan Traité des Malad. de l'Œil.

† St. Ives Traité des Malad. des Yeux.

‡ Baron de Werzel Traité de la Cataracte.

from numerous inquiries on the subject, I feel justified in stating, that though these symptoms are undoubtedly sometimes associated, they certainly bespeak a morbid affection of the retina,* rather than of the lens, and have by no means a necessary connection with Cataract. Again, the affected eye becomes generally at an early period myopic, viz. the sight begins to shorten, the patient being capable of seeing *near* objects *only* with perspicuity, the more *distant* appearing as if enveloped in a cloud or thick fog. This defect is probably owing to the increased density, or more impervious condition of the lens, and produces the same effect as if the sphericity of the eye itself were actually augmented. At all events, on this supposition we can account for the advantage which cataractous persons usually derive, for a time, from the use of concave glasses. As Cataract begins likewise, in by far the majority of instances, at the centre of the

* The coexistence, however, of these symptoms of amaurosis in a *slight degree* with the opacity of the lens, or when they have preceded its formation, ought not invariably to withhold us from operating for Cataract, as it is possible that the removal of the opake crystalline may be productive of a great improvement in sight, which may continue useful, without being impaired by any further increase of the suffusion.

crystalline, where it is thickest, they who labour under the malady, enjoy a greater share of vision in a moderate, than in a brilliant light, and consequently on the approach of evening, than under the full influence of the meridian sun. To the same circumstance also it is owing, that objects placed laterally, are seen better than those which are situated directly opposite to the eye. These phenomena may be explained upon the principle, that the pupil becomes contracted or dilated conformably to the quantity of luminous rays suffered to impinge upon the eye. When few only are admitted, the iris sympathetically expands, and allows of their passing to the retina through the yet transparent circumference of the lens: but when the stimulus of light is considerable, the area of the pupil becomes in the same ratio diminished; under which circumstance, the opake nucleus of the crystalline being alone opposed to their impulse, effectually resists their transmission to the bottom of the organ of vision. On the contrary, an eye recently affected with an incomplete amaurosis (viz. paralysis of the optic nerve, or its medullary expansion) has its sensibility excited by exposure to a vivid

light; when external objects, as well as those morbid appearances of ocular spectra already noticed, are rendered somewhat more perceptible.

With respect to the *external* or *visible* symptoms of Cataract, a haziness or muddiness is first discoverable in the centre of the pupil, situated some way behind the iris, around which there is a black ring, encircling the more or less opake nucleus of the lens; which becomes apparent in the greatest degree, at such times as the pupil is largely dilated. The appearance of this speck, or spot, sufficiently distinguishes Cataract from Gutta Serena; and its locality, from those complaints in which the obstacle preventing sight is placed anterior to the iris, or in the cornea, &c. From the centre, the opacity gradually and progressively extends itself to the edge of the crystalline, the imperfection of vision going on in nearly the same proportion, until by its density every object is rendered comparatively invisible. As the opacity increases, the fore part of the lens becomes more conspicuous, which appearance led the antients to believe, that Cataract moves forward, or actually approaches towards the pupil. This is, how-

ever, a mere delusion, the Cataract itself remaining stationary; and the phenomenon is entirely owing to the more external superficies becoming opake, the same object which reflects a greater light seeming to be placed nearer on that account. For which reason, by how much a greater light that spot reflects, so much less does it transmit to the retina. Hence the gradual decay of sight in this disease.

When the obscurity no longer increases, the cataract is said to be *mature* or *ripe;* at which period the patient is nevertheless still capable of distinguishing the light of the sun from absolute darkness, but cannot decypher the colours and forms of bodies. The opacity however assumes a variety of tints, from the palest azure to a milk-white colour, which diversity of appearance has been usually characterized by corresponding significant names, as the yellow, brown, argenteal Cataract, &c. the marks of which, however, are by no means to be depended upon as true criteria of the state and consistence of the diseased lens. In some few instances, so inconsiderable is the shade presented by the cataract, and so nearly does it resemble the natural aspect of the pupil, that the

greatest experience, observation, and scientific knowledge, are indispensable, for the accurate discrimination of that form of the disease. In the course of my practice, opportunities have occurred of witnessing the mistakes that have been committed by practitioners, unaccustomed to these investigations, in judging of this species of the malady, who, not understanding the essential character of the disorder, have actually denied its existence in cases where I have subsequently operated, and restored the blessings of sight. It demands indeed a more intimate acquaintance with the various and oftentimes complicated derangements of the eye than is generally apprehended, to be able to recognize and distinguish, under all circumstances, Cataract from ailments nearly analogous in their most prominent features, and from those extravasations of lymph, that are occasionally formed between the deep-seated lamellæ of the cornea ; in reference to which we may with propriety exclaim in the appropriate and apologizing language of Horace, " Decipimur specie recti." The following instance is so strong an exemplification of the

above remarks, and of the difficulty but absolute urgency of most scrupulously investigating the specific nature of the complaint, before we prematurely and unnecessarily decide upon an operation, that I feel impelled by a sense of duty to state the particulars in this place.

Mrs. Amelia Naylor, aged 50, White Cross Street, St. Luke's, applied for my assistance on the 3d of last September. I was informed, in reply to my inquiries into the history of her case, that three years ago she had been attacked by a severe catarrhal, attended with an obstinately painful affection of the right side of her face, which eventually terminated in an acute inflammation of the conjunctiva, first of the right, and subsequently of the left eye. The chronic stage of this latter disease existed in a slight degree at the time she came to consult me. The sight had suffered so much from the long-continued and unrestrained violence of the early symptoms, that on my first seeing her, she laboured under a defect of vision equal and very similar to what is experienced by patients who have an actual opacity of the crystalline humour. Like them too she complained of a thick mist or cloud being,

according to her own apprehension, spread before every object at which she attempted to look. This symptom, coupled with the turbid appearance of the pupil, rendered the case so truly equivocal, that an experienced oculist, who was appealed to on the occasion, had assured her in the most unqualified manner, that a Cataract was completely formed in the right, and another was commencing in the left eye, and consequently that their removal, by a surgical process, afforded the only efficient means of administering relief. Greatly alarmed at this very unexpected intelligence, she eagerly embraced a recommendation to avail herself of the judgment of the Medical Directors of the London Infirmary for curing Diseases of the Eye, the physician of which establishment, under whose care she fell, with a view to obtain a more perfect insight into the real character of the complaint, directed belladonna to be introduced under the palpebræ, upon the anterior surface of the cornea.—From this mode of employing a very proper application the most excruciating agony ensued, the painful effects of which continued during the two succeeding days. The dilatation of the pupil having been accomplish-

ed, the eyes were again examined, after which the patient was dismissed, with directions to repeat her visit at the end of two months, when, she was told, something would be done for her; the physician distinctly declaring, that a Cataract was formed in both eyes. Anticipating an operation with the utmost horror, she communicated the distressed state of her mind, excited by the apprehension of that event, to a gentleman of singular humanity and benevolence, who, with a view to uphold her spirits, suggested the possibility, rather than believed in the probability, of her case having been misunderstood. Under this impression, he referred her, as a dernier resort, for my opinion on the subject, though, at that time, he only knew me by report. The result of a very minute enquiry into the history and symptoms of her complaint, made me highly sceptical as to the existence of Cataract, and strongly inclined me to suspect, that the disease in question was solely produced by an interstitial deposit of coagulable lymph between the more internal layers of the cornea; the common consequence of preceding acute ophthalmia. Believing likewise that the extravasated lymph had not yet become

organized, I entertained but little doubt of being able to effect its complete absorption; in which event, on the supposition that the lens remained, as I conjectured, in a healthful condition, her sight would probably be again restored. Influenced by the above considerations, I allowed myself to hope for eventual success through the agency only of proper medical treatment, aided by a strict attention to dietetical regimen. With this view, she was directed to lose some blood, by an adequate number of leeches placed upon the palpebræ; to take a full dose of calomel at bed-time, and a cathartic powder next morning, which were prescribed to be repeated twice a week; to keep the parts constantly moistened during the day with a sedative collyrium; and at bed-time, after having freely fomented them with a warm decoction of poppy heads, and anointed the edges of the tarsi with a mercurial liniment, to cover the eyes with pledgets thickly spread with a cataplasm of Goulard's extract and cream. By the above remedies, the chronic inflammation very rapidly subsided, when drops of vin. opii c. hydrarg. submuriat. were ordered to be instilled into the eyes night and morning, a stimulant astringent lotion

to be used three or four times a day, and some opening pills, consisting of hydr. submur. antim. tartar. and extr. colocynth. comp. occasionally, her bowels being constitutionally torpid. From the assiduous prosecution of the foregoing plan, she soon became sensible of a manifest improvement in her visual faculties; and in the space of about six weeks, the transparency of the cornea was so completely regained, the other parts of the organ essential to vision being as I surmised in a perfect state, that she could distinguish by the naked eyes the minutest objects with perfect ease and facility. I have lately had an opportunity of inspecting the eyes, which, in regard both to their external appearance and internal economy, are quite equal to the usual condition of the organ at her time of life. Whereas, had an operation been performed, as was recommended, from the mistaken idea of the presence of Cataract, it is not improbable that her sight would have been inevitably and irrecoverably destroyed.

There is likewise another disease very liable to be confounded with Cataract, of which Mr. Hey, in his valuable Surgical Observations, p. 49, gives so clear an account, that

I shall not apologize for transcribing the particulars in his own words:

"In some persons, that part of the eye which is seen through the pupil, does not appear black as usual, but has a grey appearance, or as if of a dark pearl colour. This is so like the appearance of an incipient Cataract, that if the sight of the person is diminished, a surgeon may be induced to form a wrong prognostic. The appearance which I now describe, occurs in one species of Amaurosis, to persons advanced in age, or middle-aged, who have defective sight. In examining attentively the Eyes of such, one may observe that the part which puts on a greyish cast, is situated at a greater distance behind the pupil than an incipient Cataract, and that it has a more shining and polished appearance." Cases, of the description just alluded to, have been brought to me, in order that the patients might undergo the operation for what were esteemed instances of true Cataract; and the utmost surprize, accompanied with no small share of incredulity, has been expressed by the medical attendants, at my assuring the latter of their mistake, which they admitted with reluctance, until I explained the real nature of the

ailment. From these and similar facts, is it not probable, that the process of couching or extraction, has been occasionally resorted to unnecessarily and unsuccessfully, in consequence of the actual character of the disease having been altogether misapprehended? I may add further, that an opacity of the posterior capsule of the lens is sometimes identified with the symptoms just enumerated, and as such, judged unfit for an operation which, if skilfully executed, would probably have contributed to the perfect restoration of sight. During the last few months, I have indeed successfully operated upon two persons, a lady and gentleman, both upwards of 50 years of age, who laboured under that species of Cataract, and who had been previously assured that their impaired vision depended upon a morbid insensibility of the retina, and consequently, that the introduction of the needle into the eye, could not be productive of any essential benefit. I must beg however to apprise the Reader, that a very similar appearance to that pointed out by Mr. Hey, is by no means unfrequent amongst individuals advanced in life, unassociated with any preternatural decay of the visual powers; owing probably

to a deficient secretion of the pigmentum nigrum. The knowledge of this fact may prove serviceable, in preventing the inexperienced from pronouncing an erroneous and hasty opinion deduced from merely inspecting the Eye, which sometimes presents an aspect highly equivocal and fallacious.

There is one, fortunately, very rare species, the same I presume that Baron de Wenzel, and others, have denominated black* Cataract, (by which term the Germans understand Amaurosis) accurately to distinguish which from other disorders of the Eye, and especially from Gutta Serena, requires a more than ordinary share of experience and judgment.

The disease alluded to, is characterized by a dark bluish or slate colour in the centre of the lens, somewhat resembling wrought unpolished iron, the circumference still retaining its natural transparency. In these instances, there is still a degree of imperfect oblique vision, except at such times as the

* See Morgagni de Causis et sedibus Morborum, Epist. 13, p. 207, vol. i. where we find the epithet black Cataract applied to a palsy of the optic Nerve.

patient is exposed to a strong glare of light, when, through the contraction of the iris, the rays are in a great measure prevented, by the opake nucleus of the lens, from gaining admission to the retina. This description of Cataract is only to be recognized by the above symptom, by the slightish turbid appearance visible behind, and in the centre of the pupil, which is also sometimes, though not always, movable, and by there being no reflection, as there is in Gutta Serena, of the image of the person who looks into the eye. Janin, p. 243, gives two Observations on this disease.—I will only beg to remark on this subject, that sight has been occasionally and even unexpectedly restored by an operation, under highly equivocal and apparently very unpropitious circumstances; and that therefore, in all doubtful cases, unattended with decided and well-marked symptoms of Amaurosis, it is certainly justifiable to attempt a cure by the removal of the lens from the axis of vision, agreeably to the following directions: because, though it should fail in affording relief, the process is so safe and easy, that the patient will suffer but comparatively little subsequent inconvenience.

