A

TREATISE

ON THE

EXTRACTION

OF THE

CATARACT.

BY

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TRANSLATED FROM THE GERMAN.

WITH A PLATE; AND

NOTES

BY THE

TRANSLATOR.

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THE

TRANSLATOR'S

PREFACE.

THE charms of novelty often exert their influence as powerfully over our reaſon, and the higher faculties of the mind, as over the external ſenſes; hence, not only in matters of mere taſte, but alſo in the doctrines of ſcience, and in the practice of the arts, new modes of thinking and acting have become celebrated, and faſhionable, more perhaps from a principle of variety and change obtaining in human nature, than from their ſuperior advantages over thoſe methods that preceded them.

About half a century ago, Monſ. Daviel, a celebrated French ſurgeon, firſt publiſhed

to the world a method for extracting the Cataract: I ſay, firſt *publiſhed*, for it is doubted by many, whether he had the honour of the invention. The idea was new, and, being plauſible, ſoon attracted attention: and, as it is natural to ſuppoſe that its advocates, from having paid extraordinary attention to it, had acquired conſiderable dexterity in performing the operative part—and as they found their intereſts intimately connected with its reputation, we are not to wonder that they buſily employed themſelves in extolling its ſuperior ſucceſs and advantages over that of Couching. Yet, were any candid perſon to take the trouble of comparing the operation for Extraction, as propoſed by Mr. Daviel, with the operation of Couching, as then performed, he will not heſitate in pronouncing in favour of the latter.

Since that period, however, this new mode of operating has undergone very great improvements, both in regard to the principles by which all its parts are regulated, and alſo in reſpect to the inſtruments uſed, inſomuch that it is now as much to be depended on as any other in ſurgery.

Hitherto

Hitherto this operation has in England, as in Germany, been chiefly confined to the hands of Itinerants; who, to do moſt of them juſtice, certainly acquire a dexterity which is but ſeldom to be met with among regular-bred ſurgeons. It would be idle here, in attempting to prove that this dexterity is the reſult of practice alone, and may be acquired by moſt men, who will give themſelves the trouble of exerciſing themſelves on the dead ſubject: and, as the operation is fully as valuable as any other in the art of ſurgery, it ought to be an object of ſerious attention to the ſcientific part of the profeſſion.

It was chiefly with a view to engage the regular-bred ſurgeons in Germany to the practice of this operation, that the author was induced to publiſh this treatiſe. But, as he has ſufficiently explained his motives in his Preface, it is unneceſſary to inſiſt further upon them, than to add, that when applied to Great Britain, they will be found ſufficient to juſtify a tranſlation of his work.

Experience muſt always be dear to men, whoſe profeſſion is founded on well-eſtabliſhed facts and obſervation: but when, to

great experience, an author adds extenſive erudition, his writings become highly valuable indeed. This character may be given to all profeſſor Richter's ſurgical works. Through the whole of them are collected the beſt precepts of the beſt authors who have preceded him, joined to his own ideas, the reſult of extenſive practice: combining, in this manner, the qualities of an uſeful compiler, with thoſe of an original writer.

The following tranſlation has little to boaſt of, except as being the medium of communicating what it is hoped will prove uſeful: it has otherways great claims to indulgence, being the firſt attempt of the Tranſlator in this line.

Through the whole of the following treatiſe it will be found, that the Author ſpeaks of the anterior and poſterior chamber of the aqueous humour; and it has been thus conſtantly tranſlated, without any alluſion to the aſſertion of Mr. O'Halloran*; who ſays, that that part of the iris which is not connected

* See his paper in the Tranſactions of the Royal Iriſh Academy, 1788, p. 121.

with

with the vitreous humour, lies in immediate contact with the capſule of the lens, and that therefore "*the idea of a poſterior chamber of* "*the aqueous humour muſt be for ever ba-* "*niſhed.*" To me, the grounds on which Mr. O'Halloran founds his aſſertion, appear extremely inconcluſive, and are ſuch as will not juſtify the abſolute denial of the exiſtence of a poſterior chamber of the aqueous humour; nor do I indeed ſee how any poſitive proof can poſſibly be adduced, which will aſcertain the degree of proximity between the iris and capſule. If theſe two parts were in immediate contact with each other, as that gentleman aſſures us they are, we ſhould find conſiderable difficulty in accounting for the rapid motions of the iris, conſidering the delicacy of its texture, and the degree of friction it muſt ſuſtain. The arguments, however, which Mr. O'Halloran adduces in ſupport of his opinion, are ingenious, and ſufficient to awaken doubts concerning the prevailing idea of the ſituation of the iris; and it were to be wiſhed, that he had confined himſelf to that point alone; for the reſt

of his paper does its author but little credit, either as an anatomiſt, or judicious ſurgeon. His opinion concerning the ſtructure of the capſule of the lens, which evinces the careleſſneſs with which he has made his anatomical reſearches, is proved to be completely erroneous by the experiments and arguments of Janin, and by the facts related by the Author of the following treatiſe, in his chapter on the membranous Cataract. Mr. O.'s aſſertion, concerning the impoſſibility of any part of the vitreous humour being regenerated; and that a diſeaſed lens, whether hard or ſoft, is always ſmaller than a ſound one; ſhow how little he is acquainted with the phyſiology and pathology of the organ, concerning the nature of which he pretends to inſtruct us.

With regard to the method which Mr. O'Halloran recommends for extracting the cataract, and the knife which he employs, nothing more dangerous and injudicious could poſſibly have been deviſed. And for a comment upon them, he is referred to what profeſſor Richter ſays upon the ſubject

ject of cutting the cornea, and the form of the inſtruments to be employed for that purpoſe.

London,
November, 1790.

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AUTHOR'S PREFACE.

I HAVE taken the contents of my firſt collection of *Surgical Obſervations* *, as the groundwork of the preſent treatiſe; but they will be found ſo much improved, altered, and augmented, that no one can look upon this as a mere tranſlation of thoſe obſervations. My view was partly to make known the reſult of my later experience, and partly to communicate to Surgeons in Germany a faithful account of one of the moſt important operations in Surgery. It muſt not be looked upon, however, as a complete compilation of all that can, or has been ſaid on the Cata-

* Obſervationum Chirurgicarum, faſc. 1.

ract:

ract: for it only contains a ſhort relation of what I have obſerved myſelf in performing this operation: which, however, I hope will be ſufficient to enable any Surgeon to execute the ſame.

There are many propoſitions which, in my firſt collection of *Obſervations*, I looked upon as true and well-founded, entirely altered in this treatiſe, and declared to be ill-founded. We learn more and more every day, and experience proves to us that we have often erred where we thought ourſelves moſt ſecure againſt error. It may therefore happen, that, at a future period, I may tell my readers that even in this treatiſe ſome faults exiſt, notwithſtanding all my endeavours at this moment to be exact.

In other reſpects, my views will be completely fulfilled, if this treatiſe ſhould encourage the German Surgeons to undertake an operation which at preſent ſeems to be almoſt entirely baniſhed from the regular practitioner, and confined to itinerant oculiſts.

It will ſometimes happen that a patient loſes his ſight ſome months or years after the operation. Ignorance, and frequently envy

and ill-will, aſcribe this accident to the fault of the ſurgeon. It is needleſs for me to prove the injuſtice of ſuch a charge. But it may be aſked, Is not this ſecond blindneſs a reflection on the operation itſelf? I have heard it often aſſerted, that the operation for the Cataract is at all times but a palliative, and that the blindneſs which it relieves generally returns.

Admitting this objection to be founded, it only proves that the practice of Surgery reſembles that of Phyſic. The objection, however, is in general not well founded. Any one, who has the inclination, may convince himſelf of the contrary by many living examples. Moſt of thoſe upon whom I have performed the operation ſtill enjoy their ſight. Some, it is true, have again loſt it, partly by their own faults, partly from other cauſes. In the following treatiſe I have related their caſes, and pointed out the cauſes where this ſecond blindneſs is chiefly to be dreaded. I have alſo ſuggeſted ſome means by which I think it may be avoided.

Let us ſuppoſe, however, that a perſon loſes his ſight from two to ten years after the operation. Has he in the mean time gained nothing

nothing by the operation? Will a Phyſician acknowledge that he has performed but little ſervice to a patient whom he relieves from a pleuriſy, or dropſy, becauſe that patient ſhall happen to die ſome time afterwards of the ſame complaint? If ſome patients loſe their ſight a ſecond time after the operation, is the complaint for that reaſon incurable? It will generally be found that it is owing to an opacity of the capſule; and this capſule has been often enough taken out and the ſight reſtored.

The Surgeon who performs this operation ought to be able both to prevent and remedy the evils that are occaſionally the conſequences of it; ſuch knowledge being equally eſſential with the art of operating. I have in one chapter laid down ſome rules for treating properly thoſe ſymptoms which commonly ſupervene after the operation.

If this treatiſe is favourably received, I may probably, at a future period, be tempted to treat of the fiſtula lachrymalis, a diſeaſe concerning which I have had much experience.

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A TREA-

A

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ON THE

EXTRACTION OF THE CATARACT.

CHAP. I.

On the different Kinds of CATARACT.

THE cataract appears ſometimes to be entirely a local or topical diſeaſe; at other times, however, it ſeems as if it were the conſequence either of a general diſeaſe of the habit, or of that of ſome other part. It is to be conſidered as a local complaint, when it ariſes in conſequence of any blow, wound, or inflammation of the eye; or, in a word, when it originates from a local cauſe in a perſon who is otherwiſe in good health. We now and then obſerve it, however, in gouty, ſcrophulous, ſcorbutic, and venereal habits, and in ſuch caſes we have ſome reaſon to ſuſpect that

it is not altogether topical, but that it is more or leſs connected with the general diſeaſe of the conſtitution. This obſervation is of great conſequence; for I have obſerved, and that not ſeldom, that where the operation has been performed in ſuch caſes, a total blindneſs has followed ſooner or later. A man who had been much troubled with the gout, and a lady of a ſcorbutic habit, had both of them their ſight reſtored by means of the operation for the cataract. Seven months after, the pupils of their eyes gradually contracted themſelves, and at laſt cloſing altogether, a ſecond blindneſs enſued.

I do not mean to aſſert, that in ſuch caſes the operation ought to be entirely forbidden. All that I remark is, that the ſucceſs is leſs certain; that the patient will require a very careful preparation for the operation, and much attention after it.

There are ſome ſurgeons who believe that, at all times, the operation for the cataract is only a palliative remedy, and that the patients loſe their ſight again ſooner or later after it. This, perhaps, may be aſſerted, and with ſome degree of truth, of ſuch cataracts as ſeem connected with a general diſeaſe of the habit; but

moſt

moſt undoubtedly of none of ſuch as are altogether local. This is confirmed by experience.

Along with thoſe cataracts which are to be regarded as the effects of a conſtitutional diſeaſe, may, perhaps, be very properly claſſed what has been denominated the *hereditary cataract*; for in fact there ſeems to be ſuch a one. I have extracted the cataract from a man whoſe father, and grandfather were both blind from that complaint, and whoſe ſon has already an incipient one. Maitre Jean [a] and Janin [b] have both ſeen ſimilar caſes. I myſelf have ſeen three children, all born of the ſame parents, and who all acquired cataracts at the age of three years.

The cataract is in general ſlow both in its origin and progreſs. One caſe, however, I have ſeen, where it was completely formed in the courſe of one night. A foreſter, who had been labouring under the gout, had his feet expoſed to a great degree of cold during the night: the gout ſuddenly retroceded in conſequence, and he was entirely deprived of his

[a] See his Traité ſur les Maladies des Yéux, p. 176.

[b] See his Obſervations ſur l'Œil, p. 149; where he aſſures us, that a whole family of ſix perſons were blind from this diſeaſe.

ſight the ſame night. I ſaw him next morning, and found a complete pearly coloured cataract. Eſchenbach relates a ſimilar caſe[c].

The ſeat of the diſeaſe is various; and in this reſpect we may enumerate five different kinds. It is either the cryſtalline lens alone, or the lens, the capſule, and the liquor Morgagni together; or it is the anterior part of the capſule; or its poſterior part; or the liquor Morgagni ſingly.

The firſt is the moſt frequent and beſt kind, the ſecond the worſt, and the fourth the moſt uncommon. I have ſeen the laſt only once.

No ſooner had I punctured the capſule, by means of *La Faye*'s inſtrument, than two or three drops of a whitiſh fluid flowed out, and the ſame moment the pupil became clear, and the patient ſaw. Three months afterwards, a cataract took place in the ſame eye, which in all probability was ſeated in the body of the lens itſelf. On this account, I think a ſurgeon would act prudently, in all ſimilar caſes, were he always to extract the lens, although it ſhould not be opaque at the time of operation; for it is always to be dreaded, that it

[c] See his *Obſerv.* p. 43.

may

may become so in consequence of the injury done to the capsule, and to the lens itself during the operation.

There is a considerable variety in the consistence of the opaque lens; and in this respect we again enumerate five different kinds. Sometimes it is as soft as a jelly; and this cataract, which it is impossible to remove by couching, is however of very easy extraction. As soon as the anterior part of the capsule is pierced, by means of *La Faye*'s instrument, a part of this soft cataract immediately protrudes itself through the opening, without dilating the pupil in the smallest degree; and the operation is not only easy, but in general is followed by no bad consequences whatever. Sometimes the lens shall be entirely converted into a milky coloured liquor, which, in all probability, is the *cataracta purulenta* of old writers. In this kind of cataract, the operation does not always succeed in the same way. When the membrana capsularis is thin and delicate, it is easily pierced by means of *La Faye*'s cystitome, and then the milky contents flow out without the smallest injury being done to the iris. At other times, however, the capsule is uncommonly hard and

tough. If preſſure be employed here, the whole capſule forces itſelf through the pupil, in the form of a bag containing a whitiſh fluid. I call this kind the encyſted cataract (cataracta cyſtica). I have only extracted ſuch a cataract once. After making my inciſion through the lucid cornea, I preſſed pretty hard on the eye, without being able, however, to make the cataract move; upon which I encreaſed the preſſure conſiderably, when at once the whole capſule ſtarted ſuddenly forward, and after it a part of the vitreous humor. It was very large, quite round, and milk white. The extraction of ſuch a cataract as this requires a good degree of preſſure on the eye, and is accompanied with a forcible dilatation of the iris, and the danger of loſing a part of the vitreous humour. Indeed, I know of one caſe, where great preſſure was tried in vain, and the ſurgeon was obliged at laſt to introduce a pair of ſmall forceps in order to extract the cataract. All theſe inconveniences may be avoided, as ſoon as we diſcover the real nature of the diſeaſe. We ought then to open the capſule by means of *La Faye*'s inſtrument, even although ſome force ſhould be requiſite towards the effecting it;

it; and as ſoon as the milky liquor has flowed out, the operator muſt lay hold of the capſule with the ſmall forceps, and pull it out alſo.

At firſt I imagined that the ſack conſiſted of the external lamella of the lens, and that its internal ſubſtance had been converted into the whitiſh fluid; but I am now convinced, that it is the capſule itſelf which forms the ſack, and that in many caſes this comes eaſily away, together with the lens, during the operation. I have ſeveral lenſes in my poſſeſſion, which I have myſelf extracted, and which evidently ſhow this. They are inveloped in a membranous ſack, which is evidently the capſule. Thoſe, from whom I extracted theſe cataracts ſuffered no uncommon or bad conſequences from the operation, but all recovered their ſight perfectly; from which it may be concluded, that the eye does not ſuffer from the loſs of this part; which is a circumſtance of importance to know.

It happens now and then, that as ſoon as the capſule is opened, a conſiderable quantity of a milky-coloured fluid flows out, and ſoon after follows a very ſmall lens. The quantity of the fluid, and the uncommon

ſmallneſs of the lens, render it probable that its external lamellæ have been diſſolved. Sometimes the lens has the conſiſtence of new cheeſe; and this kind of cataract is fully as difficult to depreſs as to extract. In general it is very bulky, and, when paſſing through the pupil, it either forcibly diſtends the iris, or breaks, leaving fragments remaining in the capſule. Theſe portions muſt all be taken out; in the effecting of which the eye generally ſuffers much.

The moſt frequent and beſt kind of cataract is that which has been denominated the horny cataract. The lens is ſometimes as hard as a ſtone or piece of bone. This, however, is a rare occurrence, which I have never met with; but St. Yves[d], Heiſter[e], Ronnow[f], and others, have ſeen it.

Janin believes that it takes place, principally in old people, and, in general, in conſequence of ſome external violence done to the eye.

[d] Vid. Maladies des Yieux, p. m. 151.

[e] See his Obſervations, vol. 2.

[f] See his Tal om en ben-eller ſtenakting Starr, vid hela omkretſen of Unea faſt vuxen, ſom lyckligen blifvit med nalen nedtryckt; Hallet Far kongl. Vetenſkaps Akademien, vid Praſidii Nedlaggande, den 20 April, 1768.

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The cataract is ſaid to be ripe when it is of a pearl colour, and when the patient is ſo totally bereft of ſight that he can only diſtinguiſh light and darkneſs. If, on the contrary, the cataract be only of a milky colour, and that the patient can not only diſtinguiſh objects, but alſo ſome colours, it is then ſaid to be unripe and ſoft. There are, indeed, ſome who actually believe that the lens becomes ſoft at the onſet of the diſeaſe, and that it again grows gradually harder as the opacity encreaſes. Hence they conclude that an incipient cataract is always ſoft, and a confirmed one hard; an opinion which is contradicted by experience.

In a word, this gradual change of the cryſtalline lens is quite imaginary, the appellations ripe and unripe are ill founded, and all that has been ſaid concerning theſe two ſtates ſubject to much doubt. I have extracted cataracts of ten, twelve, and fifteen years ſtanding, which were ſo ſoft that their figure was altered as they paſſed through the pupil; and again, I have ſeen others of one or two years which have been perfectly hard. The conſiſtence of the cataract does not depend on its age. I would almoſt believe that ſome lenſes actually

turn

turn ſoft as ſoon as they begin to grow opaque; and that hence there ariſes a cataract originally ſoft, which remains ſo ever after. In the ſame manner it ſeems as if there were other cryſtalline lenſes which begin to acquire an uncommon hardneſs as ſoon as they begin to change colour; and that hence ariſes an original hard cataract, which remains ſo ever afterwards. This change in the cryſtalline lens is probably owing to the peculiar nature and effect of the cauſe producing the diſeaſe.

There is hardly any characteriſtic mark of a ſoft or hard cataract that is to be depended on. The colour proves nothing. I have extracted ſome of a milky colour, which were quite hard; and again, I have ſeen others of a pearly colour, quite ſoft. Neither is any thing to be concluded from the degree of opacity; for I have obſerved in thoſe who were ſo deprived of ſight as to be able only to diſtinguiſh light and ſhade, that the cryſtalline lens was quite ſoft, and, on the contrary, that thoſe who could ſtill diſtinguiſh objects and colours had their lens quite hard.

There are, however, two ſymptoms that I ſhall juſt now communicate to my readers, which,

which, although I cannot ſay they have never, yet have very ſeldom, deceived me. The ſofter the lens is, the larger and thicker it is in general, and therefore approaches nearer to the edge of the pupil; hence I always conclude that the cataract is large when it is near the pupil; and in this I have found myſelf but ſeldom deceived.

In order, however, to judge of the ſpace between the pupil and the lens, the ſurgeon muſt look into the perſon's eye from one ſide; but in general it requires much experience and exerciſe in order to judge of this with accuracy: beſides, there are caſes where no ſuch ſymptom ever can appear, as in thoſe where the iris adheres to the cataract; and in ſome other caſes it can be of no uſe, ſuch as in an atrophy or dropſy of the eye.

Further, we are ſometimes able to diſcern on the cataract, points, ſtreaks, or other marks. If, after having attentively obſerved the place, figure, and diſpoſition of theſe, we find that in ſome days afterwards, or upon rubbing the eye pretty hard, they have undergone any change in their figure or ſituation, we may then conclude with certainty that the cataract is ſoft; only we muſt be cautious

not-

not to draw an oppoſite concluſion; I mean, that we are not to conceive the cataract to be hard if theſe ſhould happen to ſuffer no change.

The uncertainty of the marks by which we might diſtinguiſh a hard from a ſoft cataract, and the exceſſive difficulty there is in attempting to depreſs a ſoft lens, gives the operation of extraction a decided advantage over that of couching. It is full as eaſy to extract a ſoft as a hard cataract, and the extraction on this account ſucceeds in general much better than couching; for, upon introducing the couching needle into the eye, on the ſuppoſition that the cataract is hard, and afterwards diſcovering, contrary to conjecture, that it is ſoft, difficulties occur which we ſometimes find impoſſible to overcome; and on the other hand, deceived by the incertitude of the ſymptoms, the operation is often neglected from an idea that the cataract is ſoft, whereas, had it been performed, it might have turned out very ſucceſsful. They ſuppoſe that thoſe marks which ſeem to them to indicate the unripeneſs of the cataract will gradually wear away, and that in time it will become ripe; whereas the cataract remains, both as to appear-

ance,

ance, and in reality, juſt the ſame, and the patient is thus neglected during the whole of his life. I myſelf have extracted the cataract from a woman, whom ſome refuſed to couch, merely from the idea that the lens was ſoft. It was hard, however, and might have been eaſily couched.

All theſe difficulties can be overcome by extraction. I do not aſſert, indeed, that all kinds of cataract are equally eaſy of extraction. The beſt kind is that which is hard; for it is in general ſmall, paſſes eaſily through the pupil, and leaves no part behind. Next to it is that which is like a jelly in conſiſtence; for this alſo paſſes through the pupil without doing any injury, although it is apt to leave ſome part remaining in the capſule. The worſt kind is the cheeſy cataract, which either breaks, and muſt be extracted piece by piece, or, if it remains whole, dilates the iris ſo forcibly in its paſſing out, and requires ſuch a preſſure on the eye, as gerally forces out ſome of the vitreous humour after it.

It is remarkable, that the colour of the cataract is found to be different after extraction, from

from what it appeared to be previous to the operation.

I have ſeen cataracts, which previous to the operation appeared of a pearl colour quite yellow after they were extracted, and on the other hand, ſome that appeared yellow to be of a pearl colour. The encyſted cataract, which I formerly mentioned, was of a milk-white colour, although in the eye it appeared of a pearl colour. Moſt lenſes which I have extracted are much harder and more opaque in the center than at the ſurface; nay, lenſes have been ſeen, whoſe center was as hard as ſtone. Ought we not then to conclude from hence that the diſeaſe always begins in the center? And yet, when we look at the eye of a perſon who has an incipient cataract, we obſerve, that the opacity is pretty much the ſame over the whole ſurface of the lens.

I have once ſeen the tremulous cataract, *cataracte branlante*; it was quite white, and had dark-coloured ſtripes here and there on its ſurface. Its diſtance from the pupil was very ſmall, the motion of the iris was free, and the patient could diſcern light from ſhade. Upon the

the ſmalleſt motion of the eye or the body, not only the cataract but the whole iris trembled. Maitre Jean is miſtaken when he thinks that this kind of cataract is always conjoined with the inability of diſtinguiſhing light from darkneſs.

I have alſo once ſeen what has been denominated the *cataracte barrée*. Acroſs the center of the cataract there run a milk-white ſtripe, which ſeemed to lie anterior of the lens. I judged from the appearance, that this ſtripe had its ſeat in the anterior portion of the membrana capſularis; nor was I deceived. I ſhall have occaſion to take notice of this kind of cataract by and bye.

It is no uncommon caſe for the amauroſis, or gutta ſerena, to be aſſociated with the cataract. If the patient complains of frequent head-ach, and feels an uneaſy and dull pain in the orbit, or around it, or at the root of the noſe, and at the ſame time imagines he ſees red ſparks and clouds flying before his eyes, we have great reaſon to be afraid that there is an incipient amauroſis, and in this caſe the happy effects of the operation for the cataract is in general but of very ſhort duration.

Should the patient have a confirmed gutta

ſerena, it would be folly to attempt the operation. Unfortunately, however, we are not always able to diſcover it when preſent. The immobility of the iris has been conſidered as a characteriſtic mark of it. But that may alſo originate from the adhering of the iris to the membrana capſularis. Beſides, there are many caſes of perfect amauroſis, where the pupil has remained moveable. The inability alſo of diſtinguiſhing light from ſhade is a moſt uncertain mark of this diſeaſe; for that may alſo be owing to an adheſion between the iris and capſule. In ſuch a caſe, therefore, where we wiſh to judge with tolerable certainty, particular attention muſt be paid to the diſtance of the cataract from the pupil. If the diſtance be very ſmall there is reaſon to ſuppoſe an adheſion has taken place. Should the diſtance be conſiderable, an amauroſis is probably the cauſe.

It has been adviſed by ſome not to attempt the operation whilſt the cataract is confined to one eye only; partly, becauſe the operation, it is ſaid, is unneceſſary as long as the patient enjoys the perfect uſe of the ſound eye; partly, becauſe, from the difference of the focus of viſion in the ſound eye, from that of the

the eye which had been operated on, great confuſion it is thought would ariſe in the ſight. Whether this laſt circumſtance be true or not I ſhall not take it upon me to determine; but I am convinced, for many reaſons, that the advice is to be diſregarded. It is a fact, that when one eye becomes diſeaſed, the other generally does ſo alſo, ſooner or later. Thoſe who have a cataract in one eye, are generally very ſoon affected with it in the other alſo; and this, as I have already ſaid, holds good, not only with regard to the cataract, but alſo with other diſeaſes of the eye.

It has actually happened to me, in the courſe of practice, that the loſs of one eye has been the cauſe of the loſs of the other alſo; and that a diſeaſe in one has brought on a diſeaſe in the other. I knew a foreſter who had received a ſmall ſhot in the orbit of his right eye; an amauroſis was the conſequence, and in about three quarters of a year after he was attacked with a cataract in the left, which, till then, had never received any injury. More inſtances of this kind it would be uſeleſs to relate.

I am, however, perfectly convinced in my own mind, that there is a great conſent or

ſympathy between both eyes, and that thoſe who have a cataract in one have great reaſon to dread the loſs of the other alſo. And hence, therefore, ariſes the queſtion, Is it not poſſible to ſave the loſs of the ſound eye by a timely operation? I confeſs myſelf much inclined to believe that this may at leaſt happen now and then. I once performed the operation on a woman who had a complete pearl-coloured cataract in the left eye, and an incipient one in the right, which, before the operation took place, was beginning to advance rapidly. After operating on the left eye, the progreſs in the diſeaſe of the right ſeemed to be checked, and at preſent, which is five years ſince the operation, it is exactly the ſame as the day on which it was performed. St. Ives[s] relates a very remarkable caſe, which ought to be taken notice of here: A man was wounded in the right eye with a ſmall ſhot, and ſhortly after that eye was affected with a cataract. Some time afterwards the ſame diſeaſe took place in the left eye, but which gradually diſappeared after the cataract had been extracted from the right.

[s] l. c. p. m. 261.

All

All this, in my opinion, demonſtrates the neceſſity of performing the operation as early as poſſible, and that by doing ſo we ſhall be able to prevent the probable loſs of the other; and here again we have an opportunity of ſeeing the ſuperiority of the new over the old method of operating. Thoſe who couch muſt wait till it be hard; and they often wait in vain. The cataract remains juſt as it was, and in the mean time the other eye becomes diſeaſed.

