On the nature and symptoms of cataract : and on the cure of that disease, in its early stages, by a mode of practice calculated to prevent the occurrence of blindness, and to render unnecessary the operations of couching and extraction. Illustrated by cases / by John Stevenson.

ON

THE NATURE AND SYMPTOMS

OF

CATARACT,

ETC. ETC.

LONDON:
PRINTED BY J. MOYES, GREVILLE STREET.

ON

THE NATURE AND SYMPTOMS

OF

CATARACT,

AND ON

THE CURE OF THAT DISEASE,

IN ITS EARLY STAGES,

BY A MODE OF PRACTICE CALCULATED TO

PREVENT THE OCCURRENCE OF BLINDNESS,

AND TO RENDER UNNECESSARY

THE

OPERATIONS OF COUCHING AND EXTRACTION.

ILLUSTRATED BY CASES.

BY JOHN STEVENSON, Esq.

FELLOW OF THE ROYAL COLLEGE OF SURGEONS; AND SURGEON
OCULIST AND AURIST TO HIS ROYAL HIGHNESS
THE DUKE OF YORK, &c. &c.

LONDON:
PRINTED FOR G. AND W. B. WHITTAKER,
AVE-MARIA LANE.

1824.

TO

THE KING.

SIRE,

Penetrated with feelings of the liveliest gratitude, and most respectful homage, I approach to lay this humble offering at the feet of your Majesty.

A compassionate desire to succour the distressed, and to lessen the sum of human misery, forms a distinguishing attribute of your Majesty's character, and to this sentiment I venture to ascribe your gracious condescension in permitting me to dedicate this Treatise to your Majesty.

A large portion of my life has been devoted to the investigation of Ophthalmic Diseases, accompanied by an earnest desire to improve the modes of treating them. The following pages contain the result of much meditation and experience in the management of Cataract. And, whilst I entertain, with diffidence, the hope that the doctrines I advocate will be found extensively useful in their application, I have already received, in your MAJESTY'S *sanction, the most grateful reward that could be bestowed upon my professional labours.*

Deign, SIRE, *to accept favourably the assurances of the duty and attachment of*

Your MAJESTY'S

Most faithful, most devoted,

And dutiful Subject and Servant,

JOHN STEVENSON.

PREFACE.

THE Author's earliest suggestions relative to an improved method of treating Cataract, were conveyed to the public, through the medium of the London Medical Journals, in 1812. Those hints, in the course of the following year, assumed the more regular and systematic form of a treatise, in which were embodied such additional facts and observations as subsequent experience had supplied. The work, in that shape, obtained the very flattering notice of the contemporary Reviews; and in consequence, probably, of their sanction and recommendation, the whole impression was disposed of within a few months. A short time subsequently, a new and enlarged edition appeared, which was received with

equally favourable testimonies of public approbation.

Since his last production on Cataract appeared, the author has not ceased to prosecute his inquiries on the subject; the result of which is communicated in the following pages.

Nor can he allow himself to offer to the public the more mature fruits of his experience, without proudly acknowledging, that he has been mainly indebted to the liberality and candour of his professional brethren for the numerous opportunities he has enjoyed of extending his researches.

In order to demonstrate the value and expediency of the method of treatment now recommended, it has been found necessary to examine and expose the defects and disadvantages of *Couching and Extraction* — the operations in common use. But in doing so, it is hoped that the arguments are fairly and impartially

stated, whilst they are grounded principally upon the representations and admissions of the advocates and supporters of those processes.

In bringing forward and inculcating a new and more successful mode of practice, it may be proper to add, that the omission of a longer list of cases has arisen, not from any deficiency in their number, but because the author deemed it superfluous on the one hand to record them, and on the other, their insertion would tend to augment the size and enhance the price, rather than add to the value of the work.

Whenever any point seemed to him to require elucidation, he has not neglected to uphold and exemplify the principles advanced, or the treatment recommended, by appropriate practical illustrations.

18, *Margaret Street*,
Cavendish Square,
March 25th, 1824.

CORRIGENDA.

Page 16, line 5 from bottom, *for* " a few drops," *read* " a drop, or very small quantity."

Page 123, line 1, *for* " cuvette," *read* " curette."

CONTENTS.

CONTENTS.

HISTORY AND NATURE

OF

CATARACT.

CHAPTER I.

THE sense of sight has ever and justly been deemed one of our choicest and most inestimable blessings, the real value of which can indeed scarcely be fully appreciated but by him who has had the misfortune to experience its loss or imperfection.

The organ subservient to vision, in a general point of view, and in reference to the subject of the following remarks, may, with propriety, be regarded as a compound microscopical or optical instrument of

wonderful adjusting powers. It consists of three concentric coats or tunics, the sclerotic or external, the choroid or middle, and the retina or internal,—forming a cavity, which is filled by the same number of humours, namely, the anterior, called the aqueous, the posterior or vitreous, which occupies three-fourths of the whole space, and the intermediate or crystalline lens.

These humours are obviously designed, by virtue of their transparency and respective though varying densities, to transmit and converge the rays of light to a focus upon the sensitive retina, which is an expansion of the optic nerve, originating in the brain.

The impression thus made is conveyed through the medium of this nervous apparatus to the sensorium, and produces, in a manner to us altogether incomprehensible, the phenomenon of sight.

From the above slight sketch it will be readily understood, that if any one of these humours should cease to preserve its natural pellucid character, the function of the eye must be interrupted or destroyed.

Now the disease termed Cataract* consists in an opacity of the *central* humour, which, on account of its limpidity and fancied resemblance to crystal, and its peculiar geometrical figure, is called the *crystalline lens*. This body, being situated in the axis of the pupil, must of necessity, in its altered state, oppose itself as a barrier to the admission of the rays of light into the interior of the eye-ball, and produce a degree of blindness proportionate to the intensity of the opacity.

* Cataract is derived from the compound Greek word *καταράσσω, deturbo, to confound,* because it confuses the sight. It is also designated *Γλαυχωμα*, by Hippocrates; *Ὑπόχυμα*, by Galen; *Suffusio,* by the Latin, and *Gutta opaca*, by the Arabian writers.

So long as the luminous rays are capable of penetrating partially through the lens, the complaint is designated an *incipient* cataract, the sight being only vitiated and impaired; but when its density is such as to exclude the passage of the rays altogether, the patient being able to distinguish only light from darkness, or at most the outlines of objects, the disease is said to be *mature*, or *ripe*. In conformity with these notions of the ancients, a *recent* cataract was esteemed *soft* or *unripe*, and one of *long standing*, *hard* or *ripe*, from a fallacious belief that every cataract passes through certain regular stages before it arrives at *maturity*; after which period it was supposed to become adherent and complicated, and consequently less fit for an operation.

These ideas, however, respecting the *ripeness* or *unripeness*, and its consequences, founded on the supposed *hardness* or *softness*

of cataract, as dependent on its *duration* and *colour*, are fully contradicted and disproved by experience.

When the disease is perfectly formed, it becomes visible on the slightest inspection, in which stage it exhibits a white, brown, amber, or some other distinct colour.

Hence, from the earliest period of medical science, the malady has been universally ascribed to some opaque substance situated within, and occupying a part or the whole of the opening in the iris, commonly called the pupil or sight, by the presence of which the rays of light are impeded in their way to the seat of vision.

But in regard to the real character, precise situation, and original formation of this opaque substance, many vague and erroneous opinions have at different times been entertained.

Of these, the most remarkable and important, because it served materially to influence the surgical treatment of cataract for many succeeding centuries, was the doctrine of the celebrated Galen, who was cotemporary with Antoninus Pius, the sixteenth Roman Emperor, and whose voluminous and excellent writings were for many ages appealed to, with almost superstitious veneration, as the standard of medical science. Such, indeed, is the extent and universality, not only of medical, but likewise of anatomical knowledge contained in his works, that Dr. Alexander Monro* Secundus was accustomed in his lectures to say, "that nobody ought to assume the honour of a discovery, until he was sure Galen had not mentioned it."

This distinguished physician of antiquity, having imbibed the unfounded and vision-

* MS. History of Anatomy, in the Museum at Edinburgh.

ary notion that the lens is the essential seat of vision, (" crystallinus humor primum videndi organum,")* maintained that the cataract was not occasioned, as it was even then commonly supposed to be, by an opacity of the crystalline, but was produced by a congeries of superfluous humours coagulated into a white skin, or pellicle, and placed before that body in the posterior chamber of the aqueous humour.

In vindication of this hypothesis he argued, and he reasoned correctly, although his premises were false, that, on the displacement, by the process of couching, of some intervening opaque substance lying in front of the crystalline, the sight could be restored. For it is not to be supposed with the peculiar views which he entertained relative to its function and use, that

* Galen, de Usu Part. lib. x. cap. i.

Galen contemplated the actual removal of the lens itself.

There were not wanting, however, practitioners who, unawed by the reputation and authority of Galen, dared to think for themselves, and to call in question the accuracy of his opinion; being unable to comprehend how this compact substance could be spontaneously generated in the aqueous humour, in a manner totally inconsistent with all the known laws of the animal economy.

They were inclined, and certainly not with a less degree of plausibility, to ascribe the preternatural appearance and its effects to a film, or lamen, which they conceived might, by disease, become 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 believed to be the true cataract.

A more intimate acquaintance with the structure of these parts furnished, however, an easy and satisfactory refutation of their theory: for the crystalline itself being enclosed in a tense smooth skin or capsule, is not in contact with the aqueous humour, and consequently is incapable of throwing off any layer, and its enveloping membrane is not of a character to admit of such a separation.

After a long reign of darkness and superstition, learning and the liberal arts and sciences began to revive, and to meet with great and well merited encouragement. The study of optics, which, as a branch of philosophy, engaged the attention of men eager in the pursuit of knowledge, whilst it exposed the fallacy of the prevailing notions, tended to establish more rational views, as to the use of the crystalline lens in the economy of sight. The event, which first led to the develop-

ment of the real nature and seat of cataract, may, with justice, be referred to the important discovery of Kepler, a celebrated physician of Amsterdam, who, in his extremely ingenious work, entitled "Ophthalmographia," published in the year 1639, proved by experiments, which he illustrated by sound reasoning, that the crystalline, being a perfectly diaphanous body, was unfit to retain or reflect light. This humour, he affirmed, so far from possessing, as 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 conduct the rays of light to a point upon the retina.

This momentous fact having been fully and unequivocally ascertained by the sole genius and indefatigable researches of the

above-named distinguished mathematician, more rational ideas on the subject began to be entertained, and gradually triumphed over errors which had been long and generally adopted with unsuspecting credulity.

But the progress of improvement in science was formerly very slow, and the knowledge of its concomitant discoveries was still more tardily diffused among mankind.

It will therefore scarcely appear extraordinary to those who recollect the fate of Harvey, Galileo, and other illustrious philosophers, that the facts communicated by Kepler should be received with distrust and suspicion by his cotemporaries, who were too ignorant to profit by information which, if they had applied it to the consideration of disease, would have taught them the nature of cataract, and laid a solid foundation for its rational and successful treatment. Hence, notwithstanding the correct

ideas respecting cataract that were 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, though well-founded, 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

* Recherches sur Chirurg. p. 404. Lasnier was a celebrated surgeon of Paris, who died in 1690; and who, according to Sabatier, was indebted to M. Quarré for his information upon this subject, which he communicated to the College of Surgeons previously to 1651. The memoir was subsequently published by Gassendi, Rohault, and Rolfincius.

† Rohault Tractat. Physic. tom. i.

‡ Borelli Histor. Medicinæ, 8vo.

‖ Gassendi Opera Physic. tom. ii. p. 331.

authority of the first promulgators of the doctrine that cataract was a pellicle in the aqueous humour, (a notion still prevalent among the vulgar,) and such was the influence of long-established opinion, that a few only of the less prejudiced and better informed practitioners believed the disease to be situated in the crystalline lens, until the beginning of the seventeenth century.*

About that period the several interesting publications of Maître Jan,† Heister,‡

* "Cette vérité n'était pourtant encore connue que d'un petit nombre de personnes au commencement du siècle dix-septième, &c." — *Sabatier de la Med. Operat.* tom. ii. 8vo. 1796.

† Maître Jan, Traité des Malad. de l'Œil, 12mo. 1722.

‡ Heister, Tract. de Cataract. in Lente Crystall. 1711, de Glaucomate et Amaurosi, 1713; and his Vindiciæ, published in answer to Woolhouse, in 1779. By these admirable performances, he may be said to have obtained a complete victory over the advocates for the above-mentioned doctrine of Galen, (page 7).

St. Ives,* and Brisseau,† together with the removal, by St. Ives, and by M. Petit,‡ through an incision of the cornea, of some opaque crystallines which, emerging again after depression, had passed through the

* St. Ives, Malad. des Yeux, in 12mo.

† Brisseau, Traité de la Cataracte, &c. Tournay, 1706. Brisseau first affixed the name of *Chambers* to the *two cavities* which contain the *aqueous humour* of the eye; respecting the *posterior* of which the ancients entertained very erroneous ideas, that led to serious mistakes in their operations for cataract. They conceived that the space between the iris and the crystalline lens, termed the *posterior* chamber, instead of being, as it really is, only a quarter of a line in depth, was at least equal to the space comprised between the cornea and the iris, called the *anterior*, which is ordinarily about six times the depth of the former. And they therefore thought that the needle might be passed across the former with impunity, as its dimensions were supposed to be such as to admit of the cataract being safely lodged in it.

‡ Petit, Mémoire de l'Académ. des Sciences, 1708, p. 242.

pupil into the anterior chamber of the eye, gave rise to more correct views on the subject.

These facts, supported as they were by repeated dissections of cataractous eyes, and subsequently by the repetition of the operation of extraction, tended effectually to supersede the mistaken notions of the ancients, and to establish the real character of the disease.

The above sketch of the history and nature of cataract is deemed sufficiently full and explanatory on the present occasion. I shall now proceed, in the same concise manner, to the next division of my subject.

CHAPTER II.

ON THE ANOMALOUS CHARACTER AND DIFFERENT SPECIES OF CATARACT.

The crystalline lens, the seat of cataract, is a transparent body, of a gelatinous consistence, situated between the other two humours of the eye, and of such increasing firmness from its surface to its centre, as scarcely to be correctly termed a humour. It is inclosed in a somewhat tenacious, but very pellucid skin, or investment, called its capsule; between which, however, and the lens, there is not naturally any connexion or adhesion; a small space or cavity being interposed, containing a few drops of a clear secretion denominated, from its first discoverer, the liquor or fluid of Morgagni, a celebrated anatomist of Pavia.

Cataract, viewed in all its relations and

bearings, constitutes one of the most singular and important among the interesting series of ocular derangements which tend more or less to impair, or wholly to destroy sight. The peculiar structure of the part itself which is the acknowledged seat of the complaint has not hitherto been clearly demonstrated, nor is its mode of existence involved in a less degree of obscurity.

The constitutional species of cataract originates without pain or apparent inflammation; and, although it is sometimes imputed to a variety of fancied causes, it more frequently arises independently of any that can be satisfactorily assigned. The true cataract is likewise a malady so entirely isolated, as to be altogether unconnected with the slightest affection of the surrounding parts.

The pathological relations of the lens exemplify, in a very beautiful manner,

one of the most important laws of the animal economy. I allude to the disposition in diseased action to become stationary, except in certain specific maladies, as cancer, &c.; or circumscribed and limited to the particular tissue in which it originated or was first set up, where it exhibits, in common with textures of a similar character, the same uniformity of symptoms and morbid changes, in whatever situation or organ of the human body such texture is found. But for this wise provision of nature, a disease of the lens, or indeed of any of the constituent parts of the wonderful fabric of the eye, would be liable, if not instantly arrested, to extend to, and implicate the whole assemblage of structures, involving them in inevitable destruction, and occasioning the consequent loss of sight.

Fortunately, however, the complaint is

generally confined to a small part of a small organ; and, by the aid of modern improvements in the surgery of the eye, and by the adaptation of our curative processes to the respective species of the disease, we are enabled to treat them with a degree of success at least equal to that which attends other important operations.

So Protean are the features, and so diversified the nature of cataract, that it assumes a great variety of forms, attacks indiscriminately persons of both sexes and all ages, under every circumstance and habit of life, and even the child before birth. Sometimes it is exceedingly rapid,*

* Richter gives an instance in which cataract was formed with great rapidity. "One case," he states in his work on Cataract, pp. 3 and 4, "I have seen, where it was *formed completely* in the course of *one night*." Mr. Pott, in his Remarks on Cataract, Note, p. 25, observes, "that a cataract may be formed *instantaneously* by *external violence*;" and adds, "that

whilst in the majority of instances it is as remarkably slow, in its progress.

Distinguished by such singular and anomalous characteristics,—added to the consideration of the extreme delicacy of the organ in which the disease resides,—the lively gratification to the patient, and professional eclat to the operator, resulting from its removal,—it is not surprising that this ailment should, for ages, have been an object of the highest attention to practitioners the most eminent for their surgical skill and attainments.

With respect to the different forms of cataract, the first and most important distribution is into *true* or *real*, and *false* or *spurious*. Every obstruction of light

he had seen it four different times." Similar cases are detailed in the former edition of my treatise on this subject, and one in which it occurred *suddenly, without mechanical injury.*

caused by a *visible* alteration of structure in the *posterior* chamber of the eye, between the vitreous humour and the iris, has been included under the generic term cataract.

When the opacity occurs in the crystalline, or its capsule, it is denominated *true* or *real* cataract, and is the result of primary morbid action, either from an internal or constitutional, or an external or accidental cause. When the disease arises from a new-formed deposit in the posterior chamber, or from an adventitious membrane situated between, or agglutinating the anterior capsule and the uvea together, the effect of previous and extended inflammation, it has received the appellation of *false* or *spurious* cataract.

True cataract is likewise subdivided into *lenticular* and *capsular:* distinctions founded upon the circumstance of the lens itself, or the capsule only, having

become opaque. The former, which is the species most frequently met with in practice, exhibits different appearances or modifications, arising from the relative consistence of the crystalline in different cases. According to the nature of the cataract, they have been classed into hard or firm, soft or caseous, fluid or milky. The symptoms indicative of these respective varieties, should be sedulously studied and well understood by operators on the eye; as it is a knowledge of these, which can be acquired only by careful and repeated observation, that must decide us in selecting the most suitable method of affording relief.

Infants are sometimes *born* with the complaint, which is, therefore, called *congenital* cataract, and, like the same disease in the adult, may consist in an opacity either of the lens, the capsule, or both. In such instances, the crystalline may be

in a solid, soft, or fluid state; but, as the celebrated Scarpa justly remarks, in the majority of cases the greater part, or the whole of the lens, has been absorbed, after having lost its pellucidity, by a spontaneous effort of nature during the fœtal period, or gradually after birth.

In proportion to the progress of absorption, the anterior lamella of the capsule retreats upon the posterior until the two fall into contact; when, in consequence of existing inflammation, the probable cause of the disease, they coalesce, and form a more or less dense and opaque *capsular* cataract, called the *primitive* membranous, in contradistinction to the *secondary* membranous, or *capsular*, which occasionally succeeds to the operation of couching, or extraction. If the disease be suffered to remain undisturbed, the part generally acquires an increased degree of firmness and tena-

city, producing the *coriaceous* or *siliquose* cataract.

That peculiar form of the disease characterised by a circumscribed pearly spot in the middle of the lens, or its capsule, is designated the *partial* or *central* cataract.

The opacity of the capsule presents occasionally various configurations and appearances; sometimes being diffused uniformly over the whole surface, whilst in other instances it is disposed irregularly in streaks, bars, or dots, &c. To these varieties the German ophthalmologists have, with more pains than advantage, affixed numerous and corresponding significant names, which I shall forbear to enumerate, as they lead not to any practical or useful end.