SECTION III.

ON THE LIABILITY OF BOTH SEXES AND ALL AGES TO CATARACT.

CATARACT is a disease from which neither age nor sex is absolutely exempt. As far, however, as I am competent to form a judgment upon this point, from the many cases that have fallen under my own observation, I am inclined to believe, that men are upon the whole, more subject to it than females; owing probably to the peculiarity of their habits and pursuits, exposing them, in a greater degree, to the influence of exciting causes. Although it most frequently occurs to persons who have passed their meridian, I cannot acquiesce in the following representation of Boerhaave, as to its almost universal prevalence amongst aged persons: "Homines raro," says he, "ad ultimam perveniunt senectutem, quin in uno vel altero oculo, parva vel magna Cataractâ laborant."* In this calculation, those anoma-

* Boerhaave, De morbis oculorum.

lous appearances of the eye already pointed out, as bearing an imposing remblance to the disease in question, have, we may fairly presume, been included as instances of true Cataract. The complaint is not, however, an unusual attendant upon much younger subjects; even infants are sometimes affected with this kind of blindness. I have met with an interesting case of this description in Mr. Newberry's son, Upper Mary-le-bone Street, only three years of age, upon whom, at my own house, I have lately operated with complete success, and with such astonishingly little inconvenience or suffering, that from the moment the needle was withdrawn from the eye, he ceased to manifest the slightest sense of uneasiness, and being forthwith carried home, he ate his dinner, and pursued his amusements, as if no operation had been performed. Not a vestige of inflammation supervened, an event which might have been expected, on account of his extremely debilitated constitution; the physical powers being so little developed, that he is still incapable of walking alone, or distinctly articulating more than a few monosyllables. This case is the more remarkable, on account of the very sudden and rapid

manner in which the disease, without any assignable cause, made its first appearance.* The elder sister, when four years of age, labored under lenticular Cataract in each eye, which commenced, I was informed, soon after birth. This child I had previously operated upon in an equally favourable manner, and restored to perfect sight. Her father being, in consequence, instinctively impressed with an idea, that the boy would also, at some future period, become affected in the same way, was in the constant habit of inspecting his eyes; in which he never discovered the slightest visible opacity, until Wednesday, February the 5th, from which day they increased so rapidly, that by the *following Saturday*, the Cataracts were *completely formed*. I did not see him till *ten* on the *succeeding Sunday*, and at *one* o'clock

* Of the rapidity with which Cataract occasionally is formed, the following quotation from Richter exhibits a remarkable instance.—"One Case I have seen, where it was completely formed in the course of *one night*. A forester, who had been labouring under the Gout, had his feet exposed to a great degree of cold during the night: the Gout suddenly retroceded in consequence, and he was suddenly deprived of his sight the same night. I saw him next morning, and found a complete pearly-coloured Cataract." Richter on Cataract, p. 3 and 4. Eschenbach relates in his Observ. p. 43. a similar Case.

the *following day*, the operation, at my request, was undertaken; the result of which has been, as above stated, the most perfect imaginable, the child being able to distinguish the very minutest objects with facility and correctness. The following statement of Richter is applicable to the present topic: "Tres vidi Infantes, sanis cæterùm parentibus ortos, qui sub initio tertii ætatis anni, singuli Cataractâ visum perdiderunt."* Some are born with the complaint, which is then called *congenital* Cataract, and like that in the adult, it may consist of an opacity either of the lens, the capsule, or both.

Scarpa gives a very accurate description of this species of the disease, which he denominates the *primitive* membranous, in contradistinction to the *secondary* membranous, or capsular Cataract, which occasionally succeeds to the operation of couching or extraction: "J'entends parler," says he, "de cette espèce particulière de Cataracte dans laquelle le crystallin devient pour ainsi dire atrophiè, ou que, dissous et disparu, il ne nous laisse que la capsule opaque, ou tout au plus dans son intérieur un petit noyau pas plus gros

* Richter, Observationes Medic.

que la tête d'une epingle. Cette espèce de Cataracte se rencontre le plus souvent dans les enfans, ou chez les personnes qui ne passent pas vingt ans. On la distingue des autres par une apparence semblable à une toile d'araignée, ou par un point blanchâtre dans le centre ou dans la circonférence de tout le crystallin, lorsque disparu, il en est à peine resté le noyau."* In these cases the lens may be in a solid, soft, or fluid state; but as Scarpa justly remarks, in the majority of instances, the greater part, or the whole of the crystalline, after having lost its pellucidity, is absorbed by a spontaneous effort of nature, during the fœtal period, or gradually afterwards. In proportion to the progress of absorption, the anterior lamella of the capsule retreats upon the posterior, until the parietes fall into close contact, when they coalesce, and form a more or less dense, opake, and elastic membrane, constituting the primitive capsular Cataract. This change from the lenticular to the capsular species having been accomplished, the process of absorption is from that time altogether suspended, the natural powers of the constitu-

* Scarpa, Traite des Maladies des Yeux, traduit de l'Italien, par Léveillé.

tion being unequal to effect its further dissipation, until the organization of the condensed capsule is destroyed, by being detached from the surrounding living parts, and broken into small fragments. If suffered to remain undisturbed, it generally acquires an increased degree of firmness and tenacity; a fact that strongly inculcates the advantage and expediency of an early operation.

For the accurate practical developement of most of the phenomena of *congenital* Cataract, and for the happy adaptation of a successful operation to the condition of childhood, we are particularly indebted to the genius and industry of the late Mr. Saunders. The mention of his name, on a topic with which it must ever be most honourably associated, affords me an opportunity that I am proud to embrace, of rescuing his posthumous fame from the imputation of illiberality, on account of his having withheld, during his life-time, the publication of his method of curing that species of disease. From a very intimate acquaintance with his undisguised sentiments, and from a most friendly and unreserved correspondence with him on this interesting subject, (as the following Extracts from his Letters satisfactorily evince,) I

can bear, however, the amplest testimony, that deeply as his silence is to be lamented, a series of ill-health, added to "the hope," as he expresses himself, "of rendering it more worthy of acceptance, and not a mercenary motive, as some have malignantly observed, or the intention of boasting a secret," * were the true causes which concurred to prevent his redeeming the pledge, he had so long given, of communicating the particulars in an express Treatise on the subject. And I most willingly avail myself of the present occasion, gratefully to acknowledge my obligations, for the valuable accessions of practical knowledge I obtained from his private and public instructions, relative to the nature and scientific treatment of Diseases of the Eye and Ear, while under his immediate tuition at the Institution which he had the honour to establish.

* See Mr. Saunders's Letter in the 4th Annual Report of the London Infirmary for Curing Diseases of the Eye.

SECTION IV.

ON THE PROXIMATE CAUSE OF CATARACT.

SATISFACTORILY to develop the proximate cause of Cataract, under the most favorable circumstances, is an extremely difficult task. Ignorant as we are, respecting the formation of the disease occurring spontaneously in adult subjects, the rise and whole progress of which are open to inspection; we cannot but acknowledge, that the immediate cause of the congenital species is involved in a proportionably greater degree of obscurity, since it commences at a period of human existence, which necessarily precludes our researches. Inflammation indeed is a process, which we well know, deprives transparent parts of their pellucidity, at the same time that it increases their thickness, by the interstitial deposit of coagulable lymph, as is exemplified by the phenomena of corneal Ophthalmia. On the admission then of this agent, we can explain the origin of the complaint; but Cataract

oftentimes arises without the presence of any symptoms indicative of the existence of inflammatory action, either in the deep-seated or superficial parts of the eye; unless we are disposed to admit with Boerhaave, a *lymphatic* inflammation, unattended with redness or pain. When we consider that the lens is rendered turbid and hard by exposure to acids, the hypothesis of Maître-Jan,* which attributes its opacity to an imaginary acid serosity, slowly or suddenly generated, however visionary and unfounded, was, it must be allowed, at the time he wrote, at least specious and ingenious. But his opinions that this new formed acid first renders soft, and afterwards destroys the capsule, and that it then acts upon the surface, and progressively penetrates into the interior texture of the lens, are equally erroneous; experience having fully ascertained, that the centre of the lens is primarily affected, and that in all cases of Cataract, the capsule, whether opake or otherwise, never ceases to remain entire. It seems no improbable supposition, that occasionally, and in old age particularly, an obstruction or obliteration of the extremely

* Maître-Jan, Traité des Maladies de l'Œil, p. 136.

fine nutritious vessels of the capsule or crystalline may, as suggested by St. Ives,* become the proximate cause of Cataract. The supposed dissolution, however, of the substance of the crystalline, occasioned, according to that Author, by the fluid within the capsule stagnating, fermenting, and becoming acrid, and its subsequent inspissation, although undoubtedly incorrect, contributed, with the doctrine of Maître-Jan, to establish the false notion, that this disorder passes through certain regular stages before it arrives at a state of maturity, a term by which they always meant hardness or solidity of the Cataract; which quality was deemed indispensible to a successful Depression.

On the present occasion, I would beg leave just to hint, whether a consideration of the chemical composition of the crystalline might not tend, in some degree, to assist us in elucidating the point under discussion. As the lens, according to Fourcroy,† consists of albumen with a small portion only of gelatine, may it not, when deprived of vitality, and subjected to the

* St. Ives, Traité des Maladies des Yeux, cap. 17.

† Fourcroy, Systême de Connaissance Chimique, &c.

temperature of the human body, undergo an alteration analogous to the process of coagulation? And may not the diversified modifications of which it is then susceptible, in part occasion the singular changes observable in its external and internal physical properties? With the actual manner, however, in which these changes take place, we are altogether unacquainted. In fact, all that has been hitherto advanced on this intricate question, can be considered only as conjectural and gratuitous; nor do I feel competent, from my own observation and experience, to propose any idea on the subject more satisfactory and conclusive.

SECTION V.

ON THE EXCITING CAUSES OF CATARACT.

ON the authority of the celebrated Richter,* Cataract, in reference to its exciting causes, may with propriety be considered as a local or constitutional, an external or internal malady; agreeably to what has been long since stated in very general terms by Celsus: "Ignitur vel ex morbo vel ex ictu concrescit humor."† It is esteemed purely local, when it occurs to persons otherwise healthy, in consequence of some blow, wound, exposure to strong heat, vivid light, &c. When it is the result of mechanical injury inflicted upon one Eye only, the other seldom becomes consequentially affected, unless violent symptoms of irritation should supervene, which may be sympathetically propagated to the sound organ. Punctured or lacerated wounds of the capsule of the crystalline both pro-

* Richter on Cataract, p. 1 and 2.

† Celsus, lib. vii, cap. 7, sect. 14. de Suffusione.

duce Cataract, and contribute to its natural cure, by opening a communication with the aqueous humour; the solvent power of which will act with greater or less rapidity, according to the freedom with which it is admitted into contact with the disorganized lens. On this principle we can explain the reason, why absorption of the lens, and the consequent dissipation of Cataract, are usually quicker in those cases which are produced by a lacerated, than a punctured wound.—The disease is generally reckoned constitutional, or internal, when it comes on spontaneously, without any assignable topical cause. In these instances, if it happen to be connected with a vitiated habit of body, whether scrophulous, scorbutic, venereal, or gouty, authors have imagined that under such coincidencies, it owed its origin to the prevailing acrimony of the constitution; a supposition which, however plausible, is, notwithstanding, absolutely gratuitous. What seems in some degree to countenance the idea that the cause of the opacity of the crystalline in the cases alluded to, is not altogether topical, but is in some degree connected with the general disease, is, that BOTH Eyes frequently become at the same time, or in suc-

cession, cataractous. Richter says, "he has observed, and that not seldom, that where the operation has been performed in such cases, a total blindness has followed sooner or later. A man, who had been much troubled with gout, and a lady of a scorbutic habit, had both of them their sight restored by means of the operation for Cataract. Some months after, the pupils of their eyes gradually contracted themselves, and at last, closing altogether, a second blindness ensued."* But, surely, the loss of sight which succeeded to the operation in the instances just quoted, ought not in justice to be ascribed to any peculiar diathesis in the constitution of the respective individuals. Obliteration of the pupil can only take place, in consequence either of inflammation of the iris, or protrusion of a portion of that membrane through an aperture in the cornea; an event which, it must be confessed, does occasionally, and sometimes perhaps unavoidably, result from Extraction, however skilfully performed, and which constitutes one of the principal objections against that pro-

* Richter on Cataract, translated from the German, p. 2.

cess. As far as my own experience on this point enables me to offer an opinion, I can with confidence affirm, that hitherto not a single instance of failure has occurred in my practice, although I have operated on persons, evidently labouring under scrofulous, gouty, and what are called scorbutic symptoms. Syphilis, has been enumerated amongst the constitutional causes of Cataract; if such a cause does exist, it can only be when the disease exhibits itself under acute internal inflammation of the Eye; an ophthalmy that undoubtedly sometimes does occur. In no instance of this description, have I yet had an opportunity of satisfying myself that the lens itself is thereby affected; but many times have found a very visible obscurity behind the pupil, accompanied with great defect of sight; symptoms which, according to my judgment, are referable to a deposit of coagulable lymph upon, or more probably to an opacity and thickened condition of the anterior convexity of the capsule, the effect of continuous inflammation of the iris. This state of the parts generally yields to a well directed course of mercury; whether by producing absorption of the coagu-

lated lymph, or by altering the specific action, I shall not take upon me to determine. Maître-Jan probably refers to the more stubborn cases in the following passage: —" Des autorités assez graves, m'avoient fait croire autrefois que les Cataractes dependantes d'un vice vénérien, pouvoient ceder à l'usage du mercure; mais, des observations multiplées, que j'ai eu lieu de faire depuis, m'ont absolument detrompé, et m'ont convaincu qu'elles etoient aussi rebelles à toutes especes de remèdes que les autres."*

Under the head of constitutional causes, may properly be classed what has been denominated *hereditary*, or rather, what I should call an *hereditary disposition* to Cataract, instances of which occur in successive generations in the same family. Richter says, " I have extracted the Cataract from a man, whose father and grandfather were both blind from that complaint, and whose son has already an incipient one. Maître-Jan† and Janin,‡ have both seen similar cases. I myself have seen three children,

* Maître-Jan Traité des Malad. de l'Œil. Article de la Cataracte.