There is ſtill another good reaſon for rejecting the above-mentioned advice. When the ſtate of the cataract and the health of the patient are both perfectly good, the operation ought not to be delayed; for, under ſuch circumſtances, every thing promiſes an happy iſſue. But ſhould the operation be delayed, the cataract may happen to alter for the worſe, the general health of the patient may become impaired, and thus the precious moment, in which the beſt ſucceſs might have been ſecured, is loſt, perhaps to return no more.

CHAP. II.

On the Means employed for ſecuring the Eye during the Operation.

IT has always been imagined, that an operation of ſo exquiſitely delicate a nature as that for the extraction of the cataract, was hardly to be executed with every requiſite nicety on a part ſo moveable as the eye; and on this account a number of means and inſtruments have been invented in order to keep that organ ſteady. I take it upon me, however, to aſſert that every one of theſe inventions are not only unneceſſary, but even hurtful.

I confeſs it to be true, that the fear and anxiety the patient experiences ſhortly before the operation, often induce the moſt violent convulſive motions of the eye, which it is impoſſible for him to reſtrain, however great his exertions may be to do ſo; nay, all ſtrong admonitions and entreaties only ſerve to increaſe his own reſtleſſneſs, and that of the eye. But the ſurgeon has nothing to dread from

from theſe motions however violent they may be; for, when he has placed his hand on the cheek of the patient, and is ready to enter the knife as ſoon as a favourable opportunity preſents, he has only to leave the patient and the eye to themſelves for a few moments, and he will find that, as ſoon as the firſt impreſſions of fear and ſurprize are over, the eye will become perfectly quiet and ſtill. Should it then be in a proper poſition for operating, let the knife be quickly though cautiouſly entered; as ſoon as this is done the eye becomes in general motionleſs. Should it ſtill move however, we have it always in our power to ſecure the eye by means of the knife. In ſuch caſes, therefore, all inſtruments for preventing the motion of the eye become unneceſſary; and that they are hurtful ſurely no one will pretend to deny. That method of operating is always to be accounted the beſt which does the leaſt injury to the eye. The more ſimple the method, the leſs does the eye ſuffer, and the greater chance there is of ſucceſs. The moſt of the inſtruments employed for ſecuring the eye irritate and preſs upon it, and create ſo much pain to the

patient, that they ought never to be uſed if the ſurgeon can poſſibly do without them.

There is, however, another kind of motion of the eye, which is occaſioned by the introduction of the knife, and which I therefore call involuntary. It ſometimes happens that as the knife is puſhed forward from the external angle of the eye towards the noſe, the whole eye is turned ſo much inward as to make the cornea almoſt entirely diſappear in the internal angle; and, indeed, this is not to be wondered at if we but recollect that the cornea is ſometimes ſo denſe, and hard as to require conſiderable force in cutting it. When the eye is once forced into this ſituation, it is impoſſible to finiſh the inciſion properly. If, under ſuch circumſtances, the ſurgeon ſhould not have any inſtrument beſide him with which he might prevent the motion of the eye, he will do well to withdraw the knife, and allow the wound to heal, and the aqueous humour to collect again, which happens in a day or two; when he may again attempt the operation. If, in ſpite of the awkward ſituation of the eye, the ſurgeon ſhould ſtill perſiſt in his endeavours to accompliſh the operation,

he

he will find that the inciſion cannot be done with all neceſſary accuracy, and that in conſequence the operation generally fails: I ſay generally, for I do not deny than an experienced and dexterous hand may be able to perform the operation very well even under all theſe diſadvantages.

Theſe motions of the eye, therefore, really create much difficulty. Let us now ſee whether any of the means or inſtruments which have been thought of by different writers for fixing the eye are ſufficient to obviate them.

Monſieur La Faye[h] applies the middle finger of the left hand to the ball of the eye, at the internal angle, and endeavours to keep it ſteady by means of a gentle preſſure; but this finger occupies too much place, and when the eye is ſmall, and deep approaches too near, and, indeed, covers that part of the lucid cornea where the knife ought to come out. To this we may remark, that a gentle preſſure on the naked eye only ſerves to irritate it, and produce more violent motions than thoſe it was intended to prevent; and that a ſtronger

[h] Memoir. de l'Acad. de Chirurg. de Paris, t. vi. p. 314.

preſſure is apt to occaſion too early a diſcharge of the aqueous humour, or endanger a prolapſus of the vitreous one.

M. Beranger[i], an experienced ſurgeon, and inventor of one of the beſt methods of extracting the cataract, makes uſe of a ſmall tenaculum, which he fixes in the conjunctiva, at a certain diſtance from the inferior edge of the cornea. M. Le Cat laid hold of the conjunctiva almoſt at the ſame place with a pair of ſmall pincers. Theſe two inſtruments create much pain, violent inflammation, and now and then a protruſion of the vitreous humour, from the violence and preſſure with which they act on the eye. I have ſeen the moſt dreadful inflammations, and a ſecond blindneſs happen in conſequence of their uſe; but beſides, when the eye lies deep, or that the opening between the eye-lids is narrow, there is in reality too little room for the application of theſe inſtruments.

M. Poyet's[k] method is truly ridiculous. He ſecures the eye by means of a thread; but not till the operation be ended, or at leaſt

[i] Theſ. cel. Sabatier de variis Cataractum extrahendi Methodis. Paris, 1759.

[k] Mem. de l'Acad. de Chir. de Paris, t. v. p. 399.

when

when there is no further neceſſity of fixing the eye.

I know no inſtrument more ſimple, harmleſs, or better contrived for fixing the eye, than Pamart's ſpear[1].

This inſtrument has two ſmall ſhoulders, which ought not to be placed farther than half a line diſtant from the point; by which means it cannot enter too deep into the body of the eye. Before making uſe of this inſtrument, I always twiſt a little lint around its ſhoulders, not only to moderate their preſſure on the ball of the eye, but to prevent its ſtill entering ſo much as it would otherwiſe do. I make uſe of it in the following manner:

When about to operate on the left eye, I take it in my left hand. As ſoon as I have entered the point of my knife, I puſh the point of the ſpear into the conjunctiva at the upper margin of the cornea towards the internal angle of the eye, and I now guide the knife through the anterior chamber. This inſtrument ought to be introduced in an inclined direction, ſo that the hand may reſt upon the noſe, and the point be directed to-

[1] See figure A. in the annexed plate.

wards

wards the external angle of the eye; for, by giving it this direction we prevent the rolling of the eye inwards. The ſurgeon will do well to reſt that hand which holds this inſtrument pretty firmly on the face of the patient; for if this rule be not obſerved, there is great danger of preſſing the ſpear too violently into the eye,

As ſoon as the point of the knife begins to cut its way through the inner portion of the cornea, the ſpear ought to be withdrawn; for now the eye becomes motionleſs; and beſides, ſhould this not be attended to, there is danger that the continued preſſure might occaſion not only too early a protruſion of the lens, but alſo a loſs of part of the vitreous humour, or at leaſt a premature diſcharge of the aqueous one.

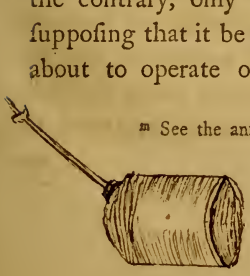
In this way Pamart's ſpear may be uſed, not only with advantage, but without any danger whatever. A little pain is, indeed, excited on the firſt application of the inſtrument; but this pain is ſo trifling that the patient ſeldom complains of it, nor does it ever create any bad conſequences. It happens now and then that the point of the inſtrument hits upon a blood veſſel, and occaſions a ſmall hæmorrhage;

a trifling

a trifling circumſtance, which might have been eaſily avoided, but which is of no bad conſequence. On the contrary, I think I have obſerved, that where this happens the ſymptoms after the operation are, in general, much milder than in common.

Mr. Rumpelt, ſurgeon to the court at Dreſden, has ſent me an inſtrument[m] of his invention, which I prefer to Pamart's. It is a kind of thimble with a ſpear projecting from it, very much reſembling Pamart's, only that it is ſhorter. It is evident to every one that he muſt have taken the hint from Pamart's ſpear. This laſt-mentioned inſtrument employs the whole of the hand; and, therefore, when it is made uſe of, there are no leſs than four hands required about the eye to be operated on; one for guiding the knife, one to raiſe the upper eye-lid, one for the ſpear, and one to draw down the under eye-lid. All theſe exceedingly embarraſs both the patient and ſurgeon. Rumpelt's inſtrument, on the contrary, only requires one finger; for, ſuppoſing that it be the left eye which we are about to operate on, and that this armed

[m] See the annexed plate, figure C.



C

thimble

thimble be put on the middle or ring finger, we can then accompliſh two ends with that hand. With the fore finger we draw down the eye-lid, and with the middle or ring one we ſecure the eye; in other reſpects it is to be uſed in the ſame way as Pamart's.

When this inſtrument is inſerted in an oblique manner into the eye, all that it does is to prevent the rotation inwards; but thoſe who wiſh by its means to prevent every involuntary motion of that organ, muſt apply it in ſuch a manner that the inſtrument be at right angles with that point of the eye which it touches; and in this manner every motion may be prevented. In ſuch a caſe the inſtrument ought to be applied before the knife be entered; for in this way every beginner will be enabled to make uſe of it; whereas it requires a certain preſence of mind, which young ſurgeons are not always poſſeſſed of, to introduce the knife, without firſt ſecuring the eye in the manner juſt now mentioned.

For my part, I ſeldom make uſe of this inſtrument at all. I generally try to fix the eye by means of a gentle preſſure of that finger which I uſe for drawing down the under eye-lid. As ſoon as the knife is entered, the

eye

eye generally ſtands ſtill; I ſay generally, for it does not do ſo always.

It appears probable that this involuntary motion of the eye ariſes from a ſpaſmodic contraction of ſome of the muſcles of that organ, and that this happens from the irritation which the puncture with the knife occaſions; but a dexterous and exerciſed hand can generally govern the eye by means of the knife alone, ſo that every other inſtrument for fixing it becomes unneceſſary. This art is only to be acquired by practice. It is uſual with ſome to cover the eye that is not to be operated on with a bandage, a ſtep which affords ſome little aſſiſtance; for by thus preventing in ſome meaſure the rotation of the one eye, we prevent that of the other alſo. At all events Rumpelt's thimble may be kept on the finger in order to be ready for uſe, if neceſſary.

CHAP.

CHAP III.

On the Manner of cutting the Cornea.

THE method which I make uſe of is very ſimple, and, in this reſpect, diſtinguiſhes itſelf from moſt others, eſpecially thoſe of Daviel[n] and Sigwart[o]. I only make uſe of a ſingle inſtrument for cutting the cornea. The more inſtruments any method requires, the more difficult that method becomes, and the more apt it is to fail. It is not poſſible to cut or puncture the eye with a number of inſtruments, and again remove them, without irritating, bruiſing, or injuring it in many different ways. The more ſimple the operation the eaſier and ſurer it is.

We cannot raiſe our arm high, nor ſtretch it far out, without loſing that command over it,

[n] His method is deſcribed in the Mem. de l'Acad. de Chirurgie, tom. v. p. 369.

[o] See his Theſis de ultro perficienda Cataractæ Extractione. Tubing. 1752, which is alſo printed in Halleri Diſſ. Chirurg. t. ii. p. 207.

and

and that degree of ſteadineſs, which is ſo much required in this operation.

On this account, the ſurgeon ought to be ſeated on a pretty high chair, and the patient on a low one, ſo that the head of the latter may reach the height of the ſurgeon's ſhoulder; by this poſition the operator will not be obliged either to raiſe or lower his arm too much. The feet of the patient ought to be ſtretched out below the chair on which the ſurgeon ſits, and the head of the former ought to be brought as near to the breaſt of the latter as poſſible. If this be obſerved, the ſurgeon will find that he need only ſtretch his hand out a very little in order to perform the operation; beſides, by being thus enabled to keep the upper part of his arm cloſe to his ſide, he acquires a ſteadineſs and command of the whole arm and hand.

The patient muſt ſit in ſuch a manner that the light falls obliquely over his noſe into the eye to be operated on. If he be placed ſo that the rays of light from the window fall in a direct line on the eye, the ſurgeon will find that he is obliged either to ſit in his own light, or that the reflection in the pupil tends to embarraſs him.

As ſoon as the other eye is covered, let an aſſiſtant ſtep behind the patient, and if it be the left eye which is to be operated on, let him place his right hand under the chin of the patient, and keep the head firm againſt his breaſt. The left hand he muſt place on the forehead, and with the fore and middle fingers he muſt raiſe the upper eye-lid. The ſurgeon pulls the under one down with the fore finger of his left hand, whilſt he performs the operation with the right.

The principal part of the operation is the inciſion through the cornea. This muſt be done with a ſingle inſtrument, and with one cut, if it be intended that the edges of the wound ſhould be equal and uniform, and if it be expected that the wound ſhould heal ſoon, and leave no ugly ſcar behind.

If, like Daviel, Sigwart, and others, we firſt open the cornea with one inſtrument, and then enlarge this opening by others, the wound will be unequal, will heal with difficulty, and leave a very ugly cicatrix behind.

The inciſion muſt be made with a knife, and not with ſciſſars, which laſt always make a contuſed wound that has a tendency to run into ſuppuration, and heals with difficulty, beſides

beſides leaving a diſagreeable blemiſh; but a knife makes a clean and good-conditioned wound; for which reaſons we ſee why the methods of Daviel and Sigwart are to be rejected.

The knife which I uſe is different from every other knife intended for the ſame purpoſe[p]. Simple as it may appear, there are ſtill a great many things to be remarked concerning it. It may, perhaps, be ſuppoſed, that more depends on the hand that guides the knife, than on the knife itſelf; and there is ſome truth in this; but we ſhall ſoon be convinced that the eaſe and nicety with which the operation is executed depends very much indeed on the ſtructure and make of the knife; and who would not rather uſe a convenient knife than ſuch a one as is managed with difficulty and inconvenience?

One of the great requiſites in this operation is, not to allow the aqueous humour to flow out until the inciſion be ended. Should this liquor be diſcharged ſooner, the anterior chamber of the eye falls together, the cornea becomes ſoft and flabby, the iris comes in con-

[p] See the plate fig. B.

tact with it, and it becomes almoſt impoſſible to finiſh the inciſion without either lacerating this laſt-mentioned membrane or the internal ſurface of the cornea; beſides, the inciſion cannot be made equal, and the whole operation fails.

In order to avoid theſe inconveniences, we muſt, in the firſt place, make uſe of one inſtrument only. If we make uſe of more than one, as Daviel does, the conſequence is, that as ſoon as the firſt one has punctured the cornea the aqueous humour flows out, the anterior chamber of the eye collapſes, and the ſecond and third inſtrument, with which the firſt opening ought to be enlarged, cannot be introduced without irritation, or without lacerating and injuring the eye.

In the next place, the blade of the knife muſt be conſtructed in ſuch a manner that it gradually increaſes in breadth from the point to the heel, in order, both to enlarge the wound as it paſſes along, and alſo to fill up the inciſion as it is made, and thus prevent the diſcharge of the aqueous humour. Both Mr. Beranger's knife [q] and mine are of this ſhape;

[q] See the plate fig. C.

and

and all others that are not ſo conſtructed are worth nothing.

There are many ſurgeons who make uſe of knives of a ſimilar form, and who yet cannot prevent the too early evacuation of the aqueous fluid, merely becauſe the blade of the knife is not broad enough at the part where it ought to be broadeſt. The inconvenience that ariſes from this is, that when too ſmall a knife of this kind is already puſhed through the anterior chamber, the inferior portion of the cornea ſtill remains uncut, and, in order to finiſh the inciſion, the ſurgeon is obliged to draw the knife back again, and thus make a ſecond inciſion; but as ſoon as the inſtrument is drawn back in the ſmalleſt degree, the wounds are no longer completely filled up, the aqueous humour flows out, the iris ſlips under the edge of the knife, and is liable to be cut by the firſt move that it makes.

I do not aſſert that this always happens, but it does ſo frequently; and in ſuch a caſe, not even the moſt dexterous hand can avoid cutting the iris *. This, indeed, may in ſome degree

* In order to prevent the iris from ſlipping under the edge of the knife in ſuch caſes, many oculiſts withdraw their fore-

degree be avoided by turning the edge of the knife a good deal forward; by which means the back being applied to the iris, that membrane may be kept from ſliding under the inſtrument, and the inciſion finiſhed. In attempting to do this, however, we run a great riſk of making the opening in the cornea too ſmall; a circumſtance which is attended with much inconvenience, as we ſhall mention afterward.

Mr. Beranger is, as far as I know, the firſt who pointed out the manner of avoiding all theſe difficulties.

The whole depends upon this; that the knife with which we are to cut the cornea

finger from the under eye-lid as ſoon as the knife has traverſed the anterior chamber, and placing it on the cornea, preſs that membrane againſt the inſtrument, by which means no ſpace is left between them into which the iris could poſſibly fall. By this method the ſurgeon generally obtains the end he had in view, that of avoiding the injuring the iris; and therefore in all caſes, where the knife to be employed is not of the conſtruction deſcribed by the author, it ought not to be neglected. It is liable, however, to two inconveniences; the one, the additional irritation which it neceſſarily produces, and the other, the embarraſſment which it generally occaſions to a young practitioner; for that part of the cornea through which he has now to cut being greatly hid by the finger, he is apt either to make an unequal inciſion, or to cut too ſmall a ſegment of that membrane.—The T.

ſhould,

ſhould, at its broadeſt point, be fully as broad as half the diameter of the cornea. The cornea is in general about ſix lines in diameter; the knife, therefore, muſt, at a certain point, be three lines in breadth, taking it for granted, however, that no more than the under half of the cornea is intended to be cut through, and not two-thirds, as Daviel recommends. In uſing a knife, ſuch as I have deſcribed, we ſhall find that as ſoon as it has traverſed the anterior chamber, and that that part of its blade which is three lines in breadth enters the eye, then the inferior portion of the cornea will be divided. It is unneceſſary to draw the inſtrument back. The whole is done with one cut, and the aqueous humour does not flow out before that is finiſhed.

The knife muſt always be puſhed on till that part of it which lies between *m and n*, *fig. B*, enters the anterior chamber of the eye. When this happens, the point of the knife projects at leaſt ſeven lines beyond the cornea; for that part of the blade of my knife, which is three lines broad, is at leaſt ten lines diſtant from the point; wherefore it may be aſked, if in ſuch eyes as lie deep there be no danger that this projecting point lacerate ſome part

at the internal angle of the eye, and thereby produce a ſudden motion of that organ ſo as to diſturb the whole operation?

It may ſeem, as if the knife of Mr. Beranger *(ſee figure C.)* poſſeſſed a ſuperior advantage to mine. The blade of his knife increaſes in breadth more rapidly, for the broadeſt part of it *(ſee q.)* is only eight lines from the point. When this part, therefore, enters the anterior chamber of the eye, there is not above four or five lines of the inſtrument which projects, and conſequently leſs riſque of wounding any part of the internal angle. From all which we might ſuppoſe, that my knife ſhould have the preference in performing on large and prominent eyes, and Beranger's on ſmall hollow ones.

However reaſonable ſuch a concluſion may appear at firſt, ſtill I think I have good grounds for aſſerting that mine ought to be preferred in both caſes.

It will in general be found that it is of much eaſier management than Beranger's. The blade does not grow broad quickly, and therefore cuts the cornea ſlowly, which allows the ſurgeon time to pay attention to every thing, and to correct the moſt minute

minute faults which may occur in the direction of the knife. Beranger's knife, on the contrary, grows quickly broad, and cuts the cornea rapidly as it is puſhed forward through the anterior chamber of the eye. On this account great dexterity is required on the part of the ſurgeon; for the celerity with which the inciſion is carried on is liable to prevent him from giving a different inclination to the knife, by which he might correct certain ſmall faults. Beſides, this knife of Mr. Beranger's is, from its form, liable to another inconveniency; I mean, it requires a much greater degree of force, in order to overcome the reſiſtance of the cornea; and it frequently happens, that although we do make uſe of a great force in order to accompliſh this end, inſtead of thereby cauſing the knife to enter the eye, we ſhall puſh that organ before it, and force the cornea into the internal angle; and this merely becauſe, from the quick increaſe of breadth, the reſiſtance which the cornea makes cannot be overcome; a circumſtance concerning which I have already ſpoken in the foregoing chapter. But my knife is ſubject to none of theſe inconveniences; and the danger of wounding any

part of the internal angle may be eaſily avoided by turning the eye much outward before beginning the inciſion; or if it ſhould turn inward during the operation, by again drawing it back with the knife. This is very eaſily done as ſoon as the point of the knife makes its appearance at the internal angle of the eye.

The blade of my knife is about an inch and a half in length. It is convex on both ſides.

Whilſt the knife traverſes the anterior chamber of the eye, the convexity of its ſide preſſes the iris back, and keeps it from falling under the edge. A convex blade alſo is eaſier puſhed through the cornea than a flat one, and it does not rub ſo much on the iris.

The point of the knife muſt be ſharp on both edges, for at leaſt the breadth of one line, in order that it may enter quickly and eaſily.

Particular care ought to be taken that the point of the knife be well-conditioned. I have ſeen it happen, that the point of the knife has bent on the cornea. If ſuch a knife be not very ſharp it does not enter, and upon the ſurgeon's making uſe of more force it ſuddenly

ſuddenly pierces the cornea, and lacerates the iris*.

The back of the knife muſt be made perfectly blunt, and that for many reaſons. As we puſh the knife forward its back ought to be turned a little towards the iris, as we ſhall mention more particularly afterwards; but this would be impoſſible were it ſharp, from the riſk we ſhould run of wounding that membrane. It often happens, during the operation, that the upper eye-lid ſlips from under

* The author, with his uſual perſpicuity, takes notice of a fault in the conſtruction of the knife, which is but too common, and which it is of the utmoſt importance to diſcover; but it has eſcaped him to point out wherein that fault lies, ſo as to enable the young ſurgeon to judge whether the knife which he is about to employ is faulty or not. The great error conſiſts in making the point too thin and too flexible; in a word, too much like the point of a lancet. A knife, whoſe point is ſo conſtructed, ſubjects the operator almoſt to a certainty of lacerating the iris. It is true, that with a little dexterity, eſpecially if the point be very ſharp, the knife may be made to enter the chamber of the eye with apparent eaſe; but as ſoon as it comes in contact with the oppoſite and internal ſurface of the cornea, owing to the denſity of that membrane, and the obliquity of its direction, the thin flexible point is reflected inward, and unavoidably lacerates the iris before it can be puſhed through. Particular directions ought, therefore, to be given to the inſtrument-maker to have the point made pretty ſtrong and firm, although not rigid nor inelaſtic.—The T.

the

the finger of the aſſiſtant. In ſuch a caſe it muſt be unavoidably wounded, which either produces a convulſive contraction of both eyelids, or a ſudden rotation of the eye. I have ſeen this trifling circumſtance produce a moſt unſucceſsful operation. Laſtly, it is evident that a knife whoſe back is made ſharp, ſuch as *Poyet*'s, muſt cut the cornea both upward and downward, which is quite contrary to the intention of the ſurgeon, who only wiſhes to cut the inferior half of that membrane; for which reaſon the knife ought to cut downward only.

The back of the knife muſt not, therefore, be ſharp, nor muſt it be too thick. The thinner the better; for when it is thick it dilates the upper angle of the wound too much, cauſing a ſmall opening at the top, through which the aqueous humour may flow out. The back of my knife is thin, and does not, therefore, produce that inconvenience. I muſt here take notice that the perſon who ſharpens the inſtrument, very often, through inattention, ſharpens it on the back, eſpecially near the point. This neglect may be attended with bad conſequences if not diſcovered. For my part, before making

ing uſe of a new-ſharpened inſtrument, I always paſs the back of it over a fine ſtone.

The back of the knife muſt be perfectly ſtraight; not bent nor curved. The intention of the ſurgeon is to ſeparate the under half of the cornea from the albuginea. The knife muſt, therefore, be made to paſs at the external angle of the eye, and enter the lucid cornea in the direction of its tranſverſe diameter, and near to the albuginea; in which direction it muſt be puſhed forward till the point appears at the oppoſite ſide of the cornea equally near the albuginea. A knife perfectly ſtrait on the back, which is made to enter the anterior chamber of the eye, at the external point of the tranſverſe diameter of the cornea, will eaſily follow that direction, and come out exactly at the oppoſite point; but, on the contrary, if a knife be made uſe of whoſe back is curved or bent, it muſt happen that the point, although entered exactly oppoſite the center of the cornea, will come out much lower at the oppoſite ſide; and indeed, always the lower the more bent it is. It is true, this fault may be corrected by elevating the point of the knife in the chamber of the aqueous humour, as ſoon as it approaches the inſide of the eye,

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and then puſhing it through the cornea. But that is a particular manœuvre that requires much attention, and renders the operation at leaſt more difficult; for the fewer ſteps there are in any operation the eaſier will that operation be.

The employment of a knife with a curved back is alſo ſubject to another inconvenience. As ſoon as the knife has fairly entered the anterior chamber, its back ought to be turned a little towards the iris; but if it be much bent or curved, it preſſes and irritates it too much. The knives of Mr. La Faye[r], Warner[s], and Sharp[t], are all curved on the back, and on that account not ſo convenient, and leſs to be depended on, than mine.

The place in the cornea where the knife is to be entered muſt be at leaſt a full half line diſtant from the albuginea; and the ſame diſtance muſt be kept as nearly as poſſible at the oppoſite point where the knife is made to come. In one word, the wound muſt be ſemi-

[r] See Mem. de l'Academie de Chir. de Paris, t. xi. pl. 20, fig. K.

[s] See his Caſes in Surgery, p. 91, pl. 2. fig. 1.

[t] See Philoſ. Tranſactions, vol. xlviii. pl. 1. p. 161; and Mem. de l'Acad. de Chirurgie de Paris, t. xi. pl. 22. fig. 2.

circular,

circular, and every point of its edge a full half line, or rather a whole one, distant from the albuginea.

If the knife be made to enter too near the line which unites the cornea and albuginea, there is a great risk of immediately wounding the iris, for at that place it is almost contiguous to the cornea; or, if the surgeon, having unguardedly entered the instrument too near the albuginea, and, afraid of wounding the iris, turns the point of it forwards, there is a risk of his only cutting between the lamellæ of the cornea, without ever entering the chamber; a circumstance concerning which I shall speak a little more fully afterwards. The nearer to the albuginea the incision is begun, the nearer does the knife approach the iris in passing through the anterior chamber, and consequently the greater is the danger of wounding that membrane. This danger is considerably augmented by this; that during the operation that membrane advances and approaches the cornea. I recollect one case where the iris was pressed so near the cornea that it was impossible to make the instrument pass beyond the pupil, although in this instance the knife had not been entered too near

near the albuginea. As ſoon as the operator attempted to puſh the knife on to the other ſide, it went in at the pupil. I am apt to believe, that as ſoon as the knife has entered the eye, the muſcles become ſpaſmodically contracted, and, by ſqueezing the globe of the eye, occaſion this projection of the iris. I think I have alſo obſerved, that when the inferior edge of the wound is made too near the albuginea, the iris and vitreous humour are very apt to be prolapſed.