Sometimes, in consequence of a blow upon, or a concussion of the eye, the capsule becomes inflamed and thickened, and filled with a fluid, in place of the

absorbed lens, by which it is distended to a large size, and assumes a spherical figure, constituting the *cystic* or *hydatid* cataract.

In another peculiar species of the disease, the opaque lens, having lost its support upon the fossula of the vitreous humour, in consequence of the destruction of its hyaloid membranes, becomes, with the iris, obedient to every motion of the eye; and, on account of its unsteady undulatory character, has been called by the French *cataracte tremblante*, or the *shaking* cataract. The removal of this species is rarely followed by the restoration of sight, the contents of the globe being very generally in a completely disorganised state. Although the marks of this morbid condition of the vitreous humour may, in general, be very easily recognised, the escape of the whole of this humour, and consequent loss of sight, has been made the convenient

apology for the ill success which has, and must ever attend, injudicious attempts to *extract* this species of cataract.

The small portion of transparent fluid interposed, as already stated (p. 16), between the capsule and the lens, sometimes, though very rarely, becomes turbid, forming the Morgagnian or *interstitial* cataract.

Occasionally all the above parts are at the same time affected; a condition of disease which has been denominated *mixed* cataract.

Various other morbid derangements of the organ of vision may also be combined with an opacity of the lens, or its capsule; a description of disease which is termed the *complicated* cataract. Many of these are readily discoverable on examination of the eye by practitioners well versed in ophthalmic surgery; who also are aware that such complication does not neces-

sarily, or in every instance, prevent the success of an appropriate operation.

When the *capsular* cataract, with or without an opacity of the crystalline, has formed preternatural adhesions to the surrounding parts, it is named the *concreted*, or, with more propriety, the *adherent* cataract, and is more or less manageable according to the nature and extent of the connecting medium.

If the opacity be partial only, the sight is simply vitiated and impaired; but if it be uniformly diffused throughout the entire substance of the lens, or its capsule, there is, in that case, a total extinction of all useful vision.

To the above, were it not an useless refinement, other species of cataract might be added: those already enumerated are deemed sufficiently comprehensive for the present occasion.

I shall not detain my reader, with a

view to justify or question the propriety of the numerous subdivisions, or nosological terms, used to denote the varieties of cataract. It was necessary to advert to them, because they are in general use; and a knowledge of their import is indispensable to enable us to understand the writings of authors upon the subject.

The distinctions alluded to ought, unquestionably, to be fully comprehended by every practitioner before he ventures to engage in the different operations for the cure of cataract; otherwise, what is called *spurious* may, as I have actually known to happen, be confounded with the *genuine* disease, and the most serious mistakes be committed in consequence of the want of such information.

CHAPTER III.

SYMPTOMS OF CATARACT.

As I wish, in reference to this part of my undertaking, particularly to direct the attention of the reader to the *early* stage of cataract, I shall point out those symptoms that characterise the disease, and by the presence of which its *commencement*, as well as its most perfect form, may be, in general, satisfactorily ascertained.

The symptoms of cataract are with propriety divided into *external* or *visible*, and *internal* or *occult*, of which latter the patient only is conscious.

The general symptoms of cataract, whether it proceed from a constitutional and unknown cause, or be the result of accident, resemble each other at one period of

the disorder: but in their early stages they are very dissimilar.

In the formation of cataract arising from accident, the external and visible symptoms discover themselves soon after the injury has been inflicted, without being preceded by those internal ones which announce the commencement of the other, or idiopathic species.

The opaque appearance in the axis of vision, depends upon a manifest and great change in the organization of the lens, or its capsule, and is the *first* symptom in the *accidental*, and the *last* in the order of occurrence in the *constitutional* form of cataract.

The origin of this opacity, except in unfavourable cases of a complicated, or inflammatory character, or in such as are the effect of accident, is seldom marked by any preceding pain, or accompanying uneasiness. Sometimes, however, there

are exceptions to this rule; for I have known many instances in which this symptom was ushered in by a great degree of intolerance of light, or morbid sensibility of the eye: an idiopathic ailment which more frequently happens independently of cataract.

The *earliest internal* symptoms of the *incipient* cataract, arising without any assignable cause, and which are experienced by the patient before any perceptible opacity is formed in the pupil, are a slight sense of *weakness* or imperfection of sight, together with a *settled mist* before the eyes, which obscures all objects, and confuses those that are minute.

A greater attention than formerly is found requisite to distinguish *near* objects; and when discerned, they are seen as it were through a semi-transparent, or somewhat turbid fluid, such as a few drops of milk would communicate to a portion of

water; or through a glass which has been smoked, or has received the exhalation of the breath.

This *apparent mist*, and the *indistinctness* of vision, remain *permanent* and *unaltered*, so long as the individual continues in the *same situation* and *degree* of *light*. The *constancy* and *fixedness* of these symptoms distinguish the *nascent* disease from many occasional and transient defects of sight, arising from *hysterics*, or sympathy of the eye with a disordered state of the digestive organs.

These characteristic features of *incipient* cataract, enable us likewise to discriminate it from those ocular hallucinations, the result of a derangement in the function of the optic nerve, or its medullary expansion, the retina; namely, the illusory appearance of black specks, flashes of light, dust, cobwebs, flies, and other fantastic and imaginary objects, which appear

to the patient to float before him in the surrounding air.

These suffusions, as they are technically denominated, have been represented by Maitre-Jan, St. Ives, Baron de Wenzel, and others, as equally demonstrative of the *first* stage of cataract, and palsy of the optic nerve, termed amaurosis, or, more commonly, gutta serena.

To the opinion of these several writers I cannot, however, subscribe; as I am convinced, from very ample observation and inquiries, that, although these symptoms are doubtless sometimes associated with, they are not essential to, nor have any necessary connexion with cataract. They bespeak, in fact, a functional defect in the nerve subservient to vision, and are, with dimness of sight, incidental to some other ophthalmic diseases, of which they are frequently the concomitants. The presence of these symptoms with an opacity of the

lens, ought to become a matter of very serious consideration in reference to the propriety or inexpediency of an operation for the accompanying cataract.

Again, to a patient with *incipient* cataract the flame of a candle does not appear distinct and clear as formerly, but as if surrounded by a *whitish* circle or vaporous halo, which seems broader, and the object less defined, the further he is removed from the light.

When cataract is complicated with a morbid affection of the retina, the flame is equally involved in a *mist;* but, unlike the *white* cloud described above, it exhibits a variety of brilliant colors, and is accompanied also, not unfrequently, with a sense of dull pain or weight at the bottom of the eye, or around the orbit.

The affected organ becomes, likewise, at an early period myopic, viz. the field of vision appears to contract, the patient

being capable of seeing *near* objects only with comparative ease and precision, the more *distant* seeming to be as if enveloped in a *cloud* or thick fog. This defect is probably owing to the increased density or less pervious condition of the opaque lens, and produces the same effect as if the sphericity of the eye itself were actually augmented. At all events we can, on this supposition, account for the advantage which cataractous persons usually derive, for a time, from the use of *convex* glasses which magnify the object.

As lenticular cataract begins likewise in by far the majority of instances at the *centre* of the crystalline, where it is thickest, those who labour under the malady enjoy a greater share of vision in a *moderate* than in a brilliant light. And, consequently, they see better on the approach of evening, or in a gloomy situation,—through a clouded glass,—or with the back turned toward the

window,—than under the full influence of the meridian sun, or of a strong artificial light. To the same circumstance it is owing that objects placed laterally are seen better than those which are situated directly opposite to the patient.

The above phenomena may be explained upon the principle that the pupil, when the eye, independently of the incipient cataract, is in a perfectly healthy state, 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 becoming in the same ratio diminished, the opaque nucleus of the lens effectually resists their transmission to the bottom of the organ of vision.

On the contrary, an eye recently affected with an incomplete gutta serena, (palsy of the optic nerve,) has its sensibility excited by exposure to a vivid light; under which circumstance external objects, as well as those ocular spectra already noticed, are rendered somewhat more perceptible.

With respect to the *external* or *visible* symptoms of cataract, as many of them are of a *peculiar* and *specific* character, so they are more to be depended upon as a basis on which to form our decision than the *internal*. We have already observed (p. 30) that they generally *follow* the *internal* ones, and in the constitutional species this order of succession is invariable: — an indistinctness and dulness of vision being perceptible to the patient for some time before an alteration in the structure of the crystalline manifests itself in the pupil.

To this cause may be ascribed the difficulty that is sometimes experienced in de-

ciding, with certainty, between the *nascent* cataract, and the *mild incipient* gutta serena.

This period of uncertainty and ambiguity as to the source and real nature of the defective sight, is usually of very short duration; for, amongst other characteristic symptoms which betray themselves, a slight *general haziness* or *muddiness*, situated immediately behind the pupil in the axis of the eye, speedily makes its appearance, and removes all doubt upon the subject.

Around this turbid substance is a black ring, encircling the more or less opaque nucleus of the lens, which becomes apparent in the greatest degree at such times as the pupil is largely dilated, either naturally, or by artificial means.

The appearance of the central speck sufficiently distinguishes cataract, on the one hand, from gutta serena, in which the cloudiness frequently observable behind the pupil is more deep-seated and its

appearance more concave; and, on the other, from those complaints in which the obstacle preventing vision is placed in the *anterior* chamber of the eye, or in the cornea.

From the centre the opacity gradually extends itself to the circumference, or edge of the crystalline; the imperfection of sight going on in nearly the same proportion, until, by the density of the whole lens, every object is rendered in a greater or less degree obscure, or altogether invisible. As the opacity increases, the fore part of the lens becomes more conspicuous; which appearance led the ancients to believe that cataract moved forwards, and actually approached the pupil. This is, however, a mere delusion, the cataract itself remaining stationary. The phenomenon is entirely owing to the external superficies becoming more opaque; the same object, which reflects a greater

light, seeming to be placed nearer on that account. Therefore, the more the light is reflected as the complaint advances, the less in proportion is transmitted to the retina.

When the obscurity of vision no longer increases, the cataract is said to be *mature* or *ripe;* a term used to express its consistence, and supposed fitness for an operation. At this period the patient is still capable of distinguishing the light of the sun from absolute darkness, but cannot discern the colours and forms of bodies. The opacity sometimes assumes a variety of tints, from the palest azure to a milk-white colour, which diversity of appearance has been usually characterised by corresponding significant names. The marks conceived to indicate the relative hardness or softness of cataract are, however, unfortunately too illusory, and not sufficiently constant, to be implicitly de-

pended upon as true and infallible criteria of the state and condition of the diseased lens.

In some instances, indeed, so inconsiderable is the shade presented by the cataract, especially if the posterior hemisphere of the capsule be affected, and so nearly does the pupil preserve its natural aspect on such occasions, that the greatest experience and knowledge of ophthalmic complaints are indispensable for the accurate discrimination of that form of the disease.

It demands, in fact, a more intimate acquaintance with the various, and oftentimes complicated derangements of the eye, than is generally apprehended, to be able, under all circumstances, to recognise and distinguish the kind of cataract alluded to, and especially in its early stage, from ailments nearly analogous in their most prominent features;—and like-

wise from those extravasations of lymph which are occasionally formed upon the capsule of the lens, or between the deep-seated lamellæ of the cornea.

CHAPTER III.

ON THE REMOVAL OF CATARACT BY THE ORDINARY OPERATIONS OF COUCHING AND EXTRACTION.

HAVING, in the foregoing pages, presented the reader with the history and symptoms of cataract, it will be proper, in the next place, to direct his attention to the several methods which have been adopted for its cure.

Several eminent writers, both ancient and modern, assert that they have succeeded, by the aid of remedies externally applied and internally exhibited, in effecting the absorption, or, as it was called, the dissipation of the cataract.* Such

* "Suffusio cum *recens* incidit, *medicamentis* sæpè discutitur."—CELSUS de Medicin. lib. vii. c. 7. sec. 13.

an event, allowing it to have really occurred, has probably been restricted to those cases in which the nature of the exciting cause, or the attendant phenomena, justify the suspicion that inflammation, either idiopathic or symptomatic, was connected with, or might be regarded as the primary source of the disease.

In instances of this description, it is

See also Fabric. ab Aquapend. Oper. Chirurg. cap. de Suffusione, p. 23.

Boerhaave de Morb. Ocul. p. 119. Paris, 1748.

Stahl, Ratio Medendi, vol. iii. Vindob. 1787. 8vo.

Hovius, in his Tractat. de Circul. Humor. in Ocul. 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. The candid Heister, however, after much inquiry on the subject, regards the whole statement as a vain and empty boast.

Sauvages, Nosol. Method. p. 724. Amsterdam, 1763.

Lemoin, Thèse aux Ecoles de Médecine. Paris, 1728.

Ware's Translation of Wenzel, p. 13.

possible, at least, to retard the further progress of the complaint; and when the opacity is confined to the capsule, as in one kind of spurious cataract, its entire removal may sometimes be effected by the *early* application of means calculated, first, to subdue the diseased action, and, subsequently, to promote absorption.

When, however, the malady is decidedly established, and is the result of an internal and occult cause, I believe no reliance can be placed on any of the boasted remedies which have by some, and particularly foreign writers, been supposed to possess an almost specific influence in resolving the opacity.

As it is now generally admitted by the best practitioners, that the cure, at least in the advanced stage of cataract, and in the absence of any inflammatory excitement, can be achieved only by operative surgery, the inquiries on the subject have

been properly directed to the consideration of the most efficient and appropriate method of removing it by mechanical expedients.

For this purpose various ingenious operations have been devised, the object of each of which, for the radical cure of the disease, must be ultimately the same, viz. *the permanent removal of the cataract from the axis of vision.*

And that mode of operating is undoubtedly the most eligible, which can be performed with the greatest facility, — with the smallest degree of present pain and subsequent danger, — which is available at the earliest period after the disease has made its appearance, — and which accomplishes most perfectly the object we have in view, namely, — the restoration of sight; thus combining every attainable benefit with the fewest avoidable inconveniences.

All these advantages seem united, in the greatest degree, in the improved method of cure which will be recommended in the ensuing chapter; and which is founded upon a more enlarged and philosophical view of the resources of nature—principally in regard to the modern doctrine of absorption in the human body.

Before, however, submitting the particulars to the consideration of the public, it seems imperative upon me to demonstrate the expediency of the measure, by pointing out the defects and dangers, and occasional inapplicability, of the ordinary processes of couching and extraction.

If I can prove, by an appeal to undeniable facts, that their use is limited to certain states and species of the disease—that such a combination of favourable circumstances as is not generally met with is indispensable to their success—that the more ancient of these processes (couching),

in addition to other and more serious inconveniences, is frequently found to afford only temporary relief; whilst the modern process (extraction) is not only difficult of execution, but likewise very precarious in its issue—no apology, it is presumed, can be required for introducing a succedaneum.

And the superior eligibility of the method of treatment suggested in this work will be readily admitted, if it can be demonstrated that, whilst it is, in a great measure, free from the objections just enumerated, it commands advantages to which neither of the operations at present adopted can lay any distinct or legitimate claim.

Until of late years, the cure of cataract had been attempted only by couching, or extraction. The former of these surgical processes is of very great antiquity. Celsus, who lived soon after the commencement of the Christian era, describes, and

is generally esteemed the inventor of the operation.*

From certain passages, however, in the works of the elder Pliny,† and from others in those of Rhazes,‡ physician to the public hospital at Bagdad, and of Avicenna,‖ called the Prince of Arabian philosophers; it is sufficiently manifest, that the operation of couching was understood and adopted by the ancients, many ages before the period usually assigned for the discovery of that process. Dr. Scott,§ who practised for many years with great and de-

* Celsus de Medicina, lib. vii. c. 7. sect. 13.

† Pliny's Natural History, lib. xxix. c. 1. This voluminous work was first printed at Venice in 1469, and was translated by Philemon Holland, in 1601.

‡ Rhazes, lib. ii. It is to this author that we are indebted for the first distinct account of the small-pox.

‖ Avicenna, Canon. Medicin. lib. iii. tract. 1.

§ Vide the Journal of Science and the Arts, No. III. pp. 68, 69.

served success at Bombay, has published a particularly interesting account of the operation of couching, which the natives of India have been immemorially in the habit of using. As their mode of performing the operation is in many respects peculiar, and different from that described by the elegant Roman writer, he thinks it is entitled to the claim of originality, and that it is probably of higher antiquity than the Celsean method of treatment.

The operation of couching consists in removing the opaque lens, which forms the cataract, from its situation in the axis of the eye, into the vitreous humour below the margin of the pupil; by which means the rays of light are again admitted to the retina, and the patient is restored to sight. The operation is performed by a slender instrument, which, from its general form, is usually denominated a needle.

When we take into consideration the

ignorance of our ancestors concerning the exact seat and 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 — the direction which the instrument ought to take when introduced into the eye, together with the ill-constructed form of the one they employed, and their rude mode of using it, added to their total neglect or mismanagement of the preparatory and after-treatment, — it cannot excite our surprise that an operation, thus circumstanced, should prove highly hazardous and painful, and only incidentally successful.

That eminent surgeon and anatomist Fabricius ab Aquapendente,* who flourished in the seventeenth century, speaks in very discouraging terms respecting the

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

generally unfavourable issue of couching in the hands of contemporary practitioners. And Professor Raw was in the habit of observing, in his lectures, " that he regarded the operation of couching as the most uncertain in all surgery."* Heister, one of the most celebrated and able surgeons of his time, says, " though the operation is easy to be performed, the success of it is very precarious;"† so that, " amongst the great variety 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 adds, likewise, " that he saw many miserable objects in tormenting pain, arising from inflamma-

* Heister's Med. Chir. and Anatom. Observ. pp. 5 and 6.

† Heister's Surgery, p. ii. sect. xi. p. 407.

tion consequent upon the operation; and that of those who regained their sight, there was scarcely one in ten who did not, sooner or later, lose it again!"*

The above, we may presume, is a faithful representation of the unfortunate effects of couching, as then performed. "The troublesome ophthalmies, and the uncertainty of success which always attended it, deterred," Mr. Sharpe† observes, "most regular practitioners from undertaking it," and thus caused this method of treatment to devolve into the hands of empirics who, by their ignorance and ill success, confirmed the discredit into which it had previously fallen, and proved the necessity of great reformation, or a total abandonment of the process which had, for many ages,

* Wathen's Dissertation on Cataract, p. 47 et seq.

† Sharpe's Treatise on the Operations of Surgery, chap. 28, p. 155.

been exclusively adopted for the cure of cataract.

In this degraded and truly discouraging state, the operation of couching continued until the present century, when it engaged the attention of several surgeons of great eminence. Callisen, Pott, Scarpa, Lucas, Hey, and others, dedicated their talents to the consideration of this subject; and, by their joint labours and suggestions, contributed very essentially to lessen the imperfections incident to the old mode of depression, and to facilitate and simplify the practice.

Notwithstanding, however, the recent and great improvements which have been introduced, many and weighty objections still attach to the operation of couching. In adverting to them, I shall not avail myself of the formidable list brought against it by its avowed opponents: nor

shall I lay any stress upon the injurious effects which are said to result from penetrating the several coats of the eye; convinced as I am that the consequences of such wounds are greatly exaggerated, and are, indeed, more fanciful than real.

It is not my design, on the present occasion, to institute a full and critical inquiry into the respective merits and defects of the various methods by which the operations termed couching, depression, displacement, or reclination, are achieved. Suffice it to observe, that the intention of all, however diversified the actual manner of performing them, is essentially the same. The principal difference of the processes adopted for this purpose turns upon the relative aspect and position, whether vertical or horizontal, which the cataract is made to assume when buried in the vitreous humour.