† Maître-Jan, Traité des Malad. de l'Œil, p. 176.

‡ Janin Observations sur l'Œil, p. 149.

all born of the same parents, and who all acquired Cataracts at the age of 3 years."* Morgagni also mentions the following examples: "Tres, intelliges, cum essent sorores, omnes Cataractæ, cui nemo trium inclytorum fratrum, obnoxias fuisse. Sic alias scribam, unâ ex matre surdas natas fœminas omnes, mares nullos."† In my own practice I have been successful in two cases of Cataract in the same family. In December, 1810, I repeated the operation on a child 18 months old, the son of Mr. B—, of Bucks, with a view to complete a cure which, owing to the premature death of my lamented Preceptor, had been only partially effected. Another of the above-mentioned children has been afflicted with congenital Cataracts, and was operated on by the late Mr. Saunders. A few months ago I was consulted by two daughters of a most respectable Solicitor, at ————, who has ten children, five of whom were born blind, with, I fear, an incurable malady. Unfortunately, too many examples of this sort exist, and are to be found in different writers, to require any confirmation of this lamentable truth.

* Richter's Treatise on the Cataract, p. 3.

† Morgagni Epist. 13, art. 18.

SECTION VI.

ON THE SEVERAL MODES OF TREATING CATARACT.

DIFFERENT methods have been resorted to for the purpose of assisting or relieving the blindness, occasioned by a greater or less degree of opacity of the crystalline or its capsule. These may be considered as dioptrical or mechanical, physical and chirurgical. The dioptric aids, *before* the operation, consist of concave glasses, in general but of temporary use, on account of the increasing opacity; although they may be strongly indicated by the myopy or short-sightedness with which it is usually combined. *After* the removal of the Cataract, spectacles of a different description are required, namely, such as are furnished with a convex, or double convex lens of proper focal powers.— The *phyſical* means are remedies internally exhibited, or externally applied, with the view of effecting the absorption, or as it was called, dissipation of the Cataract. A great deal has been written on the subject,

by many antient and modern authors* of considerable professional eminence, in recommendation of certain medicines, believed capable of exerting a specific influence over the disease, to the extent of curing not only the recent affection, but also when it is further advanced, and even in its state of maturity. Amongst the variety of agents employed for that purpose, some of them are undoubtedly inert, and wholly destitute of any active medicinal properties; whilst others, are as certainly possessed of real and tried energy in several morbid derangements of the system; and consequently, may not be absolutely inefficacious in the complaint under discussion. By the topical application of powerful stimulants, such as electricity, galvanism, æther, infusion of capsi-

" Suffusio cum *recens* incidit, medicamentis quoque sæpè discutitur." Celsus, l. vii. c. vii. sect. 13.; see also Fabric. ab Aquapend. Op. Chir. cap. de Suffusione. Boerhaave de Morb. Oculor. p. 119, 120, Paris, 1748. Stoll Ratio Medend. tom. 3, 8vo, Vind. 1787. Hovius, in his Tract. de Circul. Humor. in Oculo motu, p. 122, intimates, that he knew and practised a peculiar and effectual method of curing Cataract, of whatever species or duration, without pain or danger; but of the means by which he accomplished such unparalleled success, we are not informed: and the candid Heister, after much enquiry on the subject, considers the whole story as a vain empty boast.

cum, solutions of hydrarg. muriat. or natron muriat. &c. in mist. camphor, aided by alterative doses of mercurials, with extr. cicutæ, &c.; I have sometimes felt impressed with the idea that, by such or similar medicines, the *incipient* disease has been at least temporarily suspended, and occasionally essentially relieved. And in some of these cases, the patients have not hesitated to confirm my suspicions, by assuring me, that they were conscious of a perceptible improvement in their vision; of which indeed they have given me very decisive proofs. Our judgments may however, on such occsions, be misled. The disease is naturally most uncertain and precarious in its progress; at one time advancing with rapidity, and at other periods proceeding by equally tardy steps, and at intervals remaining altogether stationary. It will, however, satisfactorily appear, from the facts adduced in the subsequent part of this work, that the process of absorption may be greatly accelerated by appropriate remedies, when the anterior portion of the capsule of the lens is ruptured.

This state of the complaint, it must be confessed, has been a pregnant source of

deception, in estimating the effects of medicines in the cure of Cataract, originating from the infliction of mechanical injury. Yet as in the species of congenital Cataract, wherein only a portion of the opake lens exists, Nature has succeeded in removing the greater part after it has probably, from some unknown cause, lost its vital principle; and as the lenticular disease in the adult subject has unquestionably sometimes, though very rarely, disappeared spontaneously, without our being authorized to connect the event with a previous breach of its enveloping tunic; it argues in my opinion an unjustifiable degree of incredulity and hardihood, to deny the possibility of restoration of sight by any means, independently of an operation. Even admitting, for the sake of argument, that we are not *at present* in the possession of any system of medical treatment adequate to the certain attainment of so happy a result, does it necessarily follow, that we must be for ever precluded from acquiring that degree of practical knowledge? Had such a mode of reasoning, with respect to other maladies, been generally recognised, many complaints now

under our controul, would still have been ranked among the opprobria medicorum.

From these considerations we are, I apprehend, fully warranted in making further trials on this interesting point, and especially upon those persons, whose fears make them recoil at the idea of a surgical expedient. For, if the measures adopted should be unproductive of eventual benefit, they may at least tend to prepare and reconcile the minds of the timid to an operation, which they are at length convinced is rendered indispensible, by the complete failure of all preceding efforts.—Nothing that is here suggested will, I hope, be construed into a wish to be understood, as proposing to temporize with the disease, except in *its incipient stage;* for if the early symptoms are not always of a tractable nature, the more confirmed cannot be expected to yield more easily. When therefore the lens, or its capsule, is become so visibly opake, as materially to impair the functions of the organ, *chirurgical* assistance should be resorted to without further hesitation or delay; unless contraindicated by some local or constitutional cause of impediment. Previously however to his engaging

in any operation, the practitioner ought conscientiously to reflect, whether, with a thorough knowledge of its principles and practice, and of the anatomical structure of the organ affected, he has a steady hand, a quick sight, great presence of mind, and full confidence in himself; endowments which, tho' none can command, all ought to possess, who hope to succeed in so important an undertaking. For it cannot be forgotten, that the probable recovery, or the irreparable loss of sight, confessedly the most valuable and useful of all our senses, will very much depend on a due consideration of the above particulars. And surely that conduct must be highly reprehensible, if not criminal, which prompts any one, deficient in the above endowments, for the gratification of his professional vanity, or for the sake of private interest, boldly to run the risk of depriving a fellow creature of one of the principal sources of intellectual and pleasurable enjoyments. Furnished, however, with the necessary preliminary knowledge, and with a hand ready to execute the instructions of his well-informed mind, acquainted also with the history, the phenomena, and the pecu-

liar species of the disease, with its simple or complicated form, and with its fitness for the proposed operation, he may, thus qualified, undertake it without fear or misgivings, and, under favourable circumstances, he will be warranted in indulging the gratifying anticipation of a happy result.

Until of late years, the radical cure of Cataract has been attempted only in one of the two ways commonly used for that purpose, viz. by Couching or by Extraction. The former of these surgical processes is of very great antiquity. Celsus, the celebrated Roman physician, who lived at or about the commencement of the Christian æra, describes, and is generally esteemed the inventor of that operation. It consists in removing the opake lens, which forms the Cataract, from its situation in the axis of vision, into the vitreous humour, below the inferior margin of the pupil; by the removal of which obstructing medium, the rays of light regain free access to the retina, and the patient is restored to sight. The operation is performed by a slender instrument, from its general resemblance, called a needle.

When we reflect upon the ignorance of our ancestors, in regard to the exact

seat and true nature of Cataract, the relative situation of the parts which should be particularly avoided in the operation, the place at which the puncture can be made with the greatest safety, and, lastly, the direction which the Instrument ought to take when introduced into the eye, added to its ill-constructed form, and their rude mode of using it, we must cease to wonder, that an operation thus circumstanced, should prove in their hands highly hazardous and painful, and only fortuitously successful.

The following passage from the works of that eminent Surgeon, Fabricius ab Aquapendente, exhibits so true and melancholy a picture of the want of skill in their performance, and the almost constant failure in the issue of the operation, that it may not be deemed uninteresting to insert the quotation at full length in this place.

" Primum igitur vidi Chirurgos hujus-
" modi operationem privatim profitentes,
" quos merito ocularios appellamus, inter-
" dum bene et feliciter operatos fuisse, sæ-
" penumero etiam infeliciter, quia interdum
" ab ipsis uvea tunica nimium diducebatur,
" interdum rumpebatur, ex quo vel admo-
" dum amplificatum, vel distortum etiam

" pupillæ foramen redditum est, cum visûs
" læsione; interdum sub operatione, oculus
" universus intus conturbatur cum cæcitate
" ejusdem oculi. Non raro succedebant
" postea magnæ inflammationes similiter
" cum ipsius visûs ablatione; nonnunquam
" si nihil apparebat in oculo, tamen male
" omnino homines videbant, neque causa
" ulla patebat. Propter hos omnes eventus,
" credidi Chirurgos propositos potius casu,
" quam arte operari, et fortuito eventus
" provenire." *

In confirmation of the above remarks, Professor Raw used to observe in his Lectures, that he regarded the operation of Couching as the most uncertain in all Surgery; and Heister † says, that though the operation is easy to be performed, the success of it is so very precarious, that amongst the great number of persons couched by the most distinguished Oculists of his day, very few met with the desired success; and that of the vast number of patients upon whom the celebrated itinerant Taylor operated, not one in a hundred recovered his sight. He

* Fabric. ab Aquapend. de Chirurg. Operat. p. 23.

† Heister Med. Chir. et Anatom. Observ. p. 5 & 6.

adds likewise, that he saw, in several different places, many miserable objects in tormenting pain, arising from inflammation, consequent upon the operation; and that of those who regained their vision, there was scarcely one in ten who did not, sooner or later, lose it again.

The above, we may presume, faithful representation of the lamentable effects of Couching, as then practised, (consequences altogether assignable to the ignorance and unskilfulness of the Oculists, and to the imperfection of their instruments) proved the necessity of either great reformation, or total change in the process which, for many preceding ages, had been exclusively adopted in cases of Cataract. — Accident, that fruitful source of improvement, about the middle of the last century, gave birth to the rival plan of extracting the opake lens through an incision of the transparent cornea. The escape of the crystalline into the anterior chamber, after unsuccessful attempts at Depression, and its subsequent and safe removal through a section of the cornea, encouraged M. Mery to recom-

mend,* in the year 1707, the practice of extraction in all other cases of the disease. However, as it does not appear that he ever himself performed the operation which he ingeniously suggested, nothing further I believe was made known on the subject, till the hint was reduced to practice, and the whole particulars of the process published by M. Daviel, a celebrated Surgeon of Paris, in the year 1745.† The dislike at that time almost universally entertained against Couching, by the more judicious part of the profession, on account of the painful nature, and, as already intimated, almost total inefficacy of the operation, paved the way for the easy introduction, and ready admission of a highly promising substitute; the avowed novelty and apparently eradicative nature of which, attracted and biassed in its favour, some of the most expert Surgeons of the age. Their great skill and superior professional acquirements, enabled them to surmount many of the difficulties of the new proposal, and to secure it a por-

* Mem de l'Acad. Royal des Scien. 1707, p. 500.