If we wiſh that the point of the knife ſhould come out at the ſame diſtance from the albuginea at which it was made to enter, it becomes abſolutely neceſſary that the blade ſhould be perfectly ſtrait. If it be bent to one ſide, like La Faye's, the point will be turned from the iris towards the cornea. It is true, that in this caſe there is little danger of wounding the firſt of theſe membranes; but there is a very great one of lacerating the inner ſurface of the latter; beſides, with ſuch a knife, it will be found almoſt impoſſible to prevent the point from coming out at too great a diſtance from the albuginea, and conſequently from making the wound too ſmall; or, if we uſe our endeavours to prevent this,

and

and attempt to make the knife come out nearly at the ſame diſtance from the albuginea at which it was made to enter, we muſt preſs the blade very much backward, and thus endanger our ſqueezing or cutting the iris. *La Faye*'s knife ſeems to me on this very account to be more inconvenient than any of the others.

The beſt ſituation of the eye for operating on is, when directed a little upwards, and outwards, and in no other ſituation ought the knife to be introduced. I ſpeak from experience, and can aſſert, that the operation will be always the more difficult, the more the eye varies from that poſition during the moment of introducing the knife.

I myſelf once acted much againſt this rule. The eye was turned ſo much upwards, and inwards, that the greateſt portion of the cornea was concealed under the upper eye-lid. The patient had loſt all command over it, and my entreaties that he ſhould direct it downward and outward, were of no avail. After having waited a long time in vain, in expectation that the eye would change its ſituation, I at laſt entered the knife, in the hopes that I ſhould be able to move the eye by means of

that inſtrument; but the eye remained fixed and immoveable. It was quite impoſſible for me to make it move. I therefore found myſelf obliged to withdraw the knife, and to renew the operation ſome days after, when the wound was healed.

It ſhall often happen that the fear and anxiety which the patient experiences immediately before the operation, occaſion a kind of cramp, or ſpaſmodic contraction of the muſcles of the eye, by which means that organ is either thrown into convulſive motions, or rendered immoveable.

If the eye be immoveable, and at the ſame time in a good poſition, nothing more favourable for the operator could poſſibly have happened; but if it be in a bad ſituation, the ſurgeon ought by no means to attempt the inciſion; for as ſoon as the knife begins to penetrate the cornea, an additional ſtimulus is given, and if at that time the eye ſhould happen to be in motion, it may be rendered immoveable by doing ſo; or if it be without motion, it may become ſtill more fixed, ſo that the operator will find it impoſſible to force the eye into any other ſituation. I do not aſſert that this always happens, but it does

ſo

ſo frequently; and that will be a ſufficient ground of caution to a prudent ſurgeon.

When about to begin the inciſion, the point of the inſtrument ought to be directed towards the iris, ſo that the knife may form a right angle with that point of the cornea which is intended to be firſt cut; for, if it be applied obliquely to the cornea, which it neceſſarily muſt be if the knife be directed towards the internal angle of the eye inſtead of towards the iris, the conſequence is, that the whole inciſion of the cornea will be rendered oblique, and the opening too ſmall; nay, it may happen that the knife, inſtead of entering the anterior chamber of the eye, ſhall glide between the lamellæ of the cornea. This once happened to myſelf, and now and then alſo to my pupils when exerciſing themſelves on the dead ſubject. It is moſt liable to happen in thoſe whoſe cornea is but little convex, which eaſily accounts for its often occurring in the dead ſubject, where the eye ſoon loſes its natural convexity, and becomes ſhrivelled.

The fault is in general eaſily detected by the uncommon reſiſtance which one feels in forcing the knife between the lamellæ; and yet I have ſeen it twice happen, in exerciſing

on the dead body, that the lamellæ have been ſeparated the whole length from the external to the internal angle, without having once entered the anterior chamber.

If the fault be diſcovered in time, nothing is to be apprehended from it. The knife muſt be withdrawn, and again entered in a better direction. In the caſe where I committed this fault, there did not remain any mark of the ſeparation. If, however, it be not ſoon detected, and if the knife be puſhed pretty deep into the ſubſtance of the cornea, there is great reaſon to dread a future obſcurity of that membrane.

As ſoon as the point of the knife has fairly entered the anterior chamber, its direction muſt be altered. Inſtead of continuing to point it towards the iris, it muſt be directed to that oppoſite point of the cornea where we mean that it ſhould come out, and then puſhing it gradually forward in the ſame direction, we muſt turn its back gently towards the iris. By doing this, as the edge is turned towards the cornea, we ſhall avoid wounding the iris, which is generally puſhed forward during the operation.

I have obſerved that this laſt ſtep is generally executed

executed with ſome difficulty. The operator does not turn the back of the knife to the iris until it has entered the chamber, by which means the wound is ſtretched open, and the aqueous humour is apt to flow out.

For this reaſon I now introduce the knife in ſuch a direction that its back is a little turned toward the iris, ſo that I have no need to alter it afterwards *.

I have

* One of the greateſt requiſites in this operation is to make the opening in the cornea ſufficiently large. If the knife be inſerted at about the diſtance of a ſixteenth of an inch from the albuginea, and made to preſerve that diſtance throughout the whole inciſion, the opening will be generally found of a ſufficient ſize, but not more than ſufficient. How is it poſſible, however, to do this if we give the knife that oblique direction which the author has juſt now adviſed? If, according to his directions, we incline the back of the inſtrument to the iris, and conſequently turn it's edge forward, and that we are to preſerve this direction throughout the whole inciſion, is it not evident that an oblique direction will be given to the wound, and that, towards the inferior part of the cornea, the edge of the knife will come out at a greater diſtance from the albuginea than that at which it was made to enter? It may be ſaid, indeed, that the intelligent author deſires that this inclination of the knife ſhould be very ſlight; but if it be very ſlight it will not anſwer the purpoſe he intends, and if the back be turned ſo far backwards as almoſt to come into contact with the iris, it will be the cauſe of a narrow and contracted inciſion.

With a well-formed knife, ſuch as that which the author

I have ſaid, that as ſoon as the point of the knife is in the anterior chamber, it muſt be now directed towards the internal angle of the eye; but it ſometimes happens that the operator conceives it to be in the chamber when it is not ſo in reality: an unlucky miſtake; for if the direction of the knife be now altered, and pointed towards the inner angle, the knife is apt to ſlip between the lamellæ.

The knife muſt be entered with a degree of quickneſs, and yet with caution. For if we attempt to enter it ſlowly, the eye is apt to move ſuddenly, and we run the riſk of wounding either the albuginea or cornea; but if we make the firſt inciſion quickly, we can generally ſecure the eye from moving.

And now a queſtion ariſes: How large ought this opening in the cornea to be? Whether ſhall we follow the advice of Mr. Daviel, who recommends cutting at leaſt two-

deſcribes, the precaution is unneceſſary; for if the aqueous humour be not allowed to eſcape too ſoon, and the inciſion not begun too near the albuginea, the iris ſeldom begins to be puſhed forward until the point of the knife pierces the cornea at the inner angle of the eye; and then we can always prevent it from ſlipping under the edge of the inſtrument, by withdrawing the fore-finger from the under eye-lid, and gently preſſing the cornea againſt the knife.—The T.

thirds

thirds of the cornea, or my advice, which is to cut one-half only? When we cut two-thirds, we moſt undoubtedly procure a large and free opening, through which the lens can eaſily paſs, and through which we can eaſily introduce any inſtrument that may be found neceſſary. I think I have obſerved, however, that the greater the opening the more danger there is of a prolapſus, both of the iris and vitreous humour; and, indeed, it is not difficult to account for this; for it would ſeem as if theſe two parts of the eye were puſhed forward in conſequence of the retraction of the coats of the eye, which takes place as ſoon as the inciſion is made; and if two-thirds of the cornea be cut, there is certainly much leſs reſiſtance than where the half only has been ſeparated; beſides, ſo large an inciſion as this, requires more dexterity, and a much broader knife than mine. Both my knife and that of Mr. Beranger are calculated to cut one-half of the cornea only; but if the operator wiſhes to divide about two-thirds of that membrane, he ought to have a knife which meaſures at leaſt four lines at the broadeſt part of its blade. Such a knife, however, will be found to be more difficult of ma-

nagement than mine. All these are only so many unnecessary difficulties to which the operator subjects himself; for the opening will be found sufficiently large if we cut the half only.

At the same time it is of the utmost importance to know that the surgeon is exposed to much greater difficulties than these just now mentioned, if he cuts less than the half; for here the opening will be too small, and not only render the extraction of the lens extremely difficult, but prevents the easy introduction of such instruments as are necessary to open the capsule, or to extract any part of the lens which may be left behind. In order to force the lens out of such a wound as this, it is necessary that the lens, as soon as it has passed through the pupil, should sink to the lower part of the anterior chamber, and in doing this it either pulls the iris forcibly alongst with it, and hurts the tone of the fibres, or it alters its shape, or ruptures it, or pushes it out of the eye. All these difficulties may be avoided by observing a proper medium, and by cutting neither more nor less than one-half of the cornea; or, if we are to do one of them, for it is not always in our power to follow exactly

exactly the rules which art prescribes, less harm will be done by dividing rather more, than by dividing less than one-half of the cornea.

It happens now and then, that the incision is made too small, which accident is most apt to take place, even with a very experienced and dexterous operator, if the eye be turned towards the inner angle. If the opening be small, and that only in a very small degree, the fault is trifling, and will not prevent the happy success of the operation. If it should be considerably less, however, than what it ought to be, the operator had better desist from all further attempts to finish the operation, otherwise he will fall from one error into another. I myself have done so twice, and can therefore speak from experience. It is supposed by many, that if the opening be not remarkably small, it will still be sufficient to admit of a passage for the lens. Full of these hopes, the surgeon proceeds to open the capsule, and to make a pressure on the eye; but in vain; the lens does not move: he presses still stronger, and a portion of the vitreous humour starts suddenly forward, leaving the lens behind. As often as the pressure is renewed, so often

does another portion of the vitreous humour flow out, the cataract ſtill remaining. I do not attempt to explain this circumſtance; but the fact is certainly ſo. The conſequence is, a moſt violent inflammation, which inflammation, cauſed chiefly by the repeated preſſure the operator made on the eye, is very apt to run into ſuppuration.

When the inciſion is well made, the lens comes into contact with the iris as ſoon as the aqueous humour has flowed out, and then enters the pupil. This is a good ſign. On the other hand, when the inciſion is too ſmall, the lens remains in its ſituation, although the aqueous humour has entirely flowed out. This is a bad ſymptom, from which we may with certainty conclude, that upon preſſing the eye we ſhall rather force out the vitreous humour than the cataract.

If the ſurgeon, therefore, perceives that the inciſion is too ſmall, and that the cryſtalline lens does not move forward after the aqueous humour has flowed out, he ought, moſt undoubtedly, to deſiſt from making any preſſure, for as yet there is nothing to fear; the fault may be corrected by enlarging the opening, and the operation may be happily executed.

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In ſuch a caſe as this, I would make uſe of a ſmall knife, whoſe blade was bent, and whoſe point was blunt. This knife I would cautiouſly introduce into the inciſion, and firſt enlarge one corner of the wound by cutting upwards, and afterwards by doing ſo to the other. After that is done, the capſule may be opened, and the lens preſſed out. Should the operator, however, have no ſuch knife with him, he had better deſiſt from proſecuting the operation any further, and bind up the eye. The wound in the cornea heals in a few days, and the operation may be again renewed. I have done ſo once myſelf, and the operation, in which I failed the firſt time, ſucceeded very well the next. Such a failure, moſt undoubtedly, diminiſhes the confidence which the patient formerly put in the ſurgeon; but with a little preſence of mind, the real nature of the caſe may be concealed from him; and even ſuppoſing this to be impoſſible, it is much better that the patient ſhould, for a few days, loſe his confidence in his ſurgeon than loſe his eye; I ſay, for a few days; for the eye does not ſuffer much, the inflammation is not ſo great, and all is again well in a few days.

But if the operator has begun the preſſure

on

on the eye, in expectation of thus extricating the cataract, without having recourse to the previous enlargement of the wound, and that he has forced out a little of the vitreous humour, then, indeed, is the success of the operation very doubtful. He may, perhaps, be able to catch hold of the lens with a small hook, and thus extract it; I say, perhaps; for I confess never to have seen it attempted, and I believe it will be found very difficult. Supposing, even, that we at last succeed, the eye having suffered so much, the most dreadful symptoms are to be feared. I have observed, that in those cases where the vitreous humour has been forced out, and the cataract left behind, there has always followed a closing and concretion of the pupil.

Particular attention ought to be paid to the sharpness and good condition of the instruments we employ. The cornea is sometimes so very hard that it makes a kind of hissing noise, which even the attendants may hear.

I have once observed, that the point of the knife bent upon the cornea.

If the knife be not sharp enough, it will push the eye inwards, rather than penetrate

the anterior chamber; or, perhaps, the cornea may yield a little to it, and, as ſoon as the ſurgeon uſes a greater force, it ſuddenly gives way, and the knife goes too deep into the eye.

I once operated a peaſant for the cataract, who had a thick whitiſh cicatrix at the lower part of the cornea. It was neceſſary that I ſhould cut through this in the courſe of the inciſion; but I found it impoſſible, whatever force I employed; and as I had no other inſtruments with me I was obliged to deſiſt from the operation. The day following, I cut through the cicatrix with a pair of ſciſſars, and finiſhed the operation. This is, perhaps, the only caſe where the ſciſſars are neceſſary. In a caſe of this kind the queſtion ariſes, Whether we may not cut the upper inſtead of the under half of the cornea? I do not make the ſmalleſt doubt of its practicability, and know that Baron Wenzel once performed the operation ſucceſsfully in this way.

During the operation, the eye-lids muſt be drawn as much aſunder as poſſible, but with the fingers, and not with inſtruments. The aſſiſtant who ſupports the upper eye-lid, muſt take particular care not to let it ſlip down during

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ing the operation. This, however, is very apt to happen, for the eye-lids become wet, and are often convulsively drawn together as soon as the knife begins to enter the eye; besides, the assistant is often inclined to pay more attention to what the operator is about, than to what he himself is engaged in. This accident, therefore, is very liable to happen, and when it does so, it disturbs the operation exceedingly. The finger, with which the assistant ought to support the eye-lid, ought to rest and be pressed against the upper border of the orbit, but on no account to press upon the ball of the eye. Should the assistant happen to do so through inattention, not only the lens is made to spring forward as soon as the incision is finished, but a portion of the vitreous humour also.

Small and hollow eyes are difficult, but large and prominent ones easy to operate upon. I have performed this operation on some whose eye-lids were so much contracted, that upon raising the upper one the under eye-lid was drawn up alongst with it, and *vice versa*, when the under one was pulled down the upper one followed. The embarrassment which this occasions may in some degree be lessened by

by ſeparating the eye-lids from each other rather towards the inner angle of the eye.

I have alſo twice obſerved, that upon lifting up the upper eye-lid, the ball of the eye has been directed upwards. Perhaps this was owing to an adheſion of that part of the tunica conjunctiva which covers the eye to that part which lines the upper eye-lid. In theſe caſes I cauſed the upper eye-lid to be but moderately raiſed, drew the under one as much down as poſſible, made the patient direct his eye downwards, and ſucceſsfully performed the operation.

The chair on which the patient ſits ought to have a back, which ſhould reach as high as his ſhoulders, in order to prevent his ſhrinking backwards during the operation. The aſſiſtant ſhould alſo lean a little againſt the chair, in order to keep both himſelf and the patient's head ſteady. If the operator cauſes the patient to direct his face upwards, he can reſt his hand with much firmneſs and ſecurity on the patient's cheek; but if the patient holds his head in his uſual way, the ſurgeon will find but little ſupport, in compariſon with the other way, although he reſt his hand on the cheek of the patient.

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I cauſe the patient to be ſeated near any one window, whilſt all the curtains of the other ones in the room are let down. It is abſolutely neceſſary that the ſurgeon ſhould ſee clearly what he is about during the time he cuts the cornea; and for that reaſon I always cauſe the curtain of that window at which the patient is ſeated to be completely drawn up at the beginning. As ſoon as the inciſion is finiſhed I let the curtain down, and only allow as much light to fall into the eye as I find ſufficient. By this means the pupil is dilated, and I not only introduce the inſtruments to puncture the capſule with ſafety, but I by that means facilitate the iſſue of the lens.

As ſoon as the cataract is extracted, I again draw the curtains up, and examine the pupil with the moſt ſcrupulous attention. But enough of this, leſt I ſhould employ too much time with things which, in the eyes of ſome, may appear trifling.

CHAP.

CHAP. IV.

On the Method of opening the Capſule of the Cryſtalline Lens.

THE next ſtep to that of cutting the cornea is the opening the capſule. Many look upon this part of the operation not only as unneceſſary but as dangerous. It is certainly true, that in ſome caſes, as ſoon as the inciſion in the cornea is finiſhed, the cryſtalline lens ſlips forward of itſelf, although the capſule ſhall not have been previouſly punctured, and in other caſes it can be forced out with the ſlighteſt preſſure; but this does not happen always The capſule of the lens is ſometimes ſo thick and denſe that the cataract cannot be forced through the pupil even with a very ſtrong degree of preſſure; if in ſuch a caſe we increaſe the preſſure ſtill more, the capſule ſuddenly gives way, and both the lens and vitreous humour ſtart out. Nay, it ſometimes happens, that this part reſiſts all the preſſure we employ; and then, if we employ more

more force, we only force out the vitreous humour alone, leaving the lens behind; or the capsule loosens itself in its whole circumference from its adhesions, and starts out entire and enclosing the lens. I have two lenses in my possession, which I extracted, and which are both covered with their entire capsules. In these cases I only made use of a gentle pressure, and the operation succeeded wonderfully; from which we may conclude, that this part can sometimes be very easily brought away, and that in such cases it is not only no bad accident, but on the contrary a very desireable one, as it frees the patient from the risk of a secondary cataract *(cataracta secundaria)*. This is not the case, however, with that violent and forcible separation of the capsule, about which we have just now been speaking, and which never takes place without lacerating or otherwise injuring the internal parts of the eye.

Mr. Janin has observed that, when the capsule is lacerated by a violent pressure on the eye, it generally becomes obscure after the operation, occasioning either a weak vision, or a second blindness; and that, on the contrary, when it is opened with a sharp instrument it generally

generally remains clear and tranſparent. Theſe different effects are eaſily to be accounted for. When, without having punctured the capſule, we employ a great preſſure, the lens is neceſſarily forced forward, and muſt conſequently bruiſe and diſtend the anterior portion of the capſule, till not being able to reſiſt the preſſure any longer, it is torn, and gives way. The conſequence of this injury is a violent inflammation, which occaſions an opacity of its coats; whereas, when an opening is made in the capſule by the operator, the lens enters that opening, and dilates it in its paſſage out, without much violence: hence we find, that where this is attended to, the capſule ſuffers but little, and remains clear and tranſparent.

It has in general been remarked, that when the capſule has been opened, the lens comes gently and ſlowly forward, gradually enlarging the orifice until it at laſt falls out of the eye. By this ſlow progreſſion of the lens the capſule ſuffers but little, and the ſucceſs is as wiſhed for.

I do not aſſert that this ſtep of the operation, I mean the opening of the cornea, is without its difficulties and dangers. If the eye ſhould happen to move ſuddenly whilſt

we are introducing the inſtrument into the pupil there is a great riſk of wounding the iris. I can, however, aſſert, that the greateſt part of the danger ariſes either from the want of caution in the ſurgeon, or from the bad make of the inſtrument. In general the eye remains motionleſs at this time, and the lens is preſſed ſo much forward, after the aqueous humour is evacuated, that there is but little difficulty in opening its capſule.

As ſoon, therefore, as the inciſion in the cornea is completed, and that the aqueous humour has flowed out, we ought to proceed to open the capſule. In doing this we muſt not content ourſelves with only puncturing it once. This muſt be repeated ſeveral times. There are many good reaſons which induce me to adviſe this pretty ſtrongly. It happens now and then, that in extracting the lens a ſmall portion of it is left behind, which requires to be taken out afterwards by itſelf, but is not to be accompliſhed without a good deal of trouble. This happens but ſeldom, however, if the anterior portion of the capſule has been well punctured; for an eaſy and free paſſage is thus procured to all that

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is contained in it. Nothing oppoſes itſelf to the exit of the lens there, nothing capable of retaining any fragments, and the moſt gentle preſſure with the finger on the eye, aided by the retraction of the elaſtic coats of that organ, force every thing out of the capſule which had become opake. Thoſe who only make one puncture in the capſule cannot expect this. It is true, the opening enlarges, but as a large portion remains ſtill uncut and unopened, it is eaſy to conceive that a portion of the lens may remain behind: allowing this explanation to be either true or falſe, ſtill it is a certain fact, drawn from obſervation, that the leſs the capſule has been opened by repeated punctures, the more readily is a portion of the lens retained.

The ſmall portion of opake lens, which now and then remains in the capſule, muſt be extracted by means of a ſmall ſcoop, and; in order to do this it becomes abſolutely neceſſary that the ſcoop ſhould enter the capſule through the opening which was made in it. When this opening is large and wide, the ſcoop will eaſily get in, and reach the opake fragment; but, on the contrary, where the opening is ſmall, it is all in vain that we move the ſcoop

in every direction, in hopes of laying hold of it; for the ſcoop is on the outſide of the capſule, and cannot procure an entrance.

I have ſeen it happen, that every endeavour to extract the remaining fragment has been in vain. In ſuch a caſe, it was ſuppoſed by the operator to adhere to the capſule; but that was not the cauſe. It is more probable that the capſule had not been ſufficiently opened, and that the ſcoop could not reach the ſmall portion.

Let us ſuppoſe, that a ſmall opake fragment remains; and let us alſo ſuppoſe that it is impoſſible to extract it with Daviel's ſcoop. If the capſule has been previouſly well punctured and opened, we may hope that part of the aqueous humour will enter the capſule, and diſſolve the fragment. This happens at leaſt now and then, and always the more readily the larger the opening in the capſule has been. I ſhall again take notice of this circumſtance afterwards.

To theſe reaſons I have ſtill another to add. It has been obſerved by ſome, that the looſe portions of the capſule now and then become opake after the operation, and either weaken the ſight very much, or totally ob-

ſtruct it. In order to remedy this, Daviel adviſes the ſurgeon to pull out theſe opake portions by means of a pair of ſmall forceps, or by means of a hook. But how is this poſſible? they only turn opake ſome days after the operation, and by that time the wound is quite cloſed.

Theſe opake pieces of the capſule, which ſome fear ſo much, I have never ſeen; and perhaps I owe this greatly to the method I take of cutting and puncturing that membrane as much as poſſible. At all events, theſe little opake fragments are not to be ſo much dreaded; for Mr. Sharp has obſerved, that they generally diſappear of themſelves in the courſe of time.

If, alongſt with the lens, part of the capſule be alſo opake, it becomes highly neceſſary to annihilate, as it were, the anterior lamella of that membrane, elſe the patient would remain blind after the lens was extracted. It is generally impoſſible to know, *a priori*, whether the capſule be opake or not; and hence we will ſurely act with moſt prudence if we deſtroy it as much as poſſible. It is true, means have been propoſed for remedying this opacity of the capſule; but theſe means are not

ſo ſure or eaſy in their application as not to make us wiſh to render them unneceſſary.

Mr. Thenon[u] cuts the capſule croſſways, with an inſtrument made for that purpoſe[x]. Mr. Daviel[y] makes a circular inciſion, in ſuch a manner as to diſengage entirely the middle portion; but there is no neceſſity, and, indeed, it is no eaſy matter to make the inciſion of any particular form.

Mr. Beranger raiſes that portion of the cornea which has been looſened, by means of a pair of ſmall forceps, and then opens the capſule with the point of the knife with which he divided the cornea.

Mr. Daviel raiſes the cut-half of the cornea with a ſpatula, and punctures the capſule with the point of a double-edged couching needle; but this is very dangerous; for if the ſurgeon's hand happens to tremble, or that the eye moves, the iris may be immediately wounded.

The forceps of Mr. Beranger bruiſes and injures the cornea; and the ſpatula of Mr. Daviel is very inconvenient; for, by the ſmalleſt

[u] In his Theſes de Cataracta.

[x] See fig. D of the annexed plate.

[y] See Mem. de l'Acad. de Chir. de Paris, l. c. p. 325.

motion

motion of the hand, the cut ſegment of the cornea ſlips from it, and the cornea muſt be again raiſed; but this can never be done without a little injury to the iris. Beſides, in order to uſe either the ſpatula or forceps, the ſurgeon ought to have his left hand quite at liberty; but this is already engaged in drawing down the under eye-lid; or, if he entruſts this laſt to the care of an aſſiſtant, it will, as I have already taken notice when ſpeaking of Pamart's ſpear, always occaſion a good deal of embarraſſment.

Mr. Tenhaaf performs the whole operation with Mr. La Faye's knife. After he has got the knife oppoſite to the pupil, he depreſſes its point, and punctures the capſule, and then proceeds to finiſh his inciſion. How it is poſſible thus to ſink the point of La Faye's knife, which is bent forwards, and away from the pupil, is to me inconceivable. Monſ. Wenzel aſſerts, that he opens the capſule in the ſame way with Mr. Tenhaaf; he makes uſe, however, of a ſtraight knife. I confeſs it is much eaſier to do this with the point of a ſtraight knife, than with that of a bent one; but ſtill all difficulties are not removed.

Both Wenzel and Tenhaaf always run the

riſk of puncturing the edge of the iris in performing in this manner, and neither of them are able to open the capſule ſo ſufficiently as it ought to be, and as I have already deſcribed.

Perhaps I venture too far, when I thus take it upon me to throw even the ſlighteſt blame on Baron Wenzel, that celebrated and that acknowledged very dexterous operator. The criticiſm, however, is, as I hope, well founded; and what is more, I am convinced in my own mind, and from what I have obſerved, whilſt I have paid the ſtricteſt attention to his method of operating, that Baron Wenzel does not always perform what he wiſhes to make us believe; I mean, he generally leaves the capſule unopened.

The beſt and moſt convenient inſtrument for opening the capſule is the cyſtitome of Mr. La Faye[a]. Both the blade of this inſtrument and its canula ought to be ſmall and flat. Monſ. Janin ſays, it ought to be as broad as poſſible, in order to make a large opening in the capſule; but it is very poſſible to make a large opening with a ſmall inſtru-

[a] See fig. H of the plate.

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ment; we cannot, however, introduce a broad-pointed cyſtitome into the pupil without ſome danger of rubbing, bruiſing, or wounding the iris.

This inſtrument will be found to be of much eaſier management if its blade be curved than if ſtraight; for, if it be ſtraight, the ſurgeon, in order to introduce it into the pupil, muſt raiſe his arm, by doing which he loſes the command and ſteadineſs of his hand, and alſo prevents himſelf from clearly ſeeing what he is about. On the contrary, if the inſtrument be bent, there is no neceſſity for raiſing the arm. The ſurgeon may ſtill reſt his hand on the patient's cheek whilſt he introduces it.

Near the end of the inſtrument, which is furtheſt from its point, there projects from each ſide a kind of wing or ſhoulder. When the ſurgeon is about to uſe the cyſtitome, he ought to place the fore-finger on one of theſe ſhoulders, and the middle-finger on the other, and thus holding the inſtrument pretty firmly, he ought to lay his thumb gently on the knobe at the top.