The most ancient mode of effecting this

object, consists in simply depressing the opaque crystalline into the vitreous humour in a perpendicular direction, so that it may no longer interfere with the passage of the rays of light to the retina. But, in a small eye, there is not sufficient space to admit of a full-sized lens being thus sunk below the level of the pupil without the risk of injuring the iris, the ciliary processes, and sometimes even the choroid, and retina.

Independently of the liability of the cataract after this operation to re-ascend and produce blindness again, the slow and destructive inflammation which was apt to follow the mischief inflicted upon the contents of the eye, and, with great suffering, ultimately to terminate in the extinction of vision,*—caused the process

* "The real objection to couching is the ultimate step of the operation, viz. the breaking up of the fine texture that fills the globe, by the forcible depression of the lens, and the consequent derangement of the

to fall into general discredit, and finally to be abandoned.

In consequence of these frequent failures, and their injurious effects, the original method of couching has been properly superseded by that of Scarpa. This latter is performed by firmly fixing his curved needle near the internal edge of the cataract, and by moving the instrument backwards, downwards, and outwards, in the arc of a circle, to lodge the lens deep in the vitreous humour in the space between the insertion of the rectus inferior and rectus externus muscles. The

parts connected with them. Hence arises a slow insidious inflammation, marked by a gradual development of the symptoms of disorganization, viz. congestion of vessels, turbid humours, flaccid tunics, and palsied iris. The sight, instead of improving when the immediate effects of the injury are passed away, remains habitually weak and dim, or declines and fades altogether."—TRAVERS's *Synopsis of the Diseases of the Eye*, p. 318.

anterior surface of the crystalline is thus placed upwards, and the posterior downwards.

More recently, Willberg, Beer, and other German oculists, have reduced the process to still greater simplicity, by directing the flat side of the needle to be applied to the anterior and upper part of the opaque lens, and gently to tilt it backwards, so as to place it in the space between the under and outer straight muscles. The cataract being by this process changed from an upright to a *recumbent* position, its anterior surface being upwards and its posterior downwards, the operation has received the appellation of *reclination*. It may be performed by passing the needle through the cornea and pupil, as recommended by Professor Langenbeck, which is called the *anterior* operation, or behind the iris as in the common process of couching, which is termed the *posterior* operation.

Both these modifications of the old operation possess the advantage of being more easy of execution, and much less liable to inflict injury upon the sensitive membranes of the visual organ; at the same time that the cataract is not so much disposed, when thus depressed, to emerge from its new situation in the vitreous humour.

But although couching, in all its forms, certainly admits of being performed with more facility, and less attention is required to minute particulars than in extraction, still it cannot be denied that, whatever reason some expert operators may have to be satisfied with the process, its *general* success is by no means so frequent or perfect as, from its apparent simplicity, we might be led to expect.

The dangers of displacement are either immediate or consecutive, and consist principally in the mischief done to the internal parts of the eye at the time of

the operation; or, by the pressure which the opaque lens is liable, by its casual re-ascension, to make upon the iris.

Supposing the cataract to be hard, and the several textures concerned in the operation free from disease, still a considerable share of dexterity and address, and much practical experience, are requisite on the part of the surgeon, to enable him to remove the opaque crystalline from its natural situation, so as to place it securely in the vitreous humour, without in any degree interfering with the iris, the ciliary processes, or the retina.

The accomplishment of this object does not, indeed, depend exclusively upon the skill of the practitioner, being influenced materially by the relative state of the vitreous humour; which may be found in one of two opposite conditions. Should its cellular fabric prove firmer than usual, a proportionably greater degree of force

must be employed, in order to lodge the cataract in it. If this additional pressure be incautiously applied, the vitreous cells may suddenly yield to the instrument, by which the hard lens may inadvertently be propelled against the retina. Or, if the needle, under such circumstances, be applied in the manner recommended for the process of reclination, the opaque crystalline may revolve on its axis, and fall into contact with the posterior surface of the iris; and in either way produce serious inconvenience.

If, on the contrary, the vitreous humour, in consequence of internal disorganising inflammation, has lost its usual character and become fluid, it will be no longer capable of affording the proper support to the cataract: and, on being separated from its connexion with the zona ciliaris, it will, by virtue of its own superior specific gravity, subside to the bottom of the

dissolved humour. Its movements, being then free and unimpeded, will necessarily correspond with the motions of the head or eye-ball. The lens, in consequence, will be liable to impinge against the iris, or to escape, when the body is bent forward, through the pupil into the anterior chamber, and give rise to considerable irritation.*

In the event even of the cataract having been properly depressed, there is a constant nisus in the vitreous humour, especially if it happen to be preternaturally firm, by the equal resistance it affords in every part except that where its structure has been broken by the forcible projection of the crystalline lens into its substance, to cause that extraneous body to return again by the same route at which it at first gained

* See a Case of this description in St. Ives' work on Diseases of the Eye, by Stockton, p. 263.

admission. This tendency in some instances is so strong that, aided somewhat by the action of the external muscles of the eye, on raising or withdrawing the needle, the opaque lens is seen suddenly to start up, as if moved by a spring; a form of disease termed the *elastic* cataract. This effect is probably owing more to the connexion of its capsule with the hyaloid membrane not having been wholly destroyed, than to the state of the vitreous humour.

In co-operation with the foregoing causes, any sudden concussion of, or unusual pressure upon the eye-ball, may cause the depressed cataract to emerge from its imprisonment in the vitreous humour. And when this circumstance happens, the opaque lens may very possibly not resume precisely its original position, but one where, by its pressure against the posterior surface of the iris,

slow irritative inflammation, and eventual loss of sight, may ensue.

I am aware that, under the supposed contingency, the needle may be re-introduced, and the lens be again depressed; an operation which sometimes requires a *number* of *repetitions;* each of which is more or less hazardous, and, to say the least of them, highly distressing and alarming to the patient.

Again, in instances of cataract of the lens, its capsule sometimes remains unaffected and transparent. Such cases, when they do occur, demand the closest observation and considerable experience to enable us to ascertain whether, in the different manœuvres with the needle, the *anterior* portion of the capsule has altogether or partially escaped laceration; or, whether the lens has descended, with its envelope, entire. On the former supposition, *secondary* cataract may ensue.

Nor is this the only danger. The hard cataract, being pressed through the posterior capsule, and resting on a layer of vitreous humour inclosed in the external hyaloid membrane, will, by its weight and irritation as a foreign body, have a natural tendency to promote the absorption of the soft bed upon which it reposes, and ultimately to press upon the sensitive retina. At the same time, as the vitreous cells, when thus removed, are never regenerated, it follows, that the dislocated opaque crystalline will be less firmly fixed to its place of confinement, and, thus becoming itself the subject of gradual absorption, we may account for the disposition which the nucleus of a depressed lens has to re-ascend.

When the opaque lens is not divested of its capsule, absorption cannot take place. The cataract, in consequence, has been known to exist undiminished in size

for many years;* and continuing amenable throughout that period to the influence of the causes above enumerated, it may emerge and produce the most serious effects in the form of slow inflammation. This may terminate, if not prevented, in closure of the pupil, dissolution of the vitreous humour, palsy of the nerve of vision, or suppuration of the eye.

Upon the whole, if to the above dangers, which are liable to succeed to the operation by displacement, however skilfully performed, be added the consideration of the very limited number of cases to which any one of its several processes is applicable, we must, I think, pause before we subscribe to the opinion of

* De Gravers, on Diseases of the Eye and Ear, p. 105, speaks of three dissections of the eye in which the opaque lens had remained unabsorbed in the vitreous humour for the respective periods of seven, thirteen, and seventeen years!

those who consider it as alike easy, safe, and effectual.

In fact, I would venture to offer, as the result of my own observation and experience on this point, that depression, in its least exceptionable form, ought to be restricted altogether to those cases of *hard* cataract in which, from the formation of the eye, the state of the parts implicated in the operation, or other contingent circumstances, extraction cannot be made equally available. To the soft, fluid, or capsular species, neither couching nor extraction is adapted; these respective varieties of the disease being far more easily, and, indeed, almost only manageable by division or laceration, and the subsequent process of absorption.

In performing any of the more important operations in surgery, no practitioner can perhaps claim an entire exemption from occasional embarrassments and dis-

appointments. We ought, however, to be guided in the preference we give to this or that mode of cure, by its superior suitableness to the object proposed, and to the nature of each individual case, and by its general issue in such instances, rather than by the facility with which the operation can be executed.

Such, then, are the principal objections that may be urged against the operation of couching; and their weight and validity cannot fail, I think, to be readily acknowledged, whilst they furnish a sufficient apology for the qualified approbation which I am inclined to bestow on the process.

We now proceed to consider the general merits of the plan of *extracting* the cataract. This operation, though confessedly beset with many difficulties and dangers, and with the further disadvantage that, in the event of failure, it can rarely be repeated

like couching, yet, when it does succeed, the cure is both radical and complete. Whereas, however effectually the cataract may have been *depressed*, the restoration of sight is frequently only of temporary duration; the patient being always liable, at any moment of his existence, so long as the opaque lens remains unabsorbed, to a return of his former blindness, and with it possibly, a train of the most alarming and painful symptoms.

Accident, that fruitful source of improvement, gave birth to the rival process of removing altogether the opaque lens through an incision of the transparent cornea. We have undeniable proofs from the writings of several Arabian authors (Avicenna, Rhazes, &c.), that this operation, which has been introduced into European practice not much longer than seventy years, was practised in the East so early as during the first century. In conse-

quence, however, of a false and visionary idea having supplanted the then prevalent and true notion relative to the nature of cataract, the method of operating originally adopted was renounced, and exchanged for one according with the new views that were entertained of the character of the disease. Instead of removing the opaque crystalline, as formerly, through an opening in the cornea, the attempt was made to withdraw the thin pellicle which was supposed to constitute cataract, by means of hooks, and other instruments adapted to that purpose.*

At length the old method was again revived, in consequence of a suggestion derived from the occasional escape of the opaque crystalline after the operation of couching, and from other causes, into the

* Rocho Mathioli Scultet. Armam. Chirurg.
Freytag. Thèse soutenue à Strasbourg en 1721.
Heister, Institut. Chir. p. 480. 4to.

anterior chamber of the eye, and its subsequent and safe removal through a section of the cornea. For this practice the following cases are generally acknowledged to have laid the groundwork, although it is not doubted that the crystalline had frequently been extracted through an incision of the cornea by Woolhouse, Taylor, and other itinerant oculists.

St. Ives, in the year 1707, was called to attend a merchant of Sedan, who went to Paris to seek relief on account of a shaking cataract, which had passed through the pupil into the anterior chamber. It pressed so much on the iris, that it caused very considerable pain in the head, and had deprived him of sleep for three months. "I had never," says St. Ives, "heard of the like operation; but, reflecting that I did not hesitate to open the cornea to evacuate the matter of an abscess lodged behind it, I conceived I might do the same

thing for the evacuation of a solid body, and I operated in the same manner. On examining the substance thus extracted, it was found to resemble plaster. I afterwards placed the patient on his back; and M. Mery and I found the next morning that he slept well, which he had not done for a long time, — that the wound was cicatrized, — and the aqueous humour, which had been lost, was completely restored." *

The result of this case afforded the most convincing proof that cataract consists in an opacity of the crystalline lens, and that it might be removed through a section of the cornea.

" M. Mery was also present the following year with St. Ives, at the removal, in a similar manner, by the celebrated surgeon Petit, of an opaque lens that had been

* St. Ives on Diseases of the Eye, translated by Stockton, p. 263.

depressed *some years* before, but which, in consequence of a sudden exertion, emerging again, had passed through the pupil and lodged between the iris and cornea. M. Petit, having first pierced the cornea with a needle, cut it open with a lancet, and withdrew what was discovered to be the crystalline. The priest was soon after perfectly cured; and he was seen in Paris by St. Ives a year afterwards, when he could read perfectly well with cataract-spectacles."*

The success of these two operations encouraged M. Mery to recommend the adoption of the same practice in all cases of cataract; rationally concluding that, as he had seen the opaque crystalline dislodged from its seat by accident, it might certainly be removed by the skill of the operator, and be brought away by extrac-

* St. Ives on Diseases of the Eye, translated by Stockton, p. 264.

tion as well in one case as in the other. However, as it does not appear that he ever performed the operation which he ingeniously suggested, nothing further was, I believe, made known on the subject, until the hint derived from the above cases of St. Ives and Petit was reduced to practice by M. Daviel, after many fruitless attempts to render couching more successful; and the whole particulars were published by that celebrated French surgeon, in the year 1745.

We cannot be surprised at the eagerness with which the new operation was embraced, when we reflect upon the ill success of couching, as it had been previously performed. Novelty, and the apparently eradicative nature of the operation, attracted and biassed in its favour some of the most expert surgeons of the age. Their great skill and superior anatomical knowledge gave them courage to

venture upon so bold an experiment, and enabled them to surmount many of its difficulties, and to secure for it a portion of success confessedly greater than had attended the then defective mode of performing the old operation. Hence, couching declined in credit and reputation in proportion as the fair and prosperous events of extraction were most industriously proclaimed and exaggerated; whilst, as Mr. Pott observes, its manifold failures and unhappy consequences were as carefully concealed.

The operation, however, as described by its original inventor, was encumbered with a multiplicity and great superfluity of instruments, which rendered its performance no less difficult and embarrassing to the surgeon, than tedious and distressing to the patient. Baron de Wenzel, Richter, and other distinguished advocates for the practice, have, by their combined

talents and ingenuity, greatly simplified the process; and, availing themselves of the various modifications introduced by different practitioners, reduced the apparatus, and the several manipulations of the operation, nearly to the state in which it is at present performed.

My object in this work is not to detail the particulars of the operations of couching and extraction. I aim at nothing beyond giving such a general view of their nature, and of the mode of performing them, as shall enable an intelligent and attentive reader to comprehend the force and application of my reasoning. Those who are desirous of more ample information on these points, I must refer to the distinguished authors who have written professedly on these subjects; as Callisen, Pott, Scarpa, Hey, &c. on couching; and to the treatises of Wenzel, Bischoff, Demours, Wathen, and Richter, with

several more modern publications, on extraction.

The latter operation consists in making, with a proper instrument called a cataract-knife, an adequate opening into the transparent cornea; and, after puncturing or lacerating the capsule, to expel, with the aid of gentle pressure, the opaque lens through the pupil, and thence out of the eye by way of the wounded cornea. The rays of light are then again admitted to the retina, and the patient is restored to sight.

However simple and easy of accomplishment the process of extraction may appear as described in books, it is to be regretted that an operation, confessedly the neatest, the most imposing, and the most satisfactory, when successful, of any in surgery, should prove one of the most difficult of execution,—should be found exceedingly limited in its use and applica-

tion, — and, what is worse, liable to many and serious dangers and contingencies, which neither skill nor prudence on the part of the surgeon can, at all times, control or prevent.

On the first point little need be advanced, as it is generally admitted to be so difficult as to baffle the ordinary dexterity of practitioners, and to demand very frequent opportunities to be able to acquire the skill necessary to perform the operation with adroitness and success. Callisen says, when speaking of the operation, " that it requires such consummate dexterity as can be the attribute of few only of the general mass of practitioners." * That eminent surgeon, Mr. Sharpe, in his " Critical Inquiry," cautiously but candidly admits, that " the difficulty of performing the operation is too great to be

* Systema Chirurg. Hodiern. pars poster. p. 637.

universally practised." "No operation in surgery, I am well satisfied," says Mr. Travers, "requires an equal degree of temper and experience for its accurate and successful performance. The Baron de Wenzel is reported to have said that he 'had spoiled a hatful of eyes' before he had learned to extract. This was doubtless a figure of speech; but it serves to shew the appreciation of its difficulty by a great master of the art."*

If it were necessary to enforce what is the general feeling on the subject, I could readily adduce a long list of authorities to the same effect.

With regard to the partial applicability of extraction, it is but fair to observe, that this operation, like many others, has frequently proved unavailing, in consequence of the improper selection of cases for this

* Travers's Synopsis of the Diseases of the Eye, p. 323.

mode of practice. The several processes of extraction, displacement, or division, are not equally favourable to every variety of cataract; a successful result depends, indeed, as much upon the happy adaptation of the curative means to the nature of the disease, and to the state of the parts concerned in the operation, as to any dexterity and precision in its performance.

In respect to extraction, then, I will venture to assert, from a large share of observation and experience, that, like couching, it can only be necessary or proper when the opaque lens is *hard;* and that its adoption, in cases even of this description, must be determined by the state of the parts implicated in the operation. In those instances in which, from existing phenomena, there is reason to believe that the crystalline has been suffered to become indurated, and neither the form of the eye, nor the accompanying symp-

toms forbid its removal through a section of the transparent cornea, so far am I from raising my voice against extraction, that I have long been, and am still in the habit of resorting to it; and with a share of success by no means inferior, I will venture to believe, to that of the most fortunate operator. I may add, that in such instances as those alluded to, and modified according to the circumstances of the case, I esteem it the most eligible plan that can be selected, notwithstanding its acknowledged difficulties and incidental dangers.

Indeed, looking only to the radical cure afforded by extraction if it prove successful—the little disturbance it occasions to the internal parts of the eye—the short space of time usually required for the accomplishment of our object, as compared with that in the process by absorption,

and the superior eclat attending the performance of the operation—it would offer irresistible temptations to the surgeon, were there not drawbacks such as, in many instances, more than counterbalance these otherwise strong recommendations in its favour.

One of the first and most prominent objections, and which applies equally to couching, is the necessity of waiting until the opaque lens may have become what, by a misapplication of terms, is called *ripe*, or has acquired an adequate degree of *firmness* to admit of the operation. I shall have occasion to enlarge on this point in the next section, and will not, therefore, dwell upon it at present.

In illustration of the partial utility of extraction it may be observed, that its great modern champion Baron Wenzel admits that, " in the case of children,

born with cataract, the operation becomes almost impracticable."* "On children," says Mr. Wathen,† "it can never be safe to perform either of the operations of couching, or extraction." The *absorptive* practice, indeed, is the only one applicable to cases of cataract in early infancy; and for its proper and successful adoption we are indebted to the genius and talent of the late Mr. Saunders.

But there are a great number and variety of external, as well as internal local causes, the presence of which, in the adult, would be found more or less unfavourable to, and some of sufficient importance to forbid altogether, the operation by extraction.

In the first class may be reckoned those which relate to different affections of the palpebræ or eye-lids, which ought to

* Ware's Translation of Wenzel, pp. 2 and 3.

† Wathen's Dissertation on Extraction, p. 39.

possess their natural and healthy character, and be free from inflammation, œdema, and encysted tumours. An involuntary or spasmodic action of them might also occasion serious mischief, either at the moment of the operation, or after its performance, by disturbing the accurate adjustment of the lips of the wound in the transparent cornea.

If the eye-lids, in consequence of original formation, or preceding inflammation, are thickened, or adhere at their external angles, in their contracted state the operation would be rendered neither easy nor safe; and, even if performed, much subsequent mischief might result from their pressure upon the cornea.

The inversion of the cilia or eye-lashes, if not detected before the operation is performed, might, by their subsequent irritation upon the eye, be the cause of great and destructive inflammation. A

preternatural flow of tears, arising either from excitement of the gland which secretes them, or from its sympathy with the conjunctiva, or other parts of the organ of vision in a state of irritation or inflammation, would tend to prevent the union of the wound by the natural process, and thus endanger the loss of the eye.

Impediments of another description apply to the eye itself, and are generally of a more formidable nature than those just enumerated.