† Une nouvelle methode de guerir la Cataracte par l'Extraction du Crystallin par M. Daviel. Mem. de l'Acad. Royal de Chirurg. tom. ii. p. 337. Pl. 19 & 20.

tion of success confessedly greater than what had attended the then defective method of Couching. Hence the latter declined in credit and reputation, in proportion as the fair and prosperous events of the former were most industriously exhibited, whilst its manifold failures and ill consequences were as studiously concealed.

Although the simplified and greatly improved operation of Extraction is still held in the highest estimation by several eminent Surgeons and Oculists, the united talents and experience of Pott, Callisen, Scarpa, Hey, Lucas, &c. have by their joint labours and suggestions, contributed so essentially to obviate the imperfections, and to improve the practice of Depression, that the balance of respectable modern authorities has turned perhaps, upon the whole, in recommendation of the Needle in preference to the Knife. — It is not intended in the present Work to enter into a detail of the particulars, or to canvass the advantages and disadvantages of the two operations; a task which has been already very ably fulfilled by several distinguished Authors, who have written professedly on the subject. Each process has to boast amongst its ad-

vocates, Surgeons of the highest professional celebrity, who all admit that both are liable, like all other important operations, to occasional inconveniences and disappointments. The objections made to Depression are, its uncertain and precarious result, added to the injury *always* done to the vitreous humour, occasionally to the iris, and sometimes even to the retina.—The objections to Extraction are not less pointed. The difficulty of performing it is considerable, and the consequences often calamitous; to this we may add, its inapplicability to certain forms of the disease, and the impossibility of restoring any parts which may have been injured by the operation. Lastly, it is admitted, that neither Couching nor Extraction can with safety be attempted in *early* infancy.

The object of every operation for the radical cure of Cataract must be ultimately the same, viz. the *permanent* removal of the opake substance from the axis of vision. And that mode of operating is undoubtedly the most eligible, which can be accomplished with the greatest facility, with the smallest degree of present pain and future danger, and which can be adapted to the different species of Cataract; thus combining every

possible advantage, with the fewest inconveniences.

Having thus given a concise and impartial statement of the means which have been adopted for the relief or cure of Cataract, and of the two operations well known under the names of Couching and Extraction, I shall proceed to describe a *third process* for removing the opacity, which is the immediate object of the present work.

SECTION VII.

ON THE REMOVAL OF THE DIFFERENT SPECIES OF CATARACT, BY THE PROCESS OF ABSORPTION.

THE revolution which has recently taken place in the scientific treatment of Cataract, is altogether referable to our enlarged practical acquaintance with the nature of absorption in the human body. The ancients had indeed a confused notion of the solution of Cataract in the aqueous humour, long before the discovery of the absorbent system. But Mr. Saunders had the distinguished merit of applying this knowledge to the grand improvement in a mode of removing Cataract, by which, most of the dangers are avoided, and relief can be extended to the tender and helpless age of infancy: a period of existence, to which the usual methods of operating are confessedly inapplicable. What had been heretofore confined to the soft and fluid species in adults, or only casually adopted in the hard kind, is now extended to general principles of practice. The ob-

jectionable points in relation both to Couching and Extraction, which I have briefly enumerated in the last Section, were sufficiently momentous to justify, and to demand the introduction of a less exceptionable process. And the one I am about to detail will, it is presumed, be regarded as fairly entitled to that character. For it bespeaks our approbation, not only by its *universal applicability* to all descriptions of Cataract, by its greater facility of execution, and more general success, but most of all, by its coincidence with the restorative efforts of nature. To infancy the operation is particularly valuable, not only for the above reasons, and on account of the shorter space of a short life, which is passed in comparative darkness, but because, as happens to all our other faculties, a long and early disuse of the organ renders us, for a considerable period, less acquainted with its powers, and with the means of multiplying its resources.

To Mr. Saunders I shall ever give the merit of having suggested the operation, from which have emanated those practical improvements, which I am now going to explain. These I shall introduce, by first transcribing Extracts from two Letters, which

give, in the Author's own words, such a summary of his method of cure, as will be intelligible to the Reader who has perused the former part of this work. I will only beg to premise, as an additional proof of his friendship, that he obligingly inclosed with the first communication, two of his improved Needles for my own immediate use.

"My Dear Friend,

"I confide the method of operating which I pursue for Cataract to your honour, and I am very certain that it is safely deposited. I shall not have time to point out all the advantages which result from this deviation from the old method of Couching; but simple as they may appear, they are very important, as you will perceive when I detail all the circumstances, which I shall sometime do, in a Treatise on the Cataract.

"I always use the solution of belladonna, and never begin the operation until the pupil is as much dilated as it will admit of, keeping the eye, by means of Pellier's elevator, or else my own fingers, as steady as possible. The object of my introducing the instrument into the eye is, to cut the capsule in the *anterior* part of the crystalline; and

therefore, as the lens is generally more dense towards the *centre*, I take care that it shall pass through the crystalline as near to the capsule as possible. That the instrument may traverse the lens freely, you will observe that it is made of the greatest admissible tenuity, and flat, and that it cuts towards the point on each side. I find by experience, that it can be conducted, with care, through the hardest lens; whereas the needles, such as Scarpa's and Hey's, only push the whole lens before them, and without being able to carry the instrument to the capsule, the lens is made to press on and protrude the iris; whence results the consequent inflammation. As for the crystalline itself, you may or may not meddle with that; it may be well to loosen its texture in some instances, but you ought never to depress it."

* * * * * * * * * *

" The instrument should enter the sclerotica about a line behind the ciliary ligament, and should be conducted through the anterior part of the crystalline which is the softest. You may loosen the texture of the Cataract before you divide the capsule, or after, as in the operation seems most convenient, but the *capsule must be divided at all events.* I do not

much care what becomes of the *substance* of the crystalline. I sometimes let it go in considerable quantity into the *anterior* chamber, *if it seems tending that way*, but I never push it, because that must press the iris. N. B. Follow Hey's rule, to be careful *not to do too much.* After the operation, the plan with me is purely antiphlogistic, and I believe you well know what that is. If your operation should not succeed at the first attempt, describe to me the appearances, and I will gladly give you my sentiments as to repeating it.

"With respect to congenital Cataracts, from the repeated conversations we have had on the subject, it seems scarcely necessary for me to remind you, that they are generally capsular, the whole or greater part of the lens having probably been, at some antecedent period during the fœtal state, spontaneously absorbed. I shall only add to what I have already stated, that the steps to be pursued in the operation are nearly similar to those adopted for lenticular Cataract; the greater object being, either to make a sufficiently large central aperture for the rays of light to pass freely through it to the retina, or else to endeavour to tear

the condensed capsule into as small fragments as possible, when it will become soluble in the aqueous humour, and be gradually absorbed; for which purpose, you may use the needle with much more freedom than in the former case.

* * * * * * * * * *

"With our united regards,

"I am, yours faithfully,

"J. C. SAUNDERS."

Extracts from Letters, dated April, and August, 1808.

A more explicit, unaffected, and intelligible relation of Mr. Saunder's method of procedure in operating for Cataract, could, I conceive, scarcely be given, than what the above extracts from his valuable letters most satisfactorily exhibit. Nor can I suppose that a surgeon, conversant with ophthalmic practice, could fail, with the aid of such plain instructions, sufficiently to comprehend, and successfully to execute, the different steps of the above described operation, in common and favourable cases of Cataract.

It may here be remarked, that in the above statements, the *posterior* operation alone is detailed, the *anterior* having been

adopted by him but a short period before that lamentable event took place, which deprived the Public of a philanthropic Member, the Profession of a highly zealous and truly scientific Practitioner, and me of a sincere and esteemed Friend.

From the practical observations I have been enabled to make, I am very much inclined to believe, that had my worthy and enlightened preceptor lived to witness the effects of the latter process, he would either have abandoned that practice altogether, or have confined it to the fluid Cataract. For though, by introducing the Needle into the cornea, instead of passing it, in the usual manner, through the sclerotica, there is less danger of inflammation, the more sensible and important parts remaining uninjured, and the *anterior* lamella of the capsule of the lens is directly exposed to the point of the instrument; still the operator finds himself infinitely more restrained in its requisite movements, as it is scarcely possible to act very freely and advantageously upon the whole Cataract, without causing the evacuation of a larger or smaller quantity of the aqueous humour, during the operation. In that event, the previously dilated iris instantly contracts,

and advances towards the concave surface of the cornea, under which circumstances, it requires no inconsiderable share of dexterity and caution, to avoid doing mischief. The above objection is particularly pointed against those dense and elastic capsular Cataracts, which are by no means unfrequent among the long neglected congenital species. Even when it is performed successfully, as described in Dr. Farre's edition of Mr. Saunders's posthumous Work, still the object of the operation appears to me far from complete. A small aperture only being made through the centre of the capsule, the sphere of vision must ever remain circumscribed, as in the permanently contracted pupil.—Imperfect, however, as the result of the operation, in these instances, has generally proved, we owe many obligations to Mr. Saunders for suggesting it. By means of his improved Needle, the common Cataract can be punctured with facility; and if it be of the fluid kind, with a transparent capsule, all the ends of the operation may possibly at once be accomplished; or the disease is reduced to the capsular species, of the most favourable and manageable description.

The ease with which the operation is performed, has also induced me, on some occasions, to avail myself of it, in order to ascertain with greater certainty, the real nature and consistence of the Cataract; information which cannot always be satisfactorily acquired by merely inspecting the eye. The essential character of the complaint being by this means fully developed, we can the better regulate our future proceedings, and thus avoid embarrassment during the operation.

The first trial I made with the instruments sent to me by Mr. Saunders, (and which occurred very soon after their arrival) was upon Hannah Dove, a poor woman, of a weakly constitution, nearly 40 years of age, from Sutton Ashfield, Nottinghamshire. She had laboured under lenticular Cataracts in each eye for several preceding years, during which period she had borne four children, the features of none of whom had she ever had the happiness of beholding. She could, however, distinguish perfectly light from darkness, and, under favourable circumstances, was capable of decyphering the outlines of large objects. The pupils were circular, and sympathetically obedient to

the different degrees of light admitted to the retina. Agreeably to the above directions, I operated the same day upon each eye in succession, assisted by my friend Dr. Marsden, Senior Physician of the General Hospital, near Nottingham. She described the pain as scarcely exceeding what would be inflicted by the prick of a pin. The subsequent symptoms were of the mildest description. On account of the hardness of the lens, I found great difficulty in reducing it to fragments, and it became requisite in a few weeks to repeat the process, which was not followed by any unpleasant symptoms. After this second operation, she returned home; and as absorption from that period was slowly progressive, and her vision gradually improving, it was not deemed expedient to introduce the needle a third time.—The principal motive for my stating this case, is for the purpose of noticing the following curious and important pathological fact, namely, that when the ruptured lens in each eye was scarcely more than half dissipated, she was attacked in so severe a manner by an epidemic ophthalmia, as to threaten the immediate destruction of the organ, during the continuance of which, the absorptive process

became altogether stationary. By the adoption of active antiphlogistic measures, the inflammatory symptoms were, however, eventually subdued, on the declension of which, the solution and absorption of the Cataracts were renewed with such astonishing vigour and rapidity, that in a very short period, there was not a vestige of *either* left; the regenerated action of the absorbents having thus accomplished, in a *few days*, more than they had hitherto effected in as *many preceding weeks*. This event the husband announced to me in the following expressive words, " my wife's eyes are *quite clear now*," and added, " she can now see her family and friends, and manage her household affairs as formerly, which, from being so long blind, she had never expected to do again;" nor had she, at the time he wrote, any assistance from spectacles, to obtain which was the chief object of his grateful letter.

Somewhat analogous to the above, is the Case of the Countess Dowager Spencer's female attendant, upon whose eye, at the desire of her Ladyship, I operated last year for lenticular Cataract. Although a highly diseased and debilitated subject, and far beyond her meridian, the operations excited very

trifling inconvenience, and the process of solution and absorption of the lens, though slow, was going on quite equal to my most sanguine expectations, when unfortunately, a very distressing intermittent hemicrania occurred, and which, like the ophthalmia in the former instance, at once interrupted the further dispersion of the Cataract. This accessory complaint was so violent as to resist the bark, arsenic, and various other remedies for many successive weeks. At length the paroxysms grew gradually milder, and finally terminated altogether upon a *Sunday*, at which time there existed so large a portion of the unabsorbed lens, as to render the sight exceedingly imperfect. She called upon me the *following Tuesday*, and informed me with great joy, not only of the above event, but also of the restoration of her vision; being then capable of distinguishing objects as well as persons usually are, who have lost the crystalline; the want of which, being in some degree supplied by a proper convex glass, she could read the smallest print with perfect facility. From the closest examination I could not detect a particle of remaining Cataract, the pupil was quite black and clear, the iris completely circular, and

actively alive to the different degrees of light transmitted to the retina.