Before introducing the inſtrument, I generally preſs a little upon the eye with the fore-finger

finger of my left hand. This gentle preſſure not only cauſes the lens and its capſule to advance a little forwards, but it alſo cauſes the pupil to dilate; by which means the cyſtitome is introduced with eaſe and ſafety, and allows a conſiderable portion of the capſule to be cut.

It happens, and that not unfrequently, that as ſoon as the inciſion in the cornea is finiſhed, and the aqueous humour has eſcaped, the pupil immediately contracts. In ſuch a caſe it is extremely difficult to introduce La Faye's cyſtitome the length of the poſterior chamber of the aqueous humour, without danger of cutting the iris; and, indeed, ſuppoſing it to be ſafely introduced, we can then only make a very ſmall opening in the capſule. It is here that the gentle preſſure is of ſo much uſe; it widens the pupil, and facilitates the uſe of La Faye's inſtrument; beſides, it tends to fix the eye at that very moment when the ſlighteſt motion is highly dangerous.

I take hold of the inſtrument with my right hand, and raiſing the cut portion of the cornea with its canula, I puſh it forward through the pupil. As ſoon as I have got it thus far, I preſs upon the knobe of the concealed

concealed knife, and make it cut the capſule repeatedly. At the ſame time that I act thus, I move the inſtrument up and down in the pupil; I then allow the knife to return entirely within its canula, and withdraw the inſtrument.

With the ſame inſtrument, therefore, I raiſe the flap of the cornea, and puncture the capſule; in doing which my right hand only is employed; the left is engaged in preſſing on the ball of the eye, or in pulling down the under eye-lid.

There is, however, one circumſtance which I cannot omit to mention here; I mean the being very careful not to preſs too hard with the inſtrument againſt the capſule; for by doing ſo the ciliary proceſſes may be torn, and a prolapſus of the vitreous humour enſue.

I remember one caſe where I could not force out the cataract, although I had made uſe of La Faye's cyſtitome, and applied ſuch a degree of preſſure as even to make me afraid of a diſcharge of the vitreous humour. As there were no circumſtances which could make me ſuppoſe a concretion had taken place, I reſolved to make uſe of La Faye's inſtrument again, and on doing ſo the cataract

was made to come out with the addition of a very gentle preſſure. It is evident, therefore, that I had not pierced the capſule on the firſt application. Whether it be that this aroſe from the capſule's being preternaturally thick and denſe, or that the point of the inſtrument was a little blunted from being in contact with the canula, ſtill it teaches us this good leſſon; that when the cataract does not ſeem inclined to come out with the uſual preſſure, and where there are no grounds to ſuſpect any uncommon obſtacle, we ſhould again have recourſe to La Faye's inſtrument before any thing elſe be attempted. Some ſuppoſe that a concretion has taken place between the cataract and iris, and ſet to work to looſen it, by which means the eye ſuffers very much without the ſmalleſt neceſſity for it. Others continue to increaſe the preſſure, and at laſt not only force out the cataract, but the vitreous humour alſo. Theſe latter always commit a very great fault; for we ought in no caſe whatever to apply a violent preſſure to the eye. When the cataract does not come eaſily out we muſt endeavour to diſcover what it is that acts as an obſtacle to it, and to remove it. The former may now and then

then be right in their conjectures, as the reſiſtance is in reality ſometimes owing to an adheſion, but alſo often owing to the mere denſity of the capſule. In this ſtate of uncertainty, therefore, we certainly act with proper caution and prudence in again making uſe of the cyſtitome; for if by doing ſo we are enabled to extract the lens, our purpoſe is gained; if not, we have almoſt obtained a poſitive proof of there being an adheſion, and that without having done any injury to the eye.

CHAP.

CHAP. V.

On the Extraction of the Lens.

AS ſoon as the capſule is opened the lens comes forward through the pupil, either of its own accord, or in conſequence of a gentle preſſure on the eye. In this part of the operation all kind of hurry is hurtful. The more cautiouſly and ſlowly we proceed, the ſurer we are of ſucceeding well.

The cryſtalline lens cannot paſs through the pupil without conſiderably ſtretching and dilating it. If the lens be made to come rapidly out, it dilates the iris too ſuddenly, and tears or lames it. When this laſt circumſtance happens, the iris loſes its mobility, and changes its figure; a fault which unfortunately is no uncommon conſequence of this operation, but which may be avoided by not applying a ſtrong and ſudden preſſure, but by gradually and ſlowly increaſing the preſſure on the eye.

The ſlower the pupil is dilated the leſs does

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it ſuffer; the more readily it yields the more ſurely does it contract after the lens has paſſed through it, and the ſooner does it reaſſume its natural figure, mobility, and ſtrength. The eye, ſays a certain author, muſt, as it were, be brought to bed.

Sometimes the cataract ſprings ſuddenly and unexpectedly forward as ſoon as the capſule is cut. This happens eſpecially when the aſſiſtant unguardedly preſſes on the eye with the finger with which he raiſes the eye-lid, or when the operator does the ſame with the finger which is employed in drawing down the under eye-lid. All the inſtruments commonly in uſe for fixing the eye, even Pamart's ſpear itſelf, preſs too much upon the eye, and are therefore very apt to occaſion this accident. Hence we ſee how neceſſary it is to employ them as ſeldom as poſſible.

It ſometimes happens, that in ſpite of all the caution that can be taken, both by the operator and his aſſiſtants, the lens ſuddenly ſtarts out of the eye. In this caſe I am apt to believe that the fault lies in the muſcles of the eye. It ſeems probable that the internal irritation, namely, the fear and terror into which the patient is thrown, together with the

the external one produced by the knife, occaſion a convulſive contraction of the muſcles of the eye, by which the globe is ſuddenly compreſſed and drawn back. At leaſt, this much is certain, that the ſudden ejection of the lens is always to be more dreaded in thoſe who are of a fearful and irritable habit; and alſo in thoſe whoſe eyes have ſuffered conſiderably during the operation. I mention this as another motive for uſing as little freedom as poſſible with the eye, and to induce the ſurgeon to avoid every thing that may tend to augment the anxiety and fears of the patient.

In general we ſhall find, that as ſoon as we begin our preſſure, the inferior edge of the lens riſes up, and comes firſt forward through the pupil. Before doing this, however, it ſtretches the iris violently, and puſhes it forward before it, till having reached the opening in the cornea it fairly forces a portion of it out of the eye.

When we look at the eye immediately after the lens is extracted, we ſhall find the pupil to appear quite oblong and depreſſed at its inferior border. Some adviſe this part to be puſhed back with a ſmall ſcoop; but this is not neceſſary, for it ſoon recovers its former ſhape.

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When the cataract is very ſoft, the iris ſuffers but little. I have ſeen it happen, that as ſoon as I had opened the capſule containing ſuch cataracts, that they have ſquirted out, and left the pupil quite clear.

Sometimes the pupil contracts itſelf moſt violently immediately upon cutting the cornea. This is a moſt unhappy accident; for all future attempts to extract the lens are now in general in vain. Preſſure on the eye does not effect a dilatation of the pupil; and if we increaſe the preſſure very much, the vitreous humour will be forced out, and leave the lens behind. To me it appears that this accident only happens where the eye has ſuffered much during the operation; and I am, therefore, inclined to believe that it is always the conſequence of a violent ſtimulus or other injury done to the eye. Mr. Janin thinks it chiefly happens when the lens is of a bony hardneſs, and aſcribes the contraction of the pupil to the preſſure and irritation of the lens upon it. That this may in ſome caſes be the cauſe I do not take upon me to deny, but it is not always ſo; for in all the caſes of this kind which I have met with the cataract was always ſoft.

Violence is never of any uſe in ſuch a caſe as this. It ſometimes happens that the pupil, after a ſhort while, dilates of itſelf, and then we may proceed to open the capſule and to extract the lens; but when this does not happen, I deſire the patient to cloſe his eye, and cauſe a kind of cataplaſm made of ſaffron, camphor, and roaſted apples, to be applied to it. In general, from eight to twenty-four hours afterwards the pupil will be found expanded, and then I finiſh the operation.

There are ſurgeons who think, that, with ſome people the pupil is naturally ſo contracted and ſmall as to render it impoſſible to force out the cataract without lacerating the iris. They therefore adviſe us to pay particular attention to the ſtate of the pupil previous to the operation, and in ſuch where that is naturally contracted and ſmall to have recourſe to couching rather that to extraction.

I ſhall take it upon me to aſſert, that the ſurgeon may always act in direct contradiction to this rule. It is true, we ſhall ſometimes find people whoſe pupils ſeem very much contracted in the ſhade: but it will alſo be found that the pupils of theſe ſame people are, at another

another time, open and dilated, even in a pretty ſtrong light. We muſt, therefore, never truſt entirely to the one trial, but repeat it frequently, as the ſame pupil may, at times, vary much in its ſtate of contraction, although under the ſame circumſtances. I am inclined to believe that this variation in the dilatation of the pupil depends very much on the degree of irritability of the patient, which may be more or leſs under different circumſtances.

We ſhall ſometimes find, however, the pupil uncommonly contracted, and motionleſs at the ſame time. This is a circumſtance which, if diſcovered in time, ought to prevent us from undertaking the operation; and yet I have, in ſpite of this, ventured to do ſo, and found that the pupil, which appeared to be motionleſs, dilated itſelf as I preſſed upon the eye, and allowed a free paſſage to the cryſtalline lens. I do not aſſert that this always happens; but the experience which I have had renders me always bold enough to attempt the operation, even under ſuch circumſtances. I ſpeak, however, only of ſuch caſes where the contraction of the iris ſeems to be the ſole diſeaſe; not where it is the effect of an

amauroſis, or of an adheſion of the iris, or of any other cauſe which might tend to deſtroy all hopes of ſucceſs from the operation.

As ſoon as the lens is fairly out of the eye, the window curtain muſt be drawn up in order that the ſurgeon may be able to attentively examine whether the pupil is perfectly clear or not. It is a bad practice to cloſe the eye immediately on extracting the lens from the idea of preventing a prolapſus of the vitreous humour, for it frequently happens and eſpecially when the lens is ſoft, or the capſule not ſufficiently opened, that part of it remains behind, which in the ſuite diminiſhes, or altogether prevents viſion. This particle is not always very eaſy to be diſcovered, but often remains concealed in the eye; for which reaſon it muſt be moſt ſcrupulouſly examined, at one time with a ſtrong light, at another with a weaker, in order to diſcover whether any thing remains in any part of the extent of the pupil. The light ought to fall obliquely, or from one ſide, into the eye, in order that the reflection may not prevent the operator from diſcovering any of the fragments.

That which generally remains is either a white

white opake ſlime, or a piece of the cataract. This ſlime is, perhaps, nothing elſe than the Liquor Morgagni, which has become thick and inſpiſſated. At other times it ſeems to ariſe from the lens itſelf, which is now and then wholly converted into a milky fluid, part of which may eaſily remain in the capſule. The cheeſy kind of cataract is more liable to leave fragments behind it than any other. Theſe fragments are generally to be found at the upper part of the pupil, ſeldom in the lower, and ſtill more ſeldom in the middle part. When they are very ſmall, and ſeated high up in the capſule, they are not very eaſy to be diſcovered, eſpecially if the pupil be ſmall. The ſurgeon ſuppoſes the pupil to be quite free and clear, and accordingly binds the eye down. After a few days a little piece ſinks down into the center of the eye and becomes viſible, but it is then impoſſible to be extracted.

I once had a caſe exactly of this kind. I thought I had examined the pupil moſt carefully, and found it perfectly clear. Eight days after, however, on opening the eye, I diſcovered a white opake ſpot in the center of the pupil, which ſeemed to be about the ſize of the head of a pretty large pin. It is

ſomewhat remarkable, that this occaſioned a complete nyctalopia to the patient. In a ſtrong light, when the iris contracted itſelf very much, he could ſee nothing; but in a more obſcure one, where the pupil dilated itſelf, he ſaw pretty diſtinctly. It ſeems beyond a doubt that this fragment of the lens had remained concealed behind the upper part of the iris, and had afterwards ſunk down; and we muſt therefore be convinced how neceſſary it is to examine the ſtate of the pupil with the moſt ſcrupulous attention, both in a ſtrong and in a dull light; for what remains concealed behind the iris during its contraction in a ſtrong light, will come into view when it dilates in the dull one.

I have twice ſeen, that after the lens has come out to all appearance perfectly entire and unbroken, yet there followed immediately after another ſmall opake body, which, in conſiſtence, reſembled the lens itſelf. What this opake body was I am really unable to ſay. It could not be a portion of the lens, for that was hard and quite entire. Is it probable that a part of the liquor morgagni turns hard and condenſes?

What remains muſt be extracted by means of

of Daviel's ſmall ſcoop [b]. This part of the operation is ſometimes very troubleſome; for it happens that the ſcoop muſt be often introduced, and when the eye is reſtleſs it is almoſt impoſſible to avoid rubbing and puſhing againſt the iris and other internal parts of the eye. It is an unfortunate circumſtance when we are obliged to have recourſe to it; and hence we ſee, that although both a hard and ſoft cataract may be extracted, yet the former is the beſt to operate upon, ſince it ſeldom leaves any fragment behind; and we alſo ſee the neceſſity of opening the capſule as much as poſſible, becauſe it ſeldom happens then that any portion ſhall remain in it.

It is not always neceſſary, however, to have immediate recourſe to Daviel's ſcoop; for I have often been able to force out the remaining fragment by means of a gentle preſſure; and this ought, certainly, to be firſt attempted; but in doing it we muſt proceed with the utmoſt caution, for fear of forcing out any of the vitreous humour.

When the capſule has been ſufficiently punctured, we will generally ſucceed by this means alone.

[b] See fig. I, in the plate.

The ſcoop ought to be gently bent, but in every point ſmooth and equal. The iris being dilated by means of a gentle preſſure, the ſcoop may be introduced, and the fragment extracted. All this is ſometimes performed with much eaſe and quickneſs. At other times, however, and theſe I ſuſpect to be when the capſule is not ſufficiently opened, all our efforts to lay hold of the ſmall remaining portion of lens are in vain. The ſurgeon moves the ſcoop up and down in every direction, yet the fragment does not move, nor indeed does the inſtrument ſeem to touch it. The eye ſuffers much from ſuch freedom being uſed with it, and I would, therefore, adviſe the operator, where he does not eaſily accompliſh his end, to leave the fragment remaining, rather than hazard the total loſs of the eye. Thoſe who cut the capſule ſufficiently ſeldom meet with this difficulty.

It may ſtill be ſome comfort to thoſe who find themſelves obliged to lay aſide the uſe of the ſcoop, to know that all hopes are not yet loſt; for I have often ſeen this portion gradually diſappear of itſelf. That remnant which I lately mentioned as having occaſioned a nyctalopia, diſappeared in two months. I

do

do not know whether the portion of ſlime or cataract which obſtructed the ſight was diſſolved and diluted in the aqueous humour, and then abſorbed, or if it had tranſuded, or if it had only ſunk down to the lower part of the capſule behind the iris. Be it as it may, the pupil became clear; nor, indeed, is there any thing ſo very uncommon in this. Does not the milky fluid, which often flows into the anterior chamber of the eye upon couching, diſappear very ſoon? Does not the pus which is formed in the purulent eye often entirely diſappear, and even the fragments which remain in the capſule after couching?

If this happens after couching, why ought it not to take place alſo after extraction? In this caſe, the capſule being open, the aqueous humour can freely get to the particle, and diſſolve it; and this is what generally happens; therefore, when upon examining the eye ſome time afterwards, we find that the little piece is not exactly in the ſame part that we laſt obſerved it to be in, and that the moving the eye makes it tremble, there is grounds to think that it will in time ſink down behind the lower part of the iris, and leave the pupil clear. If we diſcover that it

gradually

gradually diminiſhes in ſize, and at the ſame time becomes tranſparent, we may hope that it will be altogether diſſolved.

External, diſcutient, and emollient applications, ſuch as borax, and a decoction of altheæ, probably aſſiſt and promote this wiſhed-for change; the firſt, perhaps, by giving a ſolvent power to the aqueous humour, the other by widening the opening in the cornea, and by increaſing the tranſudation of the opake particle which may have been diffuſed in the aqueous humour.

In two caſes which fell under my care, the remaining fragments occaſioned a ſingular appearance, which at firſt terrified both me and my patient. The operation was ſucceſsfully performed, the lens ſeemed to come out entire, and the pupil remained clear. Upon opening the eye the twelfth day after the operation, I was ſurprized to find it perfectly white. The patient was quite blind. At firſt I imagined that the cornea itſelf had become opake, but I ſoon diſcovered that the fault lay in the aqueous humour alone, which ſeemed thick and white. In the courſe of a fortnight, however, this muddineſs diſappeared, and the patient recovered his ſight.

This was, beyond a doubt, occaſioned by a ſmall remnant of the lens being diſſolved in the aqueous humour, and tinging it.

Although I thus aſſert that the remains of a cataract often diſappear with time, I do not mean to diſſuade ſurgeons from uſing Daviel's ſcoop. On the contrary, I adviſe it as the more ſure means, and that we ſhould only truſt to the uncertain chance of the fragments diſappearing in caſes of neceſſity,

On the ſurface of two lenſes, which I extracted, were to be diſcovered many black lines, which gave it a ſtar-like appearance. Did theſe come from the pigmentum nigrum, or not? The operation itſelf was eaſy and ſucceſsful.

CHAP.

CHAP. VI.

On the Concreted Cataract.

IF the patient be unable to diſtinguiſh light from darkneſs, if the cataract appears to be in immediate contact with the iris, and the pupil entirely, or almoſt entirely without motion, then do we judge that there is a very ſtrong concretion between it and the iris. In this caſe, the ſucceſs of the operation is very doubtful indeed; but if the patient be ſtill able to diſtinguiſh in any degree, light from ſhade, if the iris ſtill retains a little motion, although irregular, and if it ſeems to become oblique, curled, or in folds as to its figure, the adheſion to the iris is not ſo ſtrong but that the operation may be attempted with ſome hopes of good ſucceſs. But we muſt never forget, under ſuch circumſtances, to warn the patient of the nature of his caſe; and as the eye always ſuffers much from the action of ſeparating the lens from the iris, we muſt uſe every poſſible previous precaution, in

in order to prevent the ſubſequent inflammation from running too far.

If, after having cut the cornea, punctured the capſule, and preſſed gently upon the eye, we do not obſerve that the cataract moves; and, if nothing was diſcovered previous to the operation which ſhould have led us to ſuſpect that ſomething of this kind might happen, then there is ground for ſuppoſing that an adheſion has taken place. This is a ſpecies of the concreted cataract which is not eaſily diſcovered before hand.

The ſurgeon will deceive himſelf exceedingly if he expects to obtain his end in this caſe by encreaſing the preſſure on the eye: during ſome time the cataract may remain quite motionleſs, but at laſt it ſprings ſuddenly forward, togewith its capſule, and accompanied with the whole or greateſt part of the vitreous humour; nay, it often happens under ſuch a practice, that the whole of the vitreous humour alone ſhall flow out, leaving the lens and capſule behind.

Different inſtruments have been contrived, in order to affect a ſeparation of the cataract from its adheſions.

Mr. Sigwart introduces a double-edged couching

couching needle through the pupil, and between the iris and cataract; and with this he endeavours to looſen the connection all around. But how is it poſſible to introduce a ſharp pointed inſtrument between two parts which mutually adhere, without wounding both of them? How is it poſſible to ſeparate the whole ſurface of the lens from the iris with an inſtrument which is quite ſtraight? It may be poſſible to make it paſs between them in the upper part of the eye, but it will be found impracticable in the under; and what is there to be done if the adheſion be chiefly at the inferior part?

The inſtrument I generally make uſe of is a flat probe, pretty much bent at one end. This I introduce between the lens and iris, and endeavour to move it gradually around its axis, ſometimes gently preſſing on the cataract, in order to puſh it a little back, and promote the ſeparation.

Where the concretion is not very ſtrong this method generally ſucceeds. It muſt be confeſſed, however, that in doing this the iris always ſuffers much, and therefore we ought to uſe every poſſible precaution, in order to prevent an exceſs of inflammation; at the ſame time

time the ſurgeon, by proceeding very cautiouſly, may obviate the bad effects in a great degree, and ſtill obtain his end. All depends, in general, on the degree of adheſion which has taken place. The more points of union there are, and the more firmly theſe are connected, the more difficult will the ſeparation be. If the iris and lens be completely connected the caſe is incurable. It may moreover be remarked, that in the caſe of a curable concretion, the capſule, by means of which the lens adheres to the iris, is generally ſomewhat opake, and on that account, as ſoon as the ſeparation is completed, it muſt be well cut and opened by means of the cyſtitome.

The concretion of the lens with the capſule is not capable of being diſunited; for how is it poſſible to bring any inſtrument into the capſule which can ſeparate both the anterior and poſterior ſurface? All that can be done, in order to reſtore the patient to his ſight, is to extract both lens and capſule. It may be aſked by ſome, is this always poſſible? Both my own experience, and that of others, convince me that it is not only poſſible, but ſometimes very eaſy.

In two caſes, where I performed this operation,

ration, the lenſes came out unexpectedly enveloped in their capſules, without any bad ſymptoms following.

Mr. Janin has proved by many and repeated experiments, that the capſule of the lens is not a continuation of the membrane enveloping the vitreous humour, but that it is quite diſtinct, and can be eaſily ſeparated from the capſule of the vitreous humour, and from the ciliary proceſſes, by means of blunt inſtruments only: nor after its ſeparation does it ſhow any laceration, or any other mark by which one might be led to conceive that it had firmly adhered to the membrana hyaloidea[c].

But in what manner are we to proceed in order to looſen and extract both lens and capſule. I have often made uſe of the following proceſs, which is the ſame with that which Mr. Warner[d] employs in couching a concreted cataract, with good ſucceſs.

I introduce the point of a round couching needle through the pupil, and puſh it into

[c] See his Memoires et Obſervations ſur l'Œil, à Paris, 1772, p. 137; and alſo Richter's Biblioth. v. 2. part I. p. 100.

[d] See his excellent work, entitled Caſes in Surgery, 1760, p. 62.

the

the center of the lens. I then move the lens gently by means of this inſtrument in every direction. When I think I have by theſe gentle movements looſened the adheſions of the capſule, I twirl the needle round between my fingers, in order to diſengage it, and then withdraw it altogether. By this means I am generally enabled to extract the cataract with the aſſiſtance of a ſlight preſſure. If it does not not ſeem inclined to come eaſily out, I repeat the ſame manœuvre; but if, after having repeated it again and again, the cataract does not move, even although a pretty ſtrong preſſure ſhould have been applied, I would adviſe the operator to deſiſt altogether from his attempt. It is more than probable that every future one will alſo be in vain, and that the repeated irritation may prove the cauſe of the total loſs of the eye.

It might, perhaps, be better to uſe rather a double-edged than a round needle; for with ſuch one we can move the lens not only upwards and downwards, and from ſide to ſide, but we can make it turn round its axis; a motion which might contribute more than all the others to diſengage it.

It will probably ſtrike ſome as a dangerous attempt to introduce a ſharp-pointed inſtrument into the poſterior chamber of the eye. Great caution, indeed, is neceſſary in doing ſo; but all dangers may be eaſily avoided by uſing a canula to ſheath the point of the needle whilſt introducing it. As ſoon as it has arrived at the capſule the needle may be puſhed forward, and the canula withdrawn.

CHAP.

CHAP. VII.

On the Prolapſus of the Vitreous Humour.

THIS takes place under a variety of circumſtances; the vitreous humour ſometimes flows out whilſt the lens remains behind, or the lens comes out and immediately after follows the vitreous humour, or the vitreous humour begins only to flow ſome hours, nay days, after the operation.

There are many ſurgeons who dread this accident very much; and we have in conſequence many propoſals offered to us, by which it is to be prevented. Mr. Sharp recommends to us to cauſe the patient to ſhut his eye the moment the lens is extracted. Mr. Poyet orders the patient to lie on his back during the whole of the operation. But ſhould there be any cauſe which tends to force out this humour, it will eſcape in ſpite of this ſituation, even although the eye-lids be kept ſhut. It is other circumſtances entirely which we muſt attend to, if we mean to prevent the diſcharge of this fluid.

I confeſs that I have ſeen this accident happen but very ſeldom during the operation; and when it does ſo, there is always ſome particular cauſe for it. Either the aſſiſtant who ſupports the eye-lid preſſes unguardedly on the eye itſelf, or the operator performs his part ſo awkwardly, that the eye is violently irritated and injured, or he makes uſe of a bad method of operating, or his inſtruments are ill adapted for the intended purpoſes, or he perſiſts in his endeavours to force out the lens although he has made the inciſion in the cornea too ſmall, or he preſſes hard on the eye without having previouſly punctured the capſule.

Theſe are circumſtances which the operator muſt avoid if he means to prevent the diſcharge of the vitreous humour.

I myſelf have operated on ſome to whom this accident happened during the time of the operation; and the circumſtances are ſo remarkable as to excuſe my ſhortly narrating them. The eyes of the firſt patient were very hollow and profound. The inciſion was rather too ſmall, but ſtill not ſo much ſo as to deprive me of the hopes of being able to extract the cataract. Upon preſſing the eye gently

gently the lens abſolutely came forward and ſunk into the wound of the cornea; there it remained fixed, with about the half hanging out of the wound. I attempted to diſengage it by means of Daviel's ſcoop, but it broke in two. The upper half ſprang immediately back to the poſterior chamber, whilſt the other dropt down on the cheek. I thought I ſhould be able to force the remaining half out by preſſing on the eye, but I was deceived in my conjectures; for as often as I preſſed on the eye, as often did a portion of the vitreous humour come out, the cataract remaining ſtationary.

In another caſe, in which the inciſion in the cornea and capſule were both ſufficiently large, the pupil dilated itſelf, and the cataract ſeemed inclined to come through it; but although the pupil was thus dilated, and that the lens projected conſiderably forward, ſtill it never came completely out. Upon this I increaſed the preſſure, until at laſt the cataract ſprang ſuddenly out, and at leaſt a third of the vitreous humour with it. No bad conſequences enſued. The patient recovered his ſight. This cataract was very big, round, and reſembled a

ſack full of a whitiſh fluid. I have already taken notice of it.

Sometimes the vitreous humour is very thin, and as if diſſolved. In ſuch a caſe, it is extremely apt to run out upon the moſt gentle preſſure, and without any fault of the operator. What leads me to ſuſpect this, was what happened to me in the caſe of a lady, who, in order to relieve herſelf from the dimneſs of ſight, had long applied external diſcutient remedies, and eſpecially the volatile alkali. The operation was well performed, and the cataract came out with a very gentle preſſure; but yet there immediately followed a portion of the vitreous humour, which appeared uncommonly thin, and as if diſſolved *.

A diſcharge

* Profeſſor Bart, in a converſation I had with him, alſo mentioned this ſtate of the vitreous humour as what he had met with more than once in his practice; but he looks upon it as one of the moſt unfortunate circumſtances which could poſſibly happen, either to the patient or operator. Where the vitreous humour is in this diſſolved kind of ſtate, it is almoſt impoſſible to ſucceed with the operation, for even the moſt gentle preſſure, he ſays, is ſufficient to make it ouze 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. Dr. Bart has generally obſerved, that when the vitreous humour is thus diſeaſed

A diſcharge of the vitreous humour, therefore, during the operation, is a rare occurrence, and never happens without ſome very particular cauſe; but this accident happens more frequently ſooner or later after the operation. The cauſe is various. The moſt frequent appears to be a convulſive contraction of the muſcles of the eye, by which it is compreſſed.