In respect to the globe, it may be too large and protuberant; a state of the eye which is equally disadvantageous both during, and after extraction. As soon as the section of the cornea is completed, the resistance which it opposed, while whole, to the contents of the organ, being removed, the pressure of the lids on the one hand, added to the action of the external muscles on the other, would be very

apt to occasion a sudden ejection of the opaque lens, and with it a large portion of the vitreous humour, and occasionally also a protrusion or prolapse of the iris. After the operation has been performed, in this state of the eye, the pressure and motion of the lower lid against the cornea would be liable to disarrange and separate the edges of the incision, and thus tend to interrupt their adhesion.

On the contrary, should the eye-ball be diminutive in size, or sunk deep in the orbit, a transverse section through the transparent cornea could not be effected without difficulty, and consequently, in such a case, extraction becomes nearly impracticable.

The state of the cornea may, in various ways, be such as to render the operation altogether inexpedient, or even dangerous to the organ of vision. The presence of inflammation would, of course, forbid its

performance. But the sequelæ, or consequences of that morbid excitement either in the conjunctiva, or in the substance of the cornea, are frequently such as to prove equally unfavourable to the success of an operation. I allude to a nebulous, misty, or varicose state of these parts; under which circumstance an incision of the transparent cornea would, in all probability, be productive of a return of the inflammatory symptoms, and end in ulceration, slough, and the destruction of the eye.

Again, the cornea may have become, from disease or old age, considerably flattened in its external surface; a form which must render every attempt to effect a proper flap in the cornea nearly abortive.

If to this impediment be added a convex or bulging iris, the dimension or capacity of the anterior chamber will be still more contracted, and preclude the necessary

space for the passage of the knife across it, so as to allow of a sufficiently large opening to be made in the cornea, for the subsequent removal of the cataract. This condition of the eye furnishes an insuperable objection to extraction: and another, scarcely less weighty, is a widely dilated, or a permanently contracted pupil. The former would facilitate the escape of the vitreous humour, and the protrusion of the iris;—the latter would make the extraction of the opaque lens so very difficult and dangerous, that the most zealous advocates for the practice concur in forbidding its performance under such circumstances.

In reference to the state of the cataract, we have already expressed our decided opinion, that *hardness* is indispensably requisite to fit it either for the process of couching, or extraction. But, as this is a condition of the opaque crystalline

by no means constant, whatever the age of the cataract may be, it follows on this supposition that, in every other species of the disease, the operation in question must be inapplicable. Again, the lens may adhere to the posterior surface of the capsule; a peculiarity which furnishes an insurmountable obstacle to its safe removal by extraction.

Some time since I was consulted for a case of this description; and, conceiving it to be one which, under all the circumstances, called for the last-mentioned operation, I attempted to remove the hard opaque lens through a section of the cornea. Finding, however, after the first steps of the operation had been successfully executed, that my wishes could not be accomplished without risk of evacuating the greater part of the vitreous humour, I thought it most prudent to desist. The wound of the cornea healed without in-

convenience, and, indeed, without any consciousness on the part of the patient that the section had been made. The proposal to restore vision by a different process was rendered nugatory by the circumstance of another professional gentleman having been subsequently called to the case. The oculist, probably not being aware of the failure of my endeavours, or of the real character of the disease, boldly proposed to remove the cataract by extraction. The result proved the accuracy of my judgment; for with the opaque crystalline so large a portion of the vitreous humour escaped, that the eye was completely lost.

In all cases of *capsular* cataract, the simple operation of extraction is obviously improper, and highly hazardous. In a disorganised state of the vitreous humour, the not uncommon effect of internal ophthalmia, or the long-continued pressure of

a large cataract, the most dangerous consequences may be anticipated from the operation of extraction.

Professor Bart very properly "looks upon it as one of the most unfortunate instances that could possibly occur either to the patient, or the operator. When the vitreous humour is in this dissolved state, it is almost impossible to succeed with the operation, for even the most gentle pressure is sufficient to make it ooze out from above the lens; and, if the pressure be continued, the whole of that humour will be discharged before the lens can be made to move."*

Mr. B. Bell declares that "cataract, complicated with a dissolution of the vitreous humour, is so entirely hopeless and irremediable, that no operation, either by depression or extraction, should be ad-

* Richter's Treatise on the Extraction of the Cataract, p. 102.

vised for it; and for this reason, that the operation has never, in any instance of this kind of cataract, been known to succeed: and, for the most part, Mr. Peltier observes, it is productive of very dreadful pain, and the most violent degree of inflammation he ever met with. In general, too, pain and inflammation induced in this manner, remain fixed and permanent, without yielding in any degree to the common remedies."*

I cannot better illustrate this subject than by mentioning the following anecdote. When the celebrated Assalini, who attended Buonaparte in his Egyptian expedition, was in this country a few years since, he visited me, and requested that I would afford him an opportunity to witness an operation agreeably to the method described in my "Treatise on Cataract;" with the contents of which work he did

* Bell's Surgery, vol. iv. p. 312.

me the honour, at the same time, to express himself much gratified. I replied, that it would give me the greatest pleasure to accede to his wishes, on the easy condition of his consenting, in return, to allow me to admire his skill in performing the operation of extraction.

Preliminaries being thus settled to our mutual satisfaction, on the day agreed upon, five patients were brought from my "Institution for the Cure of Cataract;" and from courtesy, I begged he would select any of the number he might prefer, not only for the display of his own dexterity, but likewise for the subject of the absorptive process. The learned and ingenious professor very naturally fixed upon the case which he deemed most favourable for his purpose; and, with equal promptitude and steadiness, proceeded to make the section, in the usual manner, through the inferior half

of the cornea of the left eye, with the greatest precision and neatness. Upon puncturing the capsule with the kistitome of La Faye, and attempting, by a slight degree of pressure, to expel the opaque lens through the opening in the cornea, instead of the cataract advancing, it suddenly disappeared behind the iris, the vitreous humour having been found in a state of solution.*

It was not without repeated efforts with the hook that the lens became at length, as Wenzel expresses it, "harpooned," when it was withdrawn from the eye. The tediousness of the process, and the injury

* I am not ignorant that this state of the vitreous humour is said to be indicated by a soft unresisting sensation, on pressure, upon the eye-ball. But, until some portion of the contents of the cells of that humour is absorbed, the organ will retain a considerable degree of *firmness*. Its precise condition, therefore, cannot at all times be clearly ascertained before the operation is performed.

done to the internal parts of the eye, caused a most violent inflammation to ensue, which, after protracted sufferings, at length terminated in suppuration, and destruction of the eye.

Availing myself of the hint afforded by the result of this operation, the ill success of which could not, in any degree, be imputed to a want of skill in the operator, I determined to adopt the absorptive process with the right eye; and I am happy to add, that it succeeded in restoring the patient's sight. The case submitted to my management, with the needle, terminated so fortunately that, in six weeks after the operation, the young man happening to be in a boat on the river Thames at the time of an active press, was seized and carried to the depôt; and obtained his liberty in consequence only of my furnishing him with a certificate of his having actually undergone an operation for cataract.

When the opaque lens, in this state of the vitreous humour, is soft, it may with great ease be subjected, by the needle, to the process of absorption; but if hard, a compound operation seems the only safe method of effecting its removal.

From a review of the foregoing obstacles it may be inferred, perhaps, that extraction can scarcely ever be resorted to with propriety, or with a prospect of eventual success. But whilst such a conclusion would be equally discouraging and erroneous, to undertake the operation under the existence of several of the impediments alluded to above, would necessarily occasion a failure of the process, and bespeak a great want of judgment and prudence on the part of the surgeon.

Some of the derangements pointed out, which are occasionally found to co-exist with cataract, must be regarded only as temporary embarrassments, which may be readily overcome.

Others, indeed, of this list are of a different description; but, although they may offer insuperable objections to the operation of extraction, they are not, in every instance, equally unassailable by other curative processes;—the happy selection and appropriation of which to the peculiar state of the disease, are objects of the greatest importance in its treatment, and furnish, at the same time, the strongest test of the science and ability of the practitioner.

Whichever mode of practice may be best suited to the character of the individual case, before the operator ventures to put it into execution, he ought to assure himself that the retina retains its sensibility; and that no existing constitutional derangement is likely to interfere with the success of the plan adopted.

What has hitherto been advanced rela-

tive to extraction, applies principally to different states of the organ as influencing the practicability, the safety, or the probable result of the process. The operation, when undertaken even under the most favourable auspices, and in cases adapted to that mode of cure, in the hands too of the most intelligent and expert surgeon, is one of acknowledged difficulty and nicety, and demands the strictest attention to a greater variety of minutiæ than any other in the whole circle of operative surgery. Of this fact a stronger proof need not be adduced than the task which the late Mr. Ware, notwithstanding his long and manifold experience, and his large share of operative practice in ophthalmic surgery for many years, was in the constant habit of imposing upon himself; namely, of reading over, on the morning of an intended ope-

ration, his "twenty-four mementos for the operator in extracting the cataract." *

Far from condemning this practice, although it may perhaps by some be deemed a work of supererogation, it appears to me highly deserving of imitation, at such a moment, to accustom ourselves to refresh the memory with the liveliest impression of every circumstance connected with so important an operation; on the success or failure of which depends the future restoration, or permanent loss of the most valuable organ of our senses.

But would any distinguished surgeon of the present day deem such a rehearsal requisite before proceeding to perform any other great operation? On the contrary, would he not, without hesitation, and at a moment's notice, if called upon in a case of emergency, undertake lithotomy, the

* Ware's Chirurgical Observations relative to the Eye, vol. ii. p. 33.

application of the trephine, or the amputation of a limb?

The principal, and frequently the only instrument required for making the section of the cornea is a Knife, the form of which has undergone several alterations by different eminent practitioners, with a view to facilitate the process. The cornea-knife, invented respectively by Richter, Wenzel, and Beer, constitutes the whole of the apparatus, of this description, at present in general use. From these the operator must make his own selection.

I will only add, that so sensible are the more respectable cutlers in this line of business of the extreme accuracy requisite in the construction of the instrument used for the above purpose, that they assign not only the manufacturing, but even the setting of it, to an individual best qualified, by his mechanical ingenuity and experience, for such delicate work.

Whatever the precise shape of the knife, unless it be made of a certain determinate size, and of an exact wedge-like form—of the best tempered steel, so as to enable it to receive the finest edge and polish without breaking or bending — it would be unfit for the occasion; since a defect in any of these particulars might cause it to foil the efforts of the surgeon, and prevent the success of the operation.

Suppose a case, in which all the circumstances are favourable for the operation—that the cataract is *hard*—the cornea transparent—the other parts of the eye, as well as its appendages, in a natural state—and the patient in health and properly prepared—let us inquire what difficulties we may have to encounter, in conducting the process, from its commencement to its final completion. In detailing them, although they may appear appalling as the fabled Scylla and Charybdis, and to require equal

care to avoid, I hope I shall be acquitted of any desire to magnify the dangers attendant on the operation; for none will be adduced but such as, it is universally allowed, frequently occur.

The operation of extraction, for the sake of convenience and perspicuity, may be divided into three distinct stages;—the first comprehending the two processes called the punctuation and section of the cornea; the second, the division or laceration of the capsule of the opaque lens; and the third, the removal from its seat, and expulsion of the cataract from the eye by gentle pressure applied to the globe.

One of the difficulties in accomplishing the operation arises from the unsteadiness of the eye, especially in young and nervous subjects, who are exceedingly liable to be agitated by the dread and apprehension of a formidable operation.

With a view to counteract the vacilla-

ting and frequently convulsive motion of the organ, a variety of mechanical expedients have been devised. It has, however, been found that none of them answer the intended purpose. On the contrary, they all seem more or less to irritate and injure the eye; whilst, at the same time, they render the operation more complicated in itself, more dreadful to the patient, and more embarrassing to the operator.

Baron Wenzel indeed goes so far as to assert, that "long experience had taught him, that in extraction they are not necessary; and that a dexterous person may, in every case, easily seize a moment to perform the operation in which the eye is motionless."*

A most respectable practitioner has just assured me, that he once witnessed the

* Wenzel on Cataract, translated by Ware, p. 74.

display of great patience, on the part of one of the most eminent and scientific surgeons of this metropolis, with a laudable desire to ascertain the practicability of the Baron's suggestion. He sat before his patient, properly prepared, for upwards of *two hours*, waiting for the expected quiescence of the rolling eye, when he might, with safety, be enabled to plunge his knife into the cornea. At the expiration of that period, despairing of the attainment of his object, he dismissed the wearied and terrified patient, declaring that the operation must be postponed to another and more favourable opportunity. After an interval of a few days, a similar trial was repeated, with precisely the same disappointment.

Although the Baron, before whose magic touch every difficulty and danger is represented to have vanished, and who, according to the statements in his son's elegant

"Treatise on Cataract," easily overcame obstacles which, to other less-gifted operators, appear insurmountable, might possibly, by his superior tact and adroitness, succeed in effecting the section of the cornea in the manner described, and without any adventitious aid, very few of the most distinguished surgeons have ventured to follow his example. There is reason, indeed, to believe, that those who were swayed by the Baron's recommendation have had but little cause to congratulate themselves on the result of their unassisted efforts.

Preference is now generally and justly given to the safer and less objectionable expedient suggested by the late Mr. Wathen,* and subsequently enforced by Mr. Ware,† to steady and fix the eye, by means of the fingers of the operator and

* Wathen's Dissertation on Cataract, p. 95.

† Ware's Translation of Wenzel on Cataract, Note, p. 101.

his assistant, carefully applied until the knife has been made to penetrate through both sides of the cornea, rather than to trust to the uncertain self-possession of the agitated patient, or their own manual dexterity.

The patient and the operator being properly seated, and the eye-ball securely fixed, the sharp point of the cataract-knife is to enter the outer segment of the transparent cornea about half a line; or, according to Baron Wenzel,* at a quarter of a line anterior to its connexion with the sclerotica, and the tenth of an inch above its transverse diameter. The instrument, thus introduced, is to be pushed steadily but slowly, and without the least intermission, across the anterior chamber, with the posterior flat surface of the blade parallel with the iris, until its point is made to pierce the opposite, or nasal side of the

* Ware's Translation of Wenzel on Cararact, p. 102.

cornea, at the same distance from its junction with the sclerotica at which it entered. This concludes the *first step* of the operation, termed the *punctuation* of the cornea; on the completion of which, all kinds of pressure being instantly removed from the eye, the subsequent management of the case must be wholly resigned to the operator who, by means of his knife, will possess full command over the organ.

Provided the iris maintains its situation, no time should be lost in completing the *section* of the cornea. This, which constitutes the *second* step of the operation, should be effected by slowly pressing down the knife, or according to Wathen, "by gently and alternately impelling and retracting it from side to side,"* in order

* Wathen's Dissertation on Cataract, p. 103.

that the instrument may cut its way out of the eye through the lower circle of the cornea, by which it is evident a semi-circular flap will be formed, comprehending a little more than half the circumference of that transparent coat. The opaque lens, being released from confinement in its capsule by the aid of gentle pressure, will be observed gradually to advance towards, and finally to escape through the opening in the cornea upon the cheek, when the operation will be finished.

Several deviations from the above more general method of forming the section of the cornea, (hereafter to be noticed,) have been proposed by authors, and adopted by practitioners, with a view to obviate or lessen the dangers and accidents which, in spite of the greatest care and skill on the part of the surgeon, occasionally occur

during, or after the performance of this apparently simple and easy operation.

At present I shall content myself with briefly noticing some of the contingencies to which the several stages of the operation of extraction are exposed.

In the first place, with regard to the punctuation of the cornea, the introduction of the point of the knife fairly into the eye, and at the very spot described, without injuring the iris, or passing it between the lamellæ of the cornea, implies some degree of steadiness and firmness in the surgeon.

In all other great chirurgical operations, it is usually a matter of indifference at what moment we begin or finish the process; and precision as to the exact place at which the first incision is made, is generally of as little consequence.

Not so with extraction. If the knife be not introduced at the very instant when the eye is best prepared for its reception,

the opportunity of effecting the puncture with the greatest facility and advantage, may be sacrificed by the intervention of some obstructing cause. Again, "if, in the puncture, there be the least intermission, or stop, in the progress of the knife, the consequence will be," says Mr. Wathen, "that before it has penetrated through the cornea, if not even before the point has reached the other side of it, a great part, if not the whole, of the aqueous humour will have escaped. Hence, also, this further consequence will follow, that the cornea, the iris, and knife must, of necessity, come into immediate contact, so that the point or edge of the knife will, it is most likely, be entangled with the iris; under which circumstance it will be next to impossible to finish the punctuation, much less the section of the cornea, without wounding the iris." *

* Wathen's Dissertation on Cataract, p. 101. In

If the knife be inserted a line *below*, instead of a line *above* the transverse diameter of the pupil, the opening in the cornea will necessarily be made too small.

Should the operator, instead of passing the instrument across the anterior chamber, with its flat side parallel with the plane of the iris, and in a direction corresponding with the line formed by the junction of the cornea with the sclerotica, cause the point to pass obliquely *inwards*, it may wound the iris, and produce very severe inflammation.

Or, if its edge be advanced *forwards*, it will be apt to insinuate itself between the lamellæ of the cornea, and make no aperture at all, or being brought out near the pupil, will form an opening too diminutive for the easy extraction of the cata-

this dilemma Baron Wenzel recommends the friction of the cornea with the point of the finger as sufficient to release the iris from the edge of the knife.

ract. At the same time, vision will be likely to be impaired or destroyed, even if the operation should, in other respects, be successfully accomplished, by the future cicatrix and diffused opacity which may result from the healing of the wound.

If the knife be *too hastily* impelled across the anterior chamber, and the nasal margin of the cornea should happen to be unusually tough,* or ossified, as I once found it in a very old patient, the point of the instrument suddenly and forcibly impinging against this resisting tunic, may break or bend inwards, and produce the most serious mischief.

It is further observable, that though pressure with the fingers may be *safely*, if *gradually* applied to fix the eye " *during* the *punctuation*, if this pressure be continued only for a moment, *after* the punc-

* Ware's Translation of Wenzel's Treatise on Cataract, p. 109.

ture is finished, or till the incision of the cornea is begun, the whole contents of the globe will be deranged, and some of them, if the pressure still remains, will be apt to come away with the knife." *

In completing the circular flap of the cornea, if care be not taken to effect it *slowly*, and to guard against a jerk or shock on its sudden division, by opposing the nail to the edge of the knife whilst in the act of finishing the *section*; and the eye-lid be not instantly depressed, a spasmodic action of the external muscles of the globe will be very apt to take place, and occasion an expulsion of the cataract, accompanied simultaneously with the escape of a large portion of vitreous humour, a contusion, laceration, or prolapse of the iris, and the probable destruction of the eye.

* Wathen's Dissertation on Cataract, pp. 97 and 98.

The principal objects to be aimed at in this *first* step of the operation, are to effect a sufficiently large opening in the cornea, so as to admit of the ready escape of the cataract through it; and to avoid wounding, or causing a protrusion of the iris.

"The failure of the operation of extracting the cataract" (like that in extracting a stone from the bladder) "is often owing to the *smallness* of the incision made through the cornea. The obstacles the crystalline meets with in coming through this aperture, produce inflammation, suppuration in the eye, pain, opacity in the cornea, and many other accidents." *

Desirable, however, as a large opening in the cornea may be, the operator does not always immediately succeed in effecting this object. In such cases, a second

* Ware's Translation of Wenzel on Cataract, p. 135.

operation is required by means of the *blunt* knife, or curved scissors, which must necessarily increase the risk of doing mischief, especially if the eye happen to be particularly irritable.

But, whilst a large artificial aperture in the cornea conduces to the safety of the operation, by admitting, without the necessity of dangerous pressure, the free passage of the opaque lens through it, and the introduction of such instruments as may be subsequently required to open the capsule, or to remove any detached parts of the crystalline that may have been left behind in the eye, it increases the danger of a protrusion of the iris, and the sudden emission of vitreous humour.