Do not the above histories decidedly prove, that the absorptive process in the eye may, under certain circumstances, become in a great measure, if not entirely suspended, in consequence of a new series of actions being established in the part, or its immediate neighbourhood, and on the cessation of which, it may again revive with proportionably accumulated energy? Can the phenomenon depend upon the further secretion of aqueous humour becoming, under inflammatory action, wholly suppressed, in which case it is easy to conceive, that the quantity present, at the time, in the two chambers of the eye, having saturated itself with the disorganized lens, is thereby rendered incapable of effecting its further solution? Without contending for the correctness of the above hypothesis, the fact itself is unquestionable; and strongly inculcates the propriety and expediency of counteracting, by all practicable means, the occurrence of inflammation subsequent to the operation for Cataract, as a circumstance that, independently of the danger to which it subjects the organ of vision, will infallibly arrest the rapid cure of

the complaint. As far, however, as my own observations enable me to form a judgment on this point, I am inclined to believe, that such extraordinary instances of accelerated absorption are only to be anticipated in cases where the organ, perhaps functionally torpid, has been previously excited into a very unusual state of activity; and that if the absorbents do not, on the *decline* of the inflammatory symptoms, *immediately* manifest such a disposition, we are not warranted in expecting that it will arise spontaneously hereafter. Accordingly, when the progress of absorption, after the free disturbance of the crystalline, and laceration of its capsule, has seemed to flag and grow languid, I have endeavoured to promote it by the application of powerful stimuli to the eye, and with very decided benefit, the Cataract having in several instances, especially in children, disappeared so quickly in consequence, as to supersede the necessity of another operation, which, without such aid, I doubt not, would have been rendered indispensible. And as an additional corroboration of the possibility of expediting the dissipation of the broken and disorganized lens, I will beg leave to subjoin the following interesting statement;

which coincides with what Mr. Ware has already advanced upon the same subject.

A physician, some time since, brought for my inspection, rather as a matter of curiosity, than from any expectation that the accident would admit of relief, a poor boy, about eleven years of age, who having been just apprenticed to a shoemaker, and not having acquired the necessary dexterity in the use of his awl, inadvertently run it through the cornea of his right eye, and into the very substance of the lens. The necessary effect of the injury, was the sudden formation of Cataract, with the usual degree of accompanying blindness. The boy was forthwith conveyed to a general hospital, where measures calculated to arrest the progress of pain and inflammation, which speedily supervened, were very judiciously adopted. In the course of four or five weeks, he was discharged free from every symptom of irritation, but with scarcely any sense of sight. A fortnight afterwards he was brought to me, when I found the conjunctiva of its natural appearance, the cornea also perfectly transparent, except at the punctured part, where there existed a slight circumscribed opacity. The iris, though

movable, from having formed a partial adhesion to the capsule of the lens, was irregular in its pupillary margin. A very considerable portion of the lens hung projecting through the wound of the capsule into the anterior chamber of the eye. Having before met with a somewhat similar case, which terminated favourably, and being well aware how readily the lens is absorbed when floating in the aqueous humour, I ventured to predict that the Cataract would, in all probability, disappear spontaneously, and the boy in consequence recover his sight; a piece of information which excited in my friend no small share of surprise. However, I added, that the process might be greatly accelerated by the assistance of art. The case being left to my own treatment, two active doses of calomel and jalap were prescribed to be given in the course of the ensuing week; and a lotion, composed of the hydrarg. muriat. dissolved in equal portions of rose-water and camphire mixture, with a small addition of æther, was also directed to be applied to the affected organ three times a day. My patient called again after the expiration of a

week, and reported to me, that the cathartic powders had acted with considerable violence, and that the collyrium had excited acute pain, which, however, subsided in a few minutes. With respect to the eye, I was pleased to observe that the projecting portion of lens had been wholly absorbed, and that there was an aperture formed in its centre, of a sufficient size to admit of his seeing small objects through it very distinctly. By pursuing the same plan a week longer, the entire crystalline was dissolved and absorbed, and vision in consequence regained with a degree of perfection, equal to what it ever is after the most successful operation for Cataract. — The above instance affords, I think, very decisive evidence, that the absorbents of the eye may be excited into action by appropriate remedies, as well as those in other parts of the body; since at the time those means, both general and topical, were had recourse to in the present case, the process of absorption had not even commenced, nor was there any substantial grounds for expecting such a sudden event. Indeed, another case of a similar description, came under my observation soon afterwards. A thorn

having pierced the cornea produced Cataract, and owing to the obstinacy of the parents in not allowing any measures to be adopted for its removal, remained stationary for several months; the result of which I have not had an opportunity of ascertaining.

Whatever be the skill and dexterity of the Surgeon, it cannot but be admitted, that the ease, and oftentimes the success with which he is enabled to perform an operation, will very much depend on the perfection of his mechanical apparatus. If this observation be true with regard to operations in general, it must possess infinitely greater weight when applied to the delicate subject under consideration. I shall therefore, without further preface, lay before my Readers a few practical remarks, relative to some improvements which I have found to facilitate the operation.

In the instance of H. Dove, already detailed, and in several succeeding cases of firm lenticular, and dense and thickened membranous Cataracts, I experienced considerable difficulty in attempting with Mr. Saunders's Needle, freely to lacerate the tenacious capsules of the one, and to reduce to an adequate degree of comminution, the

hardened crystallines of the other species. These difficulties led me to believe, that the same form of instrument could not, with equal facility and effect, be adopted for each description of disease; and that the Needle itself, though much improved in its construction, did not appear to possess, even in its present shape, all the perfection of which it is susceptible. It certainly penetrates the coats of the eye, and even a hard lens, with ease. But I found that, in consequence of being blunt above the angles, it was apt to become fixed and entangled in the hard Cataract which, instead of yielding to, accompanied the several movements of the instrument, by adhering to its extremity. In consequence of that event, some danger was incurred of injuring the iris or ciliary processes; at the same time that little impression could be made upon the substance of the crystalline. It was probably in part owing to Mr. Saunders having met with similar impediments, that he subsequently preferred acting chiefly upon the *centre* of the *anterior lamella* of the capsule; disregarding in a great measure, or only gently opening the texture of the lens in the first opera-

tion, until it had become softened by a partial solution in the aqueous humour. Altho' by that cautious method of procedure, there was undoubtedly less risk of inducing a hazardous inflammation, yet this advantage was obtained at the expence of a more tedious cure, and often the necessity of repeated operations. Wishing to hasten the dissipation of the Cataract, by operating with greater freedom upon the crystalline and capsule at the same time, I gave directions to Mr. Ewing, of Drury Lane, upwards of eighteen months since, to construct one for that purpose. As this Needle varies in several respects from the latest improved one of Mr. Saunders, in order that the reader may be able, at one view, fully to comprehend in what particulars they differ, I have taken the liberty to copy the description, and the Engravings, from the posthumous work of my deceased friend; and shall afterwards subjoin an account of those alterations in the construction and use of the instrument, the advantages of which have been confirmed by repeated experience.

"The smaller improved Needle of Mr. Saunders, for the anterior and posterior operations on the capsule, is accurately repre-

sented by Fig. 1.* Its length from the point to the extremity of the shoulder next the handle, is *one inch* and an *eighth*. From the shoulder to the centre of the blade it is round; from the centre to the point, it is gradually flattened on both sides, being reduced so thin near its extremity, as to be somewhat flexible, varying in this respect according to the state of the capsule. It has on both sides of its point very sharp edges, which extend a little beyond its angles. Its breadth at the angles is the one-thirtieth part of an inch. From the point to the shoulder, there is a very gradual increase in the size of the instrument. A lateral view of Fig. 1, is given by Fig. 2."

The blade of my† Needle is only eleven lines in length, (allowing twelve to the inch) one-third of which, from the shoulder downwards is round, and diminishes gradually from half to one-third of a line in diameter. The remaining part of the instrument is gradually flattened to the extremity, which is very thin, flexible, and spear-pointed. Both the edges are rendered as sharp as possible to the

* Vide Plate, Fig. 1 & 2. † Vide Plate, Fig. 3 & 4.

extent of three lines above the angles, which are ground very obtuse, and where it is only one-third of a line in breadth. From the point of the Needle to its insertion into the handle, it gradually increases in size; by which mechanism, not only is its introduction into the eye effected with less resistance, but likewise the escape of any portion of the aqueous or vitreous humour is at the same time altogether obviated. The handle is of the usual length, and octangular, and there are three dots on the side, answering to the cutting edges, as a guide to the operator, when the point of the instrument is concealed within the globe of the eye.

By shortening the Needle in the way described, and which is still of a very sufficient length for all the purposes of the operation, more command is obtained over the motions of its point; for the greater its length, the larger arc of a circle must it describe in the necessary movements within the organ of vision, and consequently, the liability of wounding the delicate internal membranes of the eye must be proportionably increased. Besides which, the Surgeon is not so capable with a long needle, of accurately ascertaining how far it has penetrated the globe, or

what degree of power he is exerting, before he has an opportunity of seeing it through the pupil; or when it happens to be suddenly obscured, by the effusion of the opake contents of a milky Cataract. From experience too I learnt, that the tendency to pain during the operation, and to inflammatory symptoms afterwards, is counteracted, *cæteris paribus*, nearly in the ratio of the diminished size of the Needle. Hence mine is reduced to the greatest degree of tenuity of which it is susceptible, without hazard of breaking. On this account it requires, I must admit, a very steady hand, and a considerable share of boldness and decision, together with a practical acquaintance with the resistance that is usually opposed to the introduction of an instrument through the tunics of the eye, in order to prevent accidents. It is, however, to the circumstance of its diminished size and peculiar form, that I am induced particularly to ascribe the very favourable result of my operations; as the unsuccessful issue of most of the cases operated upon formerly may, I apprehend, be in a great measure imputed to the ill-constructed and large size of the broad spear-pointed couching needle employed by our ancestors, (which, by not

occupying the breach made by the incision, endangered the escape of the humours) as to their unskilfulness in using it, and to their want of anatomical knowledge with respect to the structure of the eye, and especially of its *posterior* chamber. Galen conceived, and Vesalius and Briggs, by their erroneous delineations, contributed to perpetuate the mistake, that the space between the anterior convexity of the lens, the uvea, and pupil, denominated the *posterior* chamber of the eye, was at least equal, or rather exceeded in capacity, the interstice betwixt the concave surface of the cornea and the iris, called the *anterior* chamber; and that the Needle might be passed with perfect impunity directly across it. As the antients likewise believed, that the lens was situated nearly in the centre of the globe, instead of being about four-fifths from its farther extremity, they naturally enough inferred, that the Cataract when couched, could not be buried in the vitreous humour, but that it was simply removed from the axis of vision, and depressed into the *posterior* chamber.

Against the slender form of the instrument above recommended, it has indeed been al-

ledged, that it inflicts *not* an *incised*, but a *punctured* wound; a species of injury unquestionably, in some instances, productive of alarming symptoms. This objection, however, by no means applies to the Needle under consideration, which is so constructed, as freely to *cut*, without in the slightest degree *contusing* the parts through which it passes. And surely, where the great object is to secure reunion by the first intention, in order to excite as little irritation as possible, we cannot too studiously avoid unnecessarily enlarging the extent of the solution of continuity. Finding, likewise, that the reduction of the lens and its capsule into small fragments, could with more certainty be effected by adopting Mr. Pott's method of "turning the instrument round and round between the finger and thumb, within the body of the Cataract, after its texture had been previously well loosened," in order more conveniently to adapt the Needle to that purpose, it is *rounded*, instead of being flattened, to some distance below the shoulder; and its angles are also rendered more obtuse.

The above described Needle, which I have now used during the space of more than a year and a half, with the most satisfactory

result in lenticular cataracts, completely answers every purpose for which it was originally designed, as it not only readily penetrates, but also *cuts through* the diseased crystalline with great facility, so as to allow of its reduction into the smallest portions; by which its solution is proportionably accelerated.

Before we detail the mode of using the instrument, it is necessary to ascertain the best method of fixing the eye; and also of applying the belladonna, by which the dilatation of the pupil is so happily accomplished.