It frequently happens that the patient begins to complain ſoon after the operation, of his eye moving violently and involuntarily under the bandage. This is evidently a convulſive motion, and a conſequence of the irritation which the eye ſuffered during the operation. I think I have obſerved that this diſcharge of the vitreous humour happens more frequently to thoſe who are poſſeſſed of great ſenſibility of nerves, and are ſubject to cramps; and alſo to thoſe who have been ſeized with great dread or terror, either previous to or during the operation, and who ſuffered much from

diſeaſed, it acquires a browniſh colour. If, therefore, after having made the inciſion in the cornea, and punctured the capſule, he obſerves even the ſmalleſt drop of a thin browniſh fluid ouze out from behind the lens, and that with a very moderate preſſure, he immediately deſiſts from the operation, by which the form of the eye is at leaſt preſerved to the patient.—The T.

convulſive affections after it, ſuch as a ſenſe of tightneſs and contraction in the extremities, vomiting, colic pains, trembling, and anxiety, than to thoſe of an oppoſite diſpotion.

It muſt, therefore, ſurely occur to every one, how imprudent that ſurgeon acts, who, either by his conduct, or by uſeleſs and tedious preparations, or by unneceſſary and pompous diſcourſes, tends to augment the patient's fears; who, in order to demonſtrate his intrepidity, ſpeaks and acts with wanton roughneſs, and who, in order to convince thoſe who liſten to him of his own dexterity, relates the moſt awful ſtories of the wonderful and frightful caſes which he has cured. Such a conduct only tends to terrify and diſtreſs the patient by augmenting his fears. Let the uneaſineſs and anxiety of the patient be ſoothed and quieted by a friendly and cheerful converſation, and when ſpeaking of the operation, let it be mentioned as a thing of little conſequence; but above all, let the ſurgeon perform his part with quickneſs, and without any uſeleſs parade. Theſe are rules which a ſurgeon ought moſt ſtrictly to obſerve, not only in this, but in every other

other operation. More of this, however, afterwards.

We ſee, moreover, how neceſſary it is to make uſe of emollient and ſedative remedies, both externally and internally, immediately after the operation. By theſe means we not only prevent a diſcharge of the vitreous humour, but alſo counteract the other bad conſequences of the operation.

Immediately after the operation, I lay a cataplaſm of apples, ſaffron, and camphor, on the eye.

There are other cauſes which occaſion this late diſcharge of the vitreous humour. One of the moſt frequent is the tightneſs and preſſure of the bandage. As the cornea is the moſt prominent part of the eye, every external preſſure muſt principally affect it. Indeed, every external injury, whether it be preſſure or a blow, may occaſion a diſcharge of the vitreous humour. We are never ſecure againſt this accident, till after the fourth or fifth day. The wound, it is true, appears to be cloſed before this time, but it can be eaſily forced open, and the humour diſcharged. I have ſeen it happen on the fourth day, in conſequence of violently forcing aſunder the eye-lids,

eye-lids, which adhered ſtrongly together, in order to examine the eye. The patient, who, until then, had experienced little or no pain, immediately complained of it, and, indeed, ſo much ſo, as to induce me to examine the ſtate of the eye. I found the inferior portion of the wound open, and part of the vitreous humour, of the bulk of a pea, hanging out of it. Two or three hours before there was nothing of this kind to be diſcovered. We, therefore, ſee how neceſſary it is to delay the opening of the eye till the tenth day.

Among the many cauſes which are apt to promote this prolapſus of the vitreous humour, may be reckoned violent terror. A peaſant, from whom I had extracted the cataract, was ſo perfectly free from every bad ſymptom during the firſt four days after the operation, that there was but little doubt of a complete cure. A violent fire, however, unfortunately broke out in a houſe adjacent to that of the patient's, on the morning of the fifth day. The patient was much terrified, and frightened by this accident, and ſoon after felt a moſt acute pain in his eye. Upon opening the eye, I diſcovered a prolapſus of the vitreous humour, which, if we can truſt

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to the ſenſations of the patient, was not there before, and which was certainly occaſioned by the fright; for he aſſured me, that he had received no blow, nor any external injury on the eye.

It may happen, that the patient ſhall unguardedly hurt his eye in the night, eſpecially when aſleep; on which account I always cauſe an attendant to watch the patient during the three firſt nights, and forbid him from turning on that ſide which has been operated on.

It is ſeldom that we can diſcover whether there is a prolapſus of the vitreous humour or not until about the tenth day, when we open the eye. If we are watchful, however, and attentive, there are now and then certain ſymptoms which may lead us to ſuſpect ſuch an accident even before that time. If, for inſtance, the aqueous humour, which generally ceaſes to flow out of the eye about the ſecond day, ſhould begin to flow afreſh about the third or fourth, it is to be ſuſpected that the wound has been forced open, and probably ſome of the vitreous humour, or even part of the iris, forced out. This conjecture will be rendered more probable if we diſcover any

ſufficient

ſufficient cauſe for ſuch an accident, or if the patient begins to complain ſuddenly of a violent and acute pain.

When the aqueous humour does not ceaſe to flow on the third day after the operation, but continues to do ſo until the fifth or ſixth, we may be aſſured that there is ſomething oppoſing itſelf to the cloſing of the wound in the cornea, and that it probably is, either the iris or part of the vitreous humour which has been prolapſed.

Still it muſt be confeſſed, that as theſe circumſtances do not always happen, as I have juſt now related, nor are always eaſy to be diſcovered, the prolapſus of the vitreous humour is ſeldom found out before the twelfth day when we open the eye; and upon doing this we generally diſcover the eye to have the following appearances:

The wound in the cornea is commonly entirely cloſed, except at the lower part, where it remains open, much diſtended, and filled with the vitreous humour. This reſts immediately upon the conjunctiva, and reſembles a white opake jelly hanging by a ſlender ſtalk, which ſeems to be ſqueezed and compreſſed by the wound. The whole of this portion may be very

very eaſily ſeparated by cutting through the ſtem. I never do this however, partly becauſe the patient is apt to be afraid, and think that he has to undergo a ſecond operation; beſides it is better not to let him know that any ſuch accident has happened, and it is alſo quite unneceſſary; for the prolapſed part does not hurt the eye in the ſmalleſt degree, and the wound as it cloſes gradually compreſſes this ſlender portion like a ligature, until it entirely ſeparates the portion which hangs out. All this ſometimes takes place ſo quickly, that we find the portion of vitreous humour already quite ſeparated by the twelfth day. Sometimes it is not only ſeparated by the twelfth day, but alſo waſhed out of the eye by the tears, ſo that it is almoſt impoſſible to know that ſuch an accident had taken place.

That part of the wound which was kept open by the prolapſed portion of the vitreous humour generally remains, for ſome length of time, white, thick, and irregular; but this diſappears ſooner or later; nay, it has happened often, to my great aſtoniſhment, that after a certain time not the ſmalleſt veſtige of a cicatrix was to be ſeen remaining.

Whilſt

Whilſt the vitreous humour remains in its prolapſed ſtate, it alters the figure of the iris, by drawing the under part of it downwards and forwards; but this alſo diſappears as ſoon as the wound is healed. I ſhall again ſpeak of this in the following chapter.

We are, therefore, of opinion, that when a prolapſus of the vitreous humour remains undiſcovered till the tenth or twelfth day, it becomes unneceſſary to cut or ſeparate it. Suppoſe, however, that this accident was diſcovered immediately, or that it happened during the operation, what is then to be done? Let the prolapſed part be cut off, ſays Daviel. I have often attempted to do this, but never have been able to ſucceed; and I am now reſolved never to attempt it again. It is ſo very difficult in ſuch caſes to ſeparate this portion of the vitreous humour, that I am almoſt tempted to believe that Daviel never has followed the rule which he himſelf has laid down. I ſpeak principally of that caſe where part of the vitreous humour has been forced out alongſt with the cataract. In order to prevent a too great loſs of this humour, there is no better remedy which we can at the inſtant employ, than to ſhut the eyelids. As ſoon as we open them, in order to

ſeparate the prolapſed part, a freſh portion flows out; and this happens as often as we open the eye, ſo that we are ſoon forced to deſiſt from any further trials of this kind. There may be, perhaps, caſes where this does not take place, but from what I myſelf have ſeen I muſt think that it does ſo in moſt.

I confeſs that I have ſeen caſes where this did not take place, but even in them it will ſeldom happen that we can ſeparate the prolapſed portion according to our wiſhes; for in attempting to lay hold of the portion with the ſciſſars, and to ſeparate it, a freſh portion is pulled out of the eye, and the miſchief encreaſed. But, after all, it may be aſked, why cut away this portion? what advantages are to be gained by doing ſo? I anſwer, none. The prolapſed part does not ſqueeze nor moleſt the eye, and may, therefore, remain hanging out. If, by cutting it away, we ſuppoſe that we remove an obſtacle to the healing of the wound, I anſwer, that the portion which lies in the wound itſelf, and which prevents its cloſing, cannot be ſeparated; and that the other portion which we cut away is without the wound, and does it no injury.

It is not only difficult to ſeparate this portion

tion of the vitreous humour, but alſo quite unneceſſary. The wound in the cornea, as it gradually diminiſhes in ſize, acts like a ligature upon it, and at laſt entirely ſeparates it. As ſoon, therefore, as I diſcover any part of the vitreous humour to be prolapſed, I immediately ſhut the eye-lids without cutting it away, and apply a bandage upon the eye.

I am convinced that in ſuch a caſe the ſurgeon can do little elſe than to entruſt all the reſt to nature.

Upon opening the eye the twelfth or fourteenth day after the operation, it is ſeldom that I find the ſmalleſt mark of a prolapſus of the vitreous humour. I could here relate ſeveral caſes of this kind.

The loſs of a ſmall portion of this humour ſeldom brings on any bad conſequences *. The man, whoſe caſe I related above, as having a cataract which reſembled a ſmall ſack, loſt at leaſt one-third of the vitreous humour, and yet recovered his ſight ſo entirely, that he could diſtinguiſh with his naked eye a ſmall ſpot

* Profeſſor Bart has obſerved, that the inflammation ſubſequent to the operation, is always much greater in thoſe patients who looſe part of the vitreous humour, than what commonly happens to thoſe who have ſuffered no ſuch accident.

upon

upon a diamond. The eye, alſo, was of the ſame ſize with the other; from which we may conclude that a ſmall portion of this humour may be repaired when loſt.

When the prolapſed portion is conſiderable, it is in general pretty long before the patient can open, or uſe his eye. In the caſe hinted at, above five weeks from the time of the operation elapſed before the perſon could open it; from which, and from ſeveral other ſimilar caſes, I am led to think, that little is to be dreaded from this accident. At the ſame time it is evident, that where a great part of this humour is diſcharged, there not only follows a diminution, but, in general, a total loſs of ſight.

I have remarked, and others have done ſo alſo, that thoſe patients who only loſe a ſmall or moderate ſhare of the vitreous humour, generally acquire a much ſharper ſight than thoſe who have loſt none of it. This ſingular circumſtance may, perhaps, be accounted for in the following way. When a part of the vitreous humour is diſcharged, ſo much is reſecreted as to fill not only the ſpace which was emptied, but alſo the poſterior chamber, or the place formerly occupied by the cryſtal-

line lens. And as the conſiſtence of this humour approaches nearer to the denſity of the lens than the aqueous one, it conſequently repairs its loſs better: whereas, in thoſe who have not loſt any part of the vitreous humour, the aqueous humour fills both the anterior chamber and the ſpace formerly occupied by the lens. And as there is a vaſt difference between the denſity of theſe two parts, the loſs of the lens is but badly repaired.

This may probably account for the obſervation, that thoſe who are couched generally ſee rather better than thoſe who have the cataract extracted; for, perhaps, after couching, the vitreous humour occupies the place of the lens, which, after extraction is filled up by the aqueous one. This advantage couching certainly has over extraction; but it is not a very great one; for the acuteneſs of ſight which the former poſſeſs, in compariſon with the latter, is not ſo material as to render the uſe of ſpectacles unneceſſary to them. Whether the patients be cured by extraction or couching, ſtill they muſt equally make uſe of glaſſes; and the ſurgeon ought always to inform his patient of this; for there are ſome who expect to regain the ſame acuteneſs

of viſion which they formerly had, and who are ſurpriſed and mortified after the operation, on finding that they cannot do without them. Very few, indeed, are ſo fortunate after the operation as to be able to read without their aſſiſtance.

CHAP. VIII.

On Wounds of the Iris.

IT is generally believed that the iris is very eaſily lacerated in this operation, and that all lacerations, and other wounds of that membrane, are dangerous.

If the operator pays ſtrict attention to all the rules which I have laid down, and particularly if he takes care that the aqueous humour be not diſcharged before the inciſion in the cornea is finiſhed, he will run but little riſk of wounding the iris. It is not to be denied, however, that there are caſes where it is impoſſible for the moſt dexterous ſur-

geon to avoid cutting that membrane; for in ſome it advances ſo much forward during the operation, that it is impoſſible to make the point of the knife avoid it; nay, it now and then happens, that as ſoon as the inciſion is begun the iris approaches ſo cloſe to the cornea as to make it impoſſible for the ſurgeon to avoid puſhing the point of the inſtrument into the pupil.

This accident is only prevented by avoiding all irritation previous to and during the operation, and by performing it in the moſt cautious and guarded manner. The more irritation the eye ſuffers, the more is the iris puſhed forward, and the greater is the danger of injuring it. The ſame effect is produced by entering the knife too near to the ſclerotic coat. But I have already ſpoken of this.

But are wounds of the iris in reality ſo dangerous as they have been repreſented by ſome? I have often ſeen this membrane wounded, and yet no bad effect enſue; nay, I have once ſeen it very much lacerated, and there did not even ſucceed an inflammation. As this caſe is really ſingular, I ſhall ſhortly relate it.

The patient was a lady who had very hollow

low deep eyes. The knife went gently and eaſily forward till it reached the middle of the anterior chamber; but, on my endeavouring to puſh it forward, the eye at once turned ſo much inward as to conceal the half of the lucid cornea. I intreated the patient to turn her eye outward, but in vain; ſhe could not move it; and on my again requeſting her to do ſo, ſhe turned it ſo quickly outward, that I could not prevent the point of the knife from piercing through the inferior part of the iris into the eye. I drew the knife a little back, and as the eye was now in a good poſition, I finiſhed the operation.

The experience of many confirm this opinion, that wounds of the iris are not ſo very dangerous as ſome ſeem inclined to think.

That celebrated and dexterous oculiſt, Mr. Daviel, aſſures us, that he has often lacerated the iris without any bad conſequences, and does not heſitate to cut the iris when it ſeems to obſtruct the paſſage of the cataract. He ſhows, by many examples, that this may be done without riſk or danger [e] *.

In

[e] See his Theſ. An cataractæ tutior extractio forficum ope?

* This is a piece of practice which Profeſſor Bart not only follows,

In the operation of couching, do we not puncture the choroid coat without producing any bad conſequences? Why, therefore, ſhould a wound of the iris be ſo dangerous * ?

However

follows, but ſtrenuouſly recommends, where the lens is very large, and where the iris, by not eaſily and readily dilating itſelf, ſeems to prevent the exit of that body. In ſuch a caſe, he cuts this muſcle at one ſide with a pair of ſmall bent ſciſſars; for he is convinced from experience, that the iris ſuffers much leſs real injury from a ſimple wound, than by the preſſure and over diſtention which its fibres would otherwiſe ſuffer, were ſuch a large lens to be forced through the natural opening of the pupil. I myſelf have ſeen this able and intelligent oculiſt perform this in two or three caſes, and no bad conſequence ever enſued in any one of them.—T.

* Such a queſtion was hardly to be expected from the celebrated author; for although the iris appears from diſſection to be a real continuation of the tunica choroidea, yet, from the time it leaves the ciliary circle, its modification and ſenſible qualities become quite diſtinct. As iris, it reſembles a muſcle poſſeſſed of ſenſibility and irritability to an extreme degree: as choroid coat, it appears only a vaſcular and ſenſible membrane. So apparent a difference in ſtructure and modification between two parts ought not only to forbid the phyſiologiſt from reaſoning by analogy concerning the functions of the one from thoſe of the other, but alſo prevent the medical practitioner from drawing any practical concluſions concerning the action of morbid cauſes on the one, from the effects which they ſeem to produce on the other. Convinced by anatomy alone, that the membranes lining the mouth were a real continuation of the external membranes of the body, one might as well ſuppoſe, that what produced but a ſlight inflammation on the ſkin would

produce

However much I may be convinced that ſmall wounds of the iris are not much to be dreaded, ſtill I believe that great ones are followed with bad conſequences; ſuch as violent inflammation, a contraction of the pupil, &c.

Mr. Janin believes that all wounds of the iris, which run parallel to the radiated fibres, cloſe; and that thoſe which cut theſe fibres tranſverſely never cloſe, but form a ſecond pupil, which dilates in a ſtrong light, and cloſes in the dark; for, as its motions are regulated by thoſe of the natural pupil, it muſt contract whilſt the other dilates, and dilate whilſt the other contracts.

I really am uncertain whether all this takes place as juſt deſcribed; but I can take it upon me to ſay, that I have ſeen the iris wounded in not a few inſtances, and yet never ſaw an artificial pupil produced; and I cannot conceive that the wound, in all the caſes, ſhould have been parallel to the radiated fibres.

produce only the ſame degree in the membrane lining the mouth, as to ſuppoſe that what affected but little inflammation in the choroid coat, would affect nearly or juſt the ſame in the iris.—T.

It is not uncommon for the pupil to loſe its natural round figure after the operation, and to become angular, oblique, or oblong. Experience teaches us that this fault does not in the leaſt injure viſion, and that it often gradually diſappears with time. In general, it is the conſequence of a prolapſus of the iris. It is impoſſible for this membrane to be protruded without altering the ſhape and ſituation of the pupil. A prolapſus of the vitreous humour is alſo another principal cauſe of this.

When, after the cornea and capſule being cut, the lens is forced ſuddenly out, and conſequently the iris ſuddenly ſtretched and dilated, a fault of the kind we are ſpeaking of very often remains.

I have ſeen ſeveral, the figure of whoſe pupil was altered after the operation, and who yet ſaw very well, except one woman, whoſe pupil was oblique, and who aſſerted that every object appeared in the ſame direction. In what this woman ſaid, however, I put but little confidence, as ſhe was much given to drink; beſides, it is not eaſy to conceive how the obliquity of the pupil ſhould cauſe an obliquity in viſion. Let this be as it may, the

moſt

moſt caſes prove that a change of figure in the pupil ſeldom produces any bad effects. This, it muſt be confeſſed, is only true with regard to thoſe where the alteration of the figure of the pupil is but moderate: where it is in a great degree, there is generally a contraction of the pupil, and conſequently a diminution of ſight. I have, however, obſerved in ſome caſes, that this fault has, in the courſe of time, entirely diſappeared, or at leaſt has been very much diminiſhed. The rays of light, by irritating the iris, make it alternately contract and dilate, and thus gradually reſume its former figure, except there exiſts ſome particular cauſe to prevent it.

A particular circumſtance of this kind is the prolapſus of the iris. This is always accompanied with a change in the figure of the pupil, and prevents the pupil from recovering its former ſhape as long as it exiſts.

I have never obſerved that the iris has been prolapſed during the operation; but I have ſeen ſeveral inſtances where this happened ſome hours or days afterwards.

Mr. Daviel aſſerts, that when, after having finiſhed the inciſion in the cornea, the knife is ſuddenly withdrawn, all the aqueous humour

mour at once flows out, and often a portion of the iris after it. I myſelf have never ſeen this happen, and I know of no one elſe who has; at the ſame time it is the moſt prudent practice to withdraw the knife ſlowly after having finiſhed the inciſion. It is, indeed, not to be doubted that a great preſſure on the eye, or a ſtrong irritation, of whatever kind it may be, acting during the operation, may occaſion a prolapſus of the vitreous humour, and that, on this account, all inſtruments which violently preſs and irritate the eye, of which kind are principally thoſe intended to fix that organ, ought to be avoided.

The inferior part of the iris always ſuffers ſo much during the operation, and at the ſame time ſeems as it were forced to prolapſe, that we really cannot help being aſtoniſhed that it does not happen more frequently. As ſoon as the cornea and capſule are cut, and that we begin our preſſure on the eye, the inferior edge of the lens riſes up, and preſſes ſo ſtrongly upon the inferior part of the iris, that it is ſometimes forced quite through the wound. At this time there is a real prolapſus of that membrane; but as ſoon as the inferior margin of the lens has paſſed the pupil,

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and begins to slip through the wound in the cornea, the iris glides back again. Such a distention of this membrane must necessarily induce a relaxation of its fibres, and render it liable to a prolapse.

The causes which induce a later prolapsus of the iris are various. Whatever tends to effect a prolapsus of the vitreous humour, may also effect one of the iris; and a prolapsus of the vitreous humour itself is often the immediate cause of a prolapsus of this membrane; for the vitreous humour cannot easily flow out without dragging the iris alongst with it.

The most frequent cause of this accident is a convulsive contraction of the muscles of the eye, occasioned either by the uncommon irritability of the patient, or by performing the operation in an awkward and bungling way. I have remarked, that it occurs most frequently in pale, weak, irritable, and timorous people, and that it is chiefly to be dreaded when either the whole body or the eye is affected with cramps after the operation. Any thing that presses hard on the eye, such as, perhaps, the hand of the operator or assistant, or the bandage, &c. are liable to produce this accident.

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I have already remarked, that the iris is readily prolapſed where the inciſion has been carried too near the ſclerotic coat, or, as Mr. Daviel remarks, where two-thirds of the cornea have heen cut.

Mr. Daviel recommends the returning the iris immediately, by means of a ſmall probe. This may be accompliſhed where the prolapſus has happened immediately after the operation; but as it ſeldom takes place for ſome days afterwards, it is not often diſcovered before the tenth day when we open the eye, and then the iris will be found to adhere to the wound, or the wound has contracted itſelf ſo cloſe about the prolapſed portion, that it becomes impoſſible to puſh it back. At this time the eye generally exhibits the following appearances: the pupil is long, and ſeems applied to the cornea at the inferior part of the anterior chamber. The lower portion of the iris ſeems to be formed into a plate, which hangs out of the wound; at other times it lies pretty equally in the wound, and does not project beyond it.

At firſt, this prolapſed portion is quite ſoft and pulpy, but after ſome time it turns harder. The lips of the wound ſurrounding it

it are tumid, and pout out. The reſt of the wound is completely healed, and the anterior chamber generally full of aqueous humour.

The prolapſus of the iris is ſometimes, and chiefly on its firſt occurring, attended with the moſt acute pain, which, however, gradually diminiſhes, and at laſt altogether diſappears, although the iris be not returned; nay, I have ſeen caſes of a prolapſed iris, which never were accompanied with pain, either at the beginning of the accident or afterwards. I mention this circumſtance in order to contradict the aſſertion of Mr. Guenz, who, in his *Diſſ. de Staphylomate, Lipſ.* 1748, § 4, ſays, that the prolapſus of the iris is always accompanied with violent pain at the beginning. This is, moſt aſſuredly, not always the caſe, and the pain which ariſes at the beginning generally diminiſhes in the courſe of time.

At firſt, the prolapſed part of the iris is ſo exquiſitely ſenſible, that it becomes impoſſible to touch it without exciting the moſt acute pain; nay, the very motion and preſſure of the eye-lids upon it are painful; but this in general grows gradually leſs and leſs, and often totally ſubſides. I have, in ſome caſes,

touched the prolapſed part of the iris pretty roughly with a probe, without the patient's being ſenſible of it.

If I do not happen to diſcover that the iris is prolapſed before it be ſo late, that it is impoſſible to return it by means of the probe, I generally purſue the following method. I generally tie down both eyes of the patient, in order to prevent much motion, and in the hopes that the gentle preſſure of the eye-lids may promote the return of the iris. All motion of the eye is in general painful, as it occaſions more or leſs friction on the prolapſed iris. This, therefore, muſt be guarded againſt.

The preſſure of the eye-lids really contributes towards the return of the iris, eſpecially if the patient is told to increaſe it by ſqueezing them gently together.

The external air appears to me to be what chiefly alters the ſtate of the iris; it dries it, and by ſo doing renders its return more difficult, which is another reaſon for tying the eyes down.

Every thing which excites convulſive motions of the eye, or preſſes upon that organ, or increaſes the flow of blood and humours towards

towards it, are apt to promote and augment a prolapſus of this part. To this claſs of cauſes may be reckoned every violent motion of the eye, ſneezing, coughing, vomiting, &c.

Some cauſe the patient to lye always on his back; but I doubt whether this contributes much towards the cure.

I generally wet the prolapſed part with a ſolution of alum, by means of a ſmall hair bruſh; and as ſoon as the inflammation is gone, or much diminiſhed, I cauſe a ſtrong light to be thrown ſuddenly upon the eyes ſeveral times a day; which, as it occaſions a ſudden and violent contraction of the iris, tends to draw back the prolapſed portion.

By theſe gentle means I have often ſucceeded, and have ſeen the iris completely reſtored to its natural ſituation in about three weeks or a month. The pupil alſo had regained its former figure, and the wound cloſed.

It is but ſeldom, however, that the operator ſucceeds ſo completely as this. The prolapſed part of the iris, it is true, is often made to return by aſſiduouſly employing the means we have been ſpeaking of; but in moſt caſes it remains during the life of the patient, adhering

adhering to the inner ſurface of the cornea, and disfiguring the pupil. I take it upon me, however, to ſay, that I know many patients who ſee very well in ſpite of this circumſtance. Not only the irregularity of the pupil, but the adheſion diminiſh, very much with time. I have been ſurprized at the change that has taken place in the courſe of a few months only.

Some will, perhaps, doubt that the prolapſed iris can be made to return by ſo gentle means, after having remained ſo long in the wound; but experience proves that it is perfectly poſſible. And are there not other caſes in ſurgery where a ſimilar effect is produced by a ſimilar cauſe? Is not a concreted hernia often made to return by the conſtant preſſure of a bandage, and by cauſing the patient to lay for a great length of time on his back?

I know there are ſome who recommend a more expeditious method, and propoſe to enlarge the wound of the cornea, and, after ſeparating the adheſions of the iris by means of a ſmall knife, return it into the anterior chamber. I do not pretend to reject the propoſition, but I am afraid it is one which has been deviſed and practiſed in the ſtudy only;

only; at leaſt, I have, in two caſes endeavoured, but in vain, to carry it into practice, and I am much afraid it never can be done without lacerating the iris very much.