To this disadvantage, also, may be added the greater liability of the edges of the wound to be displaced by the motion of the eye-lids, whilst union by the first intention may be retarded or prevented; and

when accomplished, the cicatrix will be proportionably broad and extensive when the incision in the cornea is thus prolonged.

The edges of the eyelids, should they swell and inflame, are likewise, under the same circumstance, more prone to insinuate themselves between the lips of the wound, and intercept the healing process.

In the event, too, of a fit of vomiting, coughing, or sneezing, supervening upon the operation, before this large wound of the cornea is reunited, or immediately after its cicatrization, it will more easily burst open, and the contents of the globe be forcibly expelled, causing the most disastrous consequences, and probably the total loss of vision.

Some time since I succeeded in extracting a *hard* cataract from the eye of a gentleman of middle age, in the most complete and satisfactory manner, when

he was enabled instantly to see every object around him.

On the fourth morning after the operation, as he had not experienced a single untoward symptom — as the wound was perfectly healed — his sight restored — and his health in every respect good — I availed myself of these favourable circumstances to pay a professional visit at some distance from town; having previously given full directions, to which he was requested implicitly to attend, during my absence the ensuing evening.

On calling upon my patient the following, or fifth morning, I had the mortification to find that, being weary of restraint, and of an uncontrollable temper, he had most imprudently, and contrary to my strict injunctions, quitted his room, and exposed himself for some hours to the cold and damp of an apartment which had not, for many years, been inhabited.

As might have been anticipated, he soon experienced a sensation of chillness, which speedily ushered in rigors and headache: symptoms that were succeeded by heat, restlessness, thirst, and general fever. A violent cough, to which he was habitually subject, began to harass him, a severe paroxysm of which occurring in the night, caused the newly healed incision of the cornea to become ruptured, with a sudden expulsion of the fluid contents of the eye, and a protrusion of the iris. When I saw him the next morning, he was labouring under high constitutional excitement, with great pain and inflammation of the affected organ, which, notwithstanding the most active antiphlogistic treatment, ultimately terminated in suppuration and destruction of the eye.

It is manifest that the unfortunate issue of the case just described, was solely imputable to the obstinacy and indiscretion

of the patient himself, every thing that art, and care on my part, could effect, having been fully accomplished.

The cataract in the other eye was afterwards extracted by an eminent oculist of this metropolis; but, from what cause I know not, the operation proved unsuccessful.

Sir William Adams * gives two instances in his practice, of failure by extraction, in consequence of the muscles of the eye having been called into very powerful action after the section of the cornea had been completed, by which a similar catastrophe ensued, with total loss of sight. It was under such circumstances, I have been informed, that the late celebrated agriculturist, Mr. Arthur Young, had a cataract extracted from each eye, by a very dexterous operator, with an equally unfortunate result.

These unavoidable accidents which occa-

* Adams on Cataract, pp. 88 and 89.

sionally take place from extraction, however skilfully the operation may have been performed, constitute one among the many strong objections against this process.

Such is a general, and not exaggerated representation of the obstacles and dangers which are sometimes met with in executing the *first* step of the operation.

The *second* consists in making, by an appropriate instrument, an adequate opening in the anterior portion of the capsule of the opaque lens.

Notwithstanding, however, that it is the least hazardous part of the undertaking, Richter declares that even this, trifling as it may appear, "is not without its difficulties and dangers." "For if," says he, "the eye should happen to move suddenly while we are introducing the instrument into the pupil, there is a great risk of wounding the iris."*

* Richter's Treatise on the Extraction of the Cataract, translated, p. 61.

But there is danger even from making the wound of the capsule either too small, or in an improper place. In the former event, an impediment would be offered to our attempts to extract the lens and any remaining fragments. In the latter, " if the puncture," observes Mr. Ware, " be made nearer to the circumference than the centre of the pupil, as the crystalline is both thinner and softer in this part, the instrument will be liable to pass through both sides of the capsule, and to pierce at once into the substance of the vitreous humour. In such a case, the vitreous humour having no longer any barrier to prevent its discharge, is liable to be forced out in a considerable quantity by the action of the lids alone; and when pressure is afterwards made to bring the cataract through, its quantity will be much increased, and the cataract, instead of coming forward, will recede from the

pupil, and will either descend towards the bottom of the eye, or will move to the side opposite to that where the faulty puncture is made. Every attempt afterwards to bring the cataract through by the application of pressure to the eye, must prove not only fruitless, but injurious." *

Some time ago an opportunity occurred to me of witnessing an unsuccessful operation by extraction, performed by a singularly skilful surgeon, which afforded an unhappy illustration of the facts just quoted.

To the above dangers, occasionally resulting from the puncture of the capsule, may be added those which may arise from accidental pressure upon the eye, applied during the performance of this operation, — from a spasmodic action of the muscles of the eye, or eye-lid — or from the intro-

* Ware's Chirurgical Observations on the Eye, vol. ii. p. 301.

duction of the cuvette, or any other instrument, to assist in extracting any detached parts of the opaque lens, or its capsule.

The *third* and last, but not the least dangerous stage of extraction, is the removal of the cataract through the respective apertures in the capsule and cornea, and the consequent completion of the operation.

"The incision of the cornea is not the most difficult part of the operation. It afterwards requires much dexterity, as well as judgment, successfully to extract the cataract; and this dexterity is particularly necessary, when the opacity of the crystalline is complicated with other morbid alterations in the state of the eye." *

The contingencies which may take place during this process, consist in the liability of the vitreous humour to escape, and

* Wenzel on Cataract, by Ware, p. 111.

of the iris to protrude, either before or immediately after the expulsion of the cataract; and in cases, too, the most propitious for this mode of treatment.

These dangers may be increased by more latent causes, the existence of which cannot be ascertained by previous examination. I allude to adhesion of the circumference of the capsule to the iris, the pupil still preserving its freedom of action * — to the union of the opaque lens with the internal surface of the capsule † — and lastly, to a sudden and violent contraction of the pupil, before the cataract has been expelled. ‡

The pressure which, in those instances, is generally deemed indispensable in order to effect the expulsion of the cataract, is always attended with the danger of pro-

* Richter's Treatise on Cataract, p. 95.

† Ibid. p. 55. ‡ Ibid. p. 81.

ducing inflammation, a rupture of the hyaloid membrane and the consequent escape of the vitreous humour, and occasionally staphyloma, and finally, contracted or obliterated pupil.

The accidents and dangers to which the process we are considering is liable, and which frequently exceed the powers of the most skilful surgeon to prevent or surmount, not uncommonly originate in, are connected with, or derive their chief importance from, the injury or prolapse of the iris, which may occur during, or after the operation.

It is not, therefore, surprising, that the prevention of this catastrophe and its disastrous consequences, should have been made a leading object with those practitioners who dedicate a large portion of their time and talents to the operative surgery of the eye. For, according to Bischoff, who published a valuable work

on extraction, " this protrusion of the iris occasions pain for ever; which is sometimes vehement, and principally increases with the motions of the eye, the fallen part of the iris rubbing continually on the eye-lids." *

To the laudable wish to lessen or obviate this unfortunate occurrence, as far as possible, by mechanical expedients, may be ascribed those deviations in the mode of effecting the division of the cornea, which have been suggested and adopted by several surgeons and oculists.

Thus, for example, instead of opening the cornea downwards, according to the more general practice, Baron Wenzel insists upon the great advantages which accrue from making a vertical incision near

* F. Bischoff on Extraction, p. 63. The prolapsus, or hernia of the iris, which is said by this author to be attended with such dreadful and lasting ill effects, is found to admit of relief by proper topical applications.

to, and on the temporal margin of, the cornea. *

Mr. Wardrop proposes to open the cornea half way between its inferior margin and the lower edge of the pupil. †

When the right eye is the subject of the operation, every possible benefit, and the fewest inconveniences, have been found to result from making the incision, when practicable, in the upper part of the cornea. In this manner I operated upon Mrs. Howard, of Brentford, a lady about fifty years of age, at my *own house:* and immediately after the cataract had been extracted, when she saw every object around her, she was conveyed to her lodgings in Holborn. The upper eye-lid serving as

* De Wenzel's Treatise on Extracting the Cataract, by Ware, p. 112.

† See a Paper on this subject in the Edinburgh Medical and Surgical Journal, for January 1809.

a complete covering to the wound, no kind of bandage or application was had recourse to, except during the time she was in the carriage, nor was she even put to bed on the occasion. Not the slightest untoward symptom supervened. And, a week afterwards, she called upon me, perfectly well in all respects.

This case is not related with a view to recommend the general adoption of the plan above-mentioned in other instances requiring the operation.

My patient, who is now in excellent health and spirits, felt a presentiment that she should recover her sight *only* if operated upon at my residence; an impression which was so strong on her mind, that she entreated me, in the most earnest terms, to comply with her prejudice. In this dilemma it appeared to me, that the method pursued was the only one which could be had

recourse to with a prospect of success; and the result proved most satisfactory.

Lastly, a scheme compounded of couching and extraction, and as such partaking, in some measure, of the inconveniences of each, was proclaimed as a discovery calculated to obviate the usual difficulties attendant upon those operations, and to embrace the means of rendering the proposed method, in all its stages, equally safe and efficacious.

Subsequent experience, however, has unfortunately demonstrated, that the utility ascribed to this modification of the old processes was greatly overrated by its too sanguine author.* "The great advantages," says Mr. Guthrie, "said to be derived from this method of operating, dwindle down to nothing when carefully examined; whilst the disadvantage of increased inflammation from the *double*

* Sir William Adams.

operation is almost always present, and invariably so, if any accident occur during its performance. In any given number of cases, more eyes will be, and *have been*, lost from the compound, than from the simple method of extraction." *

It is not the design of the present undertaking to investigate the merits of these surgical innovations, or their competency to fulfil the intentions of their respective promulgators.

I will take the liberty only of expressing my conviction, that none of the methods of opening the cornea hitherto brought forward can, with success, be indiscriminately applied to every instance proper for extraction.

So far, however, from feeling inclined, on that account, to discard any of the processes, I concede most readily, that it

* Guthrie, on the Operative Surgery of the Eye, p. 356.

will be found profitable in this, as on many other occasions, to possess a variety of resources. From these may be selected that which, on due consideration of all the bearings of the case, may appear best suited to answer particular indications and states of the disease, or of the parts concerned in the operation.

In regard, however, to the *general* disadvantages of *extraction*, I may further quote in this place the remarks of the late Mr. Benjamin Bell, who says, " With those who have frequent opportunities of observing the consequences of extraction, it proves always a very deceiving operation. The removal of the cataract is, in most instances, attended with an immediate return of vision, much to the satisfaction of both the patient and operator; but, in a great proportion of cases, even of those which at first have every appearance of proving successful, although vision may be tolerably

perfect for some months, yet it generally grows more indistinct, till at last the patients become altogether blind. This is the result of my observations, and it corresponds with the event of the operation, when performed by various good operators." *

Gooch, likewise, speaking of extraction, states, "In several instances I have observed such bad consequences, as could not have happened by depression: particularly in one case, though the celebrated De Wenzel was the operator." †

I will only add, that Mr. Saunders, after a full and candid trial of the various methods of operating, is represented to have declared, "that, for the sake of *expedition* only, he was inclined to *extract* the lens when its texture was unusually *hard*." He was, nevertheless, so sensible of

* Bell's Surgery, vol. iv. p. 251.

† Gooch's Chirurgical Works, vol. i. p. 351.

the objections which might be urged against the usual operations, (couching and extraction,) and of the limited success of extraction in general practice that, his editor observes, " he cannot assert that he (Mr. Saunders) would ultimately have conceded thus much in favour of extraction." *

From the above observations, it is manifest that such were the misgivings of Mr. Saunders in regard to extraction, in the performance of which he evinced great skill, that he even questioned its expediency in almost the only case to which it is considered peculiarly applicable.

" The success of this operation," (extraction,) says the celebrated Richter, " is always doubtful ; and the most dexterous oculist can never promise with certainty a happy event, even under the most favour-

* Saunders on the Eye, by Farre, p. 173, 1st edit.

able circumstances. A trifling and unforeseen accident is often sufficient to destroy, in one moment, our best hopes." *

A surgeon of the first eminence in this metropolis informed me, not long since, when engaged in consultation with him respecting the propriety of an operation for cataract in a personage of high rank, that in one of our most considerable Charities for Ophthalmic Diseases, comparative trials had been made with extraction, and the absorbent practice; the result of which was decidedly in favour of the latter, the cures being more perfect, and with considerably less danger of inflammation, and other ill consequences.

In a late excursion to the Continent, I had the means of assuring myself that the respective operations of couching and ex-

* Richter on Extracting the Cataract, translation, p. 146.

traction, though performed with great skill and adroitness, are far from being generally successful.

The Report published by Dr. Tartra, in the year 1812, deduced principally from the practice of a very large hospital in Paris, may be considered as a tolerably correct standard of the average success of the operation of extraction in that capital.

In his Inaugural Dissertation on this subject, he states, on the authority of his colleague, Dr. Bullier, that "*two* in *five* patients operated upon at the Hôtel Dieu for cataract, recover their sight; and this is pretty nearly the general result of operations for cataract."*

Whereas, in cases fitted for the new operation, except from the supervention of other diseases, from casualties, or from imprudence on the part of the patient, a

* Tartra, De l'Opération de la Cataracte. Paris, Jan. 1812.

failure, comparatively speaking, is a rare occurrence. Indeed, when all the circumstances are favourable, I scarcely allow myself to anticipate an unfortunate result.

And it is surely no trifling triumph in favour of this process, that the three most strenuous champions for extraction, namely, Richter, Baron Wenzel, and the late Mr. Ware, are represented, towards the close of their respective career, to have abated much in their zeal for that mode of operation; with the difficulties, dangers, and uncertain issue of which they became duly impressed, and, in consequence, relaxed greatly in their prejudice against the absorbent practice.

But it is not necessary to prosecute any further the inquiry into the many and oftentimes unavoidable causes which serve to frustrate, in a greater or less degree, our success in performing the operations of

couching and extraction. That both these operations are in many respects objectionable, — are only partially applicable, — and not unfrequently fail even in the most skilful hands, — are facts universally admitted, not only in this country, but likewise throughout the Continent.

Hence, a more successful mode of relief cannot but be regarded as a great desideratum in surgery. In the next chapter it will be my object to demonstrate the advantages of a method of treating the disease by which, if the plan recommended be adopted antecedently to any considerable morbid alteration in the lens or its capsule having taken place, most of the inconveniences and risk inseparably connected with the operations in common use may be avoided.

CHAPTER IV.

ON THE ADVANTAGES RESULTING FROM THE REMOVAL OF THE DIFFERENT SPECIES OF CATARACT, AT AN EARLY PERIOD AFTER THEIR FORMATION, BY THE ABSORBENT PRACTICE.

The physical means hitherto had recourse to for the cure of cataract, like those employed in most other important surgical operations, have at different periods been variously modified.

But, however dissimilar the mode of performing the several operations, they have all been reserved for that stage of the ailment, when the sight has become greatly impaired, or wholly destroyed.

If I may deduce an opinion from existing publications on the subject, as well as

from the private practice of the most eminent surgeons and oculists, it has not, I believe, previously occurred to any one to recommend an operation, without regard to the kind or maturity of the cataract, so soon as its character is sufficiently disclosed to enable us to decide upon the real nature and tendency of the disease.

The method of treatment which it is the immediate object of the present publication to propose, is not an untried, or fanciful and speculative suggestion, but the satisfactory result of long and extensive practical experience of its value and advantages.

The distinguishing feature of the plan alluded to, is its applicability at a period of the disease when neither of the common processes is available; and it cures, if I may be allowed the expression, by *anticipation*. For it aims at no less a purpose than the *prevention* of actual *blind-*

ness, by taking advantage of the agency of the absorbent powers, *before* the lens or its capsule has become so far disorganized as to occasion more than an imperfect eclipse of vision.

The leading principle of the practice is by no means new; and the operation founded upon it has grown out of, and is in some degree a modification of that of depression.

The ancients had a confused idea of the solution of cataract, long before the discovery of that series of lymphatic vessels which, in the aggregate, constitute what is termed, from their function, the absorbent system; or, as Mr. Hunter emphatically calls them, "the scavengers of the human body."

This inference may be drawn from the following passage of Celsus, although I am not aware that such a construction has hitherto been attached to it: "Si subinde

redit eadem (cataracta) acu magis concidenda, et in plures partes dissipanda est." * This direction to reduce the opaque lens into fragments, — which, for the purpose of couching only, would be equally unnecessary and unfavourable, — remarkably coincides with the most approved mode of treatment, by absorption, at the present day ; and could be the result only of his having, we may be allowed to presume, ascertained by experiment, that such a comminution tended to accelerate the recovery of sight: although he could not possibly be acquainted with the means by which such an event was accomplished.

The absorption of fluid and soft cataracts, after unavailing efforts to couch them, was a fact so apparent to every accurate observer, that it did not escape the notice of our countryman Bannister; as we learn

* Celsus de Medicina, l. vii. c. vii. sect. 14.

from his work on the eyes, published in the seventeenth century. He was accustomed to press down soft cataracts with his needle, by which operation he asserts, in the peculiar but expressive language of the time in which he wrote, "that he sometimes found the grosser part of the cataract to fall away, and become lower, the thinner part to be loosed and consumed, and in the end the party has recovered his sight."*

Sir William Read, oculist to Queen Anne, gives so candid and interesting an account of a cure unexpectedly effected by this process of nature, that I cannot deny myself the gratification of inserting an extract from the case as an illustration of the point under discussion. After describing one of his operations, he proceeds, "At the end of nine days I visited my patient, and found both her and her

* Bannister's Treatise on the Eye. 1622.

friends highly discontented because she could not see so well as she did before, so that I met with nothing but bitter invectives, till, having pacified them as well as I could with fair words, I came again. Within a fortnight after, when art and nature having performed their mutual operations, all the cloudy vapours and rags of the cataract were consumed and dispersed, the eyes grew clear, her sight became perfect, and so continued ever since." *

It is impossible to produce more satisfactory evidence of the effect of absorption than the above quotations afford.

Barbette † likewise, who wrote in the

* Sir William Read's Treatise on the Eyes, p. 6. 1706.

† "Licet cataracta non satis inter pupillæ regionem sit depressa, dummodo in particulas sit divisa, perfecta visio intra sex aut octo septimanas sæpissimè redit, licet tota operatio absque ullo fructu peracta videatur;

seventeenth century, and several other respectable authors, * have recorded similar instances of the absorption of the crystalline lens, when broken into fragments.

Of later date, Mr. Pott † in particular, as well as Professor Scarpa ‡ and Mr. Hey, § whose respective and highly valuable works were written when the doctrine of absorption was well understood, evidently prove their thorough acquaintance with the solubility of the lens in its natural situation, provided its capsule be opened, or when detached from it, and sunk in the vitreous humour.

It has been fully ascertained that absorption goes on with still greater rapidity

quod aliquoties experientiâ edoctus loquar." — *Chirurg. Barbettian.* C. 16. p. 1. 1672.

* Mayerne, Praxis Medica, p. 100. Geneva, 1692.

† Pott's Chirurgical Works, vol. iii. p. 156. 1776.

‡ Scarpa on Diseases of the Eye, by Briggs, p. 365.

§ Hey's Observations on Surgery, p. 61.

when the comminuted cataract is deposited in the anterior chamber. This effect may depend, as Scarpa observes, " on the greater quantity of aqueous humour in the anterior than the posterior chamber, by which the particles are more easily dissolved; or it may be owing to the larger number of absorbent vessels in the former than in the latter division of the eye."* Hence, with a view to hasten the dispersion of the opaque lens, the Professor makes a point of projecting as many as he can of the moleculæ of the soft cataract into the anterior chamber.