Celsus* asserts, that the disordered eye may be kept sufficiently still by binding wool upon the sound one: hence we may infer, that he neither employed his fingers, nor any speculum, for steadying the affected organ. If Celsus really succeeded by this mode, it could only be from the sympathy which, after a certain age, exists between the eyes, and which may make it difficult to move one, without moving the other

* Quinetiam ipse Oculus, qui curabitur, immobilior faciendus est, super alterum lana imposita et deligata." Cels. de Medicinâ, L. 7. Cap. 7. S. 14. p. 434.

at the same time. But for this purpose, great violence must be used on the sound eye, the influence of which on the diseased one must be uncertain. On this account, modern practitioners have universally availed themselves of artificial means, applied to the organ on which they are preparing to operate. Pellier's elevator, although in many respects an objectionable instrument, has for some years been generally preferred. Being made of thin silver wire, and the bearing part, which is opposed to the superior spherical surface of the eye, being nearly convex; in order to effect the requisite steadiness of the globe, so much pressure must be applied to one point, as cannot fail to occasion uneasiness, and endanger contusion, with subsequent inflammation of the coats of the eye.

With a view to obviate these inconveniences, I caused a speculum to be constructed somewhat like Pellier's, but with wire *double* the usual diameter, and arched in such a manner, as to embrace, by its corresponding concavity, a large segment of the upper portion of the eye-ball; the whole surface of contact being flattened, and guarded with silk neatly sewed round the bow. This apparatus I found much more convenient for confining

the eye, and with far less pain. But the angles, though somewhat acute, being parallel, and upon the same plane, the instrument could not be introduced underneath the upper eyelid, for the purpose of removing it sufficiently out of the way of the operator, without overstretching the outer canthus which, being sometimes excoriated, or contracted by preceding adhesive inflammation, suffered a good deal of annoyance. After a series of improvements in its form and construction, the speculum which I have now the honour to submit to the consideration of the Profession will, I flatter myself, be found by others, as it has proved in my own practice, well adapted to afford, in the most easy and effectual manner, all the assistance that can be desired from instruments of this description. The annexed plate* exhibits such an exact front and back view of the speculum alluded to, both in regard to size and figure, that without further comment, I shall enter on the mode of using it.

The Surgeon should direct the patient to look steadily at some object situated considerably lower than the horizontal line of the pupil, in which position of the eye-

* Vide Plate, fig. 7 and 8.

ball, the perpendicular concavity of the speculum should be carefully placed upon the upper convex portion of the sclerotica, immediately behind its junction with the cornea. The grooved rest or shoulder, formed in the posterior semicircular edge of the instrument, will thus receive the curved margin of the tarsus which, by sliding the speculum upwards and backwards, will be raised and supported underneath the arch of the orbit; and thus the superior part of the anterior hemisphere become fully exposed to view. So large a portion of the upper half of the eye being embraced by the smooth, broad, and accurately adjusted curvature of the speculum, the pain excited by its application is very inconsiderable. For the degree of pressure upon each individual part will be diminished, in proportion to the number of points of contact. By making the rest or shoulder of the instrument describe the segment of a circle, the tarsus is gradually raised higher and higher from the angles towards the centre, which is agreeable to its natural movements; also by this mechanism of the speculum, the object of keeping the palpebra raised, is accomplished more effectually, and with far less inconvenience to the patient,

than by the common method of introducing the curvature *underneath* the eye-lid.

For adults, one sized speculum is sufficient, as there is less difference in the relative size of the ball of the eye than is generally believed; the *apparent* difference in the magnitude of the organ, depending on the opening of the palpebræ, rather than on any great variation in the real bulk of the globe. But for infants, and even young persons, two specula, with proportionably smaller curvatures, will be required. The lower part of the handle must be bent more or less, according to the respective prominence of the forehead, or ball of the eye. In using this, or any other speculum of the kind, it is necessary to avoid pressing against the upper edge of the orbit, by the interposition of the thumb. By not attending to this particular, should the superciliary nerve,* as it sometimes does, run superficially over the edge, or through a notch only of the os frontis, instead of passing through its customary foramen, it may be severely bruised. Such an event once occurred to my observation, and the distress endured by the patient

* See Monro's Osteology, p. 1, ch. 11. article, Os Frontis.

at the time, and for some weeks after, induces me particularly to enforce the above caution.

The instrument just described, is applicable to either eye. If the operation is on the left, the patient being properly seated in a chair, rests the occiput against the breast of an assistant, who with one hand passed under the chin, supports the head, and with the other applies the speculum, to controul the motions of the eye-ball. The Surgeon in the mean time sitting at a convenient height before the patient, depresses the lower lid with the fingers of his left hand, whilst the right is engaged in directing the necessary movements of the Needle.

When the *right* eye is the subject of the operation, it has been customary to propose, that the Surgeon should take the Needle in his left hand. This appears at first sight more artificial, but it is unquestionable, that the constant use of the right in this part of the world, gives every man a greater command and strength in that member. Besides which, if the patient is placed, as I would recommend, on his back, the Surgeon sitting behind him, will find the fingers of his left hand exactly in the situation to take charge of the superior palpebra, and to steady

the organ without the use of any speculum, the assistant at the same time depressing the lower lid.—The above directions are applicable to cases of every description, with this difference only, that younger subjects and children, require more powerful coersive measures to guard against accidents during the operation. The degree of restraint necessary to be imposed in each individual instance, and the manner of applying it must, in a great measure, be left to the judgment and ingenuity of the Practitioner. I have sometimes had the little patient properly secured on a low table, and operated with success. On other occasions it has been found more convenient to place the infant on his back in the lap of an assistant, who can command the legs and arms, whilst I have confined the head betwixt my own knees, elevated to a commodious height by a stool, which supported my feet. This position places the infant subject so entirely in the power of the operator, that without any change of posture, and even without the assistance of a speculum, he can, if ambidexter, with facility perform the operation successively in each eye.

The previous application of the belladonna very much facilitates the operation by dilating the pupil, and thus enabling the operator to see the progress of his Needle. But some inconveniences have occurred from the common mode of applying it. When the eye is particularly irritable, and subject to chronic inflammation, I have seen the vessels of the conjunctiva highly excited, and the patient has complained of great pain. To prevent these unpleasant effects, I have applied the extract of the plant, in the consistence of cream, over the closed palpebræ for a few hours, and even for a night, by which the iris has been equally dilated, and the irritation on the conjunctiva avoided. But in whatever manner belladonna is used, there are subjects in whom it constantly produces double or confused vision, with various ocular spectra. Lady T. to whose eye it was very freely applied, with the view of enlarging the pupil, which had become nearly obliterated from preceding internal ophthalmia, never failed to experience those symptoms to a most remarkable and alarming degree; nor did they ever entirely subside, until some days had elapsed after the discontinuance of the remedy. It must however be admitted,

that such is by no means the *general* consequence of its employment. On the contrary, in by far the majority of instances, it seems to exert its peculiar agency solely upon the iris; the sympathetic as well as associated actions of which, for a time, it wholly destroys.—As curious physiological investigations are foreign to the present undertaking, I shall not stop to enquire, whether the supposition that attributes the above influence to the specific operation of the belladonna upon the *radiated muscular* fibres of the iris, be entitled to credit. In my Lectures on the Eye, I am in the habit of shewing, by at least plausible arguments, deduced from the anomalous actions, and the singularly organized texture of that part, that such an inference is highly problematical and gratuitous. I will beg only to add, what is of far more practical importance, that a strong infusion of Stramonium, instilled into the eye, is equally effectual in causing a dilatation of the pupil, with the advantage too, of exciting infinitely less irritation and uneasiness, than the belladonna, used in the same way.

As the mode of using my Needle differs considerably from that of the late Mr. Saunders, I shall first submit a concise descrip-

tion of the method to be pursued in performing the operation for hard lenticular Cataract.

The patient having been properly seated, the pupil fully dilated by the *external* application of the belladonna, and the eye steadied by means of the fingers when practicable, or otherwise by a well-adapted speculum, the instrument is to be introduced, in the usual manner, through the sclerotica, at a distance not exceeding one line behind its junction with the cornea, with its flat side parallel to the plane of the iris. The Needle is then to be carried to the front of the Cataract, its point being projected across the anterior chamber to the nasal margin of the pupil. The cutting edge is next to be turned backwards; when, by moving the Needle so as to describe the segment of a circle, the capsule with the enclosed lens must be divided into nearly equal portions. Proceeding cautiously in a similar manner, by repeated transverse and perpendicular incisions, the whole crystalline and its enveloping membrane will be reduced into small flocculi. This object having been accomplished, the handle of the instrument is to be carefully rotated between the finger and thumb; by

which manœuvre, the capsule is more effectually detached from its connections with the zona ciliaris at every point of its circumference, and the cohesion of the component parts of the lens more certainly destroyed. The whole, or as many of the fragments of the capsule and crystalline as the circumstances of the case will admit, *without danger of wounding the iris or ciliary processes*, are then to be pushed forward into the anterior chamber by means of the flat surface of the Needle; which must then be withdrawn, in the same manner as it was passed into the globe of the eye.

The following case of Hannah Chappel, a poor woman from Calverton, Nottinghamshire, who had for some time laboured under lenticular Cataract in each eye, first suggested to me the necessity and advantage of pursuing the practice above recommended. At eight o'clock in the morning of Tuesday, April 16th, 1810, the operation of Mr. Saunders was repeated on her left eye, for the purpose of quickening the absorption of a remaining portion of opake lens; the right having at that time sufficiently recovered by a *single* operation. The whole process was attended with so little pain, that she scarcely

felt conscious when it was completed. No sooner did the Needle come in contact, with the opake nucleus of the crystalline, than it was forced into the anterior chamber, and became impacted between the inferior part of the iris and cornea. The pupil in consequence instantly reassumed its natural transparency, and my patient had the gratification of seeing every surrounding object, with the usual degree of correctness and precision. A few hours of perfect tranquillity were, however, unexpectedly succeeded by great tension and lancinating pains of the eye-ball, which spread to the temple and forehead of the same side, accompanied with a profuse secretion of acrimonious tears, and extreme sensibility to light. An active dose of calomel and jalap was immediately exhibited, and soon produced its full effect; after which, a saline mixture with tinct. digitalis was directed to be taken every three hours. The affected organ, in the mean time, was fomented occasionally with a decoction of poppy-heads, and in the intervals, a warm sedative collyrium was ordered to be very assiduously applied. The symptoms continuing urgent, at 11 o'clock at night, sixteen ounces of blood were drawn

from the arm by a large orifice, the sudden loss of which produced syncope, with a great abatement of her sufferings. She afterwards obtained some repose, and early in the morning, I found her better in all respects. As, notwithstanding, the eye remained still very irritable, and as she had occasional paroxysms of acute pain, which the least motion, or even the act of speaking aggravated, four leeches were laid on the eye-lid, and the purgative was repeated. By rigidly adopting the antiphlogistic regimen for a few days, the inflammatory affection entirely subsided, and the following is the result of the case; which I shall give in the words of the very enlightened Physician who obligingly assisted at the operation. "I have seen Hannah Chappel, and have delivered to her the spectacles as you requested. On examining the eyes, the pupils appeared perfectly natural and clear, except that I could discern in the right, a very thin, small, floating substance, which seemed to me to be a part of the capsule of the lens, or a small part of the lens itself, not quite absorbed. She said, she could not distinguish objects so clear as with the other eye, but that she could see "to patch" any thing very well. When she put

on the spectacles, she was highly gratified with the improvement of her vision. She could then distinguish at a great distance, the lines of a newspaper, but could not tell the letters, as she had never been taught to read."—There cannot be any doubt, that the mischief alluded to, arose from the pressure of the hard nucleus of the lens on the iris; which might indeed have been removed by an incision through the cornea. Such an event, however, should at all times be guarded against, by attending carefully to the directions already given, to cut the opake crystalline through its centre in the first instance. Although this division of the Cataract is less essential to the success of the operation, in the soft, than in the hard species, yet as we cannot always ascertain its relative degrees of consistence, before the introduction of the Needle, the practice should be constantly adopted in every case of the lenticular disease. For at the same time that the section of the capsule and lens can be more easily accomplished in the former than in the latter instance, one possible source of danger is avoided, and the process of absorption is thereby accelerated.—Sometimes, from previous inflammation, an adhe-

sion will be formed between the capsule of the lens, and the posterior surface of the iris. This will readily be discovered, after the application of belladonna, by an irregularity in the figure of the pupillary margin; and whenever it is discovered, the first part of the operation must consist in the detachment of such adhesions. This should be effected with the greatest gentleness and caution, as there will always be danger of either separating the iris from the ciliary ligament, or of wounding it. It is not our present purpose to consider, whether such a wound might prove painful or not, it is enough to say, that we never can ascertain the effect it may produce on the organ, and that at least an unsightly deformity is sure to follow.

But it has been asserted, that Cataract in very old people will not admit of removal in the above manner, owing partly to the unusual solidity which the nucleus of the lens is supposed to acquire, and to the decayed powers of absorption, in declining age. The following highly interesting case, which I am obligingly permitted to publish, will sufficiently prove the fallacy of both those objections.