Suppoſe, however, that we find it impoſſible to attain the end in view by the means I have propoſed, what remains to be done? Shall we cut away the projecting part of the iris, or ſhall we apply a ligature around it? Mr. Guenz diſſuades us ſtrongly againſt both, and predicts the worſt conſequence from the practice of any of them. I confeſs that I have never employed any of theſe means; but if the prolapſed part of the iris was hard, dry, inſenſible, and ſo large as to render the motions of the eye-lids inconvenient or painful, I would, perhaps, cut it away. I would never, however, apply a ligature around it. When the part is very ſmall, and produces no kind of inconvenience to the patient, it is not neceſſary to think of an operation; and if the part be ſenſible, bad conſequences are, perhaps, to be expected. It is at the ſame time worth remarking that nothing is gained by this operation but freeing the patient from the preſſure and irritation of this ſmall projecting part. The

adheſion and irregularity of the pupil remain the ſame.

Before proceeding, however, to this operation, I would always firſt try the remedy which has been lately mentioned by Mr. Janin; I mean the butter of antimony. He touches the prolapſed part, he ſays, with a little of this once a day, or once in the two days. In general the ſtaphyloma diſappears ſo quickly that it is not neceſſary to touch it more than twice or thrice.

The butter of antimony does not act as a cauſtic, but as a ſtimulating remedy. It does not create an eſchar; and beſides, very little of it is applied, and that little ſo ſoon waſhed by the tears that it cannot act like a cauſtic. Immediately after each application of this remedy, the eye muſt be bathed in milk, which allays the pain very much. Perhaps a ſlight ſolution of the lapis infernalis might act in the ſame manner, and with the ſame effect.

This evil is, indeed, much ſooner and more eaſily corrected when early diſcovered; for we can then eaſily return the prolapſed iris. The prolapſus that takes place at a later period may be ſometimes diſcovered, and that even without opening the eyes, by attending

tending to the ſymptoms which I have related in the preceding chapter. As ſoon, therefore, as any of theſe ſymptoms begin to appear, the ſurgeon ſhould open the eyes, and remedy the evil as ſoon as poſſible.

Upon examining the eye immediately after the extraction of the lens, we ſhall find that the lower part of the iris is ſunk down to the wound in the cornea, and that the pupil is conſequently of an oblong appearance, for as the lens paſſes through the pupil to the wound it generally carries the lower part of the iris with it.

Mr. Daviel adviſes us to replace this immediately by means of the ſmall ſcoop; for my part I never do this, as I have obſerved that the iris generally reſumes its wonted place and figure in a few minutes after.

It is falſely credited by ſome, that the iris looſes its mobility after the operation of extraction. It is true, that when the lens paſſes with rapidity through the pupil, the iris is ſuddenly ſtretched and dilated, and generally loſes its power of contraction and dilatation; but this quick overſtretching of the iris is generally to be conſidered as a fault ariſing either from a want of caution in the

ſurgeon, or from his being impatient, and in too great a hurry. It is ſeldom to be dreaded where the operator handles the eye cautiouſly, and increaſes his preſſure on it gently and gradually; and this he ought eſpecially to do where the lens is large. The iris will bear a very great diſtention, if gradual, without being deprived of its mobility, much more readily than a ſmaller one that is ſudden. The immobility of the iris after the operation is generally, I will not ſay always, owing to ſome fault of the operator.

This immobility ſeldom produces any very great inconvenience if the iris be not either too much contracted, or too much dilated. I know ſeveral people who ſee perfectly well in ſpite of this defect; and I have ſeen ſome, whoſe iris, after ſome time, has begun to recover its wonted power of motion. This happy event may, perhaps, be promoted and haſtened by various means. A ſtrong aromatic lotion and electricity, that famous remedy which I have ſo often tried in vain in other caſes, have ſucceeded well in this.

Sometimes the pupil cloſes altogether after the operation. This accident cauſes a total blindneſs, and is, in general the conſequence of a violent

a violent inflammation; but, indeed, its cauſe is not always to be readily aſcertained. I once performed this operation on a woman whoſe pupil was quite open the tenth day after the operation; but on my examining the eye on the fifteenth, it was quite cloſed, and remained ſo ever after. I ſhall relate the hiſtory of a ſimilar caſe at the end of this treatiſe.

This fault is ſeldom to be corrected without an operation. The celebrated Cheſelden firſt propoſed a method for remedying this; but I muſt confeſs that his manner of operating does not deſerve approbation. He enters the ſmall knife, with which he is to pierce the iris, through the ſclerotic coat, at the diſtance of one line from the cornea, and having pierced the membranes of the eye at that place, he puſhes it from behind forward through the iris. It is not eaſy to gueſs, why he did not rather make his knife paſs immediately through the lucid cornea into the anterior chamber. In this way we reach the iris much more readily than in the one juſt deſcribed, and beſides, we wound nothing but the inſenſible cornea. Whereas, in the other way, not only all the coats of the eye, but, perhaps,

alſo the ciliary proceſſes, and even the capſule which contained the lens, are lacerated; beſides, as the point of the knife is quite concealed behind the iris, it is impoſſible to know before hand at what part we are to puſh it through, and make the opening.

It has been obſerved, that this new pupil is very apt to cloſe again ſoon after the operation. Mr. Janin ſays, that if the inciſion in the iris be made to run parallel to its radiated fibres, it always cloſes, but that, on the contrary, if it be made to cut them tranſverſely, it not only dilates itſelf, but always keeps open. Convinced of the truth of this aſſertion, he performs this operation in the following way: He firſt ſeparates the half of the lucid cornea in the ſame manner as if he was about to perform the operation for extraction, and then taking a pair of very fine ſciſſars, he enters one blade through the iris, at the diſtance of a half line from the lower part of the circumference of the cornea, and at the diſtance of a half line from the ſide of an imaginary one drawn through the concreted pupil. He then directs the inciſion upwards. In this way he has often performed the operation with the beſt effects.

If

If the eye is affected with an atrophia, the radiated fibres of the iris are never on the ſtretch although the pupil be cloſed; and in this caſe the opening that is made does not dilate, but ſoon cloſes again. In ſuch caſes, therefore, this operation ought never to be undertaken.

The inciſion of the iris ought always to be made towards the inner ſide of the concreted pupil, never towards the oppoſite one, otherwiſe the perſon ſoon learns to ſquint. Mr. Janin endeavours to account for this from the direction of the axis of viſion.

In one caſe, the wound of the iris ran into ſuppuration, and the capſule of the lens became opake. But he aſſures us, that this is a very uncommon occurrence, and that it may be prevented by proper preparation before the operation, and prudent management after it.

In another caſe, the opening was made too large, and as this admitted too many rays of light, the patient ſaw but little when expoſed to a ſtrong light. This inconvenience was corrected by the uſe of a piece of card blackened, in the middle of which was a hole about the ſize of the natural pupil. As ſoon as the

patient found himſelf expoſed to a ſtrong light he covered his eye with this card, and could then ſee diſtinctly.

I cannot ſay any thing from my own experience concerning this method, for I have never performed it; but according to all appearance it ſeems to deſerve approbation. There is one particular caſe, however, in which I would perform the operation in a different way. It ſometimes happens, that although the greateſt part of the cornea has become opake in conſequence of a leucoma, ſtill one ſpot ſhall remain clear; but when this ſpot is not almoſt directly oppoſite to the pupil the patient can ſee little, or not at all. The ſight, however, may be in good meaſure reſtored to the patient by perforating the iris oppoſite to this lucid place. Now, ſuppoſing this ſpot to be ſituated near the lower circumference of the cornea, and that we were to carry an inciſion through it, as recommended by Janin, we ſhould run the riſk of rendering that very ſpot opake. In ſuch a caſe, therefore, I would take the knife recommended by Mr. Cheſelden [d], and penetrating the cornea in an

[d] See Sharp's Operations, p. 120, plate x. fig. C.

opake

opake part, would make an opening with its point in the iris, as nearly oppoſite to the lucid ſpot as I could, in ſuch a manner, however, as to cut the fibres tranſverſely. Mr. Odhelius relates a caſe, where a man that had his ſight impaired from ſuch a cauſe, was cured by a ſmall opening in the iris, which took place of itſelf[e].

CHAP. IX.

Of the Membranous Cataract.

THERE is, in fact, ſuch a cataract: but the membrane which occaſions it is not a preternatural one, as believed by the antients, but one of the lamellæ of the capſule of the cryſtalline lens, which has loſt its tranſparency, and prevents the rays of light from paſſing to

[e] See the Memoirs of the Academy of Sciences of Stockholm, v. xxix.

the

the retina. Sometimes it is only the anterior portion, ſometimes the poſterior alone; and at other times both together are affected. In the ſecond of theſe caſes it is but rarely that the lens remains long uninjured; the diſeaſe generally communicates itſelf to it, and hence it is but ſeldom that we find the opacity confined to capſule alone. Baron Haller, however, mentions a caſe where the lens was tranſparent, and yet the whole of the capſule was opake [f].

The nature of this cataract is not often known previous to the operation. The ſymptoms are not only ſo uncertain, and many of them ſo imaginary, that I am in doubt whether I ought to relate them.

It is ſaid, that when the poſterior portion of the capſule is opake, the opacity ſeems concave, and at a good diſtance behind the pupil; whereas, on the contrary, it is convex, and near the pupil, when the diſeaſe is ſeated in the anterior portion of the capſule. But the opacity of the lens generally prevents our ſeeing the poſterior part of the capſule; and this ſame opacity of the lens may appear-

[f] See his Opuſcula Pathologica, p. 12. obſerv. 3.

equally

equally convex, and near the pupil, as that of the anterior portion of the capſule.

It is not true, that where the capſule is opake the patient becomes incapable of diſtinguiſhing light from ſhade. Experience evinces the contrary; and are there not caſes innumerable, where the patient being incapable of diſtinguiſhing light from ſhade, ſtill the capſule has not been found at all affected. I remember once to have been perfectly convinced in my own mind of the preſence of a membranous cataract, and yet upon performing the operation, I found only a common one, conſiſting of an opacity of the lens alone.

There was another caſe where I think I at once aſcertained the cataract to be a membranous one.

A taylor-boy who had been long ſubject to a redneſs and weakneſs in his eyes, happened, whilſt ſewing, to puſh his thumb with great violence againſt one of his eyes. Immediately after he felt an acute pain in it, which continued ſeveral days. In the mean time he applied a bandage to it, and made uſe of many noſtrums. Upon removing the bandage ſome days afterwards, he found that he was quite blind.

blind. He came to me ten days after the accident, and was then incapable of diſtinguiſhing light from ſhade. The pupil dilated and contracted itſelf freely, and there ſeemed to hang out of it into the anterior chamber a white opake membrane, reſembling a kind of ſack, which in all probability was the capſule of the lens; but as the patient would not ſubmit to the operation, I could never come to a certainty concerning it.

Thoſe who in extracting the lens puncture, and cut the capſule as much as poſſible, according to the rules I have given, have little to dread from its future opacity, as it is thus generally deſtroyed by this operation.

Whenever the capſule is cut, the lens projects forward, and muſt be extracted whether tranſparent or opake; for if it be left there is great reaſon to dread that it may in time become opake, and cauſe a *cryſtalline cataract*. When, therefore, the anterior portion of the capſule only is opake, the operation is to be performed exactly as if it was a cataract of the lens itſelf, with this only difference, that where its nature is early aſcertained, we ought to cut and puncture the capſule

capſule much more than is otherwiſe commonly done.

If after this the lens is extracted the pupil remains ſtill as opake as before; and if this opacity ſeems to lie further back than what it did before the operation; if the opacity ſeems now to be altered in point of colour; or if the lens that is extracted be tranſparent, and the pupil ſtill as obſcure as before the operation, there is reaſon to believe that the poſterior portion of the capſule is opake: ſtill it behoves the ſurgeon to take every poſſible care in order to diſcover whether this obſcurity does not proceed from a portion of opake lens, or kind of mucus, remaining in the capſule. And what is now to be done? In a former part of this treatiſe I have adviſed the operator to deſtroy the anterior part of the capſule as much as he can with the cyſtotome of Mr. La Faye. But as theſe inciſions may again cloſe, and as the allowing this opake body, the capſule, to remain behind in the eye, is at all times to be dreaded, it will be moſt prudent to endeavour to extract the whole of the capſule by means of a ſmall hook. Both Mr. Heuermann

mann [g] and Mr. Janin [h], have performed this with the beſt ſucceſs.

[g] See his Bemerkungen, 1 B. p. 261.

[h] See his Mem, et Obſ. ſur l'Œil, p. 255.

I am convinced that the capſule may be very eaſily detached, and am apt to believe that in the operation of couching, the lens does not eſcape out of its capſule, but that it is forced to the bottom of the eye along with it. Indeed, if this were not the caſe, it would be no eaſy matter to conceive how the lens ſhould again ſo readily riſe up to its former ſituation. If the capſule remained behind, it would be compreſſed together by the humours of the eye, and the cataract therefore could not return within the capſule, eſpecially after ſome time had elapſed, conſequently could never reſume its former place: and ſuppoſing the capſule to have remained in its place after the operation of couching; how could it happen that the lens ſhould not only riſe up into its former place, but ſometimes paſs into the anterior chamber, at the diſtance of two years from the date of the operation? Through what paſſage could the lens come? But experience has alſo demonſtrated to us, that the capſule is, at leaſt now and then, carried along with the lens in couching. Mr. Janin relates a caſe where a cataract that had been depreſſed, again roſe up, and got into the anterior chamber of the eye. He extracted it, and found it covered with its capſule.

It is not eaſy to conceive that the couching-needle is always made to paſs into the body of the lens, and extricate it from the capſule. I am convinced that the needle ſometimes does not penetrate the capſule, but is now and then applied upon it, and depreſſes it alongſt with the lens. Beſides, granting that the needle does always penetrate the capſule, is it poſſible to depreſs the lens, and leave the capſule remaining? I have often performed the operation of couching on dead bodies, and generally found that the capſule was depreſſed alongſt with the lens: which circumſtance gives one advantage to couching over extraction.

I once extracted the capsule quite easily, and without any bad consequences, and shall in future make little hesitation about attempting this, as the arguments which Mr. Janin makes use of in order to prove that the capsule of the lens is perfectly distinct from the membrana hyaloidea, and that it can be easily separated both from the ciliary processes and from the vitreous humour, appear to me quite conclusive[i]. It is true, if we could but know beforehand that the capsule was opake, we might then take a much shorter method, and extract the capsule along with the lens, in the same way as I have described in the chapter on the concreted cataract.

The most frequent kind of membranous cataract is what is called the Secondary Cataract *(Cataracta Secundaria)* and which Mr. Morand[k] and Mr. Hoin[l] first observed and described.

This secondary cataract consists in an opa-

[i] Loco citato, and also the author's Surgical Bibliothek. v. ii. part i. p. 99.

[k] See l'Histoire de l'Acad. de Sciences de Paris, ann. 1722, p. 15.

[l] Memoires de l'Acad de Chirurgie, tom. ii. p. 425.

city

city of the capsule, which is never present before the operation, but which seems to arise in consequence of the inflammation that generally follows the operation.

The pupil, which was quite clear before the operation, is, upon the tenth or twelfth day, when we open the eye, discovered to be dim and obscure; but this dimness is very different from that of the cataract before the operation. Surgeons ought to pay particular attention to this, in order that, should it take place after couching, it may not be taken for the lens which has risen up. Indeed it occurs more frequently after couching than after extraction.

I have performed the operation of extraction very often, and have only met with two cases of a secondary cataract; both of which, however, disappeared in a short time.

In the operation for extracting the cataract, the posterior portion of the capsule does not suffer any injury, and therefore seldom becomes inflamed or obscure. The anterior portion, it is true, suffers considerably, but as it is almost annihilated, it seldom becomes an obstacle to vision. In the operation of couching, however, the posterior portion of the cap-

sule

ſule always ſuffers, and the anterior one very often; on which account it is liable to become inflamed and opake *.

The ſecondary cataract is not ſo much to be dreaded as ſome are inclined to think. It decreaſes very often as the inflammation decreaſes, and the redneſs and opacity very often diſappear together, leaving the eye of its natural colour, and the pupil clear and tranſparent.

The external uſe of white vitriol, of ſugar, borax, Spaniſh flies, and other diſcutient remedies, promotes and haſtens this effect. The ſame remedies, joined to the adminiſtration of mercury, are often beneficial when the ſecondary cataract remains, after the inflammation is gone.

Should the opacity not yield to theſe remedies, I would make an inciſion in the cornea, and extract the lens. Mr. Janin has performed this ſo late as ſix months after the operation of extraction, and with the beſt ſuc-

* Why the author ſhould adduce this as an objection to the operation of couching, after the ſtrong and convincing arguments which he himſelf has ſo lately made uſe of to prove that the capſule is generally carried to the bottom of the eye alongſt with the lens, I cannot conceive. T.

ceſs. In ſuch caſes, however, the capſule is generally concreted to the iris, and is therefore not always ſo eaſy to be detached; nay, this is ſometimes altogether impoſſible.

CHAP. X.

On the morbid Conſequences of the Operation.

THAT ſurgeon has only performed the half of his duty who has dexterouſly executed the operative part. The preparing the patient for the operation, and the proper management, ſo as to prevent and remedy all bad ſymptoms which often occur after it, make up the other half, and which, beyond all doubt, is equally eſſential with the firſt.

Moſt of the itinerant oculiſts acquire, in fact, a certain dexterity of hand, by which they in general perform the operative part with eaſe and ſucceſs. But they ſoon forſake the unhappy patient, who, bouyed up with the fond

fond hopes of ſoon enjoying the pleaſures of ſight, patiently ſuffers the moſt acute pain and agonies; and at laſt, when the bandage s removed, finds that, inſtead of his former blindneſs, which was curable, his ſight is now irrecoverably loſt. Theſe men not only altogether abandon their patients, but at the ſame time deprive them of the aid they might perhaps receive from a regular bred ſurgeon. They preſent to them a few inert noſtrums, with ſtrict orders that no other remedy be uſed. The patient, full of confidence in his oculiſt, ſtrictly follows his advice, and rejecting every aſſiſtance from the ſcientific ſurgeon, remains for ever blind.

The moſt frightful of all the accidents which occur after the operation is the inflammation: when even in a ſmall degree, it weakens the ſight that was reſtored by the operation, but altogether deſtroys it when violent. When once an inflammation has taken place, it is generally long and tedious of diſcuſſion; conſequently he acts the more prudent part who adopts every timely precaution to prevent it, than he who waits to diſcuſs it after it has taken place. It is a falſe notion that the inflammation is gene-

rally more acute after extraction than after couching. I can ſay, from my own experience, that, except in three or four caſes, and I have performed this operation often, I never met with a very violent inflammation. I aſcribe this fortunate ſucceſs chiefly to the ſtrict obſervance of the following rules, which I ſhall now communicate to my readers. And why ſhould a greater degree of inflammation ariſe in conſequence of this operation, where the almoſt inſenſible cornea alone ſuffers, than after couching, in which moſt of the membranes of the eye are pierced, and the internal part greatly diſturbed? If, indeed, the ſurgeon performs his part in a bungling manner, or operates on ſuch who from faults in their conſtitution are improper ſubjects for ſuch an operation; or, if the ſurgeon is unacquainted with the remedies by which a ſtop can be put to the inflammation, or neglects to uſe them, a violent inflammation may certainly take place. But ſurely this is not ſo much the conſequence of the operation as of the ignorance and imprudence of the operator.

Soon after the operation, a number of diſtreſſing ſymptoms appear, ſuch as cramps and

and tenſion, which agitate the whole nervous ſyſtem. Some patients feel, after the operation, a degree of languor and proſtration of ſtrength, whilſt others, although the operation be perfectly well performed, are ſeized with an unaccountable dejection and oppreſſion of ſpirits. Some complain of great anxiety, others are ſeized with ſickneſs and vomiting, or with colic pains, or a ſenſe of tenſion in ſeveral parts of the body, or have their whole body ſhook with a convulſive tremor. Many complain that the eye which has been operated on rolls violently and involuntarily up and down, under the bandage. Very often a purge, which the day before the operation would have had a due effect, has none after it. Under ſuch convulſive affections of the whole nervous ſyſtem, the equal diſtribution of the blood muſt neceſſarily be very much diſturbed, ſo that too great a quantity is directed to ſome parts, whilſt others are deprived of what is uſual to them: and thus a fever and inflammation ariſe.

In general, we obſerve a double kind of fever. The firſt precedes the inflammation, and ſeems to be the cauſe of its appearance; the other ariſes after the inflammation, and ſeems to be an effect of it. If the firſt

fever be high, we may always expect a violent inflammation; and on the contrary, when the fever is gentle or moderate, we may generally rely on the inflammation being ſo alſo.

This fever uſually commences on the firſt night, increaſes the ſecond, and is at its heighth the third. The pain and inflammation commonly make their appearance after the third paroxyſm, that is, the third night after the operation. During the two firſt days the patient ſeldom feels any, even the ſmalleſt pain. It is really aſtoniſhing, that the inflammation ariſes ſo late, when one would be apt to ſuppoſe that nature had entirely forgot the ſmall injury that had been done to her. The inflammation, however, does ſometimes appear ſooner, ſometimes later. The more violent and frequent the ſymptoms are, which point out an agitation of the nervous ſyſtem, the more violent is the fever, and the ſooner does it come on; and the more violent the fever is, the more violent is the ſubſequent inflammation. Such, at leaſt, is the general courſe of theſe appearances. They do, indeed, ſuffer a little variation in ſome particular caſes; but upon the whole, it ſeems, as if the affections of the nervous ſyſtem which occur

ſoon

ſoon after the operation, were the cauſe of the inflammation and fever; at leaſt, it is neceſſary to prevent and alleviate them if we mean to prevent the inflammation.

Theſe nervous affections proceed, without doubt, from the fear and anxiety with which the patient is ſeized before the operation, and alſo from the irritation which this laſt occaſions. Long and repeated experience has taught me, that theſe diſtreſſing ſymptoms, which happen after the operation, are much more violent in weak and timorous people, who are at the ſame time poſſeſſed of great nervous ſenſibility, than thoſe who have firmer and leſs irritable nerves. Thoſe who from nature ſeem prediſpoſed to inflammations, ſuch as people of a ſtrong, vigorous, and plethoric habit, are moſt often affected with a mild and gentle opthalmia; whilſt, on the contrary, thoſe weak, delicate, and irritable habits which I have already mentioned, and whoſe blood is thin and acrid, are generally affected with the moſt violent and obſtinate inflammations. I once performed this operation on a woman of a maſculine and robuſt habit, with a ruddy copper-coloured countenance, much addicted to the drinking of ſpirits, and who

had laboured under an obſtruction of her menſes for nine months before: I confeſs that in this caſe I expected the moſt violent inflammation, and yet no bad ſymptom occurred. In one word, thoſe who are ſtrong and healthy, whoſe blood is of the beſt quality, and whoſe nervous ſyſtem is no ways diſpoſed to cramps and irregular agitations, are by much the moſt eligible patients for undergoing this operation, and have leaſt to fear for the conſequences. This operation, on the contrary, ought not to be attempted on thoſe who are ſubject to frequent headachs and opthalmias, and who are of an irritable habit, &c. without a ſufficient and careful preparation.

The method I adopt in order to prepare the patient is, to remove all kinds of ſtimuli from them, to dilute the maſs of their fluids, and relax their fibres; in a word, to bring them as much as poſſible into that kind of ſtate which is leaſt diſpoſed to convulſive and other irregular affections. Blood-letting always diminiſhes the force of the circulation, relaxes the ſolids, and is therefore uſeful to ſuch as are plethoric, and of a ſtrong elaſtic fibre. I generally perform it, therefore,

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two days before the operation, and alſo after it, when the pulſe is hard and quick, and the pain and inflammation violent. The ſurgeon muſt be very cautious, however, not to attempt this with weak irritable habits, for by doing ſo, he will only render them more inclined to convulſive and other irregular agitations.

Particular attention muſt be paid to the ſtate of the primæ viæ; for here there often lies concealed a ſtimulus, which is in itſelf capable of producing the utmoſt uneaſineſs and diſorder throughout the whole body, and which at leaſt ſeldom fails to augment the irregular commotions which follow the operation. I have often obſerved very violent inflammations to ariſe entirely from ſome irritation in the bowels, and which diſappeared as ſoon as theſe were cleanſed; on which account they ought to be well emptied previous to the operation, and, indeed, they alſo require particular attention afterwards. Weak and delicate patients are very apt, about the ſecond day, to have their tongue become foul, accompanied with a diſagreeable bitter taſte in their mouths, and many other ſymptoms, which, although the bowels had been previouſly

ouſly well cleanſed, ſtill ſhow that bilious and other impurities are collected there. Theſe increaſe and prolong the inflammation very much, eſpecially in thoſe who are troubled with nervous affections after the operation, and require more attention, as they are generally accompanied with a tendency to coſtiveneſs.

Gentle laxatives, the uſe of the vitriolic acid, and when theſe are not ſufficient, gentle emetics, ſeldom fail to relieve the inflammation, fever, and every other bad ſymptom. It is always a good ſymptom when the patient has a ſtool naturally the ſecond or third day, and feels no uneaſineſs in his bowels.

The ſymptoms of theſe impurities often ariſe very ſuddenly, eſpecially after certain affections of the mind. A man on whom I performed this operation, and who, till the fifth day after, had been perfectly free from every bad ſymptom, was ſeized on the ſixth evening with a violent fever, accompanied with great pain in the eye. The next morning the ſymptoms had abated a little, but they returned with double violence towards night. The patient was very reſtleſs, complained of a bitter diſagreeable taſte in his mouth, and a total

a total loſs of appetite. Upon enquiring into the cauſe of this ſudden alteration, I learnt that the patient had been much frightened the day before by a fire which had broke out in the neighbourhood. The uſe of the vitriolic acid and gentle laxatives removed all theſe complaints in the courſe of a few days.

The principal cauſe of the nervous affections is certainly the agitation of mind which the patient ſuffers before and during the operation. I remember two female patients of mine, who both fainted during the operation. Even the moſt inſenſible ſeldom become agitated when the moment approaches, that is to decide in part the happineſs of their future exiſtence. The ſurgeon ought, therefore, to endeavour, as much as lies in his power, to ſooth and calm the ſpirits of his patient.

The ſucceſs of this operation is always doubtful, and the moſt dexterous oculiſt can never promiſe, with certainty, an happy event, even under the moſt favourable circumſtances. A trifling and unforeſeen accident is often ſufficient to deſtroy in one moment our beſt hopes. On this account, I would adviſe every ſurgeon not to riſk his credit by too

raſh promiſes. At the ſame time, prudence alſo requires it of us not to depreſs the ſpirits of the patient by any tedious and unneceſſary harangue about all poſſible dangerous conſequences. My rule of conduct in this matter is, to conceal the uncertainty of the operation as much as poſſible from the patient himſelf, but at the ſame time to give a candid account of it to his friends. This is ſo much the more neceſſary as the itinerant oculiſts have ſo blinded the generality of men, that they look upon ſucceſs as the neceſſary conſequence of the operation; hence it does not become an object of their hopes and wiſhes, but they exact it of the ſurgeon as a matter of right, not conſidering how much depends on circumſtances. The ſurgeon, indeed, gives them ſome cauſe to do ſo, if, when by imitating the conduct of the quack, he confidently promiſes a ſucceſsful iſſue to the operation.