Mr. Pott, influenced by similar considerations, had previously stated, that, " in a few instances where he had a fair opportunity, he pushed the firm part through the pupil into the anterior chamber; where it always gradually and perfectly dissolved and disappeared, without producing pain

* Scarpa on Diseases of the Eye, by Briggs, p. 365.

or trouble whilst such dissolution was accomplishing." *

Mr. Saunders, availing himself of these facts, had the merit of being the first who systematically reduced this knowledge to general principles of practice, " by a deviation," as he expresses himself, " from the old method of couching ;" † and of adapting his process not only to the different kinds of cataract in the adult, but especially to those of early infancy — a period of existence to which the two former modes of operating are confessedly inapplicable. The very efficient and beautiful operation he contrived for the *congenital* cataract in children, which consists prin-

* Pott's Chirurgical Works, vol. iii. 1776.

† In my former Treatise on Cataract, copious extracts are inserted from two Letters addressed to me by Mr. Saunders, explanatory of the method he pursued in operating for the different kinds of cataract: and which constitute the *only documents he left* on the subject.

cipally in destroying a central portion of the capsule, equal in size to that of the pupil, was the result of cautious experiment, founded upon ingenious inductive reasoning; and is not only highly creditable to the inventor, but is also a bright example of the perfection to which, in this instance amongst many others, British surgery has of late years arrived.

In order to ascertain the best and least exceptionable mode of conducting the absorbent practice, his plans of operating were considerably varied. "In the early part of his professional career, with a view to hasten the absorption of cataract, he subjected it, in the most extensive manner, to the action of the aqueous humour. He was in the habit of introducing his larger needle into the posterior chamber, with which he freely divided the capsule, and cut up the lens in its seat, disregarding its flocculi, or even small pieces which fell in

abundance into the anterior chamber, even up to the margin of the pupil. By this bolder method of operating, the end in view was sooner attained, but frequently at the expense of dangerous inflammation." * Latterly, he contented himself with merely effecting an opening into the anterior and central portion of the capsule; and, after gently loosening the texture of the opaque lens, leaving it in its natural situation, until removed by the absorbent process. "I do not," says Mr. Saunders, in a letter to the author, "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.

Mr. Saunders occasionally also adopted, as a still milder process, the plan of ope-

* Saunders on Practical Points relating to the Eye, edited by Farre, p. 165.

rating which Conradi of Nordheim performed, namely, that of introducing a fine needle through the cornea, and lacerating the capsule; disturbing very little, or not at all, the texture of the lens, and trusting its subsequent removal to the spontaneous efforts of nature.

In the second edition of my former "Treatise on Cataract," I took the liberty (after gratefully acknowledging my obligations to Mr. Saunders for the information which I derived from his personal instruction relative to the nature and treatment of diseases of the eye and ear,) to point out the objections which, in my judgment, apply to these several modes of operating. Such alterations and modifications in their performance were at the same time described and recommended, as my own experience and observation suggested; and which I had found adequate, not only to obviate those incon-

veniences, but also materially to accelerate the restoration of sight. Subsequent opportunities of putting them to the test of comparative trials have served to confirm the correctness of my views, and the superior safety, as well as success, of my methods of operating; — which it is not deemed necessary, on the present occasion, to recapitulate.

I will only add, that for some years past, I have studiously endeavoured to adapt the process to the peculiar nature of each respective disease, and the state of the parts implicated in the operation, instead of adhering to any one mode of practice: my leading principle being to effect the best possible cure by such means as are least likely to augment pain, or superinduce a hazardous inflammation.

From a due consideration of these points, I am led to the belief, that couching or extraction, except under very peculiar

circumstances, can only be necessary or proper in the *indurated* state of the lens; and that the removal of the several kinds of *soft*, *fluid*, and *capsular* cataracts, is more easily and safely, and indeed in some instances can only be, accomplished by the operation of division, or laceration, and the subsequent process of absorption. In agreement with this latter position, Mr. Saunders is represented by his editor "to have been satisfied with the superiority of his practice with regard to the *softer* lens and the *capsular* cataract." *

The main object in conducting the mode of treatment termed the absorbent practice, is to comminute, with a proper needle, the opaque crystalline, or tear its capsule, when it is morbidly affected, into small shreds or filaments, — in order that they may, in these states, more readily undergo the process of solution in the aqueous

* Saunders's posthumous Work on the Eye, p. 173.

humour, or be acted upon by the absorbents; whilst, at the same time, the smallness of their size tends to obviate pressure, and consequent irritation of the adjacent parts. The translation of these disorganized fragments, or flocculi, into the *anterior* chamber, is of greater importance as respects the *prevention* of *irritation*, which would be apt to result from the pressure of the lens on the iris if detained in the *posterior* chamber, than as regards the *acceleration* of *absorption*.

So long, then, as the morbid crystalline continues soft, or its capsule is easily lacerable, a cataract of either description may readily and safely be reduced, by the agency of the needle, to a state fit to be acted on by the absorbents.

Now, the changes which disqualify the respective forms of the disease for this, which, when it can be accomplished, is by far the most preferable mode of cure, are

the effect of age, or of allowing the cataracts to remain unmolested until they have undergone those unfavourable transmutations;—a period of time which varies, from a few weeks to some years, according to the nature and character of the malady.

It is, however, of great importance, in reference to the general utility and universal applicability of the plan proposed, to bear in mind that in the morbid alterations to which the crystalline is subject, and which are marked by different degrees of firmness in the consistency of the lens, the order of the transition from its natural condition to that of solidity is never inverted; or in other words, it does not become, *first hard*, and *subsequently soft*, or fluid.

Of this fact the ancients seem to have been fully aware, for they conceived that every cataract passed through certain regular stages before it attained *maturity*,—

a term designed to express the *hardness* or *solidity* of the cataract. This ordinary progress of the disease to its final termination in a state of induration is liable, however, to occasional exceptions; as we know, from experience, that an old cataract sometimes preserves a considerable degree of softness.

Hence, in all the different species of the disease, characterized by the several alterations which the crystalline has undergone, an opportunity is afforded for the application of the means recommended; to which any description of cataract, at its commencement, or during its formation, may be rendered amenable. For the disease, whilst recent, whether it be of a simple or compound character, or consist of an opacity of the lens or capsule only, or of both,—whether it be congenital, secondary, or even accidental,—is, in any of these states, equally assailable by the needle.

By the agency of this instrument, the surgeon is enabled to operate upon each respective modification of cataract in its early stage, so as to subject the disorganized and divided parts to the process of absorption.

A more powerful recommendation in its behalf is, that the operation may be performed, under all the varying circumstances alluded to, with the greatest probability, I had almost said with moral certainty, of success; provided it be executed with the requisite skill and address, and that the other textures of the eye, and the constitution be, at the same time, free from disease.

Another argument to be urged in its favour is, that the process may be effected not only with the most trifling degree of present pain, but likewise with little comparative risk of subsequent inflammation.

Is it not then extraordinary, that the

above facts, which only require to be developed to appear, like most other truths, simple and easy of application, should not long since have been discovered, and turned to a practical account? And must it not seem singular that, notwithstanding our intimate acquaintance with the true nature of the different species of cataract, and also with the influence of the absorbents in contributing to their removal, so much should have been written, and so many expedients devised,—some of them by no means easy of adoption, and all uncertain in their effects,—for the purpose of overcoming difficulties which we have shewn to be exclusively the result of delay, and therefore in our power to prevent?

But the treatment of cataract has been for many ages, and still continues, even in the present enlightened state of medical science, to be conducted upon principles in direct opposition to those which regu-

late our conduct in the management of every other disease incident to the human body.

What would be thought of a surgeon, were he to propose waiting until an *occult* has become an *open* cancer, before he had recourse to the knife for its extirpation? Or, what opinion would be entertained of the abilities and qualifications of a physician, who should venture to inculcate the propriety of withholding his remedies in different kinds of fever, until the symptoms had reached their acmè, or attained their full force and malignancy? What expectation of relief could be indulged from the most appropriate mode of treatment in cases of gutta serena,* if postponed

* Vide, my "Practical Treatise on Amaurosis, or Gutta Serena;" in which this formidable, and generally deemed incurable disease, is shewn, when not organic, frequently to admit of rational explanation and successful treatment,—provided the remedies be

until the sight had become entirely extinguished?

And again—what hope could we indulge of preventing the most disastrous consequences from an attack of acute internal, or purulent external ophthalmia, if not assailed soon after its commencement, and before disorganization and irreparable mischief have occurred?

"Obsta principiis:—
Serò medicina paratur cùm malum inveteravit morâ."

Absurd and dangerous as such tenets and practice would be pronounced, if applied to any other morbid affection, have they not universally been adopted and acted upon, in the instance of cataract, from the earliest period even to the present time?

It cannot, therefore, be an useless task

adopted at an *early* period, *before* the nerve has become *completely* paralysed.

to inquire into the origin and reasons for continuing a mode of treatment which, whilst it is in many instances fraught with difficulties and dangers, forms the only exception to the rule that guides us on all other occasions,—namely, to reduce or remove unhealthy action as soon as possible after it is set up, or has manifested itself in any texture, or organ of the human body.

Before the absorbent system was discovered, the management of cataract, by the ancients, was consistent with their erroneous ideas relative to the nature of the disease, and with the false analogy from which they sprang.

"They believed," observes St. Ives, "that cataract is like a fruit which must be left to ripen on the tree; if it be gathered before it is ripe the stalk must be broken, but when it is full ripe it is easily plucked from the tree. If the

operation," he adds, "be anticipated or performed before the cataract is full ripe, the needle passes without success through the body which is to be depressed, by reason of its softness."*

From the difficulty experienced in the removal of the soft species of the disease by the processes in common use, they fancied that the opaque lens was confined to the spot by ciliary fibres—answering to the stalk of fruit; which, like it, gradually dried and became shrivelled, and at length spontaneously broke as the lens assumed a *hard* or *ripe* character. At this period, being, as they concluded, freed from its attachments, it was found readily to separate, entire and in a solid form, from its capsule or coat, like the kernel of ripe fruit from its shell.

* St. Ives on Diseases of the Eye, translated by Stockton, p. 253.

But it occasionally happened that the lens, after having lost its transparency, instead of acquiring a degree of firmness proportionate to the time it had existed, remained permanently soft, or degenerated into a substance possessing a more or less fluid and turbid consistence. Although both these forms of cataract were regarded as alike unpropitious and incurable, they were occasionally surprised to find that, contrary to their expectations, even under these circumstances the operation sometimes proved completely successful.

The freedom with which, in their rude mechanical attempts at depression, the needle was sometimes made to traverse the yielding texture of the crystalline on the one hand, and to lacerate the anterior capsule on the other, occasionally caused the subsequent diffused opacity gradually to diminish; until the whole of the obstructing medium disappeared,

in consequence of, what they supposed to be, a subsidence of the grosser parts of the cataract.*

Notwithstanding, therefore, the cure in such instances was incidentally accomplished, their ignorance of the laws by which the absorption, or, as they expressed themselves, the dissipation of the cataract was effected, prevented their reducing this knowledge to any regular system, or adopting an operation founded upon it.

But shall practitioners of the nineteenth century,—who are well aware not only that the *soft* and *fluid* forms of cataract are the most tractable, and the most favourable species for the absorbent mode of treatment, but likewise of the physiological principle on which their removal depends,

* See the Cases related by Bannister, Barbette, and Sir W. Read, quoted page 141—4, which afford a fine illustration of the above fact.

—rest satisfied with this valuable information, without availing themselves of the advantages to which it points?

It would indeed with difficulty be credited, unless the fact were generally admitted, that, shutting our eyes to the improvements which such knowledge naturally suggests, and disregarding altogether the kind, the progress, and the tendency of cataract, medical men should still permit themselves to be so far influenced by prejudice, and the sanction of antiquity, as to insist upon the *necessity* of postponing the requisite operation until the patient is wholly deprived of sight!

That this statement is not an ideal and exaggerated representation, but accords with the present and general practice, I shall shew by the following quotation from one of the latest publications on this subject. Mr. Guthrie, the author of the work alluded

to, in reference to this circumstance states that, " when the lens has become so opaque as to prevent the patient seeing sufficiently to find his way about, and he can only distinguish the shadows of objects, it (the cataract) is in a fit state for operation."

The reasons he assigns for this direction are two, namely, that " no deprivation of light can take place through an unsuccessful result; and what is of much more importance, there is less liability of inflammation ensuing after an operation on a cataract which is completely formed, or, as it has been termed, become indurated, (or ripe), than after the removal of a lens, the opacity of which is only commencing, and through which the patient can still see." *

That the same mode of practice, originating from similar views of the subject,

* Guthrie on the Operative Surgery of the Eye, p. 260.

is adopted and pursued by surgeons generally, I have ample opportunities of knowing; and I cannot better exemplify the fact, and the superior advantages of the plan of treatment I am inculcating, than by the relation of the following case, which has recently fallen under my care.

A lady had been affected with a cataract in each eye, for more than two years. Although she could not distinguish the largest printed capitals, nor the features of a person near her, and was unable to walk without danger of stumbling, or hurting herself against different objects, a well known oculist, and strong advocate for extraction, to whom she applied, adhering to the prevailing notions, assured her even at her last visit, "that she was not sufficiently blind for an operation," notwithstanding that she experienced all the inconveniences and discomforts resulting from the most imperfect vision.

As the disease had not for many months made any perceptible progress, she was desired "to absent herself until she could no longer find her way about;" — and, in reply to her anxious inquiry when she might hope for relief, she received the vague and very unsatisfactory answer, that "that period must be wholly uncertain, and could not be anticipated." Her physician having learnt that I was in the habit of operating during the early formation of the disease, recommended his patient to consult me on the subject.

After a minute inquiry into all the circumstances of the disease, and feeling convinced that the operation of extraction, for which she was instructed to wait, was ill adapted to her case, I did not hesitate to recommend the immediate removal of the cataract by the process of absorption; a proposal to which, wearied with the prospect of an almost interminable procrasti-

nation, she most readily assented. It is only necessary to add, that the operation succeeded, and has had the effect of completely restoring her to sight, and of releasing her mind, at the same time, from the torture of suspense.

The first of Mr. Guthrie's reasons for postponing the cure until vision is extinguished, namely, that the patient cannot be made worse by an unsuccessful operation, is a truism which admits neither of argument nor refutation. It does not however follow that a failure, under such circumstances, would occasion less distress or disappointment to the patient, although it might not materially compromise or impugn the credit of the operator.

With respect to the inflammation, a point that will hereafter be more fully discussed, and which the friends of the old operations contend is, more or less frequently, the

consequence of the division of the lens, and as such has been enumerated amongst its disadvantages; Mr. Guthrie candidly admits that it is generally owing to a want of skill in the operator. But surely those unfortunate symptoms which result from incompetency or mismanagement on the part of the practitioner, ought not to be charged to the account of the operation. He adds, likewise, "that to say the least of it, (viz. the alleged inflammation,) it does not occur more often than in the operation by extraction and displacement; and can almost invariably be safely subdued, provided the lens has not been allowed to remain behind irritating the iris." *

If then we consider that, upon Mr. Guthrie's own shewing, the inflammation

* Guthrie on the Operative Surgery of the Eye, p. 390.

said to be only *sometimes* induced by the absorbent plan of treatment, arises generally from the improper or unskilful manner in which the operation is performed — that it is *not more frequent* in its occurrence than after the common operations of couching and extraction, and that it is readily overcome when it does happen, — his argument loses its weight, and leaves no ground for rejecting the process in favour of the two other alternatives, the difficulties and dangers of which have been already sufficiently exposed.

If the proposed operation be undertaken at the *early* period I have so strongly recommended, and *before* any central nucleus has formed, I am enabled to speak from reiterated and far more extensive experience in these cases than has fallen to the lot of any other person, (who, being unacquainted with my

views on the subject, has never adopted the practice inculcated in these pages,) that inflammation is so *rare* a contingency when my needle is used with the requisite delicacy and address, — or, in the event of its taking place, is so easily removed, as to give no cause for uneasiness or apprehension. In confirmation of this fact, were it not deemed superfluous, I could produce cases, in number, adequate to fill a volume.

Plausible, however, as the motives above cited for allowing the cataract to remain undisturbed without regard to its character, may appear on a cursory view of the subject, the indiscriminate adoption of the practice may lead to the most serious ill consequences.

In the first place, the long continued existence of a cataract is by no means a matter of indifference, or devoid even of danger. "I am satisfied," observes Mr.

Travers, " that the cataractous eye, if it becomes the subject of inflammation, is strongly disposed to go into amaurosis (Gutta Serena); and further, that the retina loses its vigour by the permanent exclusion of light. I speak from repeated observation of the fact." Again, — " In several cases of amaurosis ensuing upon cataract, I have been disposed to regard the change in consistence and volume of the lens as productive of a destroying inflammation; in others, of a partial absorption of the vitreous humour." *

And I may add further, that the presence of cataract seems frequently to act as the exciting cause of that inflammation which produces the injurious effects just noticed.

The shorter, therefore, the period the cataract is allowed to exist, the less tendency there will be in the vessels of the eye

* Travers's Synopsis of Diseases of the Eye, p. 313.

to take on morbidly increased action; and in the event of inflammatory excitement occurring, it will be more tractable, and will yield with greater facility and certainty, than at a more advanced period of the disease.

What, then, are the motives, or what the arguments, which can be adduced to justify the customary procrastination on these occasions? Perhaps the strongest, if not the only, rational pretext for deferring the proposed operation is, that the patient may retain, by this means, the longest possible possession of a very imperfect degree of sight.

But there is scarcely an advantage that may not be bought at too dear a rate; and in the instance under consideration, it may be fairly asked, whether it is, in reality, a mark of wisdom, for the sake of a prospective and at most a contingent benefit, and of preserving for a short time a de-

fective sense of vision, which will probably become daily worse, and soon be found altogether useless — to risk the loss of present, and almost certain relief?

If a *limit* could be fixed beyond which it would not be necessary to wait for the operation of couching or extraction, then, indeed, the intermediate delay would be less irksome and objectionable.

But where is the practitioner who has the sagacity to foretel *when* the incipient cataract will be fit for either of those processes? And what patient, already in a state of comparative blindness, possesses fortitude sufficient to enable him to support, without the most distressing apprehensions and misgivings, a condition of existence which, though devoid of pain, is not free from numberless privations and inconveniences, and of which he cannot foresee the termination?

But further, who dare assert that, during

this interval, a variety of accidents may not arise to render the old operations inadmissible, more difficult of execution, or even if accomplished, more uncertain in their issue?

Are the advantages which the advocates for couching and extraction can offer, in compensation for the proposed delay, commensurate with the positive inconvenience experienced, and the risk of greater evils which may result from the postponement of the means suggested?

Admitting even, for the sake of argument only, that the lens, by delay, *may* have acquired the necessary degree of solidity to fit it for the ordinary processes,—a condition which it should be recollected cannot, with any certainty, be depended upon,—can they promise any thing but a difficult and hazardous operation, in place of the proposed immediately applicable, safe, and almost certain method of cure?

But it should be further observed, that the state of the eye itself, or some accessary disease, may forbid the adoption of couching or extraction when the crystalline has become ripe, or render them in every respect less eligible than the absorbent plan of treatment, which, though not absolutely impracticable, is, it must be confessed, ill adapted to the *indurated* state of cataract.

From all these considerations it is apparent that, by such procrastination, an essential benefit may be sacrificed, of which, at an earlier period of the disease, we might have availed ourselves ; namely, that of choosing the most appropriate method of relief.