Early last spring I was consulted by Mrs. Monypenny, of Guilford Street, Russel Square, a most respectable widow lady, upwards of 85 years of age, on account of blindness. The complaint had commenced more than three years antecedently to that period in the right eye, and about twelve months in the left. On inspection, a completely formed lenticular Cataract was plainly discernible in each. As she enjoyed, in general, a good state of health, could distinguish with facility light from darkness, and in a favourable situation the outlines of large objects and vivid colours; and as the pupils also were perfectly circular and freely moveable, and the organ, in other respects, apparently sound and perfect, I ventured, notwithstanding her advanced life, to recommend the foregoing operation. After due consideration she determined on submitting to it. On the 25th April, the operation was accordingly performed, successively in each eye, agreeably to the above directions, except that I did not judge it expedient to project much of the disorganized lens into the anterior chambers, their capacities being exceedingly small. This circumstance, added to the presence of an extensive arcus

senilis, rendered the case unfit for Extraction. My patient experienced so little uneasiness from the operation on the left eye, that immediately after the Needle was withdrawn, in compliance with her own urgent intreaty, the other organ was subjected to the same process. She subsequently underwent no other restraint than what the mildest antiphlogistic regimen imposes; yet neither pain nor inflammation ensued. She afterwards acquiesced in my proposal to introduce the Needle again, for the purpose of quickening the action of the absorbents, the divided portions of the Cataract having coalesced. The result of this second operation, which was not followed by a single unfavourable symptom, I have just learnt personally from her son; Mrs. Monypenny herself having been for some time at Rolvenden, in Kent. He informs me, that by the most attentive observation, he can only distinguish a particle of the lens still floating in the aqueous humour of the left eye, not larger than a pin's point. The pupil, he assures me, is perfectly black, the iris actively obedient to different degrees of light, and her sight so far improved that, *without spectacles*, she can discern the hands and fingers on a dial, and a variety of

smaller objects; and that a few days since, she observed some Sheep at a considerable distance in a field. He adds, that it is impossible to ascertain, from any visible defect, that she has ever been blind in that eye, or that any operation has been performed upon it.

With respect to the right eye, the process of absorption is by no means so far advanced; the opake crystalline in this had acquired a far greater density, prior to the operation. Judging, however, from the aperture through, and the flocculent appearance of the remaining portion of unabsorbed Cataract, and comparing it with what occurred to the other, he conceives that only a few weeks more will be required for its complete removal.

Several circumstances concurred to retard the cure in this case. In addition to the diminished size of the eye-ball, and proportionably small quantity of aqueous humour, since the first operation was performed, Mrs. Monypenny has suffered severely, under repeated and long continued attacks of Jaundice, during which, the process of absorption has been nearly, if not altogether suspended. However, from the foregoing history we are fairly entitled to deduce the

following important inferences: 1st. That the Needle is adequate to *all* the purposes necessary for completing the operation with safety and success, even in the Cataracts of old people: and, 2dly. That in very advanced life, Nature is still capable of effecting the entire absorption of the diseased lens, when it is reduced into small fragments; although more time may doubtless be required for that process.

The above case is offered also as an illustration of the slight pain attending the operation by this Needle, employed as directed, and of the almost total exemption from subsequent irritation. Among the number of individuals who have been restored to sight for the different species of Cataract, Mrs. Monypenny is the most advanced, and an infant *six months* old, the youngest patient on whom I have hitherto operated. — Of the almost incredible ease with which the process has been occasionally accomplished, Lieut. Col. F. is a still more striking example. Upon that officer I operated September 4th, 1810, in the presence of two of our most eminent Surgeons, for lenticular Cataract in the right eye. The Needle was passed into the organ, the crystalline reduc-

ed to fragments, the instrument again withdrawn, when my patient conceiving I was only preparing for the operation, entreated me to keep him no longer in suspence. I assured him the operation was finished, but it was with difficulty he could be made to believe so desirable a truth. This complete freedom from pain, I attribute principally to the use of my left hand, instead of Pellier's elevator; the application of which, will often produce more pain, than all the subsequent steps of the operation.

The method of operating now recommended, is also with much greater justice and propriety entitled to the phrase "radicitus tollit," than either Extraction or Couching; since the possibility of the subsequent occurrence of secondary or membranous Cataract is thereby prevented, as well as a *radical* cure eventually obtained, by the *entire absorption of every part both of the capsule and lens.* The dissipation of the disease in the above manner, requires a longer or shorter period to effect, according to existing circumstances, and the nature of the Cataract; nor is it possible accurately to predict when that event will be fully accomplished, since various unforeseen causes may intervene to

quicken or retard its completion. In a few instances of *soft* Cataract, I have known the cure obtained in three or four weeks, while in the *hard* species, some months have occasionally elapsed, and even a repetition or two of the process been sometimes required, before the whole disappeared.

In the event of the Cataract being fluid or milky, I would not recommend the foregoing method to be adopted. For the reasons already assigned, when speaking of the *anterior* operation, (page 64), I prefer first puncturing the capsule through the cornea; after which, the posterior operation for the capsular species can with greater safety and success be performed, should circumstances render any further measures requisite.

I cannot, however, forbear observing in this place, that if Mr. Saunders was unnecessarily fearful "of pushing the fragments of the broken lens into the anterior chamber, unless they tended that way," others seem to have carried the practice, without any modification or exceptions, to an opposite and far more dangerous extreme. That deservedly eminent Surgeon, Mr. Pott, though well aware that detached portions, and even the whole of the crystalline, when deposited

in the anterior chamber, (whether from being there exposed to a larger quantity of its natural menstruum, or from the Cataract being in that situation more completely separated from its connections, or from some other cause) disappeared with greater rapidity than when suffered to remain *in situ*, and accordingly practised what Scarpa so strongly inculcates at this day; yet still he thought the method wrong; not indeed from its inefficacy, but from an apprehension that it would be apt to occasion an irregularity of the pupil. Mr. Hey likewise, (Surgical Observations, pages 59 and 60) who has seen in several instances the whole opake nucleus, and very often small opake portions, fall into the anterior chamber, makes the following excellent remark; — "Indeed, if the Cataract *could*, in all cases, be brought into the anterior chamber *without injury to the iris*, it would be the best method of performing the operation." From which passage it is evident, that in the opinion of this judicious practitioner, the above procedure, with regard to the *displacement* of the ruptured lens, (a term which as Leveillé, the French translator of the Italian Professor's valuable work on the Eye,

justly remarks, is very applicable to this mode of performing the operation) is *not in all cases safely practicable.* Candour however demands the concession, that the danger suggested by the distinguished writers just quoted, is in a great measure avoided, in favourable cases, by availing ourselves of the peculiar influence of Belladonna. Yet still, according to my own observations, there are certain conditions of the organ of vision, which ought to restrain us from incautiously and rashly pushing even the broken lens with too much freedom into the anterior chamber: namely, 1st. When the pupil, from preceding inflammation of the iris, is more than usually contracted, and rendered incapable of being artificially dilated by the agency of the above-named narcotic: and, 2dly. When the anterior chamber, on account of the flattened form of the cornea on the one side, or the protuberant state of the iris on the other, from whatever causes arising, happens to be particularly small in its diameter. In the former example, there will be great risk, from an over-officiousness to expedite the cure, by projecting the broken fragments of the hard lens through the

diminished area of the pupil, of cutting or forcibly dilating the iris; either of which accidents may give birth to the most serious inconveniences. In the latter instance, the small quantity of the aqueous humour contained in the *anterior* chamber could contribute, in a very inconsiderable degree, to hasten the solution of the disorganized lens, beyond what it will spontaneously undergo, by being freely exposed to the action of that solvent in its natural situation. Whilst, on the other hand, the fragments, and still more the *nucleus* of a *hard* lens, (for so much of a *soft* one has sometimes escaped, or been pushed into the anterior chamber, as to fill this space even with the inferior edge of the pupil, giving the appearance of hypopium, with perfect impunity) confined between the iris and concave surface of the cornea, in highly susceptible states of the organ, have by their mechanical pressure or irritation, induced considerable pain, long continued inflammation, and eventually suppuration of the eye, and total loss of sight.

In the instances just stated, I greatly prefer Mr. Saunders's cautious method of suffering the ruptured lens to remain *in situ*; where I can assert, that I have never yet

known a solitary example of its failing to become sooner or later dissolved, and so entirely absorbed, as not to leave the smallest vestige of a Cataract behind. Nor is it, thus circumstanced, (unless inadvertently made to press against the uvea, by which catastrophe a permanent dilatation, and possibly too an irregularity of the pupil might ensue) disposed to excite any pain or inflammation. And surely it is better for the patient to be somewhat longer in obtaining a perfect restoration to sight, by our forbearing to do too much, than from an over anxiety on our part to accelerate the cure, to subject him to the dangers resulting from an injury of the iris. "*Sat cito si bene sat.*" There is another consideration too that ought to reconcile the individual, labouring especially under the above-mentioned complicated derangements, cheerfully to submit to this temporary retardation of his recovery; a suggestion with which Mr. Saunders perfectly coincided; viz. that his final restoration to sight will be thereby not only with greater certainty ensured, but likewise by *gradually* regaining the use of his visual faculties in the way just stated, supposing them to have been *long* lost, he will probably be capable of

enduring the full influence of light, and of freely exercising the organ nearly as soon as those persons who, after having been for a considerable period deprived of that blessing, have recovered it immediately upon the performance of an operation.

This opinion, however singular it may appear, I am induced to adopt, from no inconsiderable experience and reflection; and the plausibility, if not the correctness of it, will receive some sanction from the following statements.

Mrs. C. (for many years an inmate in the Duke of Newcastle's family) upon whom I operated last year for reticulated capsular Cataract, was enabled *instantly* after the Needle was withdrawn, to see very minute objects. The pain occasioned by the introduction of the instrument was very inconsiderable, and the slightest possible irritation supervened. The pupil, which was before so fixed and dilated that an eminent practitioner declined undertaking the operation, from an apprehension I understood, that the above symptom was produced by or complicated with, amaurosis, became at the same time in a highly active state. Although since that period no *visible* morbid

affection has existed in any part of the organ, she has been capable only, by slow degrees, of bearing the stimulus of a strong light, or application to reading or working.

Mr. Porter also, of Bethnal Green, was afflicted with a Cataract in the left eye, of a description very similar to the preceding. I performed the operation in June last, with the effect of *immediately* restoring his lost sight; yet the same inconvenience followed, and prevented him, till of late, from the comfortable use of the organ, notwithstanding the nicest examination could not detect the most trifling *apparent* defect, either in its external or internal organization; so far otherwise, that I never recollect having seen an eye, after the most successful operation, which exhibited a more animated and healthful appearance.—The *gradual* manner, therefore, in which patients recover by the diseased lens being put, by the method already detailed, into a condition fitted for spontaneous solution, so far from affording any valid objections against the operation suggested in these pages, as the advocates for couching and extraction allege, is perhaps a very strong recommendation in its favour. Do not reason indeed and experience

concur in establishing the fact, of the dangerous consequences which may, and occasionally do actually arise, from the sudden and unguarded exposure of the retina to strong light, especially when it has acquired, in consequence of having been long subjected to a state of comparative darkness, (as is really the case, from the obstruction of the rays by the opake lens) a high degree of accumulated sensorial power? And may not the intolerance of light, accompanied frequently with epiphora and a contracted pupil, subsequent to the operation of extraction, be in some instances fairly and reasonably imputed to this cause? The dangers alluded to may, it is true, be counteracted, by enjoining the patient to protect the organ, for an adequate period of time, by means of an appropriate shade, so as *gradually* to accustom the eye to the full influence of light. But we cannot, upon every occasion, expect to controul his eager desire to enjoy the various delights and exquisite pleasures resulting from restored vision; the premature gratification of which, I am persuaded, has not unfrequently laid the foundation of the formidable train of symptoms just enumerated.

But the above described *straight* Needle, although it proved admirably adapted for successfully operating upon simply *lenticular*, I found by no means equally well calculated for thickened and tenacious *capsular*, Cataracts; the usual elasticity and resistance of which, enabled them to elude, with that instrument, my efforts to tear or cut them into sufficiently small shreds for speedy solution in the aqueous humour. In cases of the latter description, I have succeeded infinitely better by the aid of *my curved one-edge capsule* or *iris-knife*, which I directed to be made for the express purpose of operating upon Stephen Manbridge, a young man 17 $\frac{1}{2}$ years of age, who was born with a congenital capsular Cataract in each eye. This patient was brought to me December 1811, by Admiral Hamilton's son, from Boldre, New Forest, Hants. In this instance, such was the extreme tenacity and cohesion of the capsules, that I found myself incapable of effecting their necessary breach and free laceration, by means of my straight Needle. Thus foiled, I caused the instrument just mentioned to be constructed, of which the subjoined account affords a correct descrip-

tion, and the accompanying plate an accurate delineation.