Some days previous to the operation, I endeavour, by means of various remedies, to diminiſh the irritability and too great ſenſibility of the habit. I generally put my patients on a cool vegetable diet, and as animal food, wine, and aromatics, are apt to heat the blood, I ſtrictly forbid them. The tepid bath, and the

the adminiſtration of emollient glyſters are of ſervice. An hour or two before the operation, and alſo ſoon after it, I cauſe the patient to ſwallow a few ounces of recently expreſſed oil of ſweet almonds, with lemon juice: this allays all cramps and tenſion of the belly, and keeps it gently open. When the cramps which ſometimes follow the operation are violent, I order emollient glyſters, a few drops of laudanum, balſamic ſoups, &c. I think myſelf warranted to aſſert, that owing to this management (which is founded on the experience and rules laid down by many celebrated ſurgeons in other operations[m]), very few of my patients ever have a violent opthalmia.

There

[m] The very famous Le Cat always ordered the uſe of the tepid bath to his patients, after the operation of lithotomy, and it is well known what ſucceſs he had in this operation. Monſieur Mareau, firſt ſurgeon to the Hotel Dieu, at Paris, generally fomeuts the whole of the abdomen, after this operation, with emollient oily and ſedative remedies, and ſeldom loſes a patient. After gun-ſhot wounds, by which the whole nerves of the body are violently ſhook and irritated, Mr. Boucher ſtrongly recommends the uſe of the warm bath, and alſo to foment the part with emollient applications. The great ſucceſs which attended this treatment, is proved by a number of caſes related by him in the fifth volume of the Mem. de l'Acad. de Chir. de Paris, p. 300, edit. in 8vo. The object of all theſe methods is to relax the

There are many who prefer the ſpring and autumn for performing this operation, on account of the greater clemency of the weather during theſe ſeaſons. But to ſuch a rule I pay little attention, and have not only performed this and other operations myſelf in every ſeaſon of the year, but have ſeen it often performed by others, without any bad conſequences. It is true, that intenſe cold or exceſſive heat are prejudicial to the patient; but the temperature of the patient's bedchamber is always ſo much in our power, that we may imitate any ſeaſon of the year in reſpect to mere heat or cold. But is the weather, during ſpring and harveſt, always ſo very moderate with us? Are they not the very ſeaſons in which moſt epidemics prevail? And is it not to be dreaded that a patient, at that time of the year, however healthy to all appearance, may have the ſeeds of theſe epidemics in his habit, which may break out ſoon after the operation.

the fibre, and prevent cramps. This method of treatment was adopted by Mr. le Dran, after all operations; and indeed it is principally to this that he attributes the very great ſucceſs that attended his practice. See his Operations of Surgery, chapter on Lithotomy.

Immediately

Immediately after the operation, I apply a cataplaſm, compoſed of apples, ſaffron, and camphor, to the eye. This cataplaſm allays the uneaſineſs and pain which ariſe from the operation. It ought not, however, to be thick or bulky, in order that it may not preſs too much on the eye.

Some moiſten the eye during the firſt days after the operation with brandy and water, but with what intention I cannot conceive.

Very great caution ought to be had in trying experiments with the eye immediately after the operation; for although they may afford ſome entertainment to the ſpectators, yet they are generally attended with ſerious conſequences to the patient. By ſuch experiments does the Charlatan endeavour to excite the ſurpriſe and aſtoniſhment of thoſe who witneſs his operation, and to inſpire his patient with the firm belief that his ſight is now perfectly reſtored. By this means alſo he generally attempts to ſecure a ſpeedy and honourable retreat, and then leaves his patient to the hand of fate. Such experiments inflame and irritate the eye, occaſioning a great derivation of fluids to the part, and expoſing the patient to the danger of being

for

for ever blind. Immediately after the lens is extracted, and the pupil clear, I bind the eye down.

I would ſtrongly recommend it to ſurgeons not to open the eye before the tenth or twelfth day. An untimely and imprudent curioſity, both on the part of the ſurgeon and patient, is, I know, very apt to make them err in this particular. The patient, anxious to be in poſſeſſion of the uſe of his newly acquired ſenſe, and the ſurgeon, impatient to know the ſucceſs of his endeavours, open the eye before the proper time, excite pain and inflammation, and ſometimes worſe ſymptoms, and by doing ſo, are apt to deprive themſelves entirely of what was the very object of their wiſhes. The eye becomes ſo very ſenſible ſoon after the operation, that it can neither bear the light nor the air. When it becomes neceſſary to renew the bandage, I always cauſe the room to be darkened. I have often ſeen it happen, upon taking off the bandage in a room where the light was pretty great, that the patient has immediately ſhrunk back, and complained that, even through his eye-lids, it was too much to bear. To many this may ſeem an unneceſſary precaution. But is there any precaution

tion really unneceſſary. Even on the tenth day, when the eye is commonly opened, harm may be done. The eye-lids are generally much ſwollen and glued together; therefore they muſt not be forced aſunder with violence. The gummy matter, which is generally in great quantity on the eye-laſhes, muſt be cautiouſly waſhed away with a little warm milk. Upon ſhutting the eye again, particular attention ought to be had that the eye laſhes do not bend and get between the eye-lids. I remember once to have ſeen a moſt violent inflammation ariſe on the tenth day from this very cauſe.

The rule which we have given not to open the eye before the tenth day, admits, however, of ſome exception, ſuch as violent pain, a prolapſus of the iris, or any other particular accident. In ſuch caſes the eye ought to be again opened, and the nature of the inflammation or other complaint examined. Acute pain is generally the mark of a violent inflammation. I have remarked, however, that this is not always to be truſted to as a certain characteriſtic ſymptom of its preſence; for I have often ſeen violent inflammation, accompanied with little pain, and *vice verſa*. I do not

pretend to explain this; Perhaps it depends much on the habit of body of the patient. Some people complain a great deal of that which others ſeem hardly ſenſible of. The pain ſeems to me to be always greateſt at the beginning of the inflammation, and to diminiſh afterwards, although the inflammation ſuffers no change. In general it increaſes during the night, towards morning it decreaſes, and ſometimes entirely ſubſides, although the inflammation is juſt the ſame. The pain and inflammation commonly commence about the third and ſometimes the ſecond day after the operation; nay, I have known it take place the firſt. I once performed this operation on a woman, who was attacked with a painful inflammation ſo early as eight hours after the operation. The pain is generally very violent the third night, and abates on the fourth; on the fifth it again increaſes, the ſixth it diminiſhes, and ſo on. Theſe ſymptoms of inflammation ſometimes continue in full force until the ſeventh, ſometimes the eleventh day, and then begin gradually to ſubſide.

On the fourth day, I commonly moiſten the eye three or four times with Goulard's

extracts, and then apply compresses dipt in the same. These compresses, however, must not be too wet, for I have remarked, that too much humidity is prejudicial to the eye.

It is bad practice to apply a plaister upon the eye: the humidity, which always flows in great quantity from an inflamed eye, is collected under the plaister, and keeps the eye soaking, as it were, in a continual bath. A simple bandage is much better; but it ought not to be applied too tight, else it is apt to irritate and inflame the eye.

Mr. Demours has invented a machine made of wax, with which he covers the eye [n]. It is concave, and applies close upon the whole anterior surface of the eye—an unnecessary and really inconvenient invention. I cover the eye with a thin compress, and bind it loosely on with a bandage. The compress may be fixed to the bandage with a pin, and in like manner the bandage ought to be attached to the night-cap. This simple bandage neither irritates nor presses upon the eye, and yet is perfectly secure. Particular at-

[n] See the Journal de Vandermonde, tom. 16, anno 1762, p. 58.

tention, however, ought to be had to prevent any folds in the compreſs.

The wound of the cornea generally cloſes in two days. At firſt it has a whitiſh appearance, and is at the ſame time a little tumid, but theſe gradually diſappear; and if the inciſion has been properly made, a ſcar is ſeldom to be obſerved afterwards. Commonly in about fourteen days after the operation, not the ſmalleſt mark of a wound is to be diſcovered. Some ſay, that the wound now and then runs into ſuppuration, which may, perhaps, happen where the patient is of a bad habit, or where the knife has been blunt; but it is a circumſtance I myſelf have never ſeen.

When a violent inflammation takes place, both bleeding and purging become neceſſary. And one copious veneſection is of more ſervice than two or three ſparing ones.

The tunica conjunctiva ſometimes ſwells ſo much as to protrude between the eye-lids. In ſuch a caſe Mr. Janin cuts the protruded portion away with a pair of fine ſciſſars, and aſſures us, that the local hæmorrhage, which is in conſequence produced, affords the moſt ſpeedy and beſt relief. It may therefore be worth

worth while to try this, which I confeſs I have never done.

When the inflammation has abated, but at the ſame time ſeems inclined to become chronical, bliſters are of eſſential ſervice, eſpecially if applied to any part near the eye. I generally lay one fully larger than the hand on the nape of the neck, and at the ſame time one behind each ear, and on the temples. When the inflammation is very violent, the cornea becomes ſometimes ſo thick and muddy, that it is impoſſible to diſcover the pupil. This dimneſs gradually abates with the inflammation; and, ſhould it remain much longer, it commonly yields very ſoon to the uſe of bliſters and white vitriol. By means of theſe remedies, I have often removed the obſcurity of the cornea in leſs than a fortnight.

It appears to me, that a too long continued application of the bandage is now and then a cauſe of the continuance of the inflammation. I have ſeen the eye a little red eight weeks after the operation. As long as the bandage is kept on, the eye is always as it were in a warm bath, which prolongs the inflammation. Under ſuch circumſtances, let the eye be frequently opened, and bathed

with cold water, and the remains of the inflammation will ſoon diſappear. The Peruvian bark, taken internally, is, in ſuch caſes, of great uſe.

When all the redneſs of the eye is gone, I alſo generally give the bark. It reſtores the vigour to the body, which has been debilitated both by medicines and a ſpare diet, and at the ſame time ſtrengthens the ſight very much.

In ſome caſes a few occaſional ſymptoms of inflammation remain for a conſiderable length of time after the operation, appearing one day, and diſappearing the next. The moſt common of theſe are a pain in the eye itſelf, and about the eye-brows, a certain degree of uneaſineſs throughout the whole body, flying heats, and a quickneſs of pulſe. The following day the patient feels himſelf pretty free from all theſe ſymptoms, but they come again the next day, and thus continue to alternate. People of a weak and irritable habit are the moſt liable to ſuch complaints; which generally yield very ſoon to the Peruvian bark.

The patient muſt at firſt be extremely cautious in uſing the eye that has been operated

rated on, as it cannot then well bear either the action of air or light. At first I allow the patient to keep his eye open in a room where the light is moderated; and when he goes out I cause him to cover it with a bit of crape. Thus the eye accustoms itself gradually both to air and light. By an imprudent and premature exposure of the eye, it becomes very much weakened, and seldom afterwards recovers its strength. At all times, indeed, the patient ought to have particular care of it, as it is a part which is become much weaker than usual, and which easily suffers.

The surgeon ought to feel himself much interested in recommending so strict attention and caution in the use of the eye which has been operated on. Envy and ill will, although indeed not always these, but sometimes also stupidity and ignorance, lead many to expect from the surgeon, not only the aid that lies in his power, I mean a restoration to sight by means of a successful operation, but also that which it is out of his power to command, and willingly attribute every accident, whether it happens in the course of the first twelvemonth, or at the end of ten

years, to a want of knowledge in him. At the ſame time, I am apt to believe, that however unjuſt theſe expectations are, yet the operator has it in ſome degree in his power to aſſiſt their being fulfilled, and prevent the danger of the patient's again loſing his ſight, and that by always extracting the capſule alongſt with the lens; for thoſe who become blind after the operation generally do ſo from an opacity of this membrane. And not only does this part become obſcure, but at the ſame time forming adheſions with the iris, it draws it together, inſomuch as at laſt to totally cloſe the pupil. Nor is this to be wondered at, the capſule being a part which has ſuffered much, and is now become quite uſeleſs. This ſecond blindneſs is indeed not always incurable, for the cornea may be again opened, and the capſule extracted. But it would ſurely be much better to prevent it. And is not this to be beſt done by extracting the lens? Is not that method, which I have already deſcribed in the chapter on the concreted cataract, always practicable? I would fain hope to be ſoon able to anſwer theſe queſtions from experience.

CHAP.

CHAP. XI.

On the Purulent Eye.

IT is ſeldom that the eye runs into ſuppuration if proper attention be paid to the rules which I have already laid down. One ſingle caſe only of this kind has ever happened to me during the whole courſe of my practice; and, after all, a purulent eye is, in fact, not ſo much to be dreaded as many think; for by proper and timely aid the ſight may be again recovered. It is not always neceſſary to have recourſe to an operation to diſcharge the pus; it is often poſſible to diſcuſs it. This, indeed, I have never done myſelf, for I generally perform the operation as early as poſſible; but Mr. Janin, Mauchart, and ſeveral others, aſſure us, that diſcutient applications have performed a cure even in thoſe caſes where both anterior and poſterior chamber of the aqueous humour were full of matter, and where the eye ſeemed ready to burſt. Mr. Mauchart eſpecially recommends aromatic fomentations, and the ſcarification of the

the internal ſurface of the eye-lids. Mr. Janin ſuppoſes, that the promoting the exudation of the purulent matter through the pores of the cornea is what we ought chiefly to have in view, and on that account makes uſe of emollient fomentations, ſuch as a decoction of marſh mallows. I ſhould be afraid, however, that this would relax too much, and make the cornea apt to give way; a circumſtance which is always to be dreaded *.

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* Were I to judge from opinion alone, I confeſs I ſhould at firſt be apt to join with the author in condemning the uſe of this remedy. But Mr. Janin, in his chapter on the purulent eye, in his work intituled, *Obſervations ſur l'Oeil*, ſpeaks in ſo confident a manner of the great ſucceſs which he himſelf has had from the uſe of this remedy, that it ſeems unfair to oppoſe a mere conjecture to what a reſpectable writer aſſures us to be a matter of fact and experience. This decoction of malva, he ſays, ſeldom fails to diſcuſs the pus contained in the eye in about twelve or fourteen days. He directs the eye to be frequently bathed with the decoction, and that a compreſs dipt in the ſame, ſhould be applied in the intervals. How an emollient and relaxing remedy ſhould produce the ſame effect as the ſtimulant one recommended by Mr. Mauchart, is a difficulty which is not ſo eaſily ſolved. The theory from which Mr. Janin takes his indication of cure, namely, that of opening the pores of the cornea, is certainly a moſt queſtionable and unſatisfactory one: it aroſe when the uſe of the abſorbent veſſels was unknown, and it is really ſtrange that it ſhould ſtill gain credit now that theſe are ſo well aſcertained. Were I to hazard a conjecture on the uſe of theſe two remedies, I ſhould ſuppoſe that they had been employed at two different ſtages of the

It commonly requires a conſiderable time before the diſcuſſion, if the pus is entirely completed, generally requiring ten or twelve days. And now the queſtion ariſes, Is it poſſible that this matter may remain ſo long in the eye, without doing any injury? Is this ſlow and uncertain diſcuſſion to be preferred to the operation; which is neither painful nor dangerous, and by means of which the pus will moſt undoubtedly be diſcharged? For my part, I muſt confeſs that I know of no one good reaſon why the diſcuſſion ought to be preferred to the operation. The latter method is quick, and ſure; the former ſlow, and uncertain. I have performed this operation ſeveral times, with the very beſt ſucceſs, and can therefore recommend it from my own experience. If, however, there be but

the diſeaſe. At the beginning, where there is a good degree of active inflammation preſent, not only new matter is continually forming, but the abſorbents, from the diſeaſe of the part, are incapable of acting. The emollient application of Mr. Janin in this caſe would be the moſt adviſable, as tending to relax the part, and diminiſh the too great action of the blood veſſels. But on the contrary, in a caſe of ſome ſtanding, where all inflammation had ſubſided, and the faults ſeemed to lie in too weak an action of the abſorbents, the ſtimulating remedy of Mr. Mauchart might perhaps be the beſt. T.

little

little pus collected, and that the patient dreads the operation very much, it may be delayed, and discutient remedies tryed in the mean-time. But as soon as both chambers seem filled with pus, there is no longer any time to be lost; the possibility of discussing it becomes doubtful, and the total loss of the sight is much to be dreaded from the long continued presence of the purulent matter. In such a case as this, I would not hesitate an instant about performing the operation. I must at the same time confess, that I never have attempted the discussion under such circumstances, and therefore am unable, from my own experience, either to recommend or condemn the practice. But to judge from appearance, it seems to me a very doubtful means of cure.

The particular place in which the pus is first formed, is different in different cases; sometimes in the anterior, sometimes in the posterior chamber. This distinction is, indeed, of little moment, as both these chambers make up but one space, and it very seldom happens that the pus, except when in small quantity, is confined to one of the chambers. This distinction, however, appears

pears of ſuch conſequence to Mr. Mauchart, that he not only gives a different name to it, according to the difference of its ſeat, but alſo recommends a difference in the method of cure. When the pus is contained in the anterior chamber, he calls it hypopion, and when in the poſterior one, empyeſis. In this laſt caſe, he takes a double edged couching-needle, and entering it about the diſtance of one line from the cornea, makes it paſs into the poſterior chamber, and then withdraws it, expecting that the pus will flow out through the puncture. This, however, ſeldom or indeed never happens, for the purulent matter is ſo thick, that it cannot paſs through ſo narrow an opening; and conſequently this immediately contracts itſelf.

This ſeems to have ſtruck Mr. Mauchart himſelf, for he propoſes to inſert at the ſame place a ſmall trocar, inſtead of the needle, and to allow its canula to remain there until all the matter be diſcharged. But is it poſſible to allow a hard body, ſuch as the canula of a trocar, to remain for ſome days in the poſterior chamber of the eye, between the iris and capſule of the lens, without occaſioning the moſt acute pain, the moſt frightful inflammation,

tion, an opacity of the cornea, and a total loſs of the eye? How is it poſſible to fix ſuch an inſtrument, in order to prevent its falling out? And is it probable that ſo thick and tenacious a matter ſhould flow through ſo fine a tube? At all times it is dangerous to introduce any inſtrument into the poſterior chamber of the eye, for it certainly does always wound the ciliary proceſſes, and very often the iris or capſule of the lens; parts, the laceration of which is not always ſo trifling an accident as many perhaps believe.

All theſe difficulties the operator draws upon himſelf unneceſſarily. A moderate opening in the cornea procures a ready diſcharge to all the pus contained in the eye; for the way through which it may eſcape (the pupil) when in the poſterior chamber is open and free.

The inciſion in the cornea can be eaſily made, and without any dangerous conſequences. I make an inciſion in the inferior portion of the cornea, with the ſame kind of knife with which I perform the operation of extraction, or, in place of it, a pretty ſtrong lancet will anſwer the purpoſe. In this manner all other inſtruments invented for this

this purpoſe become unneceſſary. When pus is formed ſoon after the operation of extraction, it is ſeldom neceſſary to make another inciſion in the cornea; for in general, in this caſe, the wound through which the lens was extracted commonly opens again of itſelf, or ſo ſlightly adheres, that it can eaſily be opened with the point of the knife.

The opening in the cornea muſt not be made too ſmall, on account of the thickneſs and tenacity of the purulent matter. I generally make it ſo large as to comprehend a fourth part of the cornea; and yet in ſpite of this, the matter does not all flow out at once, but gradually oozes out. Some who ſeem anxious to have it all evacuated at once, recommend the diluting it, and waſhing it out by means of a ſyringe. I ſhall not attempt to determine whether this method may always be put in practice with eaſe and ſafety; but I am apt to believe that it is in moſt caſes ſuperfluous. The method I adopt is as follows.

As ſoon as the inciſion is completed, a drop of the matter commonly follows the knife. I then inſtantly bind the eye down, without giving myſelf any concern about the quantity that

that remains in it. Upon removing the dreſſings ſix or eight hours afterward, I commonly find a little of the purulent matter on the compreſs. If this be the caſe, I again inſtantly ſhut the eye. Should the compreſs at next dreſſing be found quite dry, and the quantity of pus in the eye ſeem but little or not all diminiſhed, I immediately conclude that the wound in the cornea is cloſed; upon which I ſeparate the lips of the wound by means of the point of the knife, and continue to do this at any time when the compreſs appears quite dry, until the whole purulent contents be diſcharged. The eye ſuffers but little from this treatment. The aqueous humour, which is always ſecreting, dilutes the pus, and waſhes it out of the eye, and this is further promoted by the natural contraction of the elaſtic coats of that organ. It generally happens that all the pus is entirely diſcharged in the courſe of two or three days, and the ſurgeon need have no other concern but to keep the inciſion open. For my part, I do not think it poſſible to procure a more eaſy, quick, or ſafe diſcharge to the pus than this. At leaſt, I myſelf have frequently, by this method, reſtored ſeveral people to their ſight, in the

the courſe of three days, who were blind from this cauſe. In three of theſe caſes there was not the ſmalleſt mark of a cicatrix to be ſeen afterwards; in two others, a very trifling one remained. The dimneſs and muddy appearance which the cornea commonly retains after this diſeaſe, generally yields very ſoon to the uſe of the white vitriol.

A remarkable caſe once occurred to me which I will relate. A young man about twenty was attacked with a violent opthalmia, which terminated in ſuppuration. When I ſaw him, both anterior and poſterior chamber were full of matter, and the cornea ſo much diſtended as to ſeem ready to burſt. I made an inciſion in the inferior part of the cornea, through which a conſiderable quantity of pus flowed out. The following day, when the pupil became viſible, I could obſerve that the cryſtalline lens had partly projected through the ſame, and was quite cloudy; upon which I enlarged the wound, and extracted it.

I remember to have once ſeen the whole external ſurface of the cornea run into ſuppuration. It was quite obſcure, and the conjunctiva which covered it ſeemed to be

entirely corroded. After the uſe of the white vitriol, theſe ſymptoms diſappeared, and the cornea regained its natural tranſparency.

In one caſe of a purulent eye, the cornea remained very unequal after the cure, and yet the patient ſaw very diſtinctly. It is therefore not true that every inequality of the cornea cauſes ſquinting.

CHAP. XII.

IN order to conclude this ſubject, I will here relate the hiſtory of a few caſes: They will tend to prove what I have aſſerted in former parts of this treatiſe. I do not mean to ſelect the moſt ſucceſsful, but the moſt inſtructive ones.

CASE I.

A man of about forty-five years old, of a healthy and robuſt conſtitution, had a cataract in both eyes; the one in the right was

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of ten years ſtanding, the one in the left only two; the cataract in the right eye was of a pearly colour, with a few browniſh ſtreaks here and there: the motion of the pupil was free and eaſy. I ordered him to be blooded, to have a pediluvium, and to be gently purged. On the fourth of October, I performed the operation. As ſoon as the inciſion in the cornea was finiſhed, and the capſule opened, the lens approached the iris, began to dilate the pupil, and, upon my making a very ſlight preſſure, it glided out: but as the pupil ſtill remained quite opake, I continued to preſs gently, and, in the courſe of a few minutes, forced out two opake pieces, which, in point of colour and conſiſtence, exactly reſembled the lens itſelf. They were not fragments, however, of the lens, for that came out quite entire, and there were no marks on its ſurface, by which one might have been led to conjecture that any part of it had been broken off.

This cataract, which before the operation appeared of a pearl colour, was now diſcovered to be quite brown, and was ſo ſoft as to alter its figure as it paſſed through the

iris. After its extraction it could be ſqueezed between the fingers like a jelly.

As the pupil was now perfectly clear, and the patient could diſtinguiſh any object preſented to him, I immediately bound his eye down.

He remained very well during the whole day, but towards evening was attacked with a ſlight ſhivering fit, accompanied with anxiety, and followed by heat. Notwithſtanding this he paſſed a pretty good night, and next day, the fifth of October, was quite free of pain. Upon *my* opening the eyelids a very little at the internal angle, I could diſcover that the eye was free from inflammation.

I ordered him a doſe of Glauber's ſalt, which, however, did not produce any effect. The ſame quantity, taken the day previous to the operation had operated violently. As often as I removed the bandage, the patient complained that the light was too ſtrong for him to bear, even through his eye-lids, and requeſted to have the room darkened. Towards night the fever again recurred, and in a ſtronger degree than on the preceding evening.

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The ſixth of October the eye was red and painful. The aqueous humour ceaſed to flow. I ordered him a cooling drink, and to have a glyſter that evening. The fever again recurred at night, and the cold and hot fits were much ſtronger than the day before, and ſoon after the eye became very painful. The light which, on removing the bandage, now fell upon the eye through the eye-lids, occaſioned but little pain.

On the ſeventh he had a bliſter applied between the ſhoulders, which diminiſhed the pain.

The ſymptoms of inflammation gradually decreaſed under the continued uſe of purges and bliſters, and three weeks after, he was ſo much recovered as to prepare for a journey. On opening and examining the eye, I found the wound of the cornea ſo perfectly healed, that one could hardly diſcover any mark of a cicatrix; but there appeared in the very centre of the pupil, which, by the by, was quite round and moveable, a ſmall opake body, of the ſize of the head of a common pin, which, when the pupil contracted itſelf much in a ſtrong light, rendered viſion obſcure. In a moderate, or

rather obſcure light, however, the patient ſaw very diſtinctly.

I had an opportunity of ſeeing this patient five months afterwards: the ſtrength and acuteneſs of his ſight had increaſed to ſuch a degree, that he could then read large print without the aſſiſtance of glaſſes. The opake ſpot in the pupil had entirely diſappeared. I again ſaw this ſame patient, ſix years afterwards: his ſight was then as good as it had been five months after the operation.

CASE II.

A ſtrong and healthy peaſant had a cataract in both eyes. That in the right eye was of four years ſtanding, the other only of one.

On the 22d of October I performed the operation on the left eye, the cataract of which was of a pearl colour. The motion of the pupil was free and eaſy. The lens came out as ſoon as the inciſion was finiſhed, and the patient ſaw inſtantly. The pupil was quite clear, but oblong. The cataract was quite white and ſoft, except in its centre, where it was hard, and of a deeper colour.

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I now wiſhed to perform on the right eye; but the knife, inſtead of immediately entering the chamber of the aqueous humour, run the length of a few lines between the lamellæ of the cornea, owing, I ſuppoſe, to my having applied the knife too obliquely; and, on my withdrawing it, in order to give it the proper direction, the aqueous humour flowed out, the cornea became looſe and flaccid, and I was obliged in conſequence to deſiſt.

The patient was blooded ſoon after the operation, and was ordered to have his feet put in warm water in the evening. No febrile ſymptoms appeared; the patient ſlept well, and had no pain in his eye next day. On removing the bandage, he complained much of the light, although his eye was ſhut. I preſcribed a doſe of neutral ſalts, and a glyſter to be adminiſtered towards evening.

Next day he found himſelf fully as well as the day before, and continued the uſe of the ſalts. But he had a ſlight chilly fit towards night.

On the twentieth of October I gently opened the eye-lids a very little, but could not diſcover the ſmalleſt degree of inflamma-

tion. The wound of the cornea was closed, and the chamber full of aqueous humour.

As the patient seemed in such good health, and quite free from inflammation and fever, I again performed the operation, for the second time, on the right eye, on the twenty-seventh of October.

The small wound which I had made at the first trial, five days before, was now no longer to be discovered.

The cataract in this eye was of a milk white colour. Just as the point of the knife got through the cornea at the internal angle, it wounded the edge of the upper eye-lid, which had fallen down a little, through the inattention of the assistant; immediately on this happening, both the eye-lids were violently closed together. This accident disturbed the operation greatly. The eye-lids, however, were separated, and I finished the operation successfully, without lacerating the iris. The crystalline lens came forward as soon as the incision was finished, and before I had punctured the capsule. It was entire, and so hard as to allow a considerable degree of pressure, without altering its shape.