Nor is this the only disadvantage we may have to encounter as a drawback to this temporizing procedure. The retina, by disuse, is very apt to lose much of its original sensibility, so that on exposure again to the full effulgence of light, after a

long comparative exclusion from its rays, it sometimes continues anæsthetic, or torpid. In the *complete congenital* cataract, the postponement of the requisite operation is productive not only of the loss of early education, but of a change from an easily curable, to a dense, coriaceous, and very intractable state of the capsule, — an unsteady, convulsive, and unassociated motion of the eye-balls, and an impaired perception in the nerve subservient to vision.*

Even though the retina in the adult, on being again impressed with its natural stimulus, may regain, for a time, a considerable share of its former energy, instances, nevertheless, are not unfrequent in which, under these circumstances, the

* See, in illustration of these remarks, the case of Stephen Manbridge, who was *born* blind, and whom I succeeded in restoring to sight at the age of *seventeen;* and several other instances, of a similar description, detailed in my former "Treatise on Cataract."

sensorial power *gradually* fades away until ambliopy, or dullness of sight succeeds, and terminates eventually in complete amaurosis, or total blindness.

One of my patients, who had been nearly deprived of vision for upwards of *forty* years, was fortunately restored to sight by the absorbent mode of treatment; the cataract remaining *too soft* for the ordinary operations. His sight continued as good as it usually is after the removal of the lens, for more than two years, when it began sensibly to grow more and more imperfect, until at length, without any apparent local derangement, but solely from the cause just assigned, namely, the loss of nervous power in the eye, he was reduced to a state little short of absolute blindness.

Mr. P., on whom I operated with complete success for a cataract which had existed in each eye for several years, soon after his restoration to sight, experienced

a deterioration in his visual faculties which, advancing by slow degrees, at last ended in the total abolition of the sentient function of the organ; although there was not any visible defect, attendant uneasiness, or inflammation, either during the progress of the amaurosis, or after its complete establishment. Similar facts have been recorded by most writers upon this subject.

In the foregoing part of the present chapter, the applicability of the absorbent practice to all sorts and conditions of cataract, during the early period of their formation, and the danger and inexpediency of postponing its adoption, have been fully demonstrated. The superiority of the plan over the common processes, in other respects, will be best elucidated and determined by considering the arguments advanced against it, as contrasted with the advantages which it challenges.

The principal, and perhaps the only,

plausible objections with which it has been charged may, it is conceived, be comprised under the following heads: — 1*st*, The *inflammation* which the operation in question has been said to excite. 2*dly*, The *tardiness* of the cure by the process recommended, as compared with the *immediate* restoration of sight by couching, or extraction; added to the occasional necessity of a repetition of the operation. 3*dly*, The reluctance of the patient to submit to it at that period when the plan proposed is especially indicated. And 4*thly*, Its *alleged unfitness* for the cataract of *old* persons, on account of the supposed *solidity* of the opaque lens, and the inactivity of the absorbents, in advanced life.

1*st*, With respect to the charge, chiefly urged and propagated by the advocates for couching, and extraction, that the absorbent practice is liable to induce the most alarm-

ing symptoms in the form of inflammation, and its consequences: — It is not meant to say that the operation, notwithstanding its simplicity and general mildness, is, at all times, wholly exempt from casualties, or vascular re-action and topical excitement.

In certain constitutions of great susceptibility, the mere puncture, even, of the cornea by the finest instrument, intentionally or accidentally inflicted, will be apt to occasion pain and subsequent inflammation; but such an occurrence is by no means frequent, and indeed were it otherwise, the same objection would apply, with at least equal force, to the operations of couching and extraction. From a peculiar idiosyncrasy, the apparently insignificant wound made by opening a vein in the arm, has been known to produce the most acute pain and diffused inflammation

of the upper extremity ; which, in a few instances, have terminated in the death of the patient. A mortification in the foot of a gentleman, on whom I operated for cataract, was brought on by the cutting of a corn on his great toe, and placed his life in the most imminent danger.

Can it then be surprising that, in some rare instances, inflammation may be the result of the slightest injury in so delicate an organ as that of the eye? But, consecutive inflammation depends, for the most part, upon the nature of the cataract on the one hand, and on the method of performing the operation on the other.

In the purely *capsular* form of the disease, if the operation be performed *before* the anterior lamella has become tough, the supervention of inflammation is so uncommon an event that, in the many operations which, in the course of my professional career, I have had occasion to

undertake for that description of the complaint, both in the infant and adult, not a single instance has occurred to confirm the alleged accusation.

In the *soft lenticular* species, when the yielding texture of the cataract could be broken down into fine fragments, or flocculi, by delicate but repeated touches with the point of my fine needle, and even when allowed to remain in the posterior chamber, (agreeably to Mr. Saunders's latest mode of operating), so as not to press upon the iris, and still less if they were projected through the pupil into the anterior chamber, — I have found, from ample experience, that there is, in general, scarcely any tendency to inflammation.

These results coincide with the representation given by the editor of Mr. Saunders's posthumous work on the eye. It is in the *adult*, and when the opaque lens has been suffered, by postponing the

operation, to become *hard*, and consequently more difficult to be acted upon by the needle, and proportionably less soluble in the aqueous humour,—a stage of the disease which it is my particular wish to anticipate,—that inflammation is most apt to make its appearance.

Inflammation generally arises, independently of the punctured wound, either from violence during the operation, occasioned by rude and long continued attempts, on the part of the surgeon, to do too much at once, in the hope of effecting a rapid cure by a single introduction of the instrument,—from the pressure of detached portions of a somewhat hard lens against the posterior surface of the iris,—or, from the general distention and consequent irritation of its coats, by the larger space the crystalline must of necessity occupy when divided into several small fragments, and diffused through the chambers of the eye,

than whilst retaining its original form and integrity.

The *first* of the above causes of inflammation may commonly be avoided, by a skilful and cautious use of the needle; — the *second*, by commencing the operation at an *early* period after the formation of the cataract, and *previously* to the crystalline having acquired any considerable degree of *hardness;* — and the *last*, by abstaining from the too general practice of breaking up the whole lens and its capsule at one operation, and allowing the comminuted portions, or the hard nucleus, to remain *in situ* behind, so as to oppress, the iris.

By guarding against these several sources of irritation, and proceeding with the utmost circumspection, provided the constitution be good, and no disease exist to countervail success, the operation proposed may be accomplished with, comparatively, little

difficulty on the part of a well informed and experienced surgeon; and with very inconsiderable, and frequently scarcely any pain in the affected organ.

Accordingly, on several occasions, I have completed the several steps of the operation, without the patient being aware that I was doing more than making the necessary preparatory arrangements.

Amongst many other instances of this description which might be adduced, I will content myself with referring to the case of Captain Malloy, which is detailed in my former work on cataract. This patient could not be induced to believe that the process had been even commenced, until his incredulity gave way on finding himself restored to sight. He had not the slightest subsequent pain, or any redness of the conjunctiva, except at the punctured part of the eye, when he came to my house, from his own residence, the following

morning, and never experienced any further inconvenience, or confinement.

The extreme indigence of some of the patients of my "Ophthalmic Institution for the Cure of Cataract" having denied them the comfort and security of conveyance, in a close carriage, on their return to their humble abode, obliged them to submit to the risk of walking from the establishment, on some occasions the distance of two or three miles with the help of a guide, immediately after undergoing the operation.

Notwithstanding this very indiscreet, but in such cases unavoidable practice, the unfortunate persons seldom experienced any material interruption to their recovery, —a clear demonstration of the mildness of the process adopted. In fact, it rarely happens that a mechanic is detained, more than a few days, from his customary employments on account of the operation.

Indeed, in some instances of the *capsular* cataract, I have known the artisan to resume his avocations the following morning, and without his having been put to bed after the operation, or troubled with any kind of medicated application.

So much for the justice of the charge which imputes inflammation to the absorbent practice, properly conducted and resorted to at an early period of the disease.

2dly, In regard to the next objection stated, namely, the *tardiness* of the cure effected by the plan of treatment under consideration, as compared with the *immediate restoration* of sight by the process of couching or extraction : — On this point, it may be observed that it is not the suddenness, or the rapidity with which vision may be restored by an operation, but the comparative perfection of the cure, balanced by the relative proportion of cases in which

that object can be secured, with the least degree of present pain and risk of future mischief, that the value of the respective modes of relief ought to be estimated.

" The removal," observes Mr. Saunders, " of the opaque lens from the axis of vision, is not the sole end of the surgeon's skill. This great object of art may be obtained at too high a price, if parts which are essential to the perfection of vision be permanently injured.

By *extraction* it is accomplished at the expense of the cornea and iris; by *depression*, at that of the vitreous humour, and sometimes of the retina. In *both* the *advantage* lies in the *expedition* of the cure. No one who is competent to judge of the *difficulty* of perfectly performing *either*, can for a moment withhold the tribute of his praise from the successful operator.

In the operation on the capsule, art and

nature conjointly proceed in the cure; the part which the latter has to perform is, it is true, *slowly* accomplished, but its *perfection* is more than equivalent to the delay. The degrees of vision from that which is perfect to the stage of amaurosis, which permits the unhappy sufferer to distinguish only day from night, are so very various, that the merit of this or that operation, must ultimately turn — not on the time in which the cure is completed, but in the comparative number to whom, by the aid of an external lens, (cataract spectacles), perfect vision shall be restored.

If the success of the operations could be proved to be equal, even then the preference would be due to that operation which every well educated surgeon can perform, (namely, the process recommended in this treatise), rather than to that which (extraction) in the hands of a

very few, can accomplish the cure in the shortest period." *

But, the charge of *slowness* in effecting the cure of cataract by the absorbent practice is not, by any means, generally true. For, in the *capsular* species, so long as it retains a yielding reticular character, whether congenital, or secondary, and to which forms neither of the common processes is applicable, the relief is often as *prompt* and *immediate* as after the most successful removal of the *hard* lens by couching, or extraction; and without any of the corresponding dangers. Several instances of this description are detailed in my former "Treatise on Cataract."

When, too, the contents of the capsule are fluid, an equally expeditious cure can, generally, be effected by the agency of the

* Saunders, on certain practical points relating to the Eye, 1st edit. pp. 163 and 164.

needle, provided it be used *previously* to this membrane having become opaque and unyielding. Even in the *lenticular* disease, so long as the texture of the slightly opaque crystalline remains nearly uniform, and freely permeable, the recovery is seldom either doubtful or tedious. For, as absorption usually proceeds in the ratio of the *softness** of the lens, and the absence of topical irritation which, if the operation be properly performed, very seldom takes place, the process in these cases frequently goes on with such extraordinary rapidity, that I have known many of this description in which not a vestige of the cataract could be detected after the expiration of forty-eight hours; in some instances of the fluid disease, the whole had disappeared in much less than half that time.

* Mr. Saunders says, "he had experienced that the *lens* was *soluble* in proportion to its *consistence*. — *Posthumous Work on the Eye*, p. 168.

The result of an operation upon a young gentleman nineteen years of age, whose intellectual faculties were scarcely of a higher order than those of an idiot, may be adduced in confirmation of this statement.

This patient had been blind for several years. As I had succeeded in restoring his brother to sight, in a case of great difficulty and declared hopelessness, his highly respectable parents felt much anxiety that an attempt should be made to afford, if possible, similar comfort to this unfortunate object of their compassionate regards.

As he was exceedingly intractable, and would not allow any stranger to approach near to him, I found it expedient to resort to various methods to overcome his prejudices. It was also necessary, after familiarizing him to my voice, to accustom him to the position and manner

in which it was intended the operation should be performed. Having at length secured his confidence, I availed myself of a favourable opportunity to introduce my needle into his eye, and the lens being soft, the process was finished before even he was aware of my movements and design. Within the space of twenty-four hours the whole ambit of the pupil became clear, when, to his great surprise and inexpressible delight, he regained his suspended speech as well as vision, and expressed his joy and gratitude in the most simple but truly affecting language, his dejected and subdued spirits reviving with his restored perception of the surrounding objects.

No persuasion was necessary to induce him to submit to the application of the same curative means to the other eye, which he bore not only without reluctance or fear, but with the most eager anxiety.

The process proved equally successful, and vision was obtained in as short a period as in the former instance, and without the slightest untoward symptom. He remained in town under my care only from Tuesday until the following Saturday, when he returned home as well as patients are after the most satisfactory operation, and capable of seeing, by the aid of a convex lens, the smallest dot on paper.

A fact connected with this interesting case ought not be passed over in silence. I allude to the restored use of his visual faculties having been speedily followed by the developement of his mental powers, which, while he remained in a state of darkness, appeared to be completely torpid and suspended. As soon as he became partially acquainted with the external and visible properties of tangible substances, he evinced a strong desire to be instructed in their several names and uses; a wish

which, being sedulously attended to and indulged, enabled him gradually to obtain such a general share of information, as to remain no longer a burthen to himself and family, by appearing more like an automaton than a rational being.

But further, should even a repetition of the process be deemed requisite with a view to accelerate absorption, which, however, is rarely the case except when the capsule has been imperfectly divided, and the lens suffered to remain *in situ*, the pain produced by the operation is so trivial, that very few express the smallest reluctance to submit to it. And I may add, that my experience confirms the assertion of Scarpa with relation to couching, viz., that in the event of such repetition, "the symptoms of the second operation," however mild the former may have been, "are constantly less considerable than those of the first operation." *

* Scarpa on Diseases of the Eye, by Briggs, p. 390.

Another consideration will tend likewise to reconcile the patient, not only to occasional delay in the recovery of his sight, but also to the re-introduction of the needle, in case it should be thought requisite. I mean, that immediately after the slight irritation which may follow the operation has subsided, he will not only be free from uneasiness, but likewise from confinement and every other restraint, except such as ordinary prudence would dictate to prevent the occurrence of inflammation.

Nor is this all: — We ought not in general to feel any anxiety as to the *slowness* with which a comminuted cataract disappears, provided the absorbents are not totally inactive. In common cases it is of little importance whether vision be restored a few weeks earlier or later than was anticipated.

During the progress of absorption, we shall always be able to form a correct opinion as to the ultimate issue of the case.

Should this prove favourable, the patient ought to be instructed to submit with cheerfulness to a temporary retardation in his cure. Even if the disease has been *fully formed*, and of *long standing*, he may still with truth be assured, that he will probably receive the full impression of light and objects as soon as the eyes are in a condition to bear them with impunity.

The following cases shew, not only with what rapidity the cure is sometimes accomplished by the process which has been stigmatized with slowness in its restorative effects, but at the same time, how unfit the retina is to be suddenly exposed to the strong glare of light after it has been long excluded from the eye, by the presence of a cataract.

Mrs. C., for many years an inmate in the Duke of Newcastle's family, on whom I operated for adherent reticulated capsular cataract, was enabled *instantly* after the

needle was withdrawn, to see every object by the aid of proper spectacles.

The pupil, in this case, had been so long and widely dilated and fixed, that an eminent practitioner declined undertaking an operation, from an apprehension that the cataract was complicated with gutta serena.

She felt scarcely any uneasiness from the introduction of the needle, and not the slightest subsequent inflammation. But, the pain she endured from the sudden and free transmission of light to the retina was truly distressing; and, although the event proved that no morbid affection existed in any part of the organ, she became capable by slow degrees only, and after an interval of many weeks, to bear the stimulus of strong light, or application to reading, writing, or needlework.

Mr. Porter, also, of Bethnal Green, consulted me on account of his being affected

with cataracts of a description very similar to the preceding. By means of an operation, his sight was *immediately* restored.

In this, as in the former instance, the same inconveniences ensued, and for several months prevented the comfortable use of the organ: although I do not recollect having, at any period, seen an eye which exhibited, after an operation, a more animated or healthful appearance.

Thus, the *gradual* manner in which sight is generally restored by this method of operating, so far from affording any solid objections to the process, as the advocates for couching and extraction allege, is, on the contrary, in particular instances, one of its strongest recommendations.

Although this argument may not harmonize perhaps with the feelings of the patient, who looks only to present relief,

without always calculating upon the price at which it may be obtained, it will be easy to shew its force by well known facts. No one can be ignorant how much the eye suffers from sudden exposure to strong light* after it has been long subjected to comparative darkness. And may not the morbid sensibility, accompanied with a weeping of the eye and contracted pupil, which sometimes follow couching and extraction, be ascribed to this cause?

It is true that these dangers may, in a great degree, be counteracted by guarding the organ from the full influence of luminous rays, for an adequate period after the operation. In this case nothing is gained by the *rapid* recovery of vision, but we have to encounter the difficulty of

* On this point the reader is referred to a note at pp. 41 and 42 of my "Treatise on Weakness of Sight," 3d. edit. 8vo. and also at p. 135 of the same publication.

controlling the eager wishes of the patient, which, under the proposed mode of treatment, he has not the power prematurely and injuriously to indulge.

So that, upon the whole, it appears that, notwithstanding the sight may be *immediately* restored by the respective operations of couching, or extraction, the eye is not, in general, rendered efficient for the different purposes of life at an earlier period than by the absorbent practice, properly timed and conducted in the manner recommended; whilst the advantages, in every other respect, are decidedly in favour of the latter.

3*dly*, It may be urged, that the patient will feel reluctant to submit to the proposed operation at that period when it is considered to be peculiarly indicated. Some of the arguments which might be adduced in answer to this objection, have already appeared under the preceding

heads or divisions of my subject. To these may be added the reflection, that an opacity even of the *capsule*, when complete, is acknowledged to be incapable of resolution or removal by topical or general remedies; and it is also allowed, that the *lens* when disorganized, is still less under the influence, or rather is absolutely beyond the reach, of medical agents. Hence, permanent blindness, or the chance of restoration to sight by an operation, is the only alternative to which the patient can look forward. And that process surely will be preferred, which is calculated to effect the object in view with the least degree of present pain, and risk of future ill consequences.

Under the prospect, then, of approaching blindness, it is natural to presume upon the *willingness* of the patient to prevent such a distressing occurrence, as he would avoid any other serious evil, by the re-

medial means he has at his command. What advantage, indeed, would he gain, or rather, what sacrifice might he not make, by refusing to adopt a measure no less easy than efficient? Two intractable forms of cataract are the *dense* capsular, and the *hard* lenticular species. But these are alike the *product* of *time;* for, at an *early* period of their formation, as we have before observed, or in their incipient stage, they are severally permeable, or lacerable by the needle; a mode of treatment which, when it can with propriety be resorted to, is, of all others, confessedly the safest and most eligible. Are not these strong motives for submitting to an *early* operation?

In truth, the great reluctance and misgivings expressed in regard to instrumental assistance, arise principally from an association of ideas, founded upon the pain which is known to attend a punctured,

or incised wound of even the common integuments, or soft parts of the body. It is, therefore, naturally enough inferred, that an injury inflicted upon an organ so delicate as that of the eye, must be productive of an infinitely greater degree of suffering. A supposed confirmation of this opinion has been too hastily established, from the exquisite torture which accompanies inflammation of the eye on the one hand, and the violent irritation and pain which proceed from the introduction of hard or angular substances underneath the eye-lid, on the other.

The sensibility evinced on these occasions does not, however, apply to operations performed upon the eye when *free* from inflammation. The cornea, as well as ligamentous and tendinous structures, acquires poignant sensibility under a state of inflammatory excitement; but like them,

it is in a great measure, if not wholly, destitute of sensation in its natural condition. *

And the same substance which occasions a high degree of agony, when embraced by and rubbed between the eye-lids, may be borne with impunity if placed carefully only in contact with the exposed cornea. Had not, indeed, the eye been thus constituted by our all-wise and beneficent Creator, it would have been impossible to subject the organ to those otherwise insufferably painful operations which are occasionally necessary for the cure of some of its multifarious diseases.