The blade of the knife is exactly one inch in length, half of which is straight, the remainder is slightly curved to the extremity. It cuts only on the concave edge from the point upwards, to the extent of four lines, the opposite edge being blunt. From the point of the instrument to the middle of the blade, at which part it is only half a line in breadth, its thickness gradually increases; from whence to the handle it is conical, its diameter being progressively augmented from one third to half a line. The handle is of the same length as that of the Needle. There are three dots corresponding with the cutting edge, and not any upon the reverse; a circumstance that should be constantly borne in mind by the operator, in order that he may be able to ascertain with certainty, the exact position of the instrument when its point is buried within the eye.

The pupil having been fully dilated by the belladonna, and all the previous steps of the operation having been duly arranged, I introduced the knife carefully through the coats of the eye, at two lines behind the cornea, with its convexity forward. The cut-

ting edge of the instrument being brought before the membranous Cataract, its point was carried across the anterior chamber as far as the nasal edge of the pupil; when, by repeated cuts in different directions, I succeeded in reducing it to small filaments, and by cautious movements with the knife, was enabled to detach it completely from its connection with the ciliary zone, except at one point, where a small triangular piece was left united, by its basis, to the hyaloid membrane on the nasal side of each pupil. Part of the fragments fell into the anterior chambers; and in about ten weeks subsequently to the operation, the torn capsules became absorbed, leaving the whole ambit of the pupils in their contracted state, beautifully transparent. When, however, the iris was unusually dilated, or when a lateral view was taken of the eyes, the attached portions of the capsules became clearly visible. As generally happens in such circumstances, the fragments alluded to, are probably by this time either wholly dissolved, or else so considerably contracted, as in no degree to interfere with the functions of the organ. The iris in each organ was left in the most

perfect and active condition, and vision rendered so complete, that he could discern any number of the smallest dots made with the point of a pen upon paper, and the quarters marked upon the dial of a watch, with the greatest ease and correctness, when aided by the assistance of proper convex glasses; the use of which were by no means required for any of the ordinary purposes of life. The extreme mildness of the process resorted to in the present instance, cannot be better illustrated than by stating, that he was regularly conducted on foot, immediately after each operation, from my house upwards of a mile to his own lodgings; nor was he at any time confined to his room longer than two days, and not an hour to his bed. Since the beginning of April, he has acted as servant to Mr. Hamilton, who with his accustomed humanity and benevolence, has had him taught the necessary duties of his situation; a species of knowledge he acquires, I understand, with great facility.—When he first obtained his sight, he judged very erroneously respecting distances, and the external figure and properties of bodies; a defect in perception which he endeavoured to correct by the powerfully auxilliary sense of

touch. I do not recollect, however, that he described objects as appearing to his apprehension *inverted*. That irregular convulsive motion of the eyes, so peculiarly characteristic of *congenital* Cataract, accompanied with an opacity of the *whole capsule* of the lens, was improving when he left me; at which time he began to possess more command over the involuntary and unassociated actions of the muscles.

Since the publication of the above particulars in the London Medical and Physical Journals, the young man has called on me. Dr. Adams, the well known author of Morbid Poisons, and several other professional gentlemen, saw, and minutely examined with me the state of his eyes. We found the pupils of the *left* perfectly clear, and properly dilatable. In the *right* there are still some small and very opake flocculent portions of adherent capsule, which however are not visible in the natural state of the iris, or only when we take a side view of the organ. These unabsorbed fragments do not however materially interfere with the functions of vision, and will probably eventually disappear spontaneously. He can now distinguish even without glasses, by

bringing the object within four inches of his eyes, the minutest points, or the finest hair hair strokes made with a pen upon paper, and is capable of discerning a pin at some distance on the ground. Nor are his visual powers confined to near objects, for he can count the windows of houses situated half a mile off, and clearly decypher the figures on the doors across the street: In short, by means of well adapted convex spectacles, his sight is almost as good as that of many persons who have never experienced any complaint in their eyes. The eye-balls too are far steadier, and much more under his controul, than when he left London in April.

The Knife, reduced to the smaller size represented by fig. 6, in the plate, is equally applicable to the same species of disease occurring in infants, and young subjects. I have lately operated with it on the capsular Cataract of a child only three years old, in the most satisfactory manner, and without the smallest subsequent inflammation. The Knife, besides being no less manageable, is likewise a far more safe instrument than the Needle. For the iris cannot easily sustain any injury, the back of the Knife only being opposed to its posterior surface. The

slight curvature of the instrument, gives us also a very effectual purchase, so that even the elastic Cataract is easily divided by its sharp cutting edge into small shreds for speedy dissolution.

I shall now add a few words relative to the part of the Eye at which either the Needle or Knife is most conveniently introduced. Most Authors recommend the puncture with the Needle to be made at about one line, and Mr. Hey, (Surgical Observations, p. 57) even at the minute distance of one-sixteenth of an inch from the union of the cornea with the sclerotica. But no invariable rule can, in this respect, be laid down; we must be guided entirely by the nature of the case, and the peculiar form of the instrument employed. It is a certain fact, though not generally known, that in the capsular Cataract, wherein the whole or greater part of the lens has been absorbed, the iris will be often found to have retired further than ordinary towards the vitreous humour, and not unfrequently fixed in that situation, by an adhesion of its posterior surface to the capsule of the crystalline. If the Needle, under such circumstances, penetrates the Eye in the usual manner, unless

the point is directed with a corresponding degree of obliquity backward, there will be great danger of wounding the iris, or of detaching it from the corpus ciliare. If a *straight* Needle be used in *lenticular* Cataract, it certainly ought not to enter farther back, at the most, than one line from the junction of the cornea with the sclerotica. Should the Needle be very small, and the angles of its cutting edges narrow, even a less distance will be preferable. For, as Richter judiciously observes, the farther back the instrument is made to penetrate the coats of the eye-ball, the more forward must its point necessarily advance, and the greater difficulty there will be of bringing it transversely in front of the opake lens, without endangering the pupillary margin of the iris, the ciliary processes, or the concave surface of the cornea. But when a *curved* instrument is used, the above reasoning shews, that it ought to be passed into the Eye at the distance of *two* lines, or a little more, behind the ciliary ligament, to facilitate our conveying the point with safety, before the Cataract. Nor is there, as was formerly apprehended, any cause for alarm, on account of puncturing the aponeurosis of the recti

muscles. By introducing the Needle or Knife about one line below the transverse diameter of the pupil, we shall in general avoid what is however of no great importance, the effusion of blood in the operation, the long ciliary artery, which in such instances is wounded, usually pursuing its course to the iris, along the *middle* of the external convexity of the eye-ball, between the choroid and sclerotic coats.

If the patient has been in a good state of general health previous to the operation, very few directions will be sufficient, respecting the *after treatment.* In four instances only have I hitherto had occasion to draw blood by the lancet, or even leeches. One of these was Hannah Chappel's case, in which inflammation was brought on by the nucleus of the lens pressing against the iris; in the others, by extreme carelessness, and exposure to currents of cold air. By way of precaution, unless there should be very material objections, I generally direct the patient to take a dose of some saline aperient the day before, and the day after the operation. A full dose of laudanum, exhibited two or three hours previous to the introduction of the instrument, has contribut-

ed not a little to the success of the process. The antiphlogistic regimen should be afterwards continued for a few days, until the slight effects of the operation have entirely subsided. Should ophthalmia, however, from any untoward event supervene, it ought to be *instantly* combated by general and local remedies, employed with a degree of vigour proportioned to the threatened danger. A copious bleeding at the very commencement of the attack, if it should not altogether stop, will always lessen the violence of the subsequent symptoms. Unless when the iris has been the seat of inflammation, I have not witnessed even the division of the temporal artery produce such decided benefit, as bleeding from the arm by a large orifice, and continued ad deliquium. While the vessels of the eye are in a state of high excitement, simple water, poppy-head decoction, or what is better than either, infusion of digitalis, in the proportion of ʒij of the powder to ℔j of water, of a comfortable warmth, afford perhaps the best local applications. Vinous tincture of opium, and every other stimulating remedy, are undoubtedly prejudicial during the inflammatory stage.

I have elsewhere,* when speaking of this subject, urged objections to poultices, on account of their tendency to induce the formation of abscess between the lamellæ of the Cornea. Even the application of blisters should be deferred until the highly inflammatory symptoms have declined. In case the sympathetic fever runs high, saline medicines, with nauseating doses of antimonials, may be advantageously prescribed, to which, at bed time, digitalis, with extr. hyoscyam. may be usefully subjoined. It is hardly necessary to add, that the Eyes should not be exposed to any strong light, for some days after the operation. The period however for keeping them covered, must depend on the length of time the disease has existed, and the mildness or violence of subsequent symptoms. If the Cataract has been lenticular, the pupil ought to be kept in an expanded state for some time, by the occasional *external* employment of belladonna; or what I find will also, though less efficaciously, answer the same purpose, extr. hyoscyam. applied the same way.

* Vide Practical Treatise on the Morbid Sensibility of the Eye, commonly called Weakness of Sight, p. 87.

To conclude. The Reader will perceive by the extracts already given from Mr. Saunder's Letters, and my subsequent remarks, that the improvements I have ventured to offer, so far from being inconsistent with, have naturally resulted from, a practical application of his suggestions. They consist principally, of a more convenient mode of producing a dilatation of the pupil; a new-invented Speculum for supporting the upper eye-lid, and steadying the globe; such an alteration in the Needle, as gives the Operator a more determined power over the common Cataract; and a Knife, better adapted to particular forms of the disease. It will I flatter myself be admitted, that there is no kind of Cataract which, by one or other of the foregoing processes, may not be reduced to a state fitted for spontaneous absorption; the lenticular by means of the Needle, and even the dense and elastic capsular by the Knife.

However unnecessarily minute many of the details in the foregoing pages may appear to common observation, the practical Oculist will be aware, that upon a strict attention to them, our eventual success must oftentimes depend. I trust that the improve-

ments brought forward will meet most of the difficulties hitherto recorded, and will thus prove the means of facilitating the operation, and of expediting the cure, even in the most complicated and the most inveterate cases.

FINIS.

W. THORNE, RED LION COURT, FLEET STREET.

Published by Highley and Son, 24, Fleet-Street.

STEVENSON ON THE EYE.

A PRACTICAL TREATISE on the MORBID SENSIBILITY OF THE EYE, commonly called WEAKNESS OF SIGHT. By JOHN STEVENSON, Oculist and Aurist to Her Royal Highness the Princess of Wales, Member of the Royal College of Surgeons, &c. 8vo. 5s. boards.

"This is a very judicious Treatise. The Author details the results of his observation and practice, in a brief sensible way, without any quackery or oſtentation." —*Critical Review, December*, 1810.

Mr. Stevenson has rendered an important service to the public, by thus candidly and modestly communicating the result of his experience on a very common Diseaſe of the Eyes.

"It unfortunately happens, that the most meritorious, because the most industrious classes of the community, are most exposed to ocular diseases, from the constant application of their eyes in needlework, reading, writing, and various mechanical employments. A careful perusal, therefore, and judicious application of the Author's directions and hints, cannot fail to be advantageous to many such persons."—*Anti-Jacobin Review, December*, 1810.

"As Mr. Stevenſon's Treatiſe is more of a practical than ſpeculative nature, and contains ſome novel methods of managing a diſeaſe which ſeems to have been much miſunderſtood, we do not heſitate to recommend it to our readers." —*Medical and Phyſical Journal, January*, 1811.

"Mr. Stevenson has given to the Public a Work, the nature of which is unquestionably of the most interesting class, and the contents of which, in our estimation, are most valuable. Besides the leading argument which distinguishes this Tract, we find interspersed, a variety of plain and practical remarks, with none of which, nor with the facts upon which they are founded, ought the most general reader to be unacquainted." —*General Chronicle and Literary Magazine for July*, 1811.

"Every improvement in the practice upon an organ of so much importance as the eye, merits the attention of the profession in general, for all are occaſionally called upon to practice or give advice upon it.

"To us the author appears to have met the queſtion very fairly; and he has added and interſperſed many obſervations tending to confirm his opinions, for which we refer to the work itself.

"We truſt that this work will be read by all medical and surgical practitioners for their own individual information. The advice and cautions contained in it, are conveyed in a ſtyle ſo clear and perſpicuous, that we think it may be peruſed with equal advantage alſo by the public in general. For the preſervation of ſight is an object of univerſal intereſt; and in our opinion, the hints and directions ſuggeſted by this diſcriminating author, will very materially contribute to that end."—NEW MEDICAL and PHYSICAL JOURNAL, Dec. 1810.