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On examining the pupil it appeared quite thick and muddy. On which I introduced *Daviel's ſcoop* three different *times*, and brought away a thickiſh ſlime each time, after which the pupil remained clear, and the patient could diſtinguiſh the objects which were held near his eye.

The patient continued the uſe of neutral ſalts, now and then a pediluvium and glyſters, and during the firſt days after the operation, remained entirely free from pain or any other complaint.

But theſe happy proſpects ſuddenly diſappeared. On the fourth of November I found the patient, whom the night before I had left in good health, reſtleſs and uneaſy. He had had a violent fever, accompanied with much pain, all the night, and had ſlept none. Theſe ſymptoms had abated towards morning, but again appeared, with redoubled violence, the next evening. The patient complained of a total loſs of appetite, and a bitter diſagreeable taſte in his mouth. I gently ſeparated the eye-lids a very little, and found the conjunctiva very much inflamed, and the cornea muddy and cloudy.

The eye which I had firſt operated on, had the

the following appearances: the conjunctiva was inflamed; the pupil oblong; a small quantity of the vitreous humour was prolapsed, and had, in passing over the inferior portion of the iris, forced it along it with itself into and through the wound in the cornea. The wound itself was dilated at that place where the prolapsed vitreous humour and iris hung out, but in every other point it was healed. The anterior chamber of the eye was filled with the aqueous humour. That part of the vitreous humour which protruded through the cornea was pale, and so compressed by the wound that it appeared to hang by a slender thread; this I easily separated, and then attempted to return the iris, but it was hard, almost entirely insensible, and so firmly connected with the edges of the wound, as to render its return impossible.

All these symptoms occurred in consequence of a violent fright the patient had sustained, occasioned by a fire which had broke out the night before in the neighbourhood; but they yielded so rapidly to the use of cooling purges and white vitriol, that the patient thought of setting out on his journey the eleventh of November. I allowed him to

go,

go, as his domeſtic affairs would not admit of a longer abſence. The unnatural figure of the pupil did not impede viſion: he ſaw better, however, with the left than with the right eye.

As his eyes were very ſenſible to the impreſſion of light, I deſired him to keep them covered during his journey, and adviſed him to wear a piece of crape over them for ſome time after.

This ſame patient returned to ſee me four months afterwards, quite happy with the ſucceſs of the operation. He aſſured me, that his ſight had become better and ſtronger every day, and that he could then read large print with his naked eyes. The moſt remarkable circumſtance was, that the pupil of the one had entirely loſt its irregularity, and was now equally round and moveable with the other. He could diſcern diſtant objects, although not diſtinctly. I again ſaw this man in the month of May of the preſent year, being five years ſince the operation. His ſight was then as good as it had been at four months after the operation.

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CASE III.

A woman, forty-five years old, much addicted to drink, whose face was blotched, and of a deep copper colour, came to me, and intreated that I should restore her to her sight. Her menses had left her nine months before. She was blind of both eyes. The cataract in the left eye was of two years standing, and of different shades of colour; the motion of the pupil was free, and the patient could distinguish light from shade. The cataract in the right eye was pale, and only in an incipient state.

I caused this patient to be blooded, and use a pediluvium, prescribing at the same time, some laxative medicines; after which, on the third of July, I performed the operation on the left eye, and, in doing so, I made use of *Pamart's spear*. A small blood-vessel was wounded by the point of this instrument, and a slight hæmorrhage ensued, by which the whole external angle of the eye was coloured with blood.

In beginning the incision through the cornea, I entered the point of the knife too near the sclerotic coat; owing to which the iris advanced

advanced ſo much forward, that it was with the utmoſt difficulty I could make the knife traverſe the anterior chamber of the aqueous humour without lacerating that membrane. Scarcely had I punctured the capſule, by means of La Faye's inſtrument, than a drop or two of a milky liquor flowed out, and ſoon after it came the lens; but the pupil ſtill remained obſcure and dark. I preſſed gently on the eye, and forced out a ſmall, irregular, and opake body, of the ſame conſiſtence with the lens; and, immediately after, there followed another of the ſame nature. At firſt I judged them to be detached fragments of the lens itſelf; but in this I was miſtaken; for that part was quite equal and entire on its ſurface.

The patient took a table-ſpoonfull of the oil of ſweet almonds thrice, and had no other diet but gruel. At night I ordered her a pediluvium.

A few hours after the operation, ſhe was ſeized with ſlight fits of heat and cold, for which ſhe was blooded, and had one grain of opium given her.

On the fourth of July, ſhe found herſelf quite well, but had a ſlight febrile attack towards

wards the evening, which was less violent, however, than that of the preceding night.

As often as I removed the bandage, as often did she complain that the light hurt her eye, even through the eye-lids.

She had had no stool since the operation, on which account I ordered her a pretty large dose of oil of sweet almonds, which had the desired effect.

On the fifth, she was quite free from all febrile symptoms; and as she now seemed so well in every respect, I ventured to open the eye cautiously the next day. The cornea was clear and transparent, the wound closed, but of a whitish colour; the anterior chamber filled with the aqueous humour, the pupil clear, and the conjunctiva not in the smallest degree inflamed. The eye itself was so extremely sensible to the impression of light, that even the small quantity of it which was allowed to enter the apartment, made her uneasy.

The patient, full of joy at the happy event of the operation, allowed every one that came to her, to open and examine the eye. The next night she experienced the most acute pain in it.

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On the seventh, I ordered her a purge, and on my opening the eye the following day, I found it a little inflamed; the pupil was oblong, oblique, and drawn downwards towards the wound; the inferior portion of the iris had dilated the wound, and hung a little out of it. The patient again felt acute pain in the eye the next night.

On the ninth, I observed a portion of the vitreous humour prolapsed; it resembled a small bag filled with water, and was quite pale. I cut the little bag open with a pair of scissars, on which a small quantity of a watery fluid flowed out, the tumor immediately collapsed, and, from that instant, all the pain ceased. But the wound remained irregular, and the pupil long, oblique, and depressed.

On opening the eye again, on the twentieth, the patient assured me she saw every object in an oblique position. By the first of August the wound in the cornea was become less irregular, the pupil less oblong, and oblique, and the objects appeared to the patient more in their natural position.

I now allowed the patient to return home, informing her at the same time, that all these faults in her eye would disappear in the course

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of time. But I never had an opportunity of seeing her again.

CASE IV.

A woman, aged fifty years, of a pale and unhealthy look, of a delicate constitution, and who had lately sustained much distress, had a cataract in both eyes. The one in the right eye was of ten, that in the left of six years standing. She had been couched in the left eye eight years before this, but the lens had again arisen to its former place. The pupil in the right eye moved with freedom, the cataract was of different shades, and the patient could distinguish light from darkness; nay, she could also perceive such objects which were placed at her side. I performed the operation of extraction on this eye, on the sixth of February, after having prepared the patient in the usual way.

I opened the cornea, punctured the capsule, and made a pressure on the eye, but without being able to move the cataract. Fearing that I had not sufficiently punctured the capsule, I again had recourse to La Faye's instrument, which I employed with every degree

gree of accuracy, and again made the uſual preſſure, but ſtill the cataract did not move. I now began to ſuſpect that there might be an adheſion between the cataract and capſule; in order to looſen which I introduced a round ſharp pointed needle into the eye, and thruſting it into the body of the lens, I moved this upwards, ſideways, and downwards, ſeveral times; after which I withdrew the needle. I then began the preſſure again, and the cataract came out. It was hard, and very large. The patient was quite overcome with anxiety and trembling, and ſeemed ready to faint.

Soon after the operation ſhe was ſeized with alternate fits of heat and cold; her ſpirits were much ſunk, and ſhe felt a pain in her eye. I ordered her to be blooded, and to have a pediluvium. On the ſeventh, ſhe was better, and the pain in her eye was leſs. The patient uſed the pediluvium twice, and took ſome cooling ſalts; notwithſtanding which, the pain increaſed next night, and ſhe again had ſome attacks of heat and cold. On the eighth, the aqueous humour ceaſed to flow, and the pain in the eye was trifling. The patient complained of nauſea, and a diſagreeable

bitter taſte in her mouth, for which ſhe was ordered ſalts and manna.

She was very reſtleſs the following night, and had conſtant cold and hot fits. The pain in the eye was moderate during the whole of this day.

The patient complained of being cold and chilly the whole of the ninth day, and again had a bitter taſte in her mouth; for which ſhe took a purge. The pain in the eye was inconſiderable.

On the twelfth, I opened the eye-lids a very little for the firſt time, and diſcovered, to my great aſtoniſhment, that the eye was violently inflamed, the conjunctiva greatly ſwelled, and very red. I immediately ordered a ſtrong purge, applied a large bliſter between the ſhoulders, and wetted the compreſſes that covered the eye with a ſolution of alum. Next day I cauſed her to be cupped and ſcarrified on the neck, ſhoulder, and arm. Under the adminiſtration of theſe remedies, the pain in the eye, which, till now, had always been moderate, began to be very violent. The patient complained of a gnawing pain in the ball of her eye, attended with a painful ſenſation

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of weight in the orbit, forehead, and over the whole head, which indeed was so violent as to deprive her of sleep.

I again opened the eye on the twentieth, and found it full of pus; on which I immediately opened the inferior part of the wound of the cornea, and a few drops of purulent matter discharged, after which the pain abated a little. I then moistened the eye with a discutient eye-water, and bound it down. The bandage was removed on the twenty-first. A little purulent matter was discovered on the compress. The wound towards evening seemed closed, but I again opened it with the point of the knife, and a little more pus discharged. The upper part of the anterior chamber seemed now free from any matter.

In this way I proceeded for three days, giving laxatives, applying discutients and blisters, and always keeping the wound open. The patient, however, never recovered the use of her sight; for the pupil remained obscure, and the whole ball of the eye was diminished in size. The gentleness of the pain had entirely deceived me, and I did not discover that the inflammation had run into suppuration until

it was too late to prevent the evil conſequences.

CASE V.

A woman, aged thirty-five years, of a pale complexion, and timorous diſpoſition, applied to me to have the operation for the cataract performed upon her. She had been always ſubject to frequent inflammations of her eyes, and, four weeks previous to this application, had loſt a great quantity of blood in conſequence of a miſcarriage. In the right eye there was an incipient cataract, but ſhe could ſtill diſtinguiſh large objects with it. The cataract of the left was of a pearly colour, not, however, ſo opake as to deprive her of being alſo able to diſtinguiſh large bodies, or very lively colours.

I preſcribed a cooling diet for three days, employed the pediluvium, and made her ſwallow, now and then, a table ſpoonful of oil of ſweet almonds.

The day preceding the operation, I ordered her a doſe of cooling laxative ſalts, which not only purged her, but alſo cauſed her to puke, and bring up a great quantity of green ſtuff.

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I performed the operation on the left eye on the firſt of September. The cataract reſembled a jelly, and came away in portions. I was forced to make uſe of Daviel's ſcoop ſeveral times in order to clear the pupil, but in ſpite of all my endeavours, there remained in the upper part of the capſule, a ſmall white opake piece, which I could not lay hold of, nor extract. For fear of irritating the eye too much, I deſiſted from further attempts, and allowed it to remain. The patient was much alarmed during the operation, and trembled from head to foot. She ſwallowed two ſpoonfuls of oil of ſweet almonds, and then went to bed.

An hour after the operation, her pulſe became weak and irregular, her ſpirits were uncommonly ſunk, ſhe felt an univerſal laſſitude, and had frequent ſhiverings, accompanied with ſickneſs at ſtomach, and cholic pains. She puked three times, experienced the moſt acute pain in her eye all night, and had no ſleep. She was blooded, but very little could be obtained.

All theſe ſymptoms were much diminiſhed the next morning, the ſecond of September.

The patient was pretty cheerful, the eye pained her but little, the eye-lids were neither red nor ſwelled; and, on removing the bandage, ſhe could feel the light through them.

As ſhe had had no ſtool ſince the operation, and complained of a diſagreeable bitter taſte in her mouth, I ordered her a glyſter, and a weak ſolution of laxative ſalts, which produced two ſtools, and ſhe paſſed the day without being reſtleſs or pained. Towards evening, however, all the ſymptoms of the former night returned: the patient became reſtleſs, hot, and felt a pain in her eye. I ordered a bliſter to be applied behind each ear, and on her temples. On the third, the pain in the eye was little, the aqueous humour ſtill flowed out, and the patient went twice to ſtool. At night the pain again became violent. In the morning I applied a large bliſter between her ſhoulders, upon which ſhe had a very good night, and was pretty free from the pain in her eye.

On the fifth of September, ſhe was entirely free from all pain, had two ſtools, and was otherwiſe in good health. The eye-lids were red and tumid, which prevented her from feeling

feeling the light in her eyes when the bandage was removed. The aqueous humour ſtill flowed out.

The pain in the eye returned again on the ſixth, and the patient complained, at the ſame time, of a bitter diſagreeable taſte in her mouth. Her tongue was foul. Theſe ſymptoms ſoon yielded to the uſe of the vitriolic acid.

On the tenth, I attempted, for the firſt time, to open the eye-lids, but ſhut them again immediately on my obſerving the eye to be much inflamed. In ſpite of every precaution in performing this, it ſtill occaſioned much pain to the patient for ſome hours afterwards. I cauſed another bliſter to be applied between the ſhoulders.

On the twelfth, I again opened the eye. The cornea was ſo dim and obſcure that I could hardly diſcern the pupil, and the patient herſelf could only diſtinguiſh light from ſhade. The inferior portion of the iris was prolapſed, and projected through the wound of the cornea. I continued to preſcribe laxatives, to apply bliſters, and make uſe of a ſolution of alum, and again opened the eye, for the third time, on the twenty-ſecond of September. The in-

flammation was much diminiſhed, and the prolapſed portion of the iris was ſo completely returned, that the wound was quite cloſed. Now that the muddineſs of the cornea had conſiderably diſappeared, I could obſerve that the pupil was oblong, depreſſed, and clouded.

I ordered the patient bark, as ſhe ſeemed much debilitated.

By the twentieth of October, there was no appearance either of inflammation or of wound to be ſeen. The cornea and aqueous humour were clear and tranſparent, and I could now diſtinctly perceive the iris and pupil, for the firſt time. The pupil was oblong and quite clear, except towards its left ſide, where one could diſcern a long opake ſtripe. The power of viſion was weak.

I ſaw this patient again on the twelfth of November, and found her ſight much ſtronger.

CASE VI.

A woman, aged fifty-ſeven years, ſubject to the gout, and whoſe feet were frequently ſwelled, was blind from the cataract. That

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in the right eye was of ſix years ſtanding, and ſeemed in every reſpect fit and proper for the operation. The lens of the left eye had already begun to grow opake, the pupil was muddy, and, to the patient, every object appeared as if ſeen through ſmoke and clouds. In ſpite of the bad habit of body of the patient, I allowed myſelf to be prevailed upon, at her earneſt requeſt, to perform the operation, flattering myſelf that, with pains and care, I ſhould, perhaps, be able to enſure a ſucceſsful iſſue. I cauſed the patient to obſerve a ſtrict diet for ſome days, ordered her a purge at two different times, and afterwards performed the operation, on the twenty-ninth of September, on the right eye.

The operation itſelf ſucceeded well and quickly. The lens was hard, and came out entire; ſtill, however, I found, upon narrowly examining the pupil, a remains of opacity at its upper margin, which I could neither lay hold of with Daviel's ſcoop, nor extract in any other way. I accordingly deſiſted from all further endeavours, and bound the eye down.

Soon after the operation the patient complained that her eye rolled involuntarily up

and down under the bandage. She ſwallowed a couple of ſpoonfuls of oil of ſweet almonds, and, towards evening, put her feet in warm water. The pain in the eye was pretty acute during the night, and ſhe had no ſleep. Next morning, however, it had ceaſed.

On the thirtieth of September, I ordered her a doſe of laxative ſalts, and a pediluvium at night, which night ſhe paſſed pretty quietly, and free from pain. She continued well alſo the whole of next day, but experienced a moſt acute pain in her eye during that night. On the ſecond of October, towards morning, the pain abated. I cauſed her to be blooded at the ankle, and ordered her to take ſome vitriolic acid, as ſhe complained of a bitter diſagreeable taſte in her mouth.

The third of October, the pain continued ſtill as violent as on the preceding day, and the bitter taſte in her mouth. The patient took a doſe of tincture of rhubarb and nitre, and employed the pediluvium at three different times. The compreſs was frequently wetted with a ſolution of white vitriol. Next night the pain was leſs.

On the fifth of October, I gently opened the eye, for the firſt time, and perceived it to be

violently inflamed. A large bliſter was ordered to be applied immediately between the ſhoulders, and the tincture of rhubarb to be repeated. In ſpite of theſe meaſures the pain in the eye returned again at night. On the ſeventh, ſhe was entirely free from the bitter taſte in her mouth, but the redneſs of the eye was not diminiſhed. The pupil was clear, open, very large, and the eye itſelf much affected by the light. From the inferior part of the wound there hung out a ſmall portion of the vitreous humour. It was whitiſh, attached by a very ſlender filament, and eaſily ſeparated. The ninth of October, the patient felt an acute pain, not only in the eye itſelf, but alſo over the forehead. Two bliſters were applied to the temples, and one to the nape of the neck; and as ſhe had conſtantly more or leſs of a bitter taſte in her mouth, I ordered her gentle laxatives.

On the 20th of October, I again opened the eye-lids. The redneſs was much diminiſhed, the cornea was obſcure, and the aqueous humour ſo muddy, that it was with difficulty I could diſtinguiſh the pupil.

By the firſt of November, the redneſs of the eye had totally diſappeared. I now ordered

dered the patient, who was much debilitated, the bark, and allowed her to open her eye now and then in a room that was darkened.

I viſited her on the ſeventh of November, She could only diſtinguiſh light from ſhade. The pupil was very ſmall. The upper half of the cornea was clear and tranſparent, the inferior one was quite white, having ſeveral red ſpots here and there. The cicatrix of the wound was thick and irregular. The pain and inflammation entirely gone. By the twenty-ſeventh, there was not any mark of the wound to be obſerved. A little ſhooting pain was felt now and then, but ſoon ceaſed. The pupil had almoſt entirely cloſed itſelf, and, it was obſerved, that the ſight of the other eye evidently grew worſe during the whole of the cure.

CASE VII.

A ſtrong and healthy man, aged fifty-two years, who, during his whole life, had been ſubject to congeſtions of blood in his head, and was frequently troubled with head-achs, applied to me, on the firſt of June, in order to have

have the operation for the cataract performed. He had a reddish copper-coloured countenance, and was blind in both eyes.

He had been couched in the right eye twenty years before, by an itinerant oculist, which terminated very unsuccessfully; for the pupil was entirely closed, and the whole ball of the eye much diminished in size. It was therefore impossible to remedy the blindness of that eye.

The pupil of the left was oblong and immoveable. The patient could not distinguish light from shade; but he assured me that this had happened only a few days before. Almost immediately behind the pupil lay a milky cataract, across the middle of which run a white shining stripe, but which seemed to be seated anterior of the lens and in the capsule. From all these circumstances I was led to conjecture that the cataract adhered to the iris, and therefore I refused to perform the operation.

The patient returned home, but soon after wrote to me, that during a thunder storm he had plainly seen the flashes of lightning, and earnestly intreated me to attempt the operation. I accordingly allowed myself to be prevailed

prevailed upon, in ſpite of all the difficulties which threatened me; but previouſly warned the patient, that I could not anſwer for the ſucceſs of the operation, which was performed on the twenty-ſecond of July. As ſoon as the inciſion of the cornea was finiſhed, and before I had time to puncture the capſule, the lens ſprang ſuddenly forward, and out of the eye, the pupil remained perfectly clear, but the patient could not ſee. I was therefore deceived in my conjectures, and had taken that for a ſign of the adheſion of the iris, which in fact was only a conſequence of the amauroſis. It is a very ſingular circumſtance, that in this caſe the iris, which, previous to the operation was quite immoveable, moved quickly and freely after it. The white ſtripe which appeared anterior of the lens before the operation was ſtill ſeen behind the pupil; but as the patient was blind, I did not think it worth while to extract the capſule in which it ſeemed to be ſeated.

During a few days after the operation, the patient was ſo well and free from pain, that I allowed him animal food to his meals. On the ſeventh, however, he was ſuddenly

ſeized

ſeized with a moſt acute and violent opthalmia, which yielded to the uſual remedies.

I opened the eye on the fifteenth day from the operation. The pupil was oblong, but moveable. The whitiſh ſtripe ſeemed to be a little broader, but the patient was quite blind.

CASE VIII.

A woman, aged fifty years, of a good conſtitution, had a cataract in both eyes. But to uſe the vulgar expreſſion, they were ſtill unripe. The patient could not only diſtinguiſh light from ſhade, but alſo ſome of the brighter colours, and even large objects when near. The colour in the pupil reſembled that of a thick cloud. She was blooded, put upon a ſpare diet, and thrice purged. I performed the operation on the fourteenth of June. After having finiſhed the inciſion of the cornea, I gently preſſed upon the eye, and the lens came eaſily forward. Scarcely however had that taken place when the patient fainted away.

When ſhe recovered, I began the operation

tion on the other eye, and having cut the cornea, and punctured the capsule, I pressed the eye pretty strongly, but the lens did not move. Having increased the pressure considerably, the lens suddenly started forward, together with a portion of the vitreous humour, upon which I instantly shut the eye, and having opened it again a few minutes after, could not discover any of the prolapsed vitreous humour.

The patient remained perfectly free from pain, and every other bad symptom, until the sixth day, when the right eye became a little painful. This pain, however, did not create so much uneasiness to her as a constant sensation of weight and pressure in the region of the eye-brows. Towards evening she was hot and restless. These symptoms disappeared at one time and returned at another. The patient remained in this state during four weeks, at the end of which I ordered her the bark, when the symptoms gradually diminished, and at last totally disappeared. The oppressive pain above the eyebrows continued the longest, and for some time returned upon the patient's laying aside the use of the bark.

I examined

I examined the ſtate of her eyes on the twelfth of July, and found the pupils of both to be quite round and clear, the iris contracted and dilated eaſily, and the cicatrix of the wound was ſcarcely diſcernible. The patient ſaw quite diſtinctly, except in the right eye, before which ſhe thought ſome black ſpots were always floating.

On the firſt of Auguſt, ſhe informed me that the ſlight inconveniencies ſhe had experienced had now entirely left her, and that ſhe could diſtinguiſh the moſt minute objects with the aſſiſtance of her glaſſes.

CASE IX.

A man, aged twenty-five years, had a cataract in both eyes. His general health was otherwiſe good; the iris of both eyes was moveable, and the cataract itſelf of a milky colour. He could not only diſtinguiſh light from ſhade, but alſo colours and large bodies.

After having prepared him in the uſual way, I performed the operation on a very hot day, the ninth of July. I had ſcarcely punctured the capſule, when a ſubſtance like jelly

flowed out. In the ſame moment the pupil became clear, and the patient ſaw diſtinctly. The ſame thing happened with the other eye.

Soon after the operation, I cauſed the patient to ſwallow two table ſpoonfuls of freſh oil of ſweet almonds, and ſome drops of laudanum. Towards evening he bathed his feet in warm water. He was ſeized with a ſhivering fit in the night; but found himſelf quite well next morning, and was free from pain. As his tongue appeared foul, I ordered him an ounce of cream of tartar, and to be allowed no other diet than gruel for the whole day. In the evening his tongue appeared cleaner. He had frequent chilly fits, and a ſenſation of contraction and tenſion in his extremities, but theſe diſappeared on taking ſome drops of liquid laudanum. The left eye was a little painful, but the right one gave him no kind of uneaſineſs.

On the twenty-firſt, he had no pain nor fever, the eye-lids were neither red nor ſwelled: but as he retained a bitter taſte in his mouth, had a foul tongue, and diſagreeable eructations, I again ordered him the cream of tartar. Towards evening he was ſeized with chillineſs and tremor in the extremities.

The twenty-ſecond of July, his eyes itched a little; in the evening, his pulſe became full and quick, and the patient himſelf was hot. He took ſome ſpirits of vitriol. He was reſtleſs during the night, and perſpired profuſely; but this might have proceeded from the hot weather which then prevailed.

July the twenty-third. All pain in the eye was entirely gone, and in other reſpects he was in perfect good health. The flow of tears had ceaſed; his pulſe was ſoft and ſlow; his tongue, however, was a little foul, and he retained a bitter taſte in his mouth. He continued to take the acid of vitriol, and obſerved ſo ſtrict a diet, that he eat no other kind of food but gruel.

July the twenty-fourth. He found himſelf perfectly well, but ſtill had a diſagreeable bitter taſte in his mouth, for which I ordered an emetic. Having taken it the next day, he brought up a great quantity of green bitter acrid ſtuff, which entirely relieved him from all his remaining complaints.

July the twenty-ſeventh. I opened the eyes. Both were ſo perfectly free from inflammation, and every other kind of blemiſh, as to render it almoſt impoſſible for any one to have diſcovered that an operation had been

performed on them only a few days before. The cornea was tranſparent, the pupil clear, round, and moveable.

On the thirty-firſt, he returned home. Two years afterwards, I learnt that this man continued to ſee quite well, and followed his trade, which was that of a houſe-carpenter.

CASE X.

A ſoldier, who had been diſcharged the ſervice, aged ſixty-one years, of a good conſtitution, had loſt his left eye from a wound, and was affected with a cataract in the right. It was of a perfect pearl colour, the pupil was round, the iris contractile, the cataract ſeemingly at a good diſtance from the pupil, and the patient was able to diſtinguiſh light from ſhade.

After having prepared him for ſome days for the operation, I performed it on the twentieth of May.

I ſcarcely had finiſhed the inciſion in the cornea, when the lens ſuddenly ſtarted out. It was enveloped in its capſule, which ſeemed to adhere to it at different points; in other places,

places, however, it was looſe and plaited. On its anterior ſurface one could obſerve from ſixteen to twenty black ſtripes verging towards a common center, and reſembling a ſtar. They were pulpy, and eaſily waſhed off.

As the pupil was quite clear, I immediately applied a bandage to the eye, and leſt the ſeparation of the capſule might be followed by bad conſequences, I cauſed the patient to be bled.

He paſſed a very good night, and next day had neither pain nor fever. He eat nothing except gruel and bread and butter, and took three drachms of laxative ſalts every three hours.

May the twenty-ſecond. He felt a ſlight pain in his eye, but had ſlept very well the preceding night, and had two ſtools. When I viſited him he was eating ſome hung ſauſage, and as he found himſelf well, refuſed to take any medicines. His pulſe was quiet and ſoft. He had a very good night, but felt a little pain next day. He took no medicines. The compreſs was often wetted with Goulard's ſolution. In one word, although the patient did not obſerve the moſt ſtrict diet, yet no bad conſequences happened.

pened. The pain in the eye diſappeared in the courſe of a few days; and on the twenty-ſeventh I opened his eye. The pupil was clear and round, the iris moveable, the patient ſaw diſtinctly, and the cicatrix reſembled a whitiſh ſtripe. He returned home on the thirtieth.

FINIS.

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