And with respect to the sclerotica, the choroid and even the membranous part

* By the minutest examination, no nerves can be detected in the cornea. Hence Haller, in his Physiology, very justly *denies* its sensibility when *uninflamed*: — "Neque sensûs signa aut homo, aut animal edit."

of the retina, which are transfixed by the needle in the posterior operations for cataract, they are probably, in their healthy state, endowed with very little sensibility. The principal source of the trifling and momentary pain which is felt, during the careful introduction of the instrument into the eye, is from wounding the fine transparent membrane called the conjunctiva, which, after serving as a lining to the inside of the eye-lids, is reflected over the fore-part of the eye-ball. The lens itself, which is the seat of true cataract, not having any nerves, is, like the nails, absolutely without feeling.

The very inconsiderable share of uneasiness which attends the actual performance of the operation by the absorptive process, is chiefly owing to the external pressure requisite to steady the globe, and to the several evolutions of the instrument whilst in the eye, forcing the cataract against the

iris, and disturbing the internal mechanism of the organ.

The absorbent practice being thus stripped of the imaginary terrors with which it has been too much the custom to clothe it, and the advantages resulting from its early adoption, compared with the difficulties and dangers which are not unfrequently the consequences of delay, being fully demonstrated, it is presumed that its merits only require to be known, to secure for the process that preference to which it is justly entitled.

4*thly*, But it has been alleged, that cataract in *old* people cannot be removed by the absorbent method of treatment, owing partly to the unusual *solidity* which the nucleus of the lens is supposed to acquire, and to the decaying powers of absorption in declining age.

Are there not, however, circumstances of the greatest weight which render either

couching or extraction highly objectionable, and sometimes even impracticable, at that period of life? A considerable quantity of the fluid contents of the eyeball becomes occasionally absorbed, leaving the organ proportionably diminished in size; a state of parts very unfavourable to those processes. The cornea is liable to become less convex as old age advances, and the anterior chamber, in consequence, to be reduced in its dimensions; a change which is highly adverse to the successful performance of extraction. A disorganized condition of the vitreous humour is by one author said "to occur so frequently in old persons, that he is inclined to consider it as one of the attendants of old age."* Although my experience does not, by any means, lead to the conclusion that this symptom prevails to the extent represented in the passage

* Sir William Adams on the Eye, p. 210.

just cited, yet whenever it happens, it constitutes a case obviously ill suited to the operation either of couching, or extraction.*

That opaque circle around the base of the cornea, termed from its form, and frequency in advanced life, *arcus senilis*, occasionally encroaches so much upon its surface, as to forbid the section of the cornea.

The pupil, in those individuals particularly who have been long accustomed to exercise the eyes upon minute and dazzling objects, is very liable, in the decline of life, to become permanently small and contracted; in which case it would be exceedingly hazardous to attempt the re-

* "The cataracts of *old* persons," says Wenzel, "are apt to form *adhesions* to the neighbouring parts; and these render the operation (extraction) not only more difficult, but much less certain of success. — *Treatise on Extraction, translated by Ware*, p. 3.

moval of the cataract through an artificial opening in the cornea.

The above is a list of some of the difficulties which apply to the common operations for this disease occurring in elderly persons, all of which may be avoided by the adoption of the plan proposed.

That absorption is equally energetic in advanced age as in early life it would be preposterous to contend; but that this process goes on, and is capable of removing a comminuted opaque lens, is undoubtedly a fact which has been proved by repeated experience. It is, in truth, owing to the activity of the absorbent vessels outstripping the powers of the secreting arteries, that the cylindrical bones, in aged persons, are found to be specifically lighter than those of the same size and description in youth; the old interstitial ossific particles being carried away more rapidly

than new ones are deposited. This circumstance accounts for the greater tendency to *fractures* in *old*, and to *dislocations* in *young* subjects. Hence, too, the small quantity of adipose substance, and the consequent general extenuation, with relaxation, and wrinkles of the integuments, in advanced age.

Sir William Adams asserts, that "he has *frequently seen entire* cataracts, when *solid* and in *old persons*, absorbed *within six* or *eight* weeks, and sometimes in a shorter period, after being *divided* and placed in the anterior chamber." *

If such be really the result with an *entire* and *hard* lens, without producing great irritation, still I must venture to characterize the practice as alike, in the majority of instances, unnecessary, injudicious, and hazardous. Admitting, however, for the sake of argument, the

* Adams on Cataract, p. 54.

correctness of the statement, we cannot reasonably question the capability of the absorbents to act upon and remove a *comminuted* opaque crystalline of a *soft* and uniformly permeable texture.

Accordingly, I have successfully operated, under the circumstances just stated, upon a considerable number of individuals of both sexes who had reached their fiftieth, and in several who had attained their seventieth year, without meeting with unfavourable symptoms. From the disposition in the lens of individuals who have passed the meridian of life to become indurated, it is always desirable to attack the disease at a very early period after its commencement. I may add, that the proneness to inflammatory action seems to diminish with advancing years; a fact that might indeed be inferred from the nervous system becoming less sensitive, and the vascular less irritable in the decline of life.

I willingly avail myself of the permission of the patient to publish the following interesting case, which very satisfactorily illustrates and confirms the doctrine I am advocating: —

The subject of the present communication was Mrs. Monypenny, who formerly resided in Guilford Street, Russell Square; a highly respectable widow lady, upwards of *eighty-four* years of age.

The cataract, which was lenticular, had existed more than three years in the right eye, and about twelve months in the left.

The pupils being perfectly circular, and freely moveable, she was able not only to distinguish light from darkness, but likewise, in a favourable situation, vivid colours and the outlines of large objects. As she, in general, enjoyed good health, and as the organ of vision was in other respects apparently sound, she was recommended

to submit to an operation, which was forthwith performed.

As the capacity of the anterior chamber was exceedingly small, it was not attempted to project much of the divided and disorganized lens (which, being of a moderately yielding texture readily admitted of comminution,) into the anterior chamber. This circumstance, added to an extensive *arcus senilis*, rendered the case unfit for extraction, and the diminutive size of the globe equally so for couching; and no chance of relief could be afforded her but from the proposed deviation from established modes of practice.

Mrs. M. experienced such trivial uneasiness from the operation on the left eye, that immediately after the needle was withdrawn, she earnestly entreated me to introduce it into the other, in the hope of regaining, at once, the sight of both. Not

the slightest pain or inflammation ensued, and my patient recovered completely her powers of vision: although the recurrence of attacks of jaundice, to which she had long been occasionally subject, served to retard for a while the rapidity of absorption.*

* The *cessation* of the absorptive process in the eye, on the supervention of any general or local morbid excitement, has not been adverted to by any preceding writer on cataract, although it is a fact of great practical importance.

My attention was first turned to this curious circumstance by the case of a poor woman, on whom I successfully operated for a lenticular cataract with a central nucleus. The broken up lens was rapidly disappearing when she became the subject of an acute fever, which continued for several weeks. During this febrile accession, the further dispersion of the disorganized crystalline was suspended, but re-commenced after the subsidence of the new disease, and speedily effected the entire removal of the remaining portion of the cataract.

A similar circumstance happened in the case of a female attendant of the late Dowager Countess Spencer,

The above statement fully warrants the following important inferences: 1*st*, That the needle is adequate to complete the operation with ease, safety, and success, even in the cataracts of *old* people. 2*dly*, That in very advanced life, nature is still capable of effecting the entire removal of the opaque lens, especially the *soft*

on whom also I operated for lenticular cataract. When more than half of the opaque crystalline had been absorbed, she was suddenly attacked with a violent intermittent; on the termination of which the absorbents, which had become completely torpid, resumed their activity, and in the space of *two days*, having wholly removed every vestige of the morbid lens, she perfectly regained her sight. — It may be right to add, that in such instances, if the absorbents do not *immediately* recover their energy on the cessation of the intervening morbid action, no dependence is to be placed on its spontaneous revival afterwards; and consequently, under such a contingency, the operation had better be repeated without delay, with a view to rouse the vessels into activity, so as to expedite the cure.

species when reduced into small fragments; although somewhat more time may be required for that purpose than in more juvenile subjects.

The case of a distinguished nobleman on whom I operated a short time since for soft cataract, affords such a satisfactory illustration of the doctrine advanced in the foregoing pages, and of the occasional efficacy of an early operation on one eye in dissipating a nascent cataract in the other, that I shall take the liberty of briefly adverting to it in this place.

The disease had been gradually forming for many months, but the opacity had not made such progress as to deprive the patient of a certain degree of vision. The inconvenience principally complained of, in addition to the perception of a constant mist, was a sense of great confusion and indistinctness of sight; which occasioned

him very often to mistake persons and distances, and rendered him extremely uncomfortable and uneasy in his mind.

On account of his advanced age, which was upwards of seventy, and his ability to discharge, though not without great inconvenience, such every-day business of life as does not require very accurate vision, the performance of an operation was discouraged by several eminent practitioners; from apprehension, on the one hand, that violent inflammation might supervene, and on the other, that if the new process were had recourse to, the diminished energy of the absorbents would be inadequate to effect the dispersion of the cataract.

It was not without due and sufficient deliberation that I ventured to offer different advice; my reasons for which were, that extensive observation had convinced me that old age, although it may serve to retard, does not prevent the removal of

the comminuted lens by the absorbents, especially so long as it remains soft; and that the risk of inflammation is by no means augmented, but on the contrary, decreased under these circumstances.

The patient was ultimately swayed by my arguments, which were seconded by the recommendation of an eminent surgeon, and came to the resolution to submit to the operation; which was accordingly performed by me on the right eye, without the occurrence of the slightest unfavourable symptom.

The pain and inconvenience sustained by the process were so very inconsiderable, that, to use my patient's expression, "they did not deserve to be named."

As the season was advanced, a consideration of the general health, as well as the age of my noble patient, induced me readily to accede to his wish to retire for a while to the country; from whence the

most satisfactory reports were transmitted to me.

During his absence from London, such was the improvement in his vision, that His Lordship soon began to resume the active sports of the field. He was also enabled to read by candle-light the smallest print, of which, before the operation, he could scarcely distinguish a letter; and to participate again in the social amusement of cards. This gratifying alteration in his visual faculty rendered a repetition of the operation unnecessary: the power of the other (the left) eye being so greatly strengthened and improved, that my patient declared himself perfectly satisfied with the vision he then enjoyed.

The above narrative may perhaps lead to the inquiry, — Would, then, the author deem it advisable to propose that a patient affected with *incipient* cataract should submit to an operation, while he still re-

tains a sufficient degree of vision to enable him to guide himself, and to perform, not however without difficulty and inconvenience, the ordinary duties of life : although he may not be competent to attend to minuter offices, or embrace those various literary and social gratifications which require for their indulgence nicer and more accurate visual powers ?

This inquiry involves various collateral considerations ; amongst which the habits of the patient, his pursuits, the station he holds in society, and the value he may attach to his personal exertions, hold the first place. We are next to regard the nature and tendency of the cataract. Should the change which the lens is actually undergoing appear such as to forebode an intractable form of the disease, delay would of course be improper, and the threatened danger should

be anticipated by an early operation. On the contrary, should its external character bespeak a simple and uncombined species of cataract, and its progress be scarcely perceptible, procrastination, in a case of this description, is comparatively of little consequence ; and the expediency of an operation may be safely submitted to the choice of the patient.

But, for the sake of illustration, let us suppose a cataract to have made its appearance and some considerable progress in *one* eye with the usual attendant imperfection of sight, whilst in its associate organ there may be only the slightest visible opacity with a corresponding and scarcely perceptible interruption to its powers ; — would it be proper, in such a case, to resort to the curative process recommended, or to postpone the operation until the disease may have become fully formed in *both* eyes ?

As the nature and character of the cataract, in the case under consideration, could be fully ascertained and estimated, I should, for the reasons already urged, have no difficulty in recommending the operation; and with additional confidence if the disease were hereditary, of the lenticular species, and had proceeded from an internal and unassignable cause.

But the operation for cataract has been proposed and adopted in instances where the lens of *one* eye has been *entirely free* from *opacity*. That the late Mr. Saunders was an advocate for such practice may be inferred from the following passage: "On cases of cataract of one eye, the *other being perfect*, whether the cataract was primary, or arose from injury, he (Mr. Saunders) operated with the happiest results."*

Mr. Travers observes, in reference to

* Saunders on the Eye, p. 209.

this point, " it has been a custom with oculists, when a person has a full-formed cataract in one eye, and retains the vision of the other, to advise the postponement of the operation until that also is dark; — this advice I think erroneous." * He grounds his opinion on the tendency of the cataractous eye to produce amaurosis, if it becomes the subject of an accidental inflammation; and on the disposition of the retina to lose its vigour by the permanent exclusion of light. The subsequent necessity of wearing glasses he regards as a trivial and altogether subordinate consideration. Similar views of the question had been previously entertained and acted upon by Maitre Jan, † St. Ives, ‡ and Wenzel, § without hesi-

* Travers's Synopsis of Diseases of the Eye, p. 313.

† Maitre Jan, Maladies de l'Œil, edit. 2, p. 196.

‡ St. Ives, 216. 1722.

§ Wenzel's Treatise on Extraction, by Ware, 1791.

tation, and with the most complete success.

The principal objection which has been urged against the practice of operating on the cataract in one eye whilst the other is only slightly or not at all affected, to say nothing of the prejudice it must have to encounter on the part of the patient, turns upon the different degrees of refraction which the rays of light must necessarily undergo in passing through all the transparent humours of the sound eye, compared with what they must be subjected to in traversing only the aqueous and vitreous humour after the removal of the crystalline in the other. Under this change in the foci of the respective eyes, agreeably to the laws of optics, double or confused vision must ensue. Such, however, is the adjusting and correcting powers of this wonderful organ, that contrary to what theory suggests, experience

proves that the alleged defect, even after extraction, is not in such instances either considerable or permanent. *

In cases of lenticular cataract in one eye treated by the *absorbent practice*, my observation has convinced me that the inconvenience alluded to is still more trifling and transitory in its duration. This fact is probably owing to the *gradual* recovery of sight by that process, during which the one eye is enabled to accommodate itself to the focal difference in the other. Mr. S. Cooper asserts, that confused vision, said to arise from the cause under consideration, " is a gratuitous supposition, inconsiderately transmitted from one author to another." †

I may add, which is a point of great moment to be understood, that the patient has

* Wathen on Extraction, p. 57.

† Cooper's Surgical Dictionary, article Cataract, p. 297.

uniformly assured me that the operation performed under these circumstances, never failed to afford him very perceptible improvement both in respect to the power and sphere of vision.

As little cause is there for the apprehension entertained by some highly respectable practitioners, that the formation or the progress of cataract in the eye that is scarcely, or not at all, visibly affected, may be accelerated if an operation be performed for the removal of the opaque lens from the diseased organ.

It is, indeed, an undoubted fact, that the most intimate sympathy or consent exists between the two eyes, so that an inflammation having been excited in one, is very liable to be subsequently transferred to the other.

And, if a cataract should appear spontaneously, or from an internal and unknown cause in one eye, a similar disease will, in

all probability, sooner or later assail the other also. The same phenomenon occasionally, though not so frequently occurs, when a cataract is the effect of mechanical violence. In this latter instance there cannot be any ground for ascribing the supervention of the opacity of the crystalline in the eye which has not been injured, to any latent or constitutional origin, but to the similarity of texture in the corresponding parts of the respective organs; in consequence of which, the altered structure in one is apt to introduce a like derangement in the mechanism of the other.

So far, then, are facts from countenancing the too prevalent notion alluded to above, that they serve to establish a directly contrary doctrine. For, if there be any risk of morbid action being propagated or communicated by sympathy from a part of one eye to a part similarly organized in the other, that danger must surely

be obviated rather than increased by the removal of the presumed exciting cause, viz., the diseased lens.

By such an expedient the chain or concatenation of sympathetic movements being at once dissevered, the morbid action which might be anticipated, will probably not take place in the sound eye, or if it have actually commenced, may be suspended, or a healthy one be excited in it, so as forthwith to supersede the nascent derangement.

Accordingly, I am warranted by experience, which coincides with that of various eminent practitioners, in stating, that by operating at an *early* period after the formation of cataract in one eye, the *commencing* disease in the other has, in some instances, been immediately arrested; whilst in several the organ, in which the opacity had made greater progress, so perfectly regained its former pellucidity

and healthy function, * as to render an operation on that eye altogether unnecessary.

And from these circumstances it may fairly be inferred, that the too prevalent practice of postponing the operation for cataract in one eye, until the same disease shall not only have invaded, but extinguished the sight of the other, is based upon a narrow and erroneous view of the subject, and is not unfrequently the source of much subsequent risk and unnecessary suffering.

Having brought forward, it is presumed, a body of facts and arguments sufficiently

* For an exemplification of this fact, the attention of the reader is recalled to the case of the nobleman detailed at page 222. I have had occasion to notice a similar result in several other instances.

conclusive to satisfy every candid and unprejudiced mind as to the superior efficiency and paramount advantages which attach to the *early* removal of the different species of cataract, I shall content myself with offering, in conclusion, the following corollaries, which appear to my apprehension fairly deducible from the foregoing premises : —

1*st*, That the mental distress, the occurrence of blindness, and the contingent difficulties and dangers which may arise from waiting an indefinite period for the lens to become *ripe*, or in a state fit for the common operations of couching or extraction — (a change in its texture which, when it does occur, is often exceedingly tardy, the period of which cannot with certainty be anticipated, and may never arrive) — are wholly obviated by the plan proposed.

2*dly*, That the mode of operating re-

commended, if had recourse to as soon as convenient after the formation of the disease, is not only applicable to every variety and complexion of cataract, but is likewise attended with a very inconsiderable share of pain to the patient, and with little comparative difficulty to an experienced surgeon.

3*dly*, That a repetition of the operation will be rarely called for, if the process be, in the first instance, properly executed, in consequence of the absorptive process going on with great rapidity whilst the crystalline remains *soft*, or its capsule is easily lacerable ; and at the same time, there will be much less disposition to subsequent inflammatory irritation, than after either form of cataract has acquired a greater degree of consistence or tenacity.

4*thly*, That the needle, under these circumstances, can be employed to break up

the slightly opaque lens, or reduce its capsule to shreds, with the smallest imaginable injury to the eye.

5thly, That in consequence of the above advantages, and from the very nature of the process, vision is rendered at least equally good as after the most fortunate cures achieved by the operation of couching or extraction, at the same time that the possibility of a *secondary* cataract is effectually obviated.

6thly, That should not the incipient disease in the less affected eye spontaneously disappear, the restoration of sight in the one operated on will generally take place before the opacity in the former has made such progress as materially to interfere with its function.

7thly, That consequently, by this method of proceeding, the patient is guarded against the occurrence of blindness instead of being kept in a state of anxiety and

suspense, in constant expectation of its arrival, and by means which, at the same time that they are nearly destitute of pain and hazard, have a direct tendency to restore to the organ the greatest degree of perfection of which it is susceptible.

Lastly, That the plan of treatment suggested, whilst it challenges all the advantages which the customary and old methods of operating seek to afford, is decidedly preferable to both, for the reasons already assigned; and in being not only easier of execution, much more certain in its effects, and comparatively free from danger, but also in its universal applicability to every description of cataract at the early period of its formation, when neither of the common processes can be resorted to with safety or success.

THE END.

LONDON:—PRINTED BY J. MOYES, GREVILLE STREET.

Works by the Author of the foregoing Treatise:

---

1. On the MORBID SENSIBILITY of the EYE, commonly called WEAKNESS of SIGHT. Dedicated, by Permission, to H. R. H. the Duke of York. Third edition, enlarged. 8vo. Price 7*s.*

2. On CATARACT. Second Edition, enlarged and revised: with Engravings of the Author's new and improved Instruments. 8vo. Price 8*s.*

3. On GUTTA SERENA; or, NERVOUS BLINDNESS. Illustrated by Cases, demonstrating the Success of a Plan of Treatment founded upon New Views of the Disease. 8vo. Price 7*s.* 6*d